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# Early Intervention for Young Children with ADHD: Predictors of Parental Attendance

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Early Intervention for Young Children with ADHD:  
Predictors of Parental Attendance

by

Brigid Anne Vilaro

Presented to the Graduate and Research Committee  
of Lehigh University  
in Candidacy for the Degree of  
Doctor of Philosophy  
in  
School Psychology

Lehigh University  
May 2012

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2012

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*Certificate of Approval*

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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## EARLY INTERVENTION

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### ABSTRACT

Approximately 3% to 7% of all school-aged children are diagnosed with attention-deficit/hyperactivity disorder (ADHD; American Psychiatric Association [APA], 2000), and parental reports indicate increasing estimates of ADHD in the population (Visser, Bitsko, Danielson, Perou, & Blumberg, 2010). This disorder can lead to difficulties in attention and impulse control that can eventually result in everyday life impairments (APA, 2000; Pelham, Greiner, & Gnagy, 1998). As such, interventions must be implemented for young children that can ameliorate these symptoms at an early age and across settings. One intervention that has met criteria for being well established is parent education (Pelham & Fabiano, 2008). In order for parents and children to benefit from this intervention, however, parents must attend sessions. Nevertheless, previous studies have found parental attendance to be lacking (e.g., Kazdin & Mazurick, 1994). Therefore, the purpose of this study was to investigate predictors of parental attendance at behavioral parent education sessions for those with young children with ADHD. Participants included 135 children ( $M$  age = 4;  $SD$  = 0.69) and families who participated in an early intervention project, which included parent education. Results indicated that socio-economic status (SES) and marital status were statistically significant predictors of attendance at parent education sessions. Other variables, however, including ethnicity, parent stress, parent support, and child ADHD and ODD symptoms were not significant predictors of attendance. Therefore, future research should work to not only determine possible mediators and moderators between SES and marital status (e.g., parent acceptability of treatment), but also to find innovative ways to partner with parents in order to make parent education treatments relevant, feasible, and accepted.

## CHAPTER I: INTRODUCTION

Approximately 3% to 7% of all school-aged children are diagnosed with attention-deficit/hyperactivity disorder (ADHD; American Psychiatric Association [APA], 2000), and parental reports indicate increasing estimates of ADHD in the population (Visser, Bitsko, Danielson, Perou, & Blumberg, 2010). ADHD can lead to difficulties in attention and impulse control that can eventually result in everyday life impairments (APA, 2000; Pelham, Greiner, & Gnagy, 1998). Whether these difficulties lead to disruptions in the classroom, poor academic achievement, or impaired relationships with parents, teachers, peers, or siblings, children with ADHD often experience challenges that impact their functioning at home and school (Barkley, 2006; Pelham et al., 1998). Therefore, young children who are at-risk for developing ADHD must receive interventions to prevent the onset and persistence of the disorder.

### **ADHD in Young Children**

Behaviors consistent with ADHD are also seen in young children, and between 2% to 7% of preschool aged children have been reported to meet diagnostic criteria (Egger, Kondo, & Angold, 2006; Lavigne et al., 1996). Although symptomatic behaviors in young children can be more inconsistent than those behaviors of older children (LaForett, Murray, & Kollins, 2008), they nevertheless warrant attention. Indeed, inattentive and hyperactive-impulsive behaviors in preschool children have been shown to negatively impact relationships with peers and adults, behavior control, functioning at home, and academic performance (e.g., Egger et al., 2006). Additionally, because increasing levels of children are attending preschool and school readiness curricula may be more structured and frequently used, instructors of young children may expect increased levels of attention and decreased levels of hyperactivity/impulsivity (Wolraich, 2006). Therefore, interventions to ameliorate

hyperactive/impulsive behaviors at a young age to prevent later academic and behavioral concerns are warranted.

### **Parent Education**

Parent education is a promising intervention to address the needs of children with ADHD, and has been found to meet criteria as a well-established treatment (Pelham & Fabiano, 2008). Furthermore, educating parents as to how to best manage behaviors includes them as necessary stakeholders and natural intervention agents. Because parents are often with their children and behaviors associated with ADHD occur across domains in which children interact (APA, 2000), having parents serve as intervention agents allows them to teach their children in any and all situations they encounter.

Numerous parent education programs have been implemented for children with ADHD and have focused on a variety of outcomes. For example, studies have found benefits of including behavioral parent education as adjunctive to routine clinical care (i.e., supportive counseling, pharmacotherapy) when compared to routine treatment alone (Van den Hoofdakker, van der Veen-Mulders, Sytema, Emmelkamp, Minderaa, & Nauta, 2007). Additionally, Fabiano et al. (2009) found that fathers in an enhanced parent education program (i.e., supporting fathers as they directly interacted with their children) rated their children as exhibiting fewer negative behaviors than those in a traditional program, and Van den Hoofdakker et al. (2007) found that children whose parents participated in a parent education group were prescribed fewer medications than those who did not. Finally, positive effects on treatment satisfaction ratings have been found for behavioral parent education programs (e.g., Canu & Bearman, 2011; Chacko et al., 2009; Chronis et al., 2006; Fabiano et al., 2009).

Important reductions in parent stress have also been found as a result of specific parent education interventions. For example, Treacy et al. (2005) incorporated stress management techniques in their parent education sessions (e.g., cognitive restructuring, self-care) and found reductions in levels of parenting stress for both mothers and fathers. Additionally, Chronis et al. (2006) found that parents in a behavioral parent education treatment group reported engaging in fewer struggles with their children and perceived their children's behaviors to improve more than those in a waitlist control group, which could impact the levels of stress the parents experienced. Similarly, Gerdes, Haack, and Schneider (2012) and Danforth, Harvey, Ulaszek, and McKee (2006) found that parents who were involved in an education program experienced decreases in stress as their children's behaviors improved. Finally, Chacko et al. (2009) found that those who participated in an enhanced behavioral parent training group (i.e., subgroups to foster support amongst single mothers) reported experiencing significantly less stress than those in a traditional behavioral parent training group.

The aforementioned studies, however, have focused on providing parent education to those with older children with ADHD. Others have investigated the benefits of parent education for young children. For example, McGoey, DuPaul, Eckert, Volpe, and VanBrakle (2005) compared the effects of a combined early intervention package for young children with ADHD between the ages of 3 and 5 to a community treatment as usual condition. Although both groups generally experienced improvements over time, moderate positive results were seen in the areas of child behavior, parenting skills, and family functioning for the intervention group.

Additionally, the New Forest Parenting Package (Sonuga-Barke, Daley, Thompson, Laver-Bradbury, & Weeks, 2001; Sonuga-Barke, Thompson, Abikoff, Klein, & Brotman, 2006), a

parent education program for those with young children with ADHD, has resulted in positive outcomes in both domains of child behavior and maternal well-being. Although certain programs have provided parent education to those with young children with ADHD, they are outnumbered by those that have investigated the effects on school-aged children with ADHD. Additionally, in order to appropriately interpret results from parent education interventions, engagement in the sessions must be investigated.

### **Engagement**

In order for parents to experience positive benefits from parent education, they must be engaged in treatment. Throughout the parent education literature, engagement has been defined in a variety of ways. Some have measured attendance at sessions (e.g., Arnold et al., 2003; Baker, Roland, & Meagher, 2011; Peters, Calam, & Harrington, 2005; Snell-Johns, Mendez, & Smith, 2004) and others have focused on dropout from treatment (e.g., Boggs et al., 2004; Kazdin & Mazurick, 1994; Kendall & Sugarman, 1997). Additionally, the amount of homework completed between sessions (Chacko et al., 2009; Fabiano et al., 2009), as well as arriving on time to the parent education session (Chacko et al., 2009; Fabiano et al., 2009; Ingoldsby, 2010; Kazdin & Wassell, 1999) have been included as indications of engagement. Regardless of the way engagement is measured across the literature, it is a key variable to intervention (DuPaul & Power, 2008) and critical in order to elicit, measure, and sustain high levels of engagement throughout treatment (Power, Hughes, Helwig, Nissley-Tsiopinis, Mautone, & Lavin, 2010).

Attendance is one such variable relating to engagement; however, it may be necessary but not sufficient. For example, Nix, Bierman, McMahon, and The Conduct Problems Prevention Research Group (2009) found that the quality of engagement more consistently predicted parent education outcomes than attendance. Therefore, additional behaviors such as

quality of engagement, attention, and participation, should be considered part of the larger construct of engagement (Staudt, 2007). Nevertheless, some have argued that attendance may be one of the most critical components to intervention (Nock & Ferriter, 2005), as well as a substantial concern for interventionists (Baker et al., 2011; Watt & Dadds, 2007), as clients may not experience benefits without attending treatment (Staudt, 2007). Furthermore, if one conceptualizes treatment integrity to include: (a) the quality of the intervention; and (b) the quantity of the intervention, attendance is a relevant and important variable to include in order to measure the quantity of intervention received (Dane & Schneider, 1998; Korfmacher et al., 2008; Power, Blom-Hoffman, Clarke, Riley-Tillman, Kelleher, & Manz, 2005; Raikes, Green, Atwater, Kisker, Constantine, & Chazan-Cohen, 2006). Therefore, researchers must determine predictors of attendance for parent education interventions so that: (a) appropriate variables can be targeted to help increase levels of treatment involvement; and (b) treatment integrity can be assessed comprehensively.

### **Predictors of Attendance**

Throughout the literature, various predictors of parental attendance have been studied. Ethnicity, for example, has been found to predict attendance in parent education such that those from an ethnic minority background attend fewer sessions than White parents (e.g., Arnold et al., 2003; Kazdin, Holland, & Crowley, 1997; Kazdin & Mazurick, 1994). Those with higher socio-economic status (SES) have also been found to attend more parent education sessions than those from a less advantaged background (e.g., Garvey, Julion, Fogg, Kratovil, & Gross, 2006; Gross, Julion, & Fogg, 2001; Lavigne, LeBailly, Gouze, Binns, Keller, & Pate, 2010). Additionally, higher levels of parental stress (e.g., Dumas et al., 2007; Kazdin et al., 1997; Kazdin, Mazurick, & Bass, 1993) and lower levels of parental support and/or single parent status (Baker et al., 2011; Dadds & McHugh, 1992; Dumas et al., 2007;

Harrison, McKay, & Bannon, 2004; Kazdin & Mazurick, 1994; Kendall & Sugarman, 1997) have been found to predict lower levels of attendance across parent education programs.

Paths are not as clear, however, when determining whether severity of child symptoms is associated with parent attendance. For example, some studies have found that high levels of child symptoms lead to more attendance (e.g., Baker et al., 2011; Dumas et al., 2007; Garvey et al., 2006; Kendall & Sugarman, 1997; Nock & Ferriter, 2005), whereas others have found that low levels of symptoms predict attendance (Kazdin et al., 1997; Kazdin & Mazurick, 1994; Snell-Johns et al., 2005). Still others have found that symptoms do not predict attendance in parent education sessions (Gross et al., 2001; Harrison et al., 2004). Therefore, variables that could be influencing the relationship between child symptoms and attendance must be determined (Kazdin & Wassell, 1999).

Parental perceptions of treatment efficacy and relevance are important variables to consider in relation to parent attendance. For example, perhaps treatment is more relevant for parents who have children exhibiting severe rather than mild symptoms. Indeed, studies have found parental perceptions of treatment relevance (Kazdin et al., 1997) and their perceptions of acceptability (Mah & Johnston, 2008) to be related to attendance at parent education sessions. Therefore, parental acceptability of treatment warrants more attention to determine if it impacts the relationship between child symptoms and parental attendance.

Most studies that have investigated predictors of attendance in parent education programs have been conducted for parents of children with conduct disorder (CD) or oppositional defiant disorder (ODD) (e.g., Boggs et al., 2004; Dadds & McHugh, 1992; Harrison et al., 2004; Kazdin et al., 1997; Kazdin & Mazurick, 1994; Kazdin et al., 1993; Kazdin & Wassell, 1999; Kazdin & Whitley, 2003; Lavigne et al., 2010; Nock & Kazdin, 2005; Peters et al., 2005). Others have included parents of preschool children without



specific symptoms (e.g., Baker et al., 2011; Garvey et al., 2006; Gross et al., 2001; Mendez et al., 2009) and of children with anxiety (e.g., Kendall & Sugarman, 1997). Because predictors may be linked to children's diagnoses (Kendall & Sugarman, 1997), however, predictors of parent attendance for treatment of ADHD in young children must be investigated.

Additionally, among the aforementioned studies only Baker et al. (2011), Dumas et al. (2007), Garvey et al. (2006), Gross et al. (2001), and Lavigne et al. (2010) examined predictors of parent attendance with young children. Furthermore, Dumas and colleagues (2007) conducted the only study that investigated the predictors of attendance at parent education for young children with ADHD and ODD. Because predictors of attendance may vary for preschool children as a function of their age and developmental status (e.g. Egger et al., 2006; Wolraich, 2006), additional research is warranted in this area to determine reliable predictors of attendance for parents of young children with ADHD.

Although studies have investigated attendance at parent education programs for treatment of ADHD, predictors have rarely been examined. For example, Chacko et al. (2009) and Fabiano et al. (2009) found differences in engagement between two different parent education programs, and Friars and Mellor (2009) investigated reasons for dropout from parent education via qualitative interviews. These studies are limited, however, in that they did not focus on young children with ADHD, examine predictors specific to attendance (Chacko et al., 2009; Fabiano et al., 2009), or utilize quantitative analyses to determine significance (e.g., Friars & Mellor, 2009). Two exceptions exist in the literature, however. First, Arnold et al. (2003) investigated the effects of ethnicity on parent education attendance for children with ADHD, but parental stress and perceptions of support were not included as predictors, and the treatment was not provided for those with young children. Second,

Dumas et al. (2006) investigated whether stress, marital status, income, and child behaviors predicted parental attendance, but neither parent support nor acceptability of treatment were examined.

Therefore, the primary and secondary research questions for the current study were:

1.0 Were parental characteristics predictive of their attendance at parent education for young children with ADHD when controlling for family ethnicity and socio-economic status?

1.01 Was parental stress a significant predictor of parental attendance at parent education for ADHD when controlling for ethnicity and socio-economic status?

1.011 It was hypothesized that parental stress would be a significant predictor of parental attendance at parent education for ADHD based on previous research investigating parental stress in parents with children with ADHD (e.g., Anastopoulos, Guevremont, Shelton, and DuPaul, 1992) and the impact of parental stress on attendance for those with children with ODD (e.g., Kazdin et al., 1993).

1.02 Was parental support a significant predictor of parental attendance at parent education for ADHD when controlling for ethnicity and socio-economic status?

1.021 It was hypothesized that parental support would be a significant predictor of parental attendance at parent education for ADHD based on previous research explaining the importance of parental support and attendance for those with children with CD/ODD (e.g., Baker et al., 2011; Dadds & McHugh, 1992).

1.03 Was marital status a significant predictor of parental attendance at parent education for ADHD when controlling for ethnicity and socio-economic status?

1.031 It was hypothesized that marital status would be a significant predictor of parental attendance at parent education for ADHD based on previous research investigating parental marital status with those with ADHD (e.g., Wymbs Pelham, Molina, Gnagy, Wilson, & Greenhouse, 2008) and the impact of parental marital status on attendance for those with children with ODD (e.g., Kazdin et al., 1997).

2.0 Did levels of child problem behavior predict parental attendance at education sessions for young children with ADHD?

2.01 Was the level of child ADHD symptoms a significant predictor of parental attendance at parent education for ADHD?

2.011 It was hypothesized that the level of child ADHD symptoms would be a significant predictor of parental attendance at parent education for ADHD based on previous research investigating the impact that child symptom severity has on parental attendance (e.g., Kazdin & Mazurick, 1994).

2.02 Was the level of child ODD symptoms a significant predictor of parental attendance at parent education?

2.021 It was hypothesized that the level of child ODD symptoms would be a significant predictor of parental attendance at parent education for ADHD based on previous research investigating the impact that child symptom severity has on parental attendance (e.g., Kazdin & Mazurick, 1994).

3.0 If child problem behaviors significantly predict parental attendance, how did acceptability of the intervention impact the relationship between child symptoms and attendance?

3.01 Did acceptability mediate the relationship between ADHD symptoms and parental attendance at parent education for ADHD?

3.02 Did acceptability mediate the relationship between ODD symptoms and parental attendance at parent education for ADHD?

3.03 Did acceptability moderate the relationship between ADHD symptoms and parental attendance at parent education for ADHD?

3.04 Did acceptability moderate the relationship between ODD symptoms and parental attendance at parent education for ADHD?

3.001 Given the lack of prior theory or work on this issue, these four questions were exploratory and, therefore, no hypotheses were stated.

## CHAPTER II. LITERATURE REVIEW

### **Parent Education Programs**

Parent education has been found to meet criteria as a well-established treatment for children with ADHD (Pelham & Fabiano, 2008). Furthermore, educating parents as to how to best manage their children's behaviors includes them as necessary stakeholders and natural intervention agents. Because parents have enormous influence over their children's lives across the multiple domains in which children interact (APA, 2000), having parents serve as intervention agents affords them the opportunity to shape their children's behaviors in natural teaching situations and environments.

Numerous education programs have been implemented for parents of children with ADHD and have focused on a variety of outcomes. Standard parent education programs have typically focused on delivering didactic instruction to parents regarding effective behavioral strategies including, but not limited to, establishing rules, providing effective commands, and following through with established contingencies (e.g., Canu & Bearman, 2011; Chacko et al., 2009; Danforth et al., 2006; Fabiano et al., 2009; Froelich, Doepfner, & Lehmkuhl, 2002). Other programs, however, have extended the focus of parent education. For example, studies have found benefits of including behavioral parent training as adjunctive to routine clinical care (e.g., supportive counseling, pharmacotherapy, crisis management) when compared to the routine treatment alone (Van den Hoofdakker et al., 2007). Others have focused on decreasing parental symptoms of depression (Chronis et al., 2006) and stress (Treacy et al., 2005), and improving their coping styles (McKee, Harvey, Danforth, Ulaszek, & Friedman, 2004); and still others have focused on how to improve their children's interpersonal social skills (e.g., Griggs & Mikami, 2011).

The aforementioned studies have been conducted with school-aged children with ADHD. Given the importance of early intervention and prevention, however, it is critical that parent education interventions begin at an earlier age. Indeed, some researchers have investigated the effects of parent education on young children with ADHD. For example, McGoey et al. (2005) implemented a multicomponent intervention, which included parent education and preschool consultation, to intervene with 57 children with symptoms of ADHD between the ages of 3 and 5. Forty-two percent of the sample met diagnostic criteria for oppositional defiant disorder (ODD) and 37% met for conduct disorder (CD). The parent education program consisted of 12 two-hour sessions with 6 to 10 sets of parents, which included discussions of videos, and were led by graduate students. Topics included behavioral strategies (e.g., praise and rewards), safety, and modification of the home environment. Data were collected to measure child behavior and social-emotional functioning, family functioning, parental stress, medical outcomes, service utilization, school readiness, and parental knowledge of ADHD.

Results of this intervention indicated no differences between or within groups on measures of service utilization (e.g., use of medication, psychoeducation, emergency room visits) and mixed results regarding child behavior symptoms (McGoey et al., 2005). Both groups experienced moderate improvements in terms of school readiness, however, which included measures of personal-social, adaptive, motor, communication, and cognitive skills (Battelle Developmental Inventory (BDI); Newborg, Stock, & Wnek, 1988). Additionally, the multicomponent intervention group exhibited improvements over the control group in terms of seeking family support and knowledge of ADHD. Although the authors did not measure attendance or engagement, and one cannot dismantle the effects between preschool

consultation and parent education, this investigation highlights the benefits that early intervention procedures can have on young children with ADHD and their families.

Kern et al. (2007) also provided a parent education program to parents of young children with ADHD. The sample was randomly assigned to one of two groups: (a) the multi-component intervention ( $n = 71$ ), who received the Community Parent Education program (COPE; Cunningham, Bremner, & Secord, 1998); or (b) the parent education intervention ( $n = 64$ ), who received the Early Childhood Systematic Training for Effective Parenting (Dinkmeyer, McKay, Dinkmeyer, Dinkmeyer, & McKay, 1997). Those assigned to the multi-component intervention also received individualized intervention supports in the home based on functional assessment data, and in the preschool setting based on behavioral consultation procedures. Although results from the parent education portion of the multi-component intervention cannot be dismantled, the authors found that children in both groups made significant improvements in their behavior and school readiness skills when compared to baseline. Therefore, it appears as though the parent education only intervention was effective at improving symptoms of ADHD in young children.

Lakes, Vargas, Riggs, Schmidt, and Baird (2011) provided a parent education program to parents of young children that was also based on the COPE program (Cunningham et al., 1998). The authors provided 10 weekly parent education sessions to parents, and results indicated statistically significant improvements in both parenting and child social behaviors. More specifically, parents provided frequent transitional statements and praise and more often planned ahead. Additionally, children experienced decreases in negative social behaviors (e.g., emotional challenges, inattention, hyperactivity, conduct problems, peer relationship concerns) and increases in prosocial behaviors. The authors reported that of the 327 parents who enrolled in the sessions, 31% attended 8 or more, 35%

attended 4 to 7, and 31% attended 3 or less. Additionally, Lakes et al. (2011) reported that there was not a significant difference in barriers to participation between a subsample of those who participated ( $n = 54$ ) and those who attended three or fewer sessions ( $n = 15$ ), as all participants rated the barriers as having little to do with their attendance. Although it is beneficial that the authors measured potential barriers to participation, possible mediators and moderators were not examined that may have been able to explain why some parents attended and others did not.

The Incredible Years (IY) parent education program has also been shown to improve parenting practices for those of young children with ADHD. Using a sample of 99 children with ADHD between the ages of 4 and 6 years old, Webster-Stratton, Reid, and Beauchaine (2011) conducted a randomized clinical trial to investigate the effectiveness of IY. The program includes curricula for both parents and children, and includes 20 weekly 2-hour sessions. Lessons to improve academic, social, and behavioral functioning are included, and videos of children with ADHD are shown to aide in the learning process. Finally, problem solving skills and strategies to manage anger, reduce depression, and increase interpersonal supports are provided.

Webster-Stratton et al. (2011) found that both mothers and fathers reported statistically significant reductions in child inattentive and hyperactive behaviors and increases in social competence. Only mothers reported significant changes in their parenting behaviors, however, which included using more positive parenting practices (e.g., praise) and less negative parenting methods (e.g., physical punishment). These self-report results are strengthened by the fact that the authors also included direct-observations of student and maternal behaviors. Finally, the authors noted that mothers and fathers attended an average of 18.5 and 17.1 sessions out of 20, respectively. Although attendance rates were quite high,



the authors did not provide information regarding incentives or strategies that were used to increase levels of attendance.

Sonuga-Barke and colleagues have also investigated the effects of parent education on young children with ADHD by examining the New Forest Parenting Program. One study conducted by Sonuga-Barke and colleagues (2001) included 78 3-year-old children and their families who were randomly assigned to one of three groups: parent education, parent counseling and support, or waitlist control. All eight, 1 hour weekly, sessions were delivered on an individual basis and in the participants' homes. Skilled nurses implemented the parent education intervention and worked with families and children in order to provide an introduction to ADHD, teach behavioral strategies, and guide parents in completing a behavioral diary. Similar to the parent education group, the parent support and counseling intervention was also implemented by skilled nurses and parents kept behavioral diaries; but rather than directive techniques, general supports and discussions of concerns were provided.

Results indicated that children in the parent education group exhibited significant improvements in ADHD behavior (e.g., increased levels of attention and decreased levels of hyperactivity/impulsivity) and concomitant improvements in maternal adjustment when compared to the support and control groups (Sonuga-Barke et al., 2001). This study is strengthened by the fact that direct observation data were collected and results did not rely on parental report. Additionally, two treatment groups and one control group were compared in order to determine active ingredients of the intervention. Similar to the study by McGoey et al. (2005), however, the authors did not investigate attendance or engagement during sessions.

Another study by Sonuga-Barke and colleagues (2006) also investigated the effects of the New Forest Parenting Program, but this time included unskilled nurses who were briefly

trained in comparison to the 2001 study that had skilled nurses implement the intervention. With a sample of 69 children, 59 of whom were assigned to the treatment group and 10 to the control, results were not consistent with the previous investigation. Although the sample size was not large enough to quantitatively determine therapist effects, qualitative reports comparing this study with the one previously completed indicate that those families who worked with skilled nurses who were experienced in working with children with ADHD benefited from treatment, whereas those who worked with unskilled nurses did not. This study extended the investigations of the New Forest Parenting Program but, similar to the previous study conducted by Sonuga-Barke et al. (2001), the authors did not investigate attendance or engagement during sessions.

Bor, Sanders, and Mackie-Dadds (2002) conducted another parent education intervention for those with young children with ADHD. The authors randomly assigned their sample of 87 3-year-olds with disruptive behaviors and ADHD to one of three groups: enhanced behavioral family intervention (EBFI), standard behavioral family intervention (SBFI), or waitlist control. The SBFI group was provided with the Triple P – Positive Parenting Program (Sanders, 1999). Participants received an average of 10 hr of intervention with a therapist, were provided with workbooks, and engaged in modeling and role play exercises that focused on managing challenging behaviors and promoting child competence. The EBFI group also received the Triple P intervention, as well as partner support training (to improve communication between parents) and coping skills training (to promote relaxation and awareness of negative cognitions). Participants received an average of 14 hr of intervention with a therapist.

Results indicated that both intervention groups experienced significant reductions in parent-reported child behavior concerns and dysfunctional parenting (e.g., laxness,

overreactivity, and verbosity; Arnold, O’Leary, Wolff, & Acker, 1993), and significant increases in parent competence when compared to the waitlist control group (Bor et al., 2002). In addition, children in the EBFI group had fewer negative behaviors than the waitlist control group. Due to the overall lack of differences between the EBFI and the SBFI groups, however, EBFI was not found to be more effective than SBFI. Bor et al. did, however, investigate attrition from the intervention and found that mothers who rated their children’s behaviors as more severe were significantly more likely to drop out from treatment.

Barkley et al. (2000) also conducted a parent education intervention that investigated parental attrition from treatment. Families of 4-year-old children were randomly assigned to one of four treatment groups: parent education only ( $n = 39$ ), special treatment classroom ( $n = 37$ ), combined parent education and classroom treatments ( $n = 40$ ), or no treatment control ( $n = 42$ ). Parent education sessions consisted of 10 weekly sessions that focused on basic behavioral principles including attending, rewards, positive reinforcement, time out, and appropriate management in public places. Additionally, special treatment classroom interventions included behavioral interventions (e.g., token economy, response cost, daily report cards, social skills training) and the assistance of a master teacher and child psychologist.

Results indicated that those receiving classroom intervention exhibited significantly higher parent-rated adaptive behaviors and teacher-rated social skills and significantly fewer teacher-rated externalizing, internalizing, and aggression concerns (Barkley et al., 2000) than those in the parent education only group. Because of the lack of improvements for the parent education only group, the authors conducted additional analyses related to attrition. They found that 35% of parents in the parent training only and 31% in the combined treatment group did not attend any sessions. Additionally, results indicated that those who did not

attend any treatment sessions received less formal education and rated their children as having fewer behavioral concerns than those who did attend. These attrition results are contradictory to those found by Bor et al. (2002), which indicated that parents who rated their children as having high levels of behavioral concerns were less likely to attend. Therefore, researchers must investigate predictors of attendance, a major component of engagement in parent education, to clarify discrepancies in findings.

### **Engagement as a Critical Component to Behavioral Parent Education**

Throughout the literature, researchers have defined parent engagement in various ways. For example, parental attendance (e.g., Arnold et al., 2003; Peters et al., 2005; Snell-Johns et al., 2004), dropout from treatment (e.g., Boggs et al., 2004; Friars & Mellor, 2009; Kazdin & Mazurick, 1994; Kendall & Sugarman, 1997), amount of completed homework (e.g., Chacko et al., 2009; Fabiano et al., 2009), and arrival on time (e.g., Chacko et al., 2009; Fabiano et al., 2009; Ingoldsby, 2010; Kazdin & Wassell, 1999) have been common ways to evaluate engagement in treatment.

Additionally, prior investigations of parent engagement have included groups of children with mixed diagnoses, with the majority focusing on treatment for children with conduct disorder (CD) and oppositional defiant disorder (ODD) (e.g., Dadds & McHugh, 1992; Harrison et al., 2004; Kazdin & Mazurick, 1994; Kazdin et al., 1993; Kazdin et al., 1997; Lavigne et al., 2010). Kendall and Sugarman (1997), who investigated engagement for children with anxiety disorders in an outpatient clinic, indicated that predictors of engagement might be diagnosis-specific, however. Stated differently, predictors of engagement for those with CD/ODD may differ from those with anxiety and, additionally, from those with ADHD. This difference across disruptive behavior disorders may be particularly salient for parents of children with ADHD, as many parents may also have

ADHD themselves (e.g., Griggs & Mikami, 2011; Weiss, Hechtman, & Weiss, 2000), which can negatively impact organization and consistent appointment attendance. Therefore, because much of the literature has focused on parental engagement for treatment of children with CD and ODD, it is important to determine predictors of engagement for parents of children with ADHD.

Although attendance may be necessary in order to measure engagement, it may not be sufficient. For example, Nix et al. (2009) found that the quality of engagement more consistently predicted parent education outcomes than attendance. Therefore, additional behaviors such as quality of engagement, attention, and participation, should be considered part of the larger construct of engagement (Staudt, 2007). Nevertheless, some have argued that attendance may be one of the most critical components to intervention (Nock & Ferriter, 2005), as well as a substantial concern for interventionists (Baker et al., 2011; Watt & Dadds, 2007) as clients may not experience benefits without attending treatment (Staudt, 2007). Additionally, if one conceptualizes treatment integrity to include: (a) the quality of the intervention; and (b) the quantity of the intervention, attendance is a relevant and important variable to include in order to measure the quantity of intervention received (Dane & Schneider, 1998; Korfmacher et al., 2008; Power et al., 2005; Raikes et al., 2006). Therefore, researchers must determine predictors of attendance at parent education interventions for ADHD so that: (a) appropriate variables can be targeted to help increase levels of treatment involvement; and (b) treatment integrity can be assessed comprehensively.

### **Predictors of Attendance**

**Ethnicity.** Snell-Johns et al. (2004) recommended that researchers and service providers think more closely about ecological systems, including those at the home, school, community, and cultural levels (Bronfenbrenner, 1979), that can impact parental

engagement. These can include, but are not limited to factors including race, poverty, level of education, and social skills (Snell-Johns et al., 2004). Power et al. (2010) conducted one study that investigated the difficulties with engaging parents from a low-income ethnic minority background. The authors focused on parents of children with ADHD and whether they attended treatment delivered at a primary care physician's office. Treatments included strategies to increase parental involvement at home and school, manage behavioral concerns, intervene appropriately with crises, and collaborate between home, school, and medical settings in managing medications (Power et al., 2010). Despite extensive attempts to engage families over the telephone, 35% of low-income ethnic minority parents of children with ADHD never attended a treatment session. Thus, because studies have evidenced substantial difficulties with involving parents in treatments, additional work must determine how societal factors, including ethnicity, impact involvement so as to determine strategies that can increase attendance at treatment (Snell-Johns et al., 2004).

Aligned with this recommendation, variables relating to ethnicity have received much attention in the literature in terms of predictors of parental attendance, with numerous studies including ethnicity as one of many outcome variables (e.g., Baker et al., 2011; Kazdin et al., 1997; Kazdin et al., 1993; Kazdin & Mazurick, 1994; Lavigne et al., 2010; Staudt, 2007). In one such study, Wood and Baker investigated 395 parents' preferences regarding an elementary school-based behavioral parent-education program (1999). The authors included other variables, such as socio-economic status and level of formal education received, but results focusing on ethnicity indicated that African American parents were significantly more interested in attending a parent education program than Caucasian parents. Caucasian parents, however, reported significantly more attendance than African American parents. Although the study is limited in that the outcome measures were self-reports completed at

home and did not include children with ADHD, results indicate possible differences in involvement between parents of different ethnic backgrounds.

Arnold et al. (2003) also focused on the impact of ethnicity on attendance, but focused on parents of children with ADHD. Using the sample from the National Institute of Mental Health Multimodal Treatment Study of Children with ADHD (MTA Cooperative Group, 1999), Arnold et al. investigated the effects that ethnicity had on parent education treatment attendance. Although not a statistically significant difference, African American families attended 12% fewer parent education sessions than Caucasian parents and had 13% less attendance when considering all aspects of treatment (e.g., medication management sessions). Additionally, Latino parents had 15% less attendance than Caucasians when considering overall treatment but this difference did not reach statistical significance. In general, however, ethnic minority families attended a high percentage (67% - 70%) of parent education sessions, which may have been influenced by the level of intensity of the MTA study. Because ethnic minorities still attended fewer sessions than Caucasian families in this strong intervention, however, and because community interventions are most likely less intense than this intervention package, it appears as though ethnic minority status is an important predictor to consider when investigating attendance at parent education sessions.

**Socio-economic status.** Along with ethnic minority status, SES has also been studied as a predictor of parental attendance at treatment. Similar to studies investigating ethnicity, those examining the effects of SES have done so in the context of numerous predictors, and generally indicate that low-income families attend fewer sessions than those from higher SES backgrounds (e.g., Corcoran & Dattalo, 2006; Ingoldsby, 2010; Jensen & Lowry, 2012; Kazdin et al., 1997; Kazdin et al., 1993; Kazdin & Mazurick, 1994; Lavigne et al., 2010; Snell-Johns et al., 2004; Staudt, 2007). Certain authors have focused more specifically on

the effects of SES on attendance, however. For example, Garvey et al. (2006) examined parental engagement in an 11-week preventive parent-education program for 292 low-income parents with young children. The authors found that only 35% of the families enrolled in the program, and of those who enrolled 33% never attended a session. Additionally, the average attendance rate was only 4.3 of 11 sessions. Despite attempts to make the program as feasible as possible (e.g., free dinner and childcare, cab fare home), the authors explained that it might be difficult to increase attendance for low-income families without changing their life situations or the nature of the program (e.g., offering sessions at home). Because the study did not investigate the attendance rate of high-income families, however, one cannot determine whether or not more financially secure families would have attended at a higher rate or not.

Gross et al. (2001) also found similar results in their study investigating levels of parental attendance in low-income families with young children. Results indicated that for the 155 participants, the mean number of sessions attended was 5.5 of 12, and 30% of the sample dropped out of treatment before it was completed. Additionally, Peters et al. (2005) found that mothers from higher SES backgrounds were significantly more likely to complete a parent-education program than those from lower income backgrounds. Therefore, similar to results from studies investigating the impact of ethnicity on treatment attendance, it appears as though future work must be done to determine strategies to increase attendance for those from low-income backgrounds.

Therefore, because of the difficulties associated with engaging families from low-income and ethnic minority backgrounds (e.g., Power et al., 2010), research has indicated that ethnicity and SES are important predictors to attendance to consider when providing parent education treatment to families.



**Parental stress.** Whereas much research has investigated the effects of SES and ethnicity on parental attendance, less work has been done to examine the influence of parental stress on attendance at parent education sessions. Stress has certainly been found to impact the lives of those with children with ADHD, however (Theule, Wiener, Rogers, & Marton, 2010). For example, using a sample of 104 children with ADHD and their mothers, Anastopoulos et al. (1992) found that child aggression, ADHD total symptoms, child health status, maternal psychopathology, and mothers working at home were significant predictors of maternal stress. Additionally, when comparing subgroups of participants, both children with ADHD and ADHD/ODD had mothers who reported significantly higher levels of stress than normative samples, and those with children with ADHD/ODD had significantly higher levels of stress than those with children with ADHD alone. Although limitations existed, including a lack of input from fathers and the omission of a clinic-referred non-ADHD group, this study yielded meaningful results. Namely, mothers of children with ADHD can experience significant symptoms of stress, and this may be particularly salient for parents of children with comorbid ADHD and ODD. Therefore, it is critical for researchers to examine how parental stress of those with ADHD impacts involvement in treatment, including levels of attendance.

In order to gather more detailed information regarding parental stress, Whalen et al. (2006) investigated child and maternal reports of activities and moods over one-week. The goal of the study was to determine functioning and behaviors of children who were diagnosed with and taking medication for ADHD and their mothers. Results from the 27-dyad ADHD group and the 25-dyad comparison group indicated that mothers of children with ADHD were more likely to be stressed when with than when not with their children. Mothers of children with ADHD also reported: (a) significantly more disagreements with

their child; (b) being 64% less likely to be good at what they were doing at the moment; (c) that activities were significantly more difficult (e.g., completing chores, working, communicating with others); and (d) significantly less perceived effectiveness at parenting than those mothers in the comparison group. Although certain limitations to the study exist, including a small sample size, possible reactivity to the devices, and the inability to infer causation based on the correlational research, the study certainly has implications. Because mothers of children with ADHD can not only be more stressed than parents of children without ADHD, but also have less-self efficacy and perceive daily activities to be more difficult, practitioners and school personnel must think of innovative ways to support and educate families who have children with ADHD in an effort to decrease their levels of stress and increase attendance at education sessions.

Another study investigating ADHD and parental stress was conducted by Harrison and Sofronoff (2002) and investigated the participants' demographic variables and their influence on parental distress. Because parents of children with ADHD are more likely than parents of typical children to experience stress (e.g., Anastopoulos et al., 1992), the authors hypothesized that child behaviors and demographic factors would predict the levels of parental stress that were experienced. Additionally, the authors examined the locus of control (i.e.: internal or external) regarding parents' perceptions of controllability of their children's behaviors.

Using a sample of 100 mothers of children with ADHD (most of whom had a comorbid diagnosis of ODD) between the ages of 3-12 yrs old, Harrison and Sofronoff (2002) found that maternal age, child age, number of siblings, and maternal education were not related to levels of maternal stress. However, higher levels of ADHD behaviors (e.g., inattention, hyperactivity / impulsivity) and lower levels of parental perception of

controllability of those behaviors were significantly related to parental stress. Additionally, those who had lower levels of knowledge regarding ADHD had less perceived control of child behaviors. Although this study included limitations, such as not including input from fathers, most children being on medication, and the correlational nature of the research, these findings certainly have important implications for practice, namely that effective strategies must be provided to parents to enhance their perceived self-efficacy and controllability of behaviors.

Although research has indicated that: (a) parents of children with ADHD can experience significant symptoms of stress; and (b) various factors can predict levels of parental stress, the way in which parental stress impacts attendance at parent education has not received as much attention. It is critical that this variable be considered in parent education for those with children with ADHD, however, as parents who are stressed may require more strategies and support than others in order to attend treatment.

Dumas et al. (2007) conducted a study that included parental stress as a predictor of intent, enrollment, attendance, and quality of participation for 451 parents of young children with symptoms of ADHD and ODD. Contrary to expectations, the authors found that increased levels of parental stress predicted intent to enroll and actual enrollment. Stress did not predict attendance or quality of participation, however. Therefore, based on this study it appears as though increased levels of parental stress may positively impact preliminary engagement, but not actual attendance at parent education.

Most other studies have found that increased levels of parental stress negatively impact attendance at parent education, however. For example, a qualitative study completed by Frairs and Mellor (2009) investigated the perceptions of nine parents of children with ADHD who dropped out of a behavioral parent-education program. Although many themes

were derived from the parent interviews, one of the main topics indicated that the parents were experiencing high levels of stress. One cannot statistically determine whether or not stress predicted their dropping out of the study, but the results highlight the fact that parents who drop out of behavioral parent education programs may be quite stressed.

As is the case with many predictors of attendance, however, most other investigations including parental stress as a predictor were completed with parents of children with ODD/CD (e.g., Nock & Ferriter, 2005; Snell-Johns et al., 2004). Kazdin et al. (1997) completed one such study investigating barriers to treatment attendance with a sample of 242 children ages 3-14 and their families. Although 5% of the sample was diagnosed with ADHD, most others were diagnosed with CD and ODD. Results indicated that stress was not a significant predictor of dropout from behavioral parent education, but parents who dropped out of treatment indicated that stress was a significant barrier to their participation.

Alternatively, other studies by Kazdin and colleagues found that increased levels of stress significantly predict dropout from treatment (e.g., Kazdin et al., 1993; Kazdin & Mazurick, 1994). To elaborate on these findings, Kazdin and Whitley (2003) conducted a study that investigated the effects of a brief intervention to address levels of parental stress. Based on their previous research, the authors hypothesized that directly intervening to reduce parental stress would increase levels of attendance. Participants included 127 children, ages 6-14 yrs old and their parents. Children were primarily diagnosed with CD (30%) and ODD (40%), but also included those with ADHD (3%), major depressive disorder (9%), other (13%), or no diagnosis (5%). Results indicated that the portion of participants who received a brief parent problem-solving intervention along with the 16-week parent education program experienced greater self-reported decreases in stress and perceived fewer barriers to treatment than those who did not receive the intervention. There was not a statistically

significant difference between groups, however, as both sets of participants experienced significant decreases in stress over time and did not differ in terms of attendance. Therefore, although the problem-solving intervention resulted in parents reporting less stress, objective results indicate that parent education on its own may lead to decreased stress without need for additional intervention.

Thus, the extant literature indicates that parental stress is an important variable to consider for parents of children with ADHD (e.g., Anastopoulos et al., 1992); but most research investigating stress as a predictor to attendance has been conducted with parents of children with ODD/CD (e.g., Kazdin et al., 1993). Additionally, only Dumas et al. (2007) focused on parents of young children. Whereas Friar and Mellor (2009) and Kazdin et al. (1997) included parents of young children, any separate effects for these parents compared to those with other children were not reported. Therefore, the degree to which parental stress impacts treatment attendance for parents of young children with ADHD warrants investigation.

**Parental support.** Parental support, although a critical variable to consider when investigating attendance, has received less attention in the literature than parental stress. Because children with ADHD may exhibit more tantrums and externalizing behaviors in public, however, parents may experience heightened rates of criticism from others (Miranda, Grau, Rosel, & Meliá, 2009). Additionally, although parents of children with ADHD have reported receiving many requests for involvement from school personnel, they have not felt welcomed or supported in their children's schools (Rogers, Weiner, Marton, & Tannock, 2009). McKee et al. (2004), however, found that parents who sought social support were more likely to utilize adaptive coping strategies. Therefore, Snell-Johns et al. (2004) recommended that researchers and practitioners take an ecological perspective when

considering the various factors, including impaired social relationships, that impact parents with whom they intervene.

Aligned with this recommendation, Chacko et al. (2009) conducted a study that considered parental support when working with parents of children with ADHD. In their enhanced parent education program for single mothers of children with ADHD, the authors included subgroups and problem-solving tasks to foster increased levels of social support amongst the mothers. Although outcomes relating to parental social support were not reported, it is critical that more programs consider social support for parents of children with ADHD when providing treatment in order to account for the various factors (e.g., single marital status, stress, social isolation) that impact parents.

Dadds and McHugh (1992) conducted a study that considered parental support as a predictor of treatment outcome. Using a sample of 22 single parents of children with CD or ODD (child *M* age = 4.5) who were randomly assigned to standard parent education or parent education plus an adjunctive social support intervention, the authors investigated the differential effects of group assignment on treatment outcomes. Whereas both groups participated in the same parent education program, the social support group brought allies with them to the introductory session during which researchers explained to allies how to best support participants, and to participants how to best use their allies as a resource. The standard parent education group received a general introductory session separate from those in the social support group. Results, both self-report and observed, indicated that both groups significantly improved from pre- to post-treatment. When considering response to treatment (i.e., parent reports of child behavior at pretreatment decreased by 50% at follow-up), however, maternal perception of social support from friends was the best predictor of responding or not responding to treatment. Therefore, although limitations exist, including a

small sample size and possible diffusion of treatment, perception of social support was an important factor to consider when determining who responded to treatment.

Only one study was found that included parent levels of support as a predictor to enrollment and attendance at parent education sessions. Using a reduced 8 week version of the Incredible Years (IY) program, Baker et al. (2011) found that parent-perceived levels of support predicted enrollment in parent education sessions, such that those with higher levels of social support were significantly more likely to enroll in parent education sessions for their young children (e.g., attended at least one session) than those with lower levels of support. Of those who attended at least one session, however, the authors did not find any significant association between the number of sessions attended and levels of parent support. Therefore, additional studies must investigate social support when determining predictors of attendance at parent education sessions in order to gain a clearer understanding of this relationship.

**Marital status.** Marital status has also been considered as an important variable in the literature. For example, Wymbs et al. (2008) found that parents of children with ADHD were more likely to divorce and experienced shorter marriages than those of children without ADHD. Therefore, because parents of children with ADHD can experience more stress and marital discord than those without (e.g., Johnston & Mash, 2001; Wymbs et al., 2008), and because parents who are divorced can feel less supported than those who are married (Cairney, Boyle, Offord, & Racine, 2003; Poehlmann & Fiese, 1994), marital status, along with more general social support, should be considered as a variable that indicates levels of parental support.

In contrast to a more general sense of social support, however, marital status has been considered as a predictor of parental attendance in parent education interventions. For example, in their studies of parents of children with CD and/or ODD, Kazdin and colleagues

consistently found that single parent status was a predictor of dropping out from treatment (Kazdin et al., 1997; Kazdin et al., 1993; Kazdin & Mazurick, 1994). Additionally, Friars and Mellor (2009) found that single marital status, either from divorce or death of a spouse, was associated with dropping out from parent education treatment for those with children with ADHD. Although this study did focus on parents of children with ADHD, it was qualitative and included a very small sample size. Therefore, whether or not single marital status predicted attendance could not be determined (Friars & Mellor, 2009). Dumas et al. (2007), however, included parent marital status as a predictor of intent to enroll, enrollment, and attendance at a parent education session. The authors found that single marital status was a significant predictor of higher attendance at parent education sessions, but the direction of the relationship between variables was contrary to their hypotheses. Finally, similar to Dumas et al. (2007), Baker et al. (2011) included parent marital status as both a predictor to enrollment and attendance at parent education sessions for young children. The authors found that marital status was not a significant predictor of enrollment, but did significantly predict attendance. Unlike Dumas et al. (2007), however, the authors found that parents from a two-parent household were significantly more likely to attend than those who were single.

Given the dearth of research investigating the effects of social support and marital status on parental attendance for children with ADHD, additional research is warranted to determine if a relationship exists. Additionally, with the exception of Dumas et al. (2007) and Baker et al. (2011), the studies aforementioned have not investigated parents of primarily young children, and those that have focused on young children have yielded inconsistent results. Therefore, future research must consider the relationship between parental support and attendance for those with young children with ADHD.



**Child symptom severity.** Although the research investigating parental stress, support, and marital status has mostly indicated consistent pathways from these variables to parental attendance (e.g., increased levels of stress, low levels of parental support, and single marital status are predictive of less attendance), the literature surrounding the impact that severity of child symptoms has on attendance is less clear. For example, some research has indicated that increased severity of child symptoms may lead to more attendance in parent education (e.g., Baker et al., 2011; Barkley et al., 2000; Dumas et al., 2007; Garvey et al., 2006; Kendall & Sugarman, 1997). Others, however, have found that increased child symptom severity is associated with decreased levels of attendance (e.g., Bor et al., 2002; Kazdin et al., 1997; Kazdin & Mazurick, 1994; Snell-Johns et al., 2005), and still others have found no relationship between parental attendance and child symptoms (e.g., Gross et al., 2001; Harrison et al., 2004).

Furthermore, studies have investigated the effects of levels of CD, ODD, (Dumas et al., 2007; Kazdin et al., 1997; Kazdin & Mazurick, 1994; Harrison et al., 2004) and anxiety (Kendall & Sugarman, 1997) on parental attendance, and some have included children with ADHD in their samples (e.g., Dumas et al., 2007; Kazdin et al., 1997; Kazdin & Mazurick, 1994), but few studies have investigated the level of specific symptoms of ADHD that may impact parental attendance. For example, Friars and Mellor (2009) found that parents who dropped out from treatment have children who exhibit more severe ADHD symptoms. Because this study was qualitative and included few participants, however, whether or not the symptoms predicted attendance could not be determined. Additionally, Sayal, Taylor, Beecham, and Byrne (2002) found that parents of children with severe ADHD contacted primary care physicians more than those who had children with fewer symptoms. Although

informative, this study does not provide information regarding attendance in parent education.

Because the literature investigating the impact of child symptoms on parental attendance is inconsistent, possible variables that could be impacting the relationship must be investigated. Indeed, Kazdin and Wassell (1999) reported that the, “mechanisms through which predictors operate warrant attention” (p. 170). One possible variable that may impact the relationship between the severity of child symptoms and parental attendance is parental acceptance of treatment (e.g., Mah & Johnston, 2008), and certain studies have suggested that whether or not the treatment is relevant and helpful to parents can explain levels of attendance (e.g., Dumas et al., 2007; Garvey et al., 2006). Although treatment acceptability is a critical component of any intervention program, parents of children with elevated symptoms may feel as though treatment is more relevant and necessary to reduce their children’s behavior problems than those with fewer symptoms (e.g., Barkley et al., 2000). For example, parents of children with higher levels of attention and disruptive behaviors have reported significantly greater reductions in child behaviors than those of children with lower levels of behaviors (Hautmann et al., 2011). With significantly more reductions in behaviors, perhaps parents of children with higher levels of concern would find treatment more acceptable. Alternatively, parents of children with fewer symptoms may be more accepting of treatment, as they may not have to provide the same intensity of intervention to see positive results as parents of children with more severe behaviors.

Certain studies have closely investigated the effect that perceived treatment relevance could have on treatment attendance. For example, Kazdin and Wassell (1999) found that therapist ratings of parental barriers to treatment, which included treatment relevance, were significantly correlated with attendance at treatment sessions. Additionally, the authors

found that parent perceptions of treatment relevance and associated treatment demands were significantly correlated with treatment outcomes. Another study completed by Kazdin et al. (1997) found that of four categories of treatment barriers (e.g., stressors and obstacles competing with treatment, treatment demands, perceived relevance of treatment, and relationship with therapist), the difference between effect sizes for dropouts and completers was greatest for relevance of treatment, such that completers were more likely to perceive the treatment as relevant.

Therefore, the relevance of treatment appears to be a critical factor when considering attendance at parent education sessions. The little research that investigates this relationship, however, has not addressed these factors for parents of children with ADHD. Additionally, none of the studies have focused on parents of young children. Therefore, it is critical that this variable be assessed for parents of young children with ADHD to determine if acceptability impacts the relationship between ADHD and ODD symptoms and attendance, as symptom severity may be related to parental perceptions of treatment relevance.

### **Impact of Child Developmental Status on Possible Predictors**

It is particularly critical to consider predictors of attendance for parents of young children with ADHD, as these may vary as a function of young children's developmental status. For example, young children with ADHD have been found to receive significantly lower scores than their typical counterparts on measures of memory, reasoning and academic skills, conceptual development, and overall cognitive abilities (DuPaul McGoey, Eckert, & VanBrakle, 2001). Furthermore, observations of young children interacting with their caregivers indicated that children with ADHD exhibited more inappropriate behavior and noncompliance than typical children, and parents of young children with ADHD provided fewer effective commands and more negative reactions toward their children than those with

typical children (DuPaul et al., 2001). Additionally, families of young children with ADHD have indicated elevated levels of family dysfunction (DuPaul et al., 2001). Thus, because preschool children are more dependent on their parents than older children, and parents may experience more stress due to the demands of parenting and the behaviors associated with ADHD (e.g., DuPaul, et al., 2001; LaForett et al., 2008; Wolraich, 2006), it is critical to examine possible predictors of attendance at parent education, as treatment involvement may vary as a function of children's developmental status.

### **Gaps in Prior Research**

Although studies conducted by Bor et al. (2002), Baker et al. (2011), Barkley et al. (2000), and Dumas et al. (2007) investigated attendance in parent education for those with young children with ADHD symptoms, the studies conducted by Bor et al. (2002) and Barkley et al. (2000) only investigated whether child symptom severity predicts attendance. Additionally, although Dumas et al. (2007) examined income, parental stress, marital status, and child symptom severity as they relate to enrollment in, attendance at, and quality of a parent education intervention, the authors did not investigate the possible impact of parental treatment acceptability on the relationship between symptom severity and attendance. Finally, Baker et al. (2011) investigated SES, ethnicity, marital status, child symptoms, support, and parent depression, but did not include parent stress or acceptability of treatment as predictors to attendance, nor did they focus on children with ADHD. Therefore, additional studies must be conducted that both examine indicators of attendance and the impact of acceptability data. Results may then indicate reliable predictors that can be targeted to promote family involvement in interventions.

## **Contributions of the Current Study**

In sum, gaps in the extant literature exist across all predictors of attendance. First, few studies have investigated stress as a predictor of parent attendance for parents of young children with ADHD, although it has been shown to be an important variable to consider for this population (e.g., Baker et al., 2011; Dumas et al., 2007; Friars & Mellor, 2009). Second, parental social support and marital status have impacted treatment outcomes and parental psychosocial functioning of those children with ADHD, but the extent to which these variables impact attendance for those with young children with ADHD is unclear (e.g., Baker et al., 2011; Dumas et al., 2007; Friars & Mellor, 2009). Finally, because the literature is inconsistent regarding the relationship between child symptoms and parental attendance, variables that may impact this relationship (e.g., parent acceptability of treatment) must be studied for parents of young children with ADHD.

Thus, the current study sought to address these gaps in the literature by determining whether: (a) stress, parental support, and/or marital status were significant predictors of parental attendance when controlling for ethnicity and SES; (b) the relationship between the severity of child ADHD symptoms and parental attendance was impacted by parental acceptance of the treatment; and (c) the relationship between the severity of child ODD symptoms and parental attendance was impacted by parental acceptance of treatment for parents with young children with ADHD. By determining if these relationships exist, researchers and interventionists may have clearer targets for interventions aimed at increasing attendance and involvement in parent education for those with young children with ADHD.

## CHAPTER III: METHOD

### **Participants**

Participants for this study were recruited and participated in a multicomponent intervention study for young children with ADHD (see Kern et al., 2007).

**Recruitment.** In order to recruit participants, brochures were created that outlined significant symptoms of ADHD. These were sent every 6 months to pediatricians, preschools, and daycares within a 30-mile radius of a university in the Northeast United States. Follow-up calls were then made to personnel at individual sites once a month thereafter. If staff at the sites reported that parents verbally indicated interest during their visits, they were provided with more detailed written information regarding the study to give to parents. If interested, parents then contacted the research coordinator to enroll in screening procedures. As a result of these efforts, 536 parental contacts were made.

**Screening.** In order to determine if children of parents indicating interest were eligible for participation, a detailed screening procedure took place. First, after interested parents contacted the research offices, they were given an initial phone interview to determine if: (a) their children attended preschool, daycare, or the equivalent at least 2 days per week; and (b) parents had concerns regarding their child's inattentive, hyperactive, and/or impulsive behaviors. If parents responded yes to both questions, they then completed the parent and teacher versions of the Conners Rating Scales – Revised (Conners, 1997). Those children who received standard scores of 65 or above (1.5 standard deviations above the mean) on at least one subscale (inattentive, hyperactive, hyperactive-impulsive), on both parent and teacher ratings, advanced to the next stage of screening.

The next step was completed in order to: (a) exclude those children who exhibited behaviors consistent with autism spectrum disorders, developmental delays, and conduct

disorder; and (b) more closely assess ADHD and ODD behaviors. Graduate students trained in school psychology, counseling, and special education administered the screening measures via telephone interviews with parents. First, the Modified Checklist for Autism in Toddlers (M-CHAT; Robins, Fein, Barton, & Green, 2001) was given to parents. If they endorsed two or more items on this scale, the Gilliam Autism Rating Scale (GARS; Gilliam, 1995) was administered, and children who received an “autism quotient” of 121 or above were excluded from participation due to significant symptoms associated with autism spectrum disorders.

If, however, parents did not endorse symptoms related to autism spectrum disorders, researchers then administered the Diagnostic Interview Schedule for Children – IV (DISC-IV; Shaffer, Fisher, Lucas, & NIMH DISC editorial board, 1998) and the Children’s Global Assessment Scale (CGAS; Shaffer et al., 1983). Children were excluded from participation if they received a CGAS score above 80, indicating no impairment. Additionally, DISC-IV interviews with the parent must have indicated that children met DSM-IV criteria for one of the three ADHD subtypes (APA, 2000), but children were excluded if they met criteria for conduct disorder.

Finally, if children did not meet any exclusion and met all inclusion criteria, research assistants directly assessed their cognitive abilities using the Differential Abilities Scale (DAS; Elliott, 1990). Those who received a standard score of below 70 were excluded for the possible presence of developmental delays.

Of the 536 families who showed initial interest in the study, 152 children met all inclusion criteria and completed consent forms. Due to scoring errors and psychiatric disorders that were discovered once the study was underway, however, 135 children were included in the data analyses. Seventy-one participants were randomly assigned to the multicomponent intervention group (MCI) and 64 to the parent education (PE) group.

Children in the study ranged in age from 3-5 years old ( $M = 4$ ;  $SD = 0.69$ ). More specifically, 32 (23.7%) were 3 years old, 67 (49.6%) were 4 years old, and 36 (26.7%) were 5 years old. Additionally, 106 (78.5%) were male, 29 (21.6%) were female, and 90% of the families spoke only English. Parents who participated in the education classes included 122 female caregivers (51.3%) who ranged in age from 19 – 65 years old ( $M = 32.93$ ;  $SD = 7.75$ ) and 116 (48.7%) male caregivers ranging in age from 21 – 70 years old ( $M = 34.89$ ;  $SD = 8.39$ ). See Table 1 for additional parent demographic information combined across both groups.

### **Setting**

Preschools/daycares in which children attended included both public and private institutions (e.g., Head Start, early intervention programs, home-based daycare), but all children who attended kindergarten at the time of enrollment attended public schools. Additionally, all parent education sessions were provided at convenient public or private locations (e.g., schools, churches, hospitals).

### **Measures**

As this project is part of a larger intervention project, measures were administered that are not included in this manuscript. For a detailed account of child academic and behavioral outcome measures see Kern et al. (2007).

**Screening measures.** Parent and teacher versions of the *Conners Rating Scale-Revised (CRS-R*; Conners, 1997) were administered during screening procedures. Parent and teacher scales include 80 and 59 items, respectively, and are used for the assessment of children between the ages of 3 and 17 years old. Items are rated on a four point Likert scale ranging from 0 (not true at all) to 3 (very much true). The seven subscales derived from factor analysis on the parent rating scale include: oppositional; cognitive problems;



hyperactivity-impulsivity; anxious shy; perfectionism; social problems; and psychosomatic. The teacher scale includes six of the same subscales with the exception of psychosomatic concerns. Using samples of 2,200 and 1,702 children ranging in age from 3-17 and predominantly European American, the parent and teacher rating scales were found to have exemplary psychometric properties (Conners, Sitarenos, Parker, & Epstein, 1998 a, b). Internal consistency alpha coefficients range from .75-.94 and .73-.95 on the parent and teacher scales, respectively. Additionally, test-retest reliability for the oppositional, cognitive problems, and hyperactivity-impulsivity subscales on the parent form are .60, .78. and .71, and on the teacher form, coefficients are .86, .47, and .72, respectively (Conners et al., 1998 a, b).

The *Modified Checklist for Autism in Toddlers (MCHAT)* was also administered to parents, and includes 22 items to which parents respond “yes” or “no” (Robins et al., 2001). Questions include symptoms consistent with autism spectrum disorders, (e.g., “Does your child look you in the eye for more than a second or two;” “Does your child make unusual finger movements near his/her face”) and are intended to screen for behaviors that would lead to additional assessments. The MCHAT was tested with a sample of 1,122 parents at well-child physician visits and with 171 parents of at-risk children via early intervention services, and was found to have an alpha of .85 indicating appropriate internal consistency (Robins et al., 2001).

If parents endorsed two or more symptoms on the *MCHAT*, they were then administered the *Gilliam Autism Rating Scale (GARS; Gilliam, 1995)* for screening purposes. This rating scale contains 56 items that are scored on a four point Likert scale ranging from never to frequently observed, and an overall Autism Quotient is yielded ( $M = 100$ ;  $SD = 15$ ). The measure was tested with a sample of 284 parents and teachers of children with Autism

Spectrum Disorders, and internal consistency alpha coefficients for the four original subscales are .82 for Stereotyped Behavior, .84 for Communication, .85 for Social Interaction, and .68 for Developmental Disturbance (Lecavalier, 2005). Research has indicated, however, that the GARS more appropriately includes three factors including stereotypic behaviors, social impairments, and communication impairments. (Lecavalier, 2005). These subtests are significantly correlated at the  $p < .01$  level with the original four subscales, although correlations with the developmental disturbance subscale were smaller (.18-.30) than those with the other three subscales (.48-.82).

Parents were also administered the *Diagnostic Interview Schedule for Children – IV* (*DISC-IV*; Shaffer et al., 1998), a structured diagnostic interview to assess DSM-IV (Diagnostic and Statistical Manual of Mental Disorders; American Psychiatric Association ([APA], 2000) criteria for a variety of disorders. For the purposes of this study, researchers administered the ADHD, ODD, and CD subsets of the interview, which lasted approximately 60-90 min. Most questions are short, require relatively little elaboration, and can be answered with a single word response (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). Additionally, the DISC-IV is administered and scored on a computer that produces a report of the diagnoses. Inter-clinician reliability analyses of the parent version of the interview yielded coefficients ranging from .43 for reported conduct disorder to .96 for specific phobias, with a coefficient of .79 for ADHD (Shaffer et al., 2000).

Next, research assistants completed the *Children's Global Assessment Scale* (*CGAS*; Shaffer et al., 1983). The CGAS is a unidimensional scale that asks clinicians to rate the patient on a scale from 1 to 100, with 1 indicating the most impaired child and 100 indicating a child with no impairment. For the purposes of this project, participants were excluded if they received a CGAS score greater than 80, indicating little to no impairment. The scale is

divided into 10 anchor points set at 10 units apart, and specific behaviors are provided with each anchor to guide clinicians. By having five, second year child psychiatry fellows rate the same 19 cases that were presented to them, researchers found that test-retest reliability is appropriate for this scale with a coefficient of .85, and it yielded significant differences in scores between inpatients and outpatients, indicating sensitivity to impairment (Shaffer et al., 1983).

Finally, children were administered the *Differential Abilities Scale (DAS)*; Elliott, 1990) to assess their level of cognitive functioning. The DAS contains 17 subtests divided amongst three different age levels: lower preschool (2 years 6 months to 3 years 5 months), upper preschool (3 years 6 months to 5 years 11 months), and school age (6 years to 17 years 11 months). The preschool version yields an overall composite score (General Conceptual Ability) and includes Verbal and Nonverbal composite scores. The General Conceptual Ability standard score was used for screening purposes, and children with a score of less than 70 were not eligible to participate in the study. Additionally, preschool subtests include block building, verbal comprehension, naming vocabulary, picture similarities, pattern construction, copying, and early number concepts. Using a sample of English-proficient children between the ages of 2 and 17 years old that was matched to the United States census and oversampled for children from African American or Hispanic descent, test-retest reliability coefficients ranged from .83 to .93 across composites indicating high levels of stability over time (Elliott, 1997).

**Predictor measures.** Prior to the intervention, parents completed a demographic questionnaire created for the purposes of the study that included basic demographic characteristics such as ethnicity, marital status, and employment status. Questions were presented in a multiple choice or open-ended answer format, and a copy of the demographic

rating scale is provided in Appendix A. Additionally, employment status was measured using the Hollingshead Scale (Hollingshead & Redlich, 1958) and included as the measure of SES. This scale asks parents to choose which of eight employment categories apply to them including: higher executive, business manager, administrative personnel, clerical or sales, skilled manual employment, machine operator, unskilled employee, or never worked in paid employment.

Parents also completed the *Parenting Stress Index-Short Form (PSI)* (Abidin, 1995), a 36-item scale that assesses levels of parental stress in regards to their children's behavioral concerns, which has been frequently used to assess parental stress in ADHD populations (e.g., Anastopoulos et al., 1992; Chacko et al., 2009; Harrison & Sofronoff, 2002; Treacy et al., 2005). Subscales include defensive responding, parental distress, parent/child dysfunctional interactions, difficult child, and total stress. Testing a sample of 185 parents enrolled in a social adjustment study for young children between the ages of 4 and 10 years old, internal consistency alpha coefficients range from .78-.91 (Haskett, Ahern, Ward, & Allaire, 2006). For the purposes of this study, the total stress raw score was used as a predictor.

Along with marital status, the *Family Crisis Oriented Personal Scales (F-COPES)* (McCubbin, Olsen, & Larsen, 1981) was used to determine level of parental support. This 30-item scale is designed to assess parental perceptions of coping behaviors that families may use in times of stress or crisis. Respondents rate each item on a 1 (Strongly Disagree) to 5 (Strongly Agree) Likert scale. Raw scores for five subscales (Acquiring Social Support, Reframing, Seeking Spiritual Support, Mobilizing to Acquire and Accept Help, and Passive Appraisal) were used as dependent measures. Internal consistency reliabilities for the individual subscales range from .63-.83, and the total internal consistency coefficient equals

.86 (McCubbin et al, 1981 as cited in Barnett, Hall, & Bramlett, 1990). Additionally, the overall test-retest reliability was found to be .81, with reliabilities for the subscales ranging from .61-.95 (McCubbin et al., 1981 as cited in Barnett et al., 1990).

Next, the CPRS-R (Conners, 1997) was utilized to determine level of child ADHD and ODD symptoms. Please see the previous description for appropriate psychometric properties.

Finally, parents completed the *Treatment Acceptability Rating Form (TARF;* Reimers, Wacker, & Cooper, 1991), a 20 item rating scale that assesses perceptions of acceptability. Based on the results from a principal components factor analysis, 17 of the 20 items are summed in order to yield a total acceptability score. Items are rated on a 7-point Likert scale, and assess reasonableness, effectiveness, side effects, disruptiveness, cost, willingness, severity, understanding, and compliance. Using samples of 50 and 90 parents seeking treatment at a behavioral management center for their children between the ages of 1 and 12 years old, the TARF was found to appropriately discriminate between subjects who found the treatment acceptable versus those who found it unacceptable (Reimers et al., 1991; Reimers, Wacker, Cooper, & DeRaad, 1992). Additionally, Chronbach's alpha was determined for all subscales except understanding and compliance, which both included only 1 item (Reimers et al., 1992). The mean alpha coefficients for the subscales are as follows: .90 for reasonableness; .95 for effectiveness; .77 for side effects; .69 for disruptiveness; .71 for cost; .83 for willingness; and .92 for severity (Reimers et al., 1992). Furthermore, inter-item correlations ranged between .28 and .88 (Reimers et al., 1991). The total acceptability raw score was used for the purposes of this study.

**Outcome measure.** The percentage of education sessions that parents attended, collected by consultants after each session and recorded in each participant's data file, was the outcome variable for this study.

## **Procedures**

For more detailed procedures of interventions provided to parents other than parent education sessions, see Kern et al. (2007).

**Assessment and data collection.** For the larger study, data collection occurred at baseline and at 6-month intervals thereafter for a total intervention length of three years. For the purposes of this study, all predictor variables collected at baseline and overall attendance throughout treatment were utilized. Additionally, parent acceptability of treatment at 6 months was used in the analyses. The 6-month acceptability rating was chosen not only because it had higher rates of completion than other data collection periods, but also because most parent education sessions for young children do not last a full year (e.g., Barkley, 2000; McGoey et al., 2005; Sonuga-Barke et al., 2001). Therefore, using parent acceptability ratings at the 6-month assessment phase would be most comparable to time periods used in other parent education studies with this population. Predictor measures, with the exception of the demographic questionnaire, were either hand delivered or mailed to parents with a self-addressed stamped envelope. Any parental questions that arose were addressed immediately, and once measures were returned parents were mailed a check for \$50 to compensate them for their time. Graduate students, trained via one-on-one sessions with the project data coordinator, scored and entered all data that were returned into a database. In order to ensure accuracy of scoring, a different graduate student scored 30% of all data that were returned. Additionally, a data collector confirmed accuracy of entry for 30% of the data by ensuring that the appropriate scores were entered into the databases. These accuracy

checks yielded very few errors, and all were resolved by having the data collection coordinator confirm that the correct scores were entered.

**Parent education intervention.** In order to allow continued enrollment into the study, parent education cohorts were formed approximately every 3 months and ranged in size from 4 to 24 participants depending on rates of recruitment and enrollment. Each cohort was provided with a consultant who was an advanced graduate student in school psychology, counseling, or special education. Participants were randomly assigned to either the MCI or PE intervention group. Both groups were provided with 20 parent education sessions that lasted 2 hrs each. Most sessions were held during the evening, with some occurring over the weekends depending on what was most convenient for the cohort. In order to encourage participation, transportation was available for those who required it, and childcare and snacks were provided to both MCI and PE groups. All sessions consisted of didactic presentations and included PowerPoint slides, video-clips, discussions, modeling, and role-play. Both the MCI and PE groups received similar content in their parent education sessions related to behavioral management strategies and safety. Additionally, the first two sessions were identical for both groups and focused on an introduction to the study and an overview of ADHD, respectively.

Because the parent education sessions were developed from two programs, however, differences occurred between the two. First, the parent education sessions for the MCI group were developed from the Community Parent Education (COPE) program (Cunningham et al., 1998). This empirically validated program focuses on general behavioral management skills and is aimed at increasing child compliance. For the purposes of this study, additional sessions were added to focus on functional assessments, data collection, and prevention of accidental injuries. The PE group, however, received parent education sessions developed

from the Early Childhood Systematic Training for Effective Parenting (Dinkmeyer et al., 1997). Topics for this group focused on understanding behavior, discipline, health, nutrition, and safety. Specific topics provided at each MCI and PE session are presented in Table 2. Due to sample size, however, differences between groups were not analyzed, as both groups received the same amount of and similar content during parent education sessions, and very few differences in child behavior outcomes between groups were found (DuPaul et al., under review; Kern et al., 2007). Nevertheless, it should be noted that substantial additional demands were made upon the MCI group that may have impacted participation. For example, participants in the MCI group also received individualized intervention supports in the home, using functional assessment data, and preschool, using behavioral consultation procedures. For more detailed descriptions of these intervention components, see Kern et al. (2007).

Consultants for both MCI and PE groups not only reviewed a procedural manual, but also completed a weeklong training on group facilitation. Additionally, PE consultants received training on the Early Childhood Systematic Training for Effective Parenting (Dinkmeyer et al., 1997), and MCI consultants completed previous coursework in behavioral assessment, intervention, and consultation. Each consultant was also supervised by one of the principal investigators (see Kern et al., 2007).

All sessions were audiotaped across the MCI and PE groups, and 17.1% and 16.1%, respectively, were randomly selected and evaluated for procedural integrity by a principal investigator. Integrity checklists were created for the purposes of this study and included all topics, subtopics, and activities that were part of the respective parent education sessions. Mean session integrity was 96.4% (range 42-100%) for the MCI group and 97% (range 78-100%) for the PE group, and when integrity was below 90%, one of the principal



investigators met with the consultant to provide specific feedback. The only session that yielded low integrity occurred during the MCI group and included only two parents, one of whom was difficult to keep on task.

### **Data Analyses**

Prior to analyzing the data through hierarchical regression, preliminary analyses were conducted. First, differences between the MCI and PE groups were analyzed to determine if any statistically significant discrepancies existed on ethnicity, SES, marital status, support, stress, child ADHD symptoms, child ODD symptoms, acceptability of treatment, and attendance. If statistically significant differences between groups were found on any of these variables, the group of the participant would be included as a predictor in the first step of the analyses. Second, descriptive means and standard deviations were calculated. Third, bivariate correlations were examined in a correlation matrix. Fourth, dummy variables were created to allow for including categorical variables (e.g., ethnicity, marital status) in the regression analyses. Fifth, in order to determine the appropriateness of the FCOPES scale (McCubbin et al., 1981) for the current sample, Cronbach's alpha was determined using item level data.

Sixth, assumptions associated with hierarchical regression were tested, including normality and homoscedasticity of the residuals, linear relationships between the outcome and the predictors, and absence of multicollinearity. Normality of residuals was tested by examining histograms of standardized residuals and probability plots. If the normality of residuals assumption did not hold, outliers' influence, if any, on the data were assessed by checking whether the absolute value of Cook's distance (Cook & Weisberg, 1982) was greater than 1. Skewness and kurtosis statistics were checked to assess normality of the data. Transformations were applied if skewness statistics were outside of the range of -2 and +2

and kurtosis statistics were outside the range of -7 and +7 (Curran, West, & Finch, 1996). Homoscedasticity of residuals, or the constant variance of residuals, was determined by examining scatter plots of residuals, and transformations were computed if this assumption was not met. Finally, correlations and collinearity diagnoses (e.g., tolerance, and variance inflation factor [VIF]) amongst predictor variables assessed multicollinearity. If any of these correlations were above .80, if the VIF was above 10 (Myers, 1990), or if tolerance was less than .20 (Menard, 1995), appropriate predictor variables were omitted so that independence between predictors was achieved.

Finally, the amount of missing data was determined and managed using imputations across variables. There are not clear guidelines regarding how much missing data is considered too much, as researchers have explained that the quality of the missing data (i.e., assumptions met) is more critical than the amount of missing data (e.g., Allison, 2002; McKnight, McKnight, Sidani, & Figueredo, 2007). In the current sample, however, imputations were only conducted with variables having 21% or less of missing data. Analyses to understand any differential characteristics (e.g., ethnicity, SES, child gender, child age, child symptom severity) of those with missing data were conducted. Missing data were then imputed using multiple imputations (Rubin, 1987) in SAS with PROC MI procedure (Yuan, 2000) and occurred for all predictor variables and the dependent variable of attendance. Although some researchers advise against using imputations for dependent variables (e.g., Tabachnick & Fidell, 2007), others believe it is acceptable to do so (e.g., Allison, 2002; Howell, 2008; Schafer, 1997), as it could actually influence biased interpretations if not conducted.

After conducting preliminary analyses, the first set of research questions, investigating the predictive relationship between parental stress, support, and marital status

on attendance, was analyzed using hierarchical multiple regression (Cohen, Cohen, West, & Aiken, 2003) with 132 participants. Three participants were excluded from the analyses as they did not have any completed data. Hierarchical regression was preferred to determine the prediction of parental characteristics on attendance above and beyond demographic variables, including SES and ethnicity. The demographic variables were entered into the regression model in the first block, and the putative predictor variables were entered in a second block if appropriate based on preliminary analyses. Based on power analyses using G\*Power3 (Franz, Erdfelder, Lang, & Buchner, 2009), a sample size of 92 would yield power of .80 for a .05 alpha level and medium effect size ( $f^2 = .15$ ) for 5 predictors. Therefore, this sample size provided adequate power with which to detect findings of moderate magnitude.

In order to assess the second set of research questions, determining if child ADHD and ODD symptoms predicted attendance, similar preliminary analyses were conducted as with the first set of analyses. Once assumptions were met, the predictive relationship between ADHD and ODD behavior severity (CPRS-R) was determined using regression analyses in SAS.

If child ADHD symptoms and ODD symptoms were significant predictors of attendance, analyses to determine the impact of acceptability on the relationship between ADHD / ODD symptoms and attendance would be conducted to answer the third set of research questions. Due to the amount of missing data for the TARF (Reimers et al., 1991) these questions were exploratory in nature, as power was not sufficient. Additionally, similar preliminary analyses were conducted as with the first set of analyses.

First, mediation would be assessed for ADHD and ODD separately using regression analyses, with symptom severity as the independent variables, attendance as the dependent variable, and acceptability as the mediator using procedures outlined by Baron and Kenny

(1986). If: (a) ADHD or ODD behavior significantly predicted attendance; (b) ADHD or ODD behavior significantly predicted acceptability; (c) acceptability predicted attendance; and (d) the relationship between ADHD or ODD behavior and attendance was less significant in the third step with the inclusion of acceptability, mediation will have been demonstrated (Baron & Kenny, 1986).

Second, with attendance as the outcome variable and acceptability as the moderator variable, moderation analyses would be conducted using regression analyses with an interaction term, because the independent variable, symptom severity, is continuous (e.g., Aiken & West, 1991). If the interaction term, including both symptom severity and acceptability, significantly predicted attendance, moderation will have been demonstrated (Baron & Kenny, 1986).

## CHAPTER IV: RESULTS

### **Demographic Characteristics**

Demographic characteristics for the current sample are provided in Table 1. The total sample was mostly White, married, and worked full time. The sample was more diverse when it came to parents' employment position and educational levels. Most parents who reported their employment were involved in clerical or sales, administration or personnel, skilled manual employment, or business management. In terms of educational levels, most parents were high school graduates, completed some college, or graduated college.

For the purposes of this study the sample was collapsed across treatment groups; however, analyses to determine any between-group differences on variables used in this study were conducted (see Table 3). Statistically significant differences between groups were not found across demographic and study variables. Therefore, additional steps were not taken to control for significant differences between groups.

### **Descriptive Data and Correlations**

Descriptive statistics, including means and standard deviations, for all predictor and outcome variables are presented in Table 4. These are presented for the entire sample collapsed across both treatment groups.

Bivariate correlations are presented in Table 5. When interpreting these correlations it is important to note that SES was measured on an 8-point scale, with 1 indicating the highest SES and 8 the lowest, and marital status measured on a 5-point scale, with 1 indicating parents who were married, 2 indicating parents who were not married but living with someone, 3 indicating those who were separated, 4 indicating those who were widowed, and 5 indicating parents who were never married and not living with someone. Additionally, correlations including SES, marital status, and ethnicity were calculated using Kendall's Tau,

as they are categorical and nonparametric variables; all other correlations with continuous variables, however, were calculated using Pearson's correlation coefficient. Significant positive correlations were found between SES and marital status ( $p < .01$ ), such that those with a higher SES were also married, marital status and stress ( $p < .05$ ), such that those who were not married (i.e., indicated by a higher number on the scale) reported having higher levels of stress, and marital status and child ODD symptoms ( $p < .01$ ), such that those who were not married (i.e., indicated by a higher number on the scale) reported having children with higher ODD symptoms. Significant positive correlations were also found between parental stress and child ADHD symptoms ( $p < .05$ ) and parental stress and child ODD symptoms ( $p < .01$ ), such that those reporting higher levels of stress also reported having children with higher levels of ADHD and ODD symptoms, and child ADHD symptoms and child ODD symptoms ( $p < .01$ ), such that those who reported having children with higher levels of ADHD symptoms also reported having children with higher levels of ODD symptoms. Furthermore, significant negative correlations were found between SES and attendance ( $p < .01$ ), such that those with a lower income (i.e., indicated by a higher number on the scale) were less likely to attend, between marital status and attendance ( $p < .05$ ), such that those who were single (i.e., indicated by a higher number on the scale) were less likely to attend, and between family support and parental stress ( $p < .01$ ), such that parents who felt more supported were less stressed.

### **Internal Consistency**

In order to determine the appropriateness of the FCOPES scale for the current sample, Cronbach's alpha was calculated using item level data. An alpha coefficient of .76 was found and, therefore, the FCOPES had acceptable internal consistency for use in subsequent analyses.

## Testing of Assumptions

Prior to testing the research questions, assumptions associated with multiple regression, including normality and homoscedasticity of the residuals, linear relationships between the outcome variable and the predictor variables, and the absence of multicollinearity were tested to ensure the appropriateness of the data.

**Normality.** Normality of residuals was tested by examining histograms of standardized residuals, probability plots, skewness, kurtosis, and Cook's distance for each of the predictor and the outcome variables. Histograms and probability plots were observed to represent normal distributions. Additionally, all continuous predictors had skewness coefficients between -2 and +2 and kurtosis coefficients between -7 and +7 (Curran et al., 1996). The only exception to this outcome was for the marital status predictor variable, which had a skewness coefficient of 2.14 (see Table 4). Because this is a categorical variable that was then dummy coded for the purposes of the regression analyses, transformations were not conducted. Finally, the absolute value of Cook's distance was never greater than 1 (Cook & Weisberg, 1982). Therefore, the assumption of normality was satisfied.

**Homoscedasticity.** Homoscedasticity of the residuals was examined by observing a scatterplot of residuals. The scatterplot indicated that the residuals were distributed approximately equally across the dependent variable and, therefore, this assumption was satisfied.

**Linearity.** Linear relationships between the outcome variable and the predictor variables were tested by examining a plot of observed versus predicted values. The plot showed that points were randomly distributed along a diagonal line and, therefore, the assumption of linearity was satisfied.

**Multicollinearity.** Finally, analyses were conducted to test for the absence of multicollinearity. None of the correlations between predictor variables were above .80 (see Table 5), the variance inflation factor (VIF) was not above 10 (Myers, 1990), and tolerance was not below .20 (Menard, 1995). Therefore, the assumption of absence of multicollinearity was satisfied.

### **Missing Data Patterns**

In order to appropriately address missing data across variables, any significant differences between those who completed assessments versus those who did not were examined by conducting a multivariate analysis of variance (MANOVA). Because 53% of the sample did not complete the TARF rating, whether or not participants completed this rating served as the independent variable, and demographic characteristics including ethnicity, SES, child gender, child age, and child ADHD and ODD symptom severity were the dependent variables. Results indicated that participants differed significantly only on SES, with those who completed the TARF ( $M = 2.92$ ) having a significantly higher SES than those who did not ( $M = 3.51$ ;  $F(1) = 4.77, p = .03$ ). Therefore, results are not missing completely at random (MCAR), but they are missing at random (MAR) (Allison, 2001).

Multiple imputations (Rubin, 1987) in SAS with PROC MI procedure (Yuan, 2000) were conducted for all predictor and outcome variables. More specific missing data patterns were also yielded, and indicate that 33.33% ( $n = 45$ ) of participants did not have any missing data, and 0.74% ( $n = 1$ ) of participants did not have any completed data (See Table 7). It should be noted, however, that relatively low levels of missing data existed across all study variables other than the TARF (see Table 4). Those without any completed data were not included in subsequent analyses.



## Research Question 1

The first set of research questions asked whether parent marital status, support, and stress significantly predicted attendance at parent education sessions when controlling for SES and ethnicity.

**Missing data.** The multiple imputation procedure yields separate regression results for each of the data imputations as well as for the final combined data set. Sets of parameter estimates for the variables included in research question one are provided for the original data set and the five imputed data sets in Table 8. Across the original and all imputed sets, SES was a significant predictor of attendance. Ethnicity, however, was a statistically significant predictor in the original data set but nonsignificant across all imputed data sets. Additionally, marital status was a nonsignificant predictor in the original and in the fifth imputed data set, but was a significant predictor of attendance using the first four imputed data sets. Parent support and parent stress were not significant predictors of attendance across the original and five imputed data sets.

$R^2$ ,  $\Delta R^2$ , and  $F$  results for research question one from the original and five imputed data sets are presented in Table 9. Results indicated that across the original data set and all imputed data sets, both model one (Ethnicity and SES) and model two (Ethnicity, SES, marital status, parental support, and parental stress) explained a significant amount of the variance in attendance at parent education sessions. The amount of variance explained, however, varied across imputations, with the original data set explaining the most variance ( $R^2 = 0.208$ ), and imputation three explaining the least amount of variance ( $R^2 = 0.167$ ).

**Hierarchical regression.** Hierarchical linear regression analyses were used to answer the first set of research questions. Attendance at parent education sessions was the dependent variable, with SES and ethnicity entered into block one, and marital status,

support, and stress being included in block two. Results for the combined data sets are presented in Table 10.

Model one of the regression analysis, including SES and ethnicity, revealed a significant prediction model ( $F(2, 129) = 6.11, p = .002; R^2 = .13$ ). The second model also significantly predicted attendance at parent education sessions with the addition of parental marital status, support, and stress ( $F(3.126) = 4.43, p = .001; R^2 = .18$ ). Furthermore, model two improved model fit by explaining an additional 5% of variance, although this did not reach statistical significance ( $\Delta R^2 = .05; p > .05$ ). Therefore, the overall model explained 18% of the variance in attendance at parent education sessions.

Beta coefficients of individual predictors indicated that SES was a significant predictor in models one and two ( $p < .01$ ), and marital status was a significant predictor in model two ( $p < .05$ ). Additionally, SES and marital status uniquely predicted 7.64% and 3.12% of the variance, respectively. Therefore, participants with a higher SES and who were married were more likely to attend parent education sessions.

## **Research Question 2**

The second set of research questions examined whether child problem behaviors, including ADHD and ODD, predicted parent attendance at parent education sessions.

**Missing data.** As with research question one, multiple imputation procedures were used to yield complete data sets for research question two. Sets of parameter estimates for the variables included in research question two are provided for the original data set and the five imputed data sets in Table 11. Neither child ADHD symptoms nor ODD symptoms significantly predicted attendance at parent education sessions across the original and all five imputed data sets.

$R^2$ ,  $F$ , and  $p$  results for research question two from the original and five imputed data sets are presented in Table 12. Results indicated that neither ADHD nor ODD symptoms explained a significant amount of variance in attendance at parent education sessions.

**Linear regression.** To answer research question two, linear regression analyses were used. Attendance at parent education sessions served as the dependent variable and child ADHD and ODD symptoms were the predictor variables. Results for the combined data sets are provided in Table 13.

Neither child ADHD symptoms ( $t(1, 130) = 0.67, p > .05; R^2 = .005$ ) nor child ODD symptoms ( $t(1, 130) = -1.14, p > .05; R^2 = 0.013$ ) significantly predicted attendance at parent education sessions. Therefore, mediator and moderator analyses to answer research question three could not be conducted.

## CHAPTER V: DISCUSSION

As hypothesized, SES and marital status were significant predictors of attendance at education sessions for parents of children with ADHD. Both parents who were married and those who were from higher SES were significantly more likely to attend sessions than those who were single or from a lower SES. Although the addition of marital status to the first block of predictors, which included SES and ethnicity, uniquely explained 3.12% of the variance when predicting attendance, however, it, along with parent support and stress, did not explain a statistically significant amount of additional variance. These results are consistent with previous research indicating that parents with a higher income are more likely to attend sessions whether they have children with ADHD (Dumas et al., 2007), CD, or ODD (Kazdin et al., 1993; Kazdin & Mazurick, 1994; Kazdin et al., 1997; Lavigne et al., 2010). Findings are also consistent with research investigating the impact of marital status on attendance, such that parents who were married were more likely to attend parent education sessions (Baker et al., 2011; Friars & Mellor, 2009; Kazdin et al., 1997; Kazdin et al., 1993; Kazdin & Mazurick, 1994). Although Dumas et al. (2007) also found that marital status was a significant predictor of attendance, the authors found that those who were single were more likely to attend parent education sessions. Therefore, future research should more closely investigate the impact of marital status on attendance and possible mediators and moderators of that relationship.

Alternatively, other tested predictors of attendance, including ethnicity, parent levels of stress and support, and child ADHD and ODD symptoms, were not statistically significant. Therefore, further analyses to determine the impact of parental acceptability on the relationship between child symptoms and attendance could not be conducted.

Nevertheless, these results are consistent with some previous research. First, the lack of

significant results between parent levels of support and attendance are consistent with results found by Baker et al. (2011). The authors found that parental levels of interpersonal support were predictive of enrollment (e.g., attending at least one session), such that those with more support were more likely to enroll, but did not find a significant relationship between the number of sessions attended and parental support. Second, the nonsignificant relationship between stress and attendance is consistent with results found by Dumas et al. (2007). Alternatively, these findings are inconsistent with research indicating that the more stress parents of children with ODD or CD feel, the more likely they were to drop out of treatment (Kazdin et al., 1993; Kazdin et al., 1997; Kazdin & Mazurick, 1994). Perhaps these differences across studies exist because children with ODD or CD can exhibit more frequent and severe externalizing behaviors than those with ADHD alone, which can lead to greater parental stress. Indeed, studies have indicated that parents of children with comorbid ADHD and ODD experience higher levels of stress than those with children with ADHD alone (e.g., Anastopoulos et al., 1992). Because the majority of children in the current sample also had comorbid ADHD and ODD, however, additional studies should determine whether or not differential effects exist across disruptive behavior disorders when investigating the relationship between parental stress and attendance at parent education sessions.

Finally, the nonsignificant results between levels of child ADHD and ODD symptoms and parent attendance are consistent with previous research that investigated the relationship between levels of child behavior concerns (e.g., inattentive, hyperactive, oppositional, anxious) and attendance (e.g., Dumas et al., 2007; Gross et al., 2001; Harrison et al., 2004). Other studies, however, found that the more behavioral symptoms children exhibited, the more likely parents were to attend (Barkley et al., 2000; Garvey et al., 2006; Kendall & Sugarman, 1997), whereas additional findings indicated that the more behavioral symptoms

children exhibited, the less likely parents were to attend sessions (Bor et al., 2002; Kazdin et al., 1997; Kazdin & Mazurick, 1994; Snell-Johns et al., 2005). Perhaps factors specific to this sample, such as ethnicity and child age, impacted the results such that the relationship between symptoms and attendance at parent education was not statistically significant. Alternatively, increased statistical power or more detailed measurement of ADHD and ODD symptoms may have yielded more positive findings. Therefore, future studies should not only investigate the relationship between child symptoms and attendance at parent education sessions, but also consider possible mediators and moderators (e.g., parent acceptability, parent stress, parent support) of that relationship in order to have a clearer understanding of the predictors.

### **Clinical Implications**

The findings from this investigation may indicate that more supports should be provided to parents who are single and/or from a lower SES background in order to increase their levels of attendance. Although many parent education programs for those with young children already offer free child care, transportation, and snacks (e.g. Dumas et al., 2007; Garvey et al., 2006; Gross et al., 2011; Kern et al., 2007; McGoey et al., 2005), these accommodations were not sufficient in increasing levels of attendance for the current sample. For example, Gross et al. (2011) found that reimbursing parents for childcare costs did not impact their attendance or quality of engagement during parent education sessions. Thus, the authors hypothesized that the amount of money provided to parents per session, which averaged nine dollars, did not amount to enough money for the parents to care about or notice. Therefore, future researchers should consider using participatory action research (PAR) and participatory intervention methods (PIM) (e.g., Leff, Costigan, & Power, 2004; Leff et al., 2006; Nastasi et al., 2000). These approaches focus on forming critical

partnerships with committed stakeholders (e.g., parents) in order to create adaptations to a program that can best meet their needs. By asking parents what supports, topics, or sessions are most important to them, not only may clinicians be better able to tailor sessions so that more parents can attend, but parents may also feel more ownership over the process (Nastasi et al., 2000).

In addition to partnership approaches to increase attendance, clinicians may also consider providing parent education sessions via the Internet (e.g., Carpenter, Frankel, Marina, Duan, & Smalley, 2004; Dunham et al., 1998; Taylor, Webster-Stratton, Feil, Broadbent, Widdop, & Severson, 2008). Although this approach may limit participation for some parents who do not have access to the Internet or a computer, it may be more appealing and convenient to others who experience multiple barriers (e.g., increased levels of stress, finding childcare, transporting children, coordinating their schedules) to attending a parent education session outside of their home.

In addition to web-based parent education sessions, clinicians should consider other ways to address the impact of marital status on attendance at parent education sessions. For example, perhaps clinicians should assess risk for marital difficulties amongst parents who seek treatment for their children with ADHD. Measuring the strength of a marital relationship may not only provide areas to focus on during parent education (e.g., spousal support and continuity of consequences provided), but it may also allow for clinicians to suggest family or marriage counseling for those parents who report higher levels of parental discord. Providing additional and preventive marital supports to parents of children with ADHD may prevent divorce from occurring, which would then prevent lower attendance rates amongst single parents.

For those parents who are single, however, more direct support may be required in order to provide parent education sessions. For example, arranging for a babysitter in the home while parents attend sessions at an alternative location may be desirable for some parents, as they would not have to relocate the children for a short period of time.

Alternatively, providing in vivo parent education sessions at home may be both convenient and efficient because the clinician would be able to directly observe interactions between the parent and child, which could then be targeted during education sessions. This may also be an effective strategy to address barriers that those with a lower SES and increased levels of stress encounter. Regardless of the supports offered, however, clinicians should utilize partnership approaches to determine what accommodations are most acceptable to and feasible for parents.

Perhaps the most important variable necessary to increase attendance at parent education sessions, however, is the relationship between the parents and clinicians. Indeed, previous research has not only indicated that this is a critical variable to measure (Kazdin & Mazurick, 1994), but also that the parent-clinician relationship influences attendance and premature dropping out from treatment (Gross et al., 2001; Kazdin et al., 1997). If parents do not attend any sessions, however, it may be difficult for clinicians to form relationships with them. Therefore, it may be particularly important for clinicians to start forming relationships with parents via the telephone prior to the first session (Harrison et al., 2004; Snell-Johns et al., 2005).

In order to more closely determine the impact of parent-clinician relationships prior to treatment, McKay, McCadam, and Gomzales (1996) investigated the differences in initial session attendance between two groups of parents of children with behavioral concerns. The control group received a typical pre-treatment phone screen that focused on children's



behavioral concerns and whether or not the treatment provided could address the challenges. The intervention group, however, received a pre-treatment telephone intervention that focused on clearly defining behavioral concerns, providing strategies to assist in managing behavior, and discussing potential barriers to attendance. Results indicated that parents who received the intervention were significantly more likely to attend their first scheduled appointment.

Power et al. (2010) also examined the importance of pre-treatment telephone contact in an urban, primary care setting. Similar to the research conducted by McKay et al. (1996), when clinicians were able to reach a family via the telephone they discussed parental goals for treatment, praised families for seeking out treatment for their children, and discussed potential barriers to attendance. Results indicated that the number of clinician-initiated phone calls, the number of parent-initiated phone calls, and the number of minutes the clinician and parent spent on the telephone were significant predictors of attendance at the first appointment. Additionally, further analyses indicated that the number of minutes spent on the telephone may have mediated the relationship between both clinician- and parent-initiated calls and attendance at the first session. Therefore, clinicians should consider calling parents prior to treatment, not only to provide a short reminder of an upcoming session, but more importantly to start building a professional and meaningful relationship that will hopefully increase the parents' levels of attendance and motivation for participation in treatment.

During these initial phone calls, motivational interviewing techniques (Miller & Rollnick, 2002) may be an effective way to have parents explain their goals for treatment and determine barriers to reaching them. For example, a pilot study conducted by Sterrett, Jones, Zalot, and Shook (2010) found that parents who received a brief motivational interviewing

intervention, including phone calls to identify barriers to and develop solutions for attendance, were more likely to attend and were more satisfied with parent workshops than those who did not receive the intervention. Therefore, although this was a pilot study and had a small sample size, clinicians should consider using motivational interviewing to help parents address and find solutions to barriers that may impact their attendance at parent education sessions.

Finally, although social support was not a significant predictor of attendance in this study, clinicians should understand the importance of social interactions for parents of children with ADHD. For example, Bussing et al. (2003) investigated whether parental social networks and perceived levels of social support impacted their use of mental health services for their children at risk for ADHD. Using a sample of elementary school children and their parents (98% mothers), the authors found that higher levels of support led to less use of mental health services. Additionally, Bussing et al. (2003) found that African American families and those from a lower SES reported having smaller social networks with fewer health professionals than Caucasian and higher SES families, but that they also had more contact with their social networks than Caucasian or higher SES families. Therefore, clinicians should not only be aware of the differences in social support networks, but also inquire about social networks with parents (Bussing et al., 2003). By doing so, the clinician may not only be able to determine if more formal supports are needed, but can also suggest that the parent contact their support networks, as this may help to decrease caregiver strain (Bussing et al., 2003).

### **Research Implications**

Certainly attendance at treatment is viewed as a particularly important variable to consider when measuring parent engagement in treatment (e.g., Nock & Ferriter, 2005;

Staudt, 2007; Watt & Dadds, 2007). Given more recent conceptualizations of treatment integrity, however, future researchers should also consider attendance as a critical variable to include when measuring integrity (Power et al., 2005). Traditional models of treatment integrity have focused on measuring what information a researcher provides to clients and how it is provided (Power et al., 2005). Although this type of conceptualization may be effective for manualized treatments, it ignores critical participant variables, such as participant beliefs and suggestions for methods to monitor integrity, that should be considered when developing interventions to be provided in a natural environment (Power et al., 2005). Thus, an alternative partnership model of treatment integrity has been proposed, which focuses not only on how the treatment was delivered but also how treatment was received by the participants (e.g., attendance, engagement during session, motivation). In order for data regarding more process-oriented variables (e.g., engagement during sessions, motivation) to be collected, however, parents must first attend sessions. Therefore, future researchers should not simply measure and report attendance, but rather use it to help create a comprehensive understanding of treatment integrity. For example, if 80% of parents attend one parent education session offered, but 30% attend another, researchers should determine differences between the two sessions (e.g., treatment fidelity, parental engagement during sessions) in order to more comprehensively report integrity data and how they may have influenced attendance.

Future researchers should also consider using multiple imputation methods to manage missing data (Allison, 2002; Rubin, 1987) particularly for longitudinal studies of parent education that may be subject to significant participant attrition. By imputing data for multiple data sets utilizing the original parameter estimates, analyzing the data for each set, and then pooling the data to create a single set of results, researchers are provided with a

largely unbiased approach for obtaining a complete data set (Enders, 2010; Howell, 2008). Because of this approach, multiple imputation methods are preferred to more traditional approaches such as casewise deletion, pairwise deletion, and mean substitution that can reduce power and bias results and interpretation (Allison, 2002; Enders, 2010; Howell, 2008; Yuan, 2000).

Finally, researchers should consider improving measurement tools to gather information regarding parental levels of support and stress. This may be particularly important for measures of parental support, as the *FCOPES* (McCubbin et al., 1981) may be too outdated for modern populations. Therefore, future studies should both develop and use more updated assessment tools in order to ensure appropriate measurement for current samples.

Additionally, perhaps parent levels of support and stress were not significant predictors in the current study due to the methods with which they were measured (e.g., self-report rating scales; Abidin, 1995, McCubbin et al., 1981). Therefore, future research should consider alternative ways to measure support by using both different methods and informants. For example, researchers can conduct more in-depth interviews with parents in order to have a clearer understanding of parents' perceived levels of support than what would be yielded with self-report scales. Additionally, researchers can ask parents to track the number of friend and family interactions they both made and received on a weekly basis, similar to how Dadds and McHugh (1992) asked parents to complete a diary of their social interactions. This would allow for a more objective view of social support than self-report measures, which include subjective perceptions. Finally, researchers may consider asking parents to have a different informant, such as a close friend or ally, record the number of interactions they initiated with and received from the parent. Again, Dadds and McHugh

(1992) asked parents to bring allies to parent education groups to foster their network of support, and asked allies to complete a diary of their social interactions with the parent. Researchers should further develop these strategies to provide more direct supports to parents, determine what types of social interactions may be more meaningful than others, and to investigate how these strategies impact attendance at parent education.

### **Limitations**

The results of this investigation should be interpreted with certain limitations in mind. First, the sample consisted of mostly White families. Not only could this limited racial representation have impacted the nonsignificant results regarding the predictive relationship between ethnicity and attendance, but it also limits the external validity of the findings to other racial groups. Therefore, future studies should include more racially diverse samples in order to extend the results to additional populations. Further, information was not collected regarding which parent attended the education sessions. In order to more closely understand significant predictors of paternal attendance, however, future studies should record which parents attended sessions to determine any differential predictors for mothers versus fathers.

Second, parents in the community and multicomponent intervention groups received different parent education curricula and were combined when conducting the analyses. Although the intervention groups were not significantly different on any study or demographic variables, the predictive relationships between the study variables and attendance for the community and multicomponent groups cannot be dismantled. Thus, researchers should determine whether or not the intensity of interventions impacts levels of attendance at parent education sessions.

Third, data for the current study were missing at random but they were not missing completely at random, as participants with more complete data also had a higher SES. Stated

differently, those who completed the TARF had a higher SES, and therefore the data are not missing completely at random. Due to the missing acceptability data, however, it cannot be determined whether those with missing data did not complete their assessments due to their acceptability of the treatment. Therefore, it is assumed that the data are missing at random. Although it is not necessary that data be missing completely at random and it is actually not possible to test that the missing at random assumption was met (Allison, 2002; Enders, 2010), the results should be interpreted with this in mind, as the results may be more reflective of those with a higher income.

Fourth, more than 50% of the TARF data were missing. Although these data were not utilized in the study due to the lack of significance between ADHD and ODD symptoms and attendance, the fact that so many participants did not complete the data is certainly a limitation. The low levels of response may be due to the fact that parents were mailed the assessments and asked to return them in a self-addressed stamped envelope so that data collectors would be blind to their responses. Future researchers should find alternative ways to collect this satisfaction ratings and also keep data collectors blind to the results. For example, perhaps project coordinators could schedule end-of-treatment phone interviews in which the data are collected.

Another limitation regarding missing data has to do with the PROC MI (Yuan, 2000) procedure used to impute the data. Each time these sets of analyses are completed different data sets are provided and, therefore, different results are found. Thus, if the analyses were to be replicated with these same data, a slightly different set of findings may result. In order to prevent this from occurring, researchers should include the seed number in the code for subsequent analyses, which is provided in the output, to ensure that results are replicable (see Allison, 2002; Yuan, 2000).

Sixth, time variant predictors collected at baseline were included as variables in the models assessed. These include parent levels of stress, support, and child ADHD and ODD symptoms, and the baseline variables that were used may differ as a result of treatment from those collected at a different time. Therefore, the current findings may differ from outcomes using predictor variables at mid- or post-treatment.

Finally, this research only measured predictors to attendance and not other components of parental engagement. Researchers have indicated that attendance at parent education sessions is necessary in order to experience the gains of treatment but not sufficient (e.g., Nix et al., 2009). For example, in a study conducted by Nix and colleagues (2009), the authors found that only race and parent age predicted attendance at parent education sessions, but race, marital status, home environment, neighborhood quality, child school behaviors, and parental education, occupation, and depression predicted the quality of engagement as measured by family coordinators. Additionally, quality of engagement rather than attendance predicted parental response to treatment. Therefore, future researchers should determine if variables similar to the ones used in this study (i.e., ethnicity, SES, marital status, support, stress, and child level of symptoms) are predictive of other facets of parental engagement (e.g., active versus passive engagement, off-task behavior, parent and facilitator ratings of engagement, number of parent-initiated telephone calls) in order to gain a more comprehensive view of engagement and how it may impact treatment outcomes.

## **Conclusion**

SES and marital status are significant predictors of attendance at parent education sessions for parents of young children with ADHD. These results are consistent with previous research indicating that parents from a lower SES background and who were single were less likely to attend education sessions. Knowing that these relationships exist is not

sufficient, however. Future researchers must work to not only determine predictors of other facets of engagement, but to also find ways to collaborate with parents to increase levels of attendance. For example, partnering with parents to determine acceptable and feasible methods for intervention delivery, providing education sessions via the Internet, and building strong relationships with parents may be critical procedures to consider in future parent education research.

Fostering parent engagement with treatment is particularly important for those of young children with symptoms of ADHD, as more severe behaviors and comorbid diagnoses may be prevented through early intervention techniques. By reaching out to and collaborating with parents when their children first exhibit inattentive and hyperactive behaviors, mental health professionals have the potential to develop meaningful relationships that include parents as necessary and critical partners in treating their children's behavioral health.



Table 1

*Participant Demographics*

Variable	Percentage of Sample
Ethnicity	
White	68%
Hispanic	13%
Other	13%
African American	3%
Information not provided	2%
Parents' Marital Status	
Married	66%
Not married, living together	13%
Separated	7%
Never married, not living with someone	8%
Information not provided	7%
Parents' Employment Status	
Full-time	61%
Part-time	7%
Unemployed	13%
Disabled	3%
Student	1%
Other	2%
Information not provided	7%
Parents' Employment Position	
Clerical or sales	19%
Administration or personnel	18%
Skilled manual employment	17%
Business management	14%
Higher executive	6%
Machine operators	4%
Unskilled employee	2%
Information not provided	19%
Parents' Education Level	
Some college	28%
High school graduate	26%
Graduated college	23%
Advanced graduate degree or certification	7%
Did not complete high school	7%
Information not provided	9%

Table 2

*Parent Education Sessions*

MCI	PE
Opening (Purpose and Overview)	Opening (Purpose and Overview)
Introduction to ADHD	Introduction to ADHD
Attending and Rewards	Understanding Your Child' Behavior (STEP)
Functional Behavioral Assessment I: Finding the Problem	Home Safety
Functional Behavioral Assessment II: Identifying Patterns	Self-Esteem (STEP)
Functional Behavioral Assessment III: Developing a Plan	Parent Self-Care
Home Safety	Healthy Child Overview
Teaching Early Literacy	Listening and Talking (STEP)
Teaching Early Numeracy	Learning to Cooperate (STEP)
Balanced Attending and Planned Ignoring	Preparing Your Child for School
Transitional Warnings and When-Then Statements	Discipline (STEP)
Planning Ahead I	School Readiness
Time Out from Reinforcement	Discipline Discussion
Point Systems I	Language Development
Point Systems II	Social and Emotional Development (STEP)
Planning Ahead II	Cognitive Development
Home-School Communication	Healthy Child Overview (part 2)
Problem Solving	Review and Application of STEP Sessions
Transitioning to Kindergarten	Review and Application of all Sessions
Closing	Closing

*Note.* MCI = multicomponent intervention group; PE = parent education group; ADHD = attention deficit hyperactivity disorder; STEP = Systematic Training for Effective Parenting. Reprinted from "Multisetting Assessment Based Intervention for Young Children at Risk for Attention Deficit Hyperactivity Disorder: Initial Effects on Academic and Behavioral Functioning," by L. Kern et al., 2007, *School Psychology Review*, 36, p. 245. Copyright 2007 by the National Association of School Psychologists. Reprinted with permission.

Table 3

*Between Group Analyses on Demographic and Study Variables*

Variable	MCI <i>n</i>	MCI <i>M</i>	CI <i>n</i>	CI <i>M</i>	<i>F</i>	<i>p</i>
Child Gender	72	1.26	63	1.16	2.21	0.14
Child Age	72	3.94	63	4.12	2.231	0.14
SES	63	3.44	55	2.96	3.46	0.07
Ethnicity	70	2.00	62	2.26	0.51	0.48
Marital Status	66	1.56	60	1.65	0.12	0.73
Family Support	59	97.76	47	97.77	0.00	0.99
Parental Stress	60	89.08	48	84.40	1.46	0.23
CPRS-R ADHD Symptoms	60	72.13	48	71.71	0.04	0.84
CPRS-R ODD Symptoms	60	66.58	48	63.35	1.66	0.20
Treatment Acceptability	32	94.16	22	92.18	0.38	0.54
Attendance	66	6.53	55	6.33	0.03	0.87

*Note.* MCI=Multicomponent intervention; CI=Community intervention; Child gender: 1=male, 2=female; Child age reported in years; SES measured using highest occupation in the household, and with a scale from 1-8 with lower numbers indicating higher SES; Ethnicity: 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, 6=Pacific Islander, 7=Other; Marital Status: 1=Married, 2=Not married living together, 3=Separated, 4=Widowed, 5=Never married not living with someone; ADHD=Attention-deficit/Hyperactivity Disorder; ODD=Oppositional Defiant Disorder; CPRS-R=Conners Parent Rating Scale-Revised; CPRS-R scores are *t*-scores; Treatment acceptability data are raw scores, with highest score possible as 119; Attendance = number of sessions attended out of 20

Table 4

*Descriptive Statistics*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
SES	118	3.22	1.42	0.19	-0.61
Ethnicity	132	2.12	2.06	1.74	1.49
Marital Status	126	1.61	1.19	2.14	3.72
Family Support	106	97.76	11.68	-0.24	-0.62
Parental Stress	108	87.00	20.10	0.19	0.30
CPRS-R ADHD Symptoms	108	71.94	10.44	-0.20	-0.83
CPRS-R ODD Symptoms	108	65.15	12.97	0.30	-0.92
Treatment Acceptability	54	93.35	11.51	-0.23	-1.01
Attendance	121	6.44	6.64	0.70	-0.93

*Note.* SES measured using highest occupation in the household, and with a scale from 1-8 with lower numbers indicating higher SES; Ethnicity: 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, 6=Pacific Islander, 7=Other; Marital Status: 1=Married, 2=Not married living together, 3=Separated, 4=Widowed, 5=Never married not living with someone; ADHD=Attention-deficit/Hyperactivity Disorder; ODD=Oppositional Defiant Disorder; CPRS-R=Conners Parent Rating Scale-Revised; CPRS-R scores are *t*-scores; Treatment acceptability data are raw scores, with highest score possible as 119; Attendance = number of sessions attended out of 20

Table 5

*Correlations Between all Predictor and Outcome Variables*

Variable	1	2	3	4	5	6	7	8	9
1. SES	1.00	-0.06	0.26**	0.06	-0.06	0.01	0.05	-0.08	-0.29**
2. Ethnicity		1.00	0.01	0.05	0.04	0.08	0.12	-0.05	-0.13
3. Marital Status			1.00	-0.01	0.16*	0.06	0.22**	0.09	-0.24**
4. Family Support				1.00	-0.28**	0.06	-0.08	0.13	0.02
5. Parental Stress					1.00	0.24*	0.48**	0.01	-0.04
6. CPRS-R ADHD						1.00	0.51**	0.03	0.06
7. CPRS-R ODD							1.00	-0.12	-0.10
8. Treatment Acceptability								1.00	0.15
9. Attendance									1.00

*Note.* SES measured using highest occupation in the household, and with a scale from 1-8 with lower numbers indicating higher SES; Ethnicity: 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, 6=Pacific Islander, 7=Other; Marital Status: 1=Married, 2=Not married living together, 3=Separated, 4=Widowed, 5=Never married not living with someone; ADHD=Attention-deficit/Hyperactivity Disorder; ODD=Oppositional Defiant Disorder; CPRS-R=Conners Parent Rating Scale-Revised; CPRS-R scores are *t*-scores; Treatment acceptability data are raw scores, with highest score possible as 119; Attendance = number of sessions attended out of 20

\* $p < .05$

\*\* $p < .01$

Table 6

*Differences between those with and without TARF data*

	With TARF	Without TARF	<i>df</i>	<i>F</i>	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>			
	<i>n = 47</i>	<i>n = 53</i>			
SES	2.91 (1.28)	3.51 (1.42)	1	4.77	0.03
Ethnicity	0.66 (0.48)	0.77 (0.42)	1	1.60	0.21
Child gender	1.28 (0.45)	1.21 (0.41)	1	0.64	0.43
Child age	4.00 (0.75)	4.00 (0.76)	1	< 0.001	1.00
CPRS-R ADHD	71.98 (10.52)	71.81 (9.97)	1	0.01	0.94
CPRS-R ODD	65.17 (12.01)	64.87 (13.47)	1	0.01	0.91

*Note.* TARF = Treatment Acceptability Rating Scale; SES measured using highest occupation in the household, and with a scale from 1-8 with lower numbers indicating higher SES; Ethnicity: 1=White, 2=Black, 3=Hispanic, 4=Asian, 5=Native American, 6=Pacific Islander, 7=Other; Child gender: 1=male, 2=female; Child age reported in years; ADHD=Attention-deficit/Hyperactivity Disorder; ODD=Oppositional Defiant Disorder; CPRS-R=Conners Parent Rating Scale-Revised; CPRS-R scores are *t*-scores

Table 7

*Missing Data Patterns*

Group	Ethnicity	Marital Status	Attend	SES	Stress	CPRS-R ODD	CPRS-R ADHD	Support	TARF	Frequency	Percentage of non-missing data
1	X	X	X	X	X	X	X	X	X	45	33.33
2	X	X	X	X	X	X	X	X		49	36.30
3	X	X	X	X	X	X	X			2	1.48
4	X	X	X	X				X		1	0.74
5	X	X	X	X					X	3	2.22
6	X	X	X	X						11	8.15
7	X	X	X		X	X	X	X	X	2	1.48
8	X	X	X		X	X	X	X		4	2.96
9	X	X	X							1	0.74
10	X	X		X	X	X	X	X	X	2	1.48
11	X	X		X	X	X	X	X		1	0.74
12	X	X		X	X	X	X			1	0.74
13	X	X		X						3	2.22
14	X	X			X	X	X	X		1	0.74
15	X		X		X	X	X	X		1	0.74
16	X		X							2	1.48
17	X									3	2.22
18									X	2	1.48
19	O	O	O	O	O	O	O	O	O	1	0.74

*Note.* Group refers to the number of different missing data patterns; X=non-missing data; O=Missing data for all variables

Table 8

*Comparison of parameter estimates for research question 1 across imputations*

	B	Standard Error	<i>t</i>	<i>p</i>
	( <i>n</i> = 94)			
Original data				
Intercept	8.127	8.213	0.99	0.325
Ethnicity	3.027	1.444	2.10	0.039
SES	-1.720	0.509	-3.38	0.001
Marital Status	2.280	1.646	1.39	0.169
Support	0.010	0.057	0.17	0.863
Stress	-0.004	0.037	-0.12	0.909
	( <i>n</i> = 132)			
Imputation 1				
Intercept	13.696	6.679	2.05	0.042
Ethnicity	1.786	1.153	1.55	0.124
SES	-1.307	0.399	-3.28	0.001
Marital Status	2.640	1.284	2.06	0.042
Support	-0.034	0.047	-0.72	0.474
Stress	-0.034	0.029	-1.19	0.237
Imputation 2				
Intercept	3.470	6.238	0.56	0.579
Ethnicity	1.740	1.143	1.52	0.130
SES	-1.540	0.405	-3.81	0.000
Marital Status	2.693	1.211	2.22	0.028
Support	0.054	0.047	1.14	0.257
Stress	-0.007	0.028	-0.27	0.789



Table 8 (continued)

	B	Standard Error	<i>t</i>	<i>p</i>
Imputation 3				
Intercept	5.068	6.856	0.74	0.461
Ethnicity	1.743	1.159	1.50	0.135
SES	-1.203	0.410	-2.93	0.004
Marital Status	3.146	1.284	2.45	0.016
Support	0.014	0.049	0.29	0.774
Stress	0.003	0.030	0.11	0.911
Imputation 4				
Intercept	7.114	7.010	1.01	0.312
Ethnicity	1.154	1.164	0.99	0.323
SES	-1.406	0.409	-3.44	0.001
Marital Status	3.014	1.304	2.31	0.022
Support	0.023	0.050	0.47	0.638
Stress	-0.018	0.030	-0.60	0.548
Imputation 5				
Intercept	9.028	6.574	1.37	0.172
Ethnicity	1.367	1.161	1.18	0.241
SES	-1.499	0.418	-3.59	0.001
Marital Status	2.312	1.289	1.79	0.075
Support	0.029	0.049	0.58	0.561
Stress	-0.036	0.028	-1.29	0.198

Table 9

*Comparison of block 1 and block 2 analyses for research question 1 across imputations*

		<i>df</i>	$R^2$	$\Delta R^2$	<i>F</i>	<i>p</i>
( <i>n</i> = 94)						
Original Data	Model 1	2	0.188	0.188	7.29	0.001
	Model 2	5	0.208	0.020	4.63	0.001
( <i>n</i> = 132)						
Imputation 1	Model 1	2	0.118	0.118	6.11	0.003
	Model 2	5	0.179	0.061	5.50	0.0001
Imputation 2	Model 1	2	0.144	0.144	7.93	0.001
	Model 2	5	0.188	0.044	5.83	< .0001
Imputation 3	Model 1	2	0.124	0.124	5.14	0.007
	Model 2	5	0.167	0.043	5.06	0.0003
Imputation 4	Model 1	2	0.129	0.129	6.23	0.003
	Model 2	5	0.181	0.052	5.57	0.0001
Imputation 5	Model 1	2	0.133	0.133	6.81	0.002
	Model 2	5	0.183	0.050	5.63	0.0001

Table 10

*Hierarchical regression analyses pooled across imputations for research question 1*

Model	Predictor	B	$\beta$	$R^2$	$\Delta R^2$	$F$	$p$
( $n = 132$ )							
Model 1				0.130	0.130	6.11	0.002
	Ethnicity	1.792	0.127				
	SES	-1.606**	-0.344				
Model 2				0.180	0.050	4.43	0.001
	Ethnicity	1.558	0.110				
	SES	-1.391**	-0.298				
	Marital status	2.761*	0.195				
	Support	0.017	0.030				
	Stress	-0.019	-0.058				

\*  $p < .05$ ; \*\*  $p < .01$

Table 11

*Comparison of parameter estimates across imputations for research question 2*

	B	Standard Error	<i>t</i>	<i>p</i>	
	( <i>n</i> = 103)				
Original	Intercept	4.390	4.584	0.96	0.340
	CPRS-R ADHD	0.036	0.063	0.58	0.565
	Intercept	10.281	3.384	3.04	0.003
	CPRS-R ODD	-0.050	0.051	-0.99	0.327
	( <i>n</i> = 132)				
Imputation 1	Intercept	4.480	3.985	1.12	0.263
	CPRS-R ADHD	0.025	0.055	0.45	0.652
	Intercept	10.359	2.824	3.67	< .001
	CPRS-R ODD	-0.063	0.042	-1.48	0.141
Imputation 2	Intercept	4.623	4.042	1.14	0.255
	CPRS-R ADHD	0.022	0.055	0.40	0.687
	Intercept	9.175	3.023	3.04	0.003
	CPRS-R ODD	-0.045	0.045	-0.99	0.325
Imputation 3	Intercept	1.666	4.062	0.41	0.682
	CPRS-R ADHD	0.064	0.056	1.15	0.254
	Intercept	9.299	2.913	3.19	0.002
	CPRS-R ODD	-0.047	0.044	-1.06	0.292
Imputation 4	Intercept	2.842	3.985	0.71	0.477
	CPRS-R ADHD	0.048	0.054	0.87	0.384
	Intercept	8.758	2.913	3.01	0.003
	CPRS-R ODD	-0.037	0.043	-0.86	0.389
Imputation 5	Intercept	3.678	4.010	0.92	0.361
	CPRS-R ADHD	0.037	0.055	0.67	0.503
	Intercept	11.562	2.971	3.89	< .001
	CPRS-R ODD	-0.080	0.045	-1.79	0.076

Table 12

*Comparison of regression analyses across imputation for research question 2*

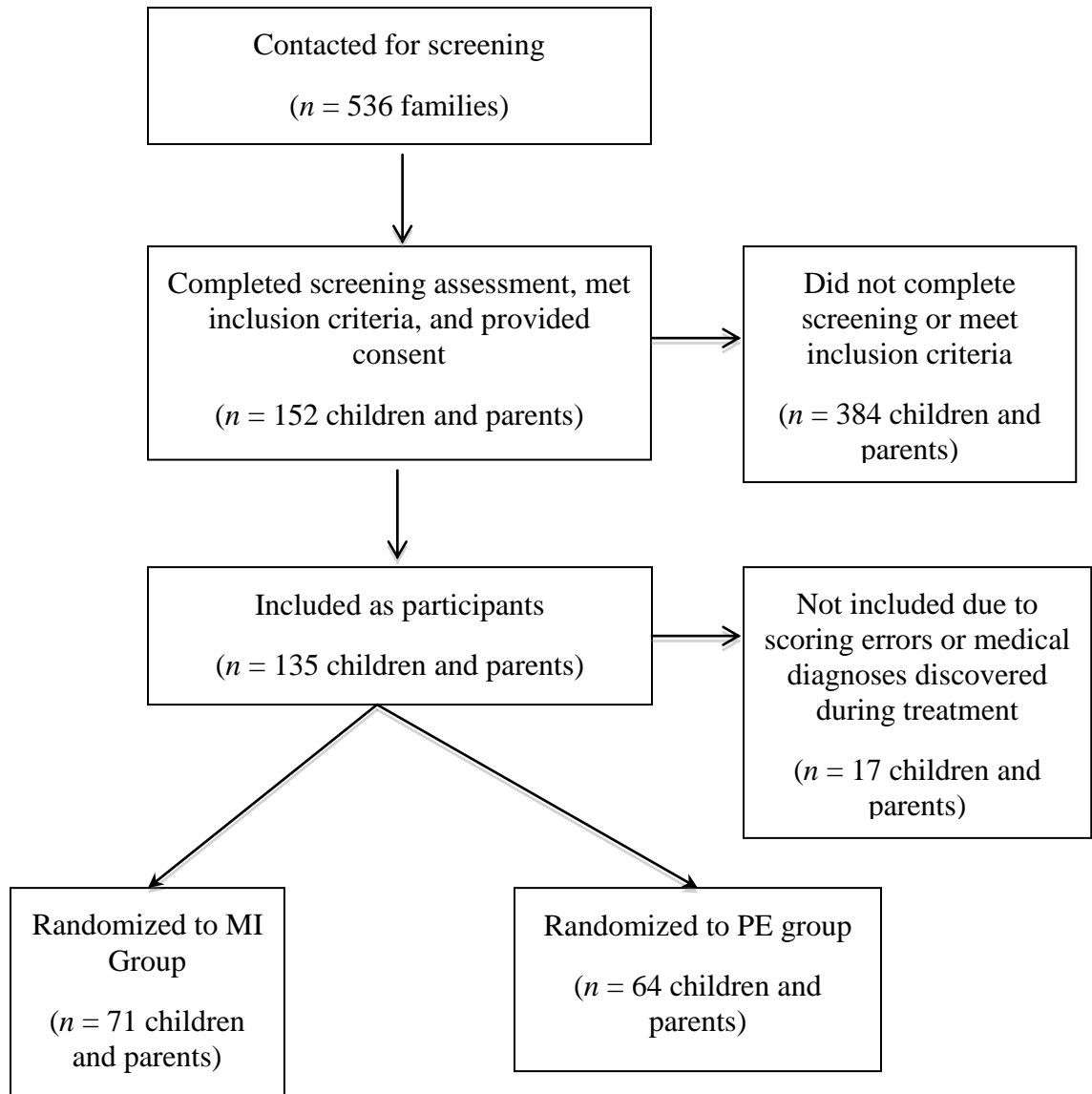
		<i>df</i>	$R^2$	<i>F</i>	<i>p</i>
		( <i>n</i> = 103)			
Original data	CPRS-R ADHD	1	0.003	0.33	0.565
	CPRS-R ODD	1	0.010	0.97	0.327
		( <i>n</i> = 132)			
Imputation 1	CPRS-R ADHD	1	0.002	0.20	0.652
	CPRS-R ODD	1	0.017	2.19	0.141
Imputation 2	CPRS-R ADHD	1	0.001	0.16	0.687
	CPRS-R ODD	1	0.007	0.98	0.325
Imputation 3	CPRS-R ADHD	1	0.010	1.31	0.254
	CPRS-R ODD	1	0.009	1.12	0.292
Imputation 4	CPRS-R ADHD	1	0.006	0.76	0.384
	CPRS-R ODD	1	0.006	0.75	0.389
Imputation 5	CPRS-R ADHD	1	0.004	0.45	0.503
	CPRS-R ODD	1	0.024	3.21	0.076

Table 13

*Regression analyses pooled across imputations for research question 2*

	B	$\beta$	Standard Error	$R^2$	$t$	$p$
	( $n = 132$ )					
CPRS-R ADHD	0.039	0.062	0.058	0.005	0.67	0.502
CPRS-R ODD	-0.054	-0.108	0.048	0.013	-1.14	0.257

Figure 1. Participant recruitment and allocation to treatment.







- 1 = Regular public school grade
- 2 = Regular private/ parochial school grade
- 3 = Regular public preschool/pre-Kindergarten
- 4 = Regular public kindergarten
- 5 = Regular private / parochial preschool/pre-Kindergarten
- 6 = Regular private / parochial Kindergarten
- 7 = Special school for preschoolers with emotional/ behavioral or learning problems
- 8 = Day care
- 9 = Play group
- 10 = Not in school, not in play group, not in day care

9A. \_\_\_\_\_ If 1 or 2 above, enter grade level

9B. How many days per week does your child attend the group educational activity? \_\_\_\_\_

How many hours per day? \_\_\_\_\_

10A. In the current household, mother/ mother figure's current employment status \_\_\_\_\_

- at
- 1 = Working full time (35 hours or more a week one or more jobs)
  - 2 = Working part time
  - 3 = Unemployed, looking for work
  - 4 = Unemployed, not looking for work
  - 5 = Disabled
  - 6 = Retired
  - 7 = Student, full time
  - 8 = Student, part time
  - 9 = Other (Specify) \_\_\_\_\_
  - 10 = Not in household

10B. In the current household, father/ father figure's current employment status \_\_\_\_\_

- at
- 1 = Working full time (35 hours or more a week one or more jobs)
  - 2 = Working part time
  - 3 = Keeping house
  - 4 = Unemployed, looking for work
  - 5 = Unemployed, not looking for work
  - 6 = Disabled
  - 7 = Retired
  - 8 = Student, full time
  - 9 = Student, part time
  - 10 = Other (Specify) \_\_\_\_\_
  - 99 = Not in household

11A. In the current household, mother/ mother figure's highest occupation \_\_\_\_\_

- concern,
- 1 = Higher Executive; proprietor of large major professional
  - 2 = Business manager of large concern, proprietor of medium-sized business, lesser professional
  - 3 = Administrative personnel, owner of small independent business, minor professional
  - 4 = Clerical or sales worker, technician, owner of little business
  - 5 = Skilled manual employee
  - 6 = Machine operator, semi-skilled employee
  - 7 = Unskilled employee
  - 8 = Never worked in paid employment
  - 99 = Not provided

11B. In the current household, father/ father figure's highest occupation \_\_\_\_\_

- 1 = Higher Executive; proprietor of large concern, major professional
- 2 = Business manager of large concern, proprietor of medium-sized business, lesser professional
- 3 = Administrative personnel, owner of small independent business, minor professional
- 4 = Clerical or sales worker, technician, owner of little business
- 5 = Skilled manual employee
- 6 = Machine operator, semi-skilled employee
- 7 = Unskilled employee
- 8 = Never worked in paid employment
- 99 = Not ascertained

12. In the current household does any part of the family income come from public assistance?

- 1 = Yes
- 2 = No

13A. In the current household, mother/ mother figure's highest level of education \_\_\_\_\_

- 1 = Eighth grade or less
- 2 = Some high school
- 3 = High school graduate or GED
- 4 = Some college or post-high school
- 5 = College graduate
- 6 = Advanced graduate or professional degree

13B. In the current household, father/ father figure's highest level of education \_\_\_\_\_

- 1 = Eighth grade or less
- 2 = Some high school
- 3 = High school graduate or GED
- 4 = Some college or post-high school
- 5 = College graduate
- 6 = Advanced graduate or professional degree

14. In the current household, what is the parents' (parental figures') current marital status?

- 1 = Married/ Common Law
- 2 = Not married, living together
- 3 = Separated
- 4 = Widowed
- 5 = Never married, not living with someone

15. If married (1) or living together (2), enter number of years \_\_\_\_\_

16. How many parent (or parental figure) separations or divorces has the child experienced?  
\_\_\_\_\_

17. If the child was in foster care, how many different homes was he/ she in prior to yours?  
\_\_\_\_\_

18. What is the primary language spoken in the home?

- 1 = English
- 2 = Spanish
- 3 = Other

19A. How is English used in the home, by the parents/ parent figures? \_\_\_\_\_

- 1 = Spoken, Read, and Written
- 2 = Spoken, Read, not Written
- 3 = Spoken, not Read, Written
- 4 = Spoken, not Read, not Written
- 5 = Not spoken, Read, or Written

19B. How is English used in the home, by the child?  
\_\_\_\_\_

- 1 = Spoken
- 2 = Not Spoken

20. How many times has your child moved since birth? \_\_\_\_\_

21. What is your primary mode of transportation?

- 1 = Car
- 2 = Bus
- 3 = Taxi
- 4 = Rides from friends
- 5 = Other \_\_\_\_\_

22. Please provide the name, address, and phone / fax number of your pediatrician. We need this information in order to access your child's medical records.

Pediatrician's Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone Number \_\_\_\_\_

Fax Number \_\_\_\_\_

23. Please provide the social security number of you or your spouse. We must have this before we can send you the \$50 thank you for completing each assessment of your child's progress.

\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_ Name: \_\_\_\_\_

24. Please provide your address and phone number(s).

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: ( ) \_\_\_\_\_(home)

( ) \_\_\_\_\_(work/other)

25. Please provide the names and contact information for two people who we can contact if we are unable to reach you over an extended period of time:

1. Name:

\_\_\_\_\_

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: ( ) \_\_\_\_\_

2. Name:

\_\_\_\_\_  
\_\_\_\_\_

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: ( ) \_\_\_\_\_

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# Brigid A. Vilaro, M. Ed.

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## **Education**

Aug 2007 - Present

**Doctoral Student, School Psychology  
Specialization in Pediatric School Psychology**

Graduate GPA: 3.99

Lehigh University, Bethlehem, PA

Dissertation: Early intervention for young children with ADHD:

Predictors of parental attendance

Committee Members: George J. DuPaul, Ph.D., Thomas J. Power, Ph.D.,  
Lee Kern, Ph.D., & Patricia H. Manz, Ph.D.

Dissertation Proposal Date: December 2011

Dissertation Defense Date: May 2012

Jan 2009

**Master of Education, Human Development**

Specialization in Pediatric Psychology

Lehigh University, Bethlehem, PA

Qualifying Project: Cross-age peer coaching: Enhancing the peer  
interactions of children exhibiting symptoms of ADHD

Committee Members: George J. DuPaul, Ph.D., Robin Hojnoski, Ph.D., &  
Lee Kern, Ph.D.

Project Passed: February 2010

May 2006

**Bachelor of Arts, Major: Psychology**

GPA: 3.707

Magna cum Laude

Loyola College in Maryland, Baltimore, MD

## **Awards & Honors**

2002 - 2006

**Dean's List: Loyola College in Maryland**

2004 - 2006

**PsiChi Psychology Honors Society**

## **Clinical Experience**

### **Supervised Placements**

Sep 2010 - Jun 2011

**Psychology Trainee, Fourth Year Placement**

Inpatient Pediatric Rehabilitation, Good Shepherd Hospital, Allentown,  
PA

Supervisors: Gianna Locascio, Psy.D., Elona Suli-Moci, Ph.D., M.D., &  
Rosauro Dalope, M.D.

*Member of a multidisciplinary inpatient pediatric rehabilitation team, which included pediatricians, neuropsychologists, occupational therapists, physical therapists, recreational therapists, social workers, nutritionists, inpatient special education teacher, and speech therapists. Participated in the school reentry process, which involved collaborating with school personnel, families, and the multidisciplinary rehabilitation team. Also involved in the design, implementation, and monitoring of academic and*

*behavioral interventions, and participated in neuropsychological assessment*

Bethlehem Area School District, Bethlehem, PA

Supervisor: Lidia Cordero, Ed.S.

*Conducted comprehensive multidisciplinary psychoeducational evaluations to determine special education eligibility for students ages four through thirteen; consulted with teachers and parents to develop and implement classroom- and home-based interventions to improve students' behavior and academic performance; and provided counseling to adolescents with symptoms of depression and aggression.*

Sep 2009 - Aug 2010 **Psychology Trainee, Third Year Placement**

Inpatient Pediatric Rehabilitation, Good Shepherd Hospital, Allentown, PA

Supervisors: Gianna Locascio, Psy.D. & Rosauro Dalope, M.D.

*Member of a multidisciplinary inpatient pediatric rehabilitation team, which included pediatricians, neuropsychologists, occupational therapists, physical therapists, recreational therapists, social workers, nutritionists, inpatient special education teacher, and speech therapists. Participated in the school reentry process, which involved collaborating with school personnel, families, and the multidisciplinary rehabilitation team. Also involved in the design, implementation, and monitoring of academic and behavioral interventions, and participated in neuropsychological assessment*

Allentown School District, Allentown, PA

Supervisor: Jessica Muggleston, M.Ed.

*Conducted comprehensive multidisciplinary psychoeducational evaluations to determine special education eligibility for students ages four through thirteen; consulted with teachers and parents to develop and implement classroom- and home-based interventions to improve students' behavior and academic performance; and provided counseling to adolescents with symptoms of depression and aggression.*

**Practica**

Jan 2009 - May 2009 **Psychology Trainee, Assessment and Intervention in Educational Consultation Practicum**

Department of School Psychology, Lehigh University, Bethlehem, PA

Instructor: Edward Shapiro, Ph.D.

*Participated in a one-semester didactic course and clinical practicum in educational consultation using curriculum-based assessment. The clinical practicum included completing one behavioral assessment of academic skills on an elementary school child. I designed a reading intervention and implemented it with the student two times a week for four weeks. Finally, I utilized progress-monitoring techniques to evaluate reading performance and make adjustments to the intervention.*

Aug 2008 - Jan 2009 **Psychology Trainee, Behavioral Assessment Practicum**

Department of School Psychology, Lehigh University, Bethlehem, PA

Instructor: Robin Hojnoski, Ph.D.

*Participated in a one-semester didactic course and clinical practicum in behavioral assessment. The clinical practicum included conducting two behavioral assessments. Each assessment involved parent, teacher, and child interviews, direct observations, the use of checklists and/or rating scales as appropriate, and other measures deemed necessary to identify target behaviors. Based on the assessments, I wrote comprehensive reports that both described the assessment results and provided recommendations designed to ameliorate the identified problems.*

Aug 2008 - Dec 2008 **Psychology Trainee, Consultation Practicum**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Instructor: Patricia Manz, Ph.D.  
*Participated in a one-semester didactic course and clinical practicum in consultation procedures that included conducting one formal consultation with a teacher. The consultation process included a problem identification interview, problem analysis interview, problem evaluation meeting, data collection, the development of an intervention menu, a summary report, and a case reflection.*

Jan 2008 - May 2008 **Psychology Trainee, Assessment of Intelligence Practicum**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Instructor: Kevin M. Kelly, Ph.D.  
*Developed skills in administering, scoring and interpreting cognitive and achievement tests in a one-semester didactic and practicum course. Received training in the Wechsler intelligence tests (i.e., WISC-IV, WAIS-III, WPPSI-III), Wechsler achievement tests (WIAT-II), and the Woodcock-Johnson test of Achievement (WJ-III). Completed five full battery assessments (one adult, two adolescent / child, and one pre-school child).*

### **Other Clinical Experience**

Jul 2011 - Jun 2012 **Director of Parent Training**  
Bethlehem, PA  
*Lead an education program for parents of a child with ADHD and Tourette Syndrome. This education program consists of weekly one-hour classes. Curriculum includes the development of behavioral expectations, appropriate use of behavior specific praise, preventive interventions, and coping skills*

Jan 2008 - May 2008 **Director of Parent Training**  
Lehigh University, Bethlehem, PA  
Supervisor: Lee Kern, Ph.D.  
*Led an education program for parents of a child with ADHD. This program consisted of 10 one-hour classes. Curriculum included the development of behavioral expectations, the appropriate use of behavior specific praise, preventive interventions, and coping skills.*

Jun 2005 - Aug 2005 **Summer Treatment Program**  
Counselor, Buffalo, NY  
*Summer counselor for a comprehensive treatment program for children with ADHD in grades 1-6. The program was designed to improve behavioral, emotional, and learning problems through group and*

*individual behavior modification treatment in a 5-week summer program. I was the primary treatment provider for four children and implemented individualized reward based programs and monitored their progress. I also led recreationally based, age-appropriate games and activities that included a variety of treatment components approximately three times per week.*

## **Research Experience**

- Sep 2011 – Jun 2012 **Classroom Facilitator – Center for Adolescent Research in Schools (CARS)**  
Lehigh University, Bethlehem, PA  
Advisor: Lee Kern, Ph.D.  
*Classroom facilitator on a multi-site team working to develop comprehensive, feasible, and acceptable interventions to support high school students with emotional and/or behavioral challenges. Responsibilities include recruiting participants, working closely with school personnel, meeting with parents and students to complete assessment batteries, training school staff who volunteer to become mentors, training teachers in providing effective classroom interventions, gathering evaluation data, and conducting classroom assessments.*
- Jun 2009 – May 2011 **Project Coordinator - Relative Efficacy of Vyvanse for ADHD Medical Protocol (Project REVAMP)**  
Lehigh University, Bethlehem, PA and University of Rhode Island, Providence, RI  
Advisor: George J. DuPaul, Ph.D.  
*Project coordinator on a multi-disciplinary team examining the effects of a stimulant medication (Vyvanse) on the functioning of college students with ADHD. Responsibilities included scheduling screening and intake interviews, scheduling project meetings, and collaboration with the Lehigh University Health Center physicians.*
- Sep 2007 – Sep 2010 **Project Coordinator – Whitehall / Coplay Middle School Study Skills Program**  
Lehigh University, Bethlehem, PA  
Advisor: George J. DuPaul, Ph.D. & George White, Ph.D.  
*Project coordinator on a multi-disciplinary team examining the effects of an after-school study skills program for middle school students with and without ADHD. Responsibilities included scheduling screening and intake interviews, scheduling project meetings, and collaboration with the Whitehall / Coplay School District faculty and administrators.*
- Sep 2007 – Dec 2009 **Qualifying Project Research**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Title: Cross-age peer coaching: Enhancing the peer interactions of children exhibiting symptoms of ADHD  
Advisor: George J. DuPaul, Ph.D.  
*The purpose of this study was to examine the effects of a cross-age peer-coaching program for four first grade students who met criteria for displaying significant symptoms of ADHD, as well as four third and fourth*

*grade students without ADHD who were their coaches. The coaching pairs met every morning to establish a daily goal for the younger child to meet during free time, and a multiple baseline across participants design was utilized. Results indicated variable results, but suggested that the cross-age peer-coaching program led to general decreases in negative social behavior, and was highly acceptable for all students involved. Responsibilities included study design, development, implementation, data analysis, and presentation of findings. Presented a poster at the 2010 meeting of the National Association of School Psychologists Convention, Chicago, IL, and accepted for publication in Child and Family Behavior Therapy.*

## **Other Research Experience**

### **Sep 2007 - Dec 2008    Research Assistant/Data Collector – Early Intervention Study**

Lehigh University, Bethlehem, PA

Investigators: George J. DuPaul, Ph.D., & Lee Kern, Ph.D.

*As a research assistant on this NIH funded grant studying preschoolers at-risk for ADHD, I conducted parent interviews, administered and scored standardized measures of achievement (e.g., Dynamic Indicators of Basic Early Language Skills) and behavior rating scales (e.g., Child Behavior Checklist) with children ages three through seven and their parents. I also conducted structured behavioral observations in the home and school settings and created integrated assessment and observation reports for parents.*

### **Sep 2006 - Jun 2007    Senior Research Support Specialist / Teacher Consultant**

State University of New York at Buffalo, Buffalo, NY

Investigators: William E. Pelham, Ph.D., Lisa Burrows-MacLean, Ph.D., Daniel Waschbusch, Ph.D., Martin Hoffman, M.D., & James Waxmonsky, M.D.

*Participated as a full-time research assistant on this NIH funded grant studying the effectiveness of various behavioral modification programs on kindergarten and first grade students with ADHD. Primary responsibilities included the management of 34 cases, each involving teacher consultation to establish the implementation of daily report cards and various behavioral modifications in the classrooms (e.g., time out procedures, reward programs, and use of effective praise and commands). Other activities included data entry, case presentations, intervention implementation, and social skills group facilitator.*

### **Jun 2003 - May 2005    Undergraduate Research Assistant – Memory Study**

Loyola College in Maryland, Baltimore, MD

Investigators: Kerri Goodwin, Ph.D.

*As a research assistant on this study investigating false memory recall of college-age students, I facilitated testing sessions with participants, transcribed interview data, and participated in data analysis.*

## **Teaching Experience**



Sep 2010 – Jun 2012 **Teaching Assistant for Assessment and Intervention in Educational Consultation and Behavioral Assessment**  
Lehigh University, Bethlehem, PA  
Instructors: Edward Shapiro, Ph.D., & Robin Hojnoski, Ph.D.  
*Assist masters and doctoral level graduate students in the applied practicum assignments associated with the courses. Establish connections with local schools, collaborate with students and teachers involved in the projects, prepare and give feedback to students regarding interviews they conduct, assist students in choosing assessment and intervention procedures, and collect acceptability data from teachers.*

## **Specialized Coursework**

Jan 2011 – May 2011 **Applications of Pediatric School Psychology—Prevention**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Children's Hospital of Philadelphia, Philadelphia, PA  
Instructor: Thomas J. Power, Ph.D.  
*Participated in a didactic series for graduate students. This course applied a developmental-ecological model in understanding critical issues of school adjustment commonly encountered by children with health problems, and involved the development of a prevention training grant proposal.*

Aug 2010 – Dec 2010 **Structural Equation Modeling**  
College of Education, Lehigh University, Bethlehem, PA  
Instructor: Grace Caskie, Ph.D.  
*Participated in a didactic series for graduate students. This course involved the understanding and applications of Structural Equation Modeling (SEM) for the applied sciences, and the completion of a final project in which SEM techniques were utilized to examine possible predictors of home safety for parents with children with ADHD.*

Jan 2010 – May 2010 **Applications of Pediatric School Psychology—Intervention**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Children's Hospital of Philadelphia, Philadelphia, PA  
Instructor: Thomas J. Power, Ph.D.  
*Participated in a didactic series for graduate students. This course applied a developmental-ecological model in understanding critical issues of school adjustment commonly encountered by children with health problems, and involved the development of an intervention development grant proposal.*

Aug 2009 – Dec 2009 **Health/Pediatric Psychology**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
Instructor: George J. DuPaul, Ph.D.  
*Participated in a didactic series for graduate students. This course involved understanding the nature of pediatric medical conditions, designing academic, behavior, and/or psychological interventions for students presenting with one or more health conditions, understanding effective methods to use in consulting with medical and educational personnel, case conceptualization and treatment of medical disorders, and*

*critically examining the empirical literature in the field of pediatric psychology.*

## **Professional Certifications**

2011 – Present Certified School Psychologist, Pennsylvania

## **Professional Activities**

### **Memberships**

2011 – Present Graduate Student Affiliate, American Psychological Association – Division 54 Pediatric Psychology  
2010 – Present Graduate Student Affiliate, American Psychological Association – Division 16 School Psychology  
2007 - Present Graduate Student Affiliate, American Psychological Association  
2007 - Present Student Affiliate, National Association of School Psychologists

### **Departmental**

Jan 2009 – May 2011 **Graduate Student Council**  
College of Education, Lehigh University, Bethlehem, PA  
*Served as the Department of School Psychology representative to the Graduate Student Council; organized and led a community holiday toy drive for families in need in the Lehigh Valley, PA.*

Aug 2007 - May 2008 **Graduate Student Senate**  
Department of School Psychology, Lehigh University, Bethlehem, PA  
*Served as the Department of School Psychology representative to the Graduate Student Senate.*

## **Presentations and Publications**

### **Publications**

DuPaul, G. J., Weyandt, L. L., Rossi, J. S., **Vilardo**, B. A., O'Dell, S. M., Carson, K. M., ...Swentosky, A. (2011). Double-blind, placebo-controlled, crossover study of the efficacy and safety of lisdexamfetamine dimesylate in college students with attention-deficit/hyperactivity disorder. *Journal of Attention Disorders, 1-19*. doi: 10.1177/1087054711427299

O'Dell, S. M., **Vilardo**, B. A., Kern, L., Kokina, A, Ash, A. A., Seymour, K. A, ...Thomas, L.B. (2010). JPBI 10 years later: Trends in research studies. *Journal of Positive Behavior Interventions*, Retrieved from <http://pbi.sagepub.com/content/early/2010/11/18/1098300710385346>.

DuPaul, G.J., White, G.P., Jitendra, A.K., **Vilardo** B.A., & Tresco K.E. (2010). Middle-school students with attention-deficit/hyperactivity disorder: After-school program for promoting organization and study-skills. *Disturbi di Attenzione e Iperattività, 6(1)*, 41-60.

### **In Press**

**Vilardo, B. A., DuPaul, G.J., Kern, L., & Hojnoski, R. L. (In press).** Cross-age peer coaching: Enhancing the peer interactions of children exhibiting symptoms of ADHD. *Child and Family Behavior Therapy*.

### **In Review**

DuPaul, G. J., Eckert, T. L., **Vilardo, B. A.** (In review). Effects of school-based interventions for ADHD: Meta-analysis 1996-2010.

Weyandt, L. L., DuPaul, G. J., Verdi, G., Rossi, J. S., Swentosky, A., **Vilardo, B. A.**...Carson, K. M. (In review). The performance of college students with and without ADHD: Neuropsychological, academic, and psychosocial functioning.

### **Paper & Poster Presentations at Scientific Meetings**

**Vilardo, B. A., DuPaul, G. J., & Kern, L.** (2012, February). Early intervention for young children with ADHD: Predictors of parental attendance. Presented at the annual convention of the National Association of School Psychologists. Philadelphia, PA.

DuPaul, G. J., Weyandt, L. L., **Vilardo, B. A.**, O'Dell, S. M., Carson, K. M., Swentosky, A.,...Rossi, J. S. (2011, August). Effects of lisdexamfetamine dimesylate on functioning of college students with ADHD. Presented at the American Psychological Association Convention. Washington, D. C.

DuPaul, G. J., Eckert, T. L., **Vilardo, B. A.**, & Koenig, E. A. (2010, August). Effects of school-based interventions for ADHD: Meta-analysis 1996-2008. Poster presented at the American Psychological Association Convention. San Diego, CA.

**Vilardo, B. A., & DuPaul, G. J.** (2010, March). Cross-age peer coaching: Enhancing the peer interactions of children exhibiting symptoms of ADHD. Poster presented at the annual convention of the National Association of School Psychologists. Chicago, IL.

Kern, L., **Vilardo, B.**, O'Dell, S., Kokina, A., & Carr, T. (2009, March). JPBI ten years later: An analysis of critical PBS features in intervention studies. Presented at the Sixth International Conference on Positive Behavior Support. Jacksonville, FL.