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PROGRAM FOR THE EDUCATION AND ENRICHMENT OF RELATIONAL  
SKILLS: PARENTAL OUTCOMES WITH AN ADHD SAMPLE

By

Kelsey A. Gonring, M.S.

A Dissertation submitted to the Faculty of the Graduate School,  
Marquette University,  
in Partial Fulfillment of the Requirements for  
the Degree of Doctor of Philosophy

Milwaukee, Wisconsin  
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ABSTRACT  
PROGRAM FOR THE EDUCATION AND ENRICHMENT OF RELATIONAL  
SKILLS: PARENTAL OUTCOMES WITH AN ADHD SAMPLE

Kelsey A. Gonring, M.S.

Marquette University 2015

The goal of the current study was to examine the effect of PEERS®, a 14-week parent-assisted friendship-building program for adolescents with ADHD, on parental functioning, quality of the parent-adolescent relationship, and family functioning. Participants included 25 parents (19 mothers, 6 fathers) of adolescents with ADHD. Families completed the Program for the Education and Enrichment of Relational Skills (PEERS®; Laugeson & Frankel, 2010). Measures of parenting stress, parental efficacy, parent-adolescent communication, parent-adolescent involvement, causal attributions for negative social interactions, and family chaos were completed by parents at pre and post-treatment. Parents demonstrated statistically significant improvements in parenting stress and parent-adolescent communication and marginally statistically significant improvement in parental efficacy. Parents also demonstrated statistically reliable change in measures of parenting stress, parent-adolescent communication, parent-adolescent involvement, and family chaos. Overall, these findings demonstrate the benefit of PEERS® at improving parental functioning, quality of the parent-adolescent relationship, and family functioning for families of adolescents with ADHD.

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## INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood mental health disorders of childhood, characterized by symptoms of hyperactivity/impulsivity, inattention, and impaired family, academic, and social functioning (American Psychiatric Association [APA], 2013; Barkley, 2006; Visser, Bitsko, Danielson, Perou, & Blumberg, 2010). As a result, youth with ADHD are often the subject of social rejection and may lack genuine and meaningful friendships, leading to serious and long-term consequences (Daly, Creed, Xanthopoulos, & Brown, 2007). The impaired functioning and symptomatology that children with ADHD experience also affects their parents. Raising a child with ADHD requires a great deal of patience and monitoring and can impose increased caretaking demands on parents (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992; DuPaul, McGoey, Eckert, & Van Brackle, 2001). Consequently, parents of youth with ADHD often experience decreased parental functioning in a variety of domains. Research has shown significantly higher rates of parenting stress, conflicts in the parent-child relationship, and maternal depression, decreased rates of parental efficacy, and more blaming attributions for their child's negative behavior in comparison to parents of youth without ADHD (Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003; McCormick, 1995).

Due to the high prevalence of ADHD, much research has been devoted to investigating effective interventions for families of children with ADHD. Behavioral Parent Training (BPT), an evidenced-based treatment for ADHD, has shown to be effective at decreasing child symptomatology and improving parental functioning, but

has not been shown to be effective at improving social functioning (Mrug, Hoza, & Gerdes, 2001). Social skills training (SST) interventions have aimed to improve social functioning in youth with ADHD, but have not demonstrated long-term improvements (Hoza, Mrug, Pelham, Greiner, & Gnagy, 2003; Mrug et al., 2001; Pelham & Fabiano, 2008; Pfiffner & McBurnett, 1997; Tutty, Gephart, & Wurzbacher, 2003). Despite the fact that many researchers have argued that parental involvement in SST is essential for demonstrating improvements, very few SST studies have included a parental component (Abikoff, Hechtman, Klein, Gallagher, Fleiss, Etcovitch, et al., 2004; Antshel & Remer, 2003; Frankel, Myatt, Cantwell, & Feinberg, 1997; Tutty, et al., 2003), and none have directly assessed the value of this inclusion with regards to improvement in parental functioning following treatment (Frankel et al., 1997; Hoza et al., 2003; Pfiffner & McBurnett, 1997). Thus, the current study examined parental and family outcomes following a parent-assisted friendship-building program for youth with ADHD, which has been empirically-validated for teens with Autism Spectrum Disorder (ASD).

### **ADHD – Parental Functioning and Treatment**

ADHD is a prevalent, chronic, and impairing childhood disorder occurring in 3%-10% of school-aged children and adolescents (Barkley, 2006; Visser et al., 2010). ADHD is characterized by symptoms of hyperactivity/impulsivity (e.g., inability to sit still, fidgeting) and inattention (e.g., inability to stay focused, lack of concentration), which are atypical in comparison to other children at the same stage of development (APA, 2013). Onset of the disorder occurs early in a child's life and contributes to impairment in a variety of domains (i.e., family, academic, and social; Smith, Barkley, & Shapiro, 2006).

Impairment has been shown to persist through adolescence and adulthood, leading to serious and long-term consequences (i.e., delinquency, school drop-out, academic difficulties, and substance use) and psychological maladjustment (APA, 2013; Daly et al., 2007; Faraone, Sergeant, Gillberg, & Biederman, 2003).

### **Parental Functioning in Families of Children with ADHD**

Given the significant impact ADHD has on family functioning, decades of research have examined parental functioning in parents of youth with ADHD. Research has shown significantly increased rates of parenting stress, decreased rates of parental efficacy, and more blaming attributions for negative child behavior compared to parents of children without ADHD (Chronis et al., 2003; Gerdes & Hoza, 2006; Jones & Prinz, 2005; McCormick, 1995; Theule, Wiener, Tannock, & Jenkins, 2013).

**Parenting Stress.** One of the most extensively studied areas is parenting stress, which has been defined as, “a condition or feeling experienced when a parent perceives that the demands associated with parenting exceed the personal and social resources available to meet those demands” (Cooper, McLanahan, Meadows, & Brooks-Gunn, 2009, p. 559). Although a direct, causal connection between childhood ADHD and parenting stress has not been established, correlational evidence suggests that increased caretaking demands (perhaps as a result of child noncompliance and academic and social impairment) placed on parents of children with ADHD are associated with increased parenting stress (Anastopoulos et al., 1992; DuPaul, et al., 2001). Research has consistently demonstrated that parents of children with ADHD experience higher levels of parenting stress than parents of children without ADHD (Abidin, 1992; Anastopoulos, et al., 1992; Fischer, 1990; Mash & Johnston, 1983; Johnston & Mash, 2001; Theule et

al., 2013). Research examining parenting stress in mothers of children with ADHD (Pimentel, Vieira-Santos, Santos, & Vale, 2011; Baker & McCal, 1995; Johnston & Mash, 2001) also has identified both child factors (i.e., overall severity of the child's ADHD, externalizing behavior problems, such as hyperactivity, impulsivity, and aggression) and parental factors (i.e., parenting style, parent psychopathology) as contributors to the increased stress these parents experience (Anastopoulos et al., 1992; Baker & McCal, 1995; also see Fischer, 1990; Mash & Johnston, 1983).

**Parental Efficacy.** Given the demands of parenting a child with ADHD and the related parenting stress, it is reasonable to consider how parental beliefs of their ability to parent effectively may be affected. This cognitive construct is termed parental self-efficacy (PSE). In a review by Jones and Prinz (2005), PSE is defined as, “the expectations caregivers hold about their ability to parent successfully” (p. 342). Most relevant to the research being discussed, PSE has been considered an antecedent to feelings of parental competence and effectiveness (i.e., behaviors, skills, and strategies that support positive child outcomes). Presumably, in the face of challenging child behaviors, parents with high PSE display confidence in their knowledge and application of effective parenting skills, whereas parents with low PSE may find it more difficult to parent effectively and exhibit diminished confidence in their ability to parent (Jones & Prinz, 2005).

Unfortunately, very few studies have examined parental efficacy in parents of children with ADHD. Initial research found that parents of children with hyperactivity reported lower levels of parenting self-esteem and greater maternal stress, and that they perceived their children as more problematic (Mash & Johnston, 1983). Other studies

have found that mothers and fathers of children with ADHD report lower self-confidence and less warmth and involvement with their children, and that they use more corporal punishment than parents of children without ADHD (Alizadeh, Applequist, & Coolidge, 2007). More recent literature has demonstrated that parents of youth with ADHD feel more frustrated, worried, upset, worn out, and helpless in comparison to parents of youth without ADHD (Primack et al., 2012).

**Parental Attributions.** Parental cognitions, such as attributions for child behavior, also have been shown to influence parenting strategies, as well as the way parents behave toward their child (Hoza et al., 2000; Miller, 1995). A wide body of literature has shown that parents of children with ADHD have different attributional patterns than parents of non-ADHD children. Specifically, parents of children with ADHD attribute their child's ADHD behaviors (e.g., inattentive-overactive) to internal and stable, yet uncontrollable, factors, whereas parents of non-ADHD children attribute these behaviors in their child to external and unstable factors. Parents of children with ADHD also tend to perceive their child's positive behavior (i.e., prosocial behavior, compliance) as less internal, controllable and stable over time, and they attribute undesirable behaviors to more stable and global factors (Collett & Gimpel, 2004). Likewise, mothers of children with ADHD have been shown to view inattentive-impulsive behavior as more internal and global/stable, but less controllable than mothers of children without ADHD (Gerdes & Hoza, 2006).

Research also has demonstrated that parents of children with ADHD who make more blaming attributions (i.e., internal locus of control, intentional, and controllability) for their child's disruptive behaviors (i.e., noncompliance and hyperactivity) report more

parenting stress, feelings of incompetence, and maternal depression (Chronis, Chacho, Fabiano, Wymbs, & Pelham, 2004; Harrison & Sofronoff, 2002; Johnston & Patenaude, 1994; Morrissey-Kane & Prinz, 1999). In summary, the attribution style of parents of children with ADHD is generally consistent with the neurobiological basis of the disorder; however, when ascribing cause to positive behaviors, parents of children with ADHD assign credit to external factors and do not see the behavior as purposeful or consistent over time. Given the latter finding, researchers suggest that the differences in these attributions patterns among mothers of children with and without ADHD may impact parenting behavior. For example, blaming attributions have been associated with more negative affect and greater use of power assertion (Gerdes & Hoza, 2006; Johnston & Freeman, 1997).

### **Psychosocial Treatments for Youth with ADHD**

**Behavioral Parent Training.** Given the significant impact ADHD has on both child and parental functioning, effective psychosocial treatments have been examined for several decades. Research examining treatment modalities for ADHD has concluded that behavioral parent training (BPT) is a well-established, evidence-based treatment (Chronis, Jones, & Raggi, 2006; Daly et al., 2007; Fabiano, Pelham, Coles, Gnagy, Chronis-Tuscano, & O'Conner, 2009; Pelham & Fabiano, 2008; Pelham, Wheeler, & Chronis, 1998). When implemented in clinic-based settings, BPT has been shown to be effective at improving both child and parental functioning. Following treatment, children have shown improvements in problematic behavior and increased compliance at both home and school. Specific post-treatment improvements in parental functioning include decreased parenting stress, family chaos, negative and ineffective parenting, as well as

increased parental efficacy, improvement in parental attitudes and disciplinary practices, and enhanced parenting self-esteem (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Daly et al., 2007; Gerdes, Haack, & Schneider, 2012; Loren et al., 2015; MTA Cooperative Group, 1999a,b; Molina, et al., 2009; Weinberg, 1999).

**Social Skills Training.** Although BPT is effective at improving many areas of child and parental functioning, it has not been shown to be effective at improving social functioning or normalizing the peer status of children with ADHD (Mrug et al., 2001). To date, several studies have examined the effectiveness of social skills training (SST) in conjunction with BPT, as well as modified versions of SST and friendship-building programs for families of youth with ADHD. The majority of studies examining SST have demonstrated decreases in ADHD symptomatology, but they did not show changes in social functioning (Antshel & Remer, 2003; Hoza et al., 2003; Mrug et al., 2001; Tutty et al., 2003; Tynan, Schuman, & Lampert, 1999).

There have been several modifications to traditional SST, such as including a parental component and pairing a child with a buddy in order to encourage prosocial behavior and facilitate dyadic get-togethers. These have resulted in promising findings, such as increased get-togethers and decreased negative behavior (i.e., teasing, aggression, defiance), but they have not been replicated (Piffner & McBurnett, 1997; Hoza, 2007). Additionally, the one study examining a stand-alone friendship-building program (Children's Friendship Training [CFT] program) for school-aged children with ADHD demonstrated improvements in child behavior when interacting with PEERS® (i.e., decreased aggressiveness and withdrawn behavior, and increased assertiveness and self-control), but did not examine the effect of having parents involved in treatment or the

effect of treatment on parental functioning; findings also have not been replicated, to the authors' knowledge (Frankel et al., 1997).

In summary, unlike the effects of BPT, these interventions have been unsuccessful at generalizing and/or maintaining improvements and have not examined the effect of treatment on parental functioning. Overall, these interventions have reported little effect on the social status and peer acceptance of youth with ADHD and have not been categorized as well-established treatments (de Boo & Prins, 2007; Storbo, Skoog, Thomsen, Simonsen, & Gluud, 2011).

### **PEERS® for Teens with ASD**

In comparison to social skills training, friendship-building programs look beyond the peer group context and focus heavily on dyadic peer relationships. Friendship-building programs, such as the Program for the Education and Enrichment of Relational Skills (PEERS®; Laugeson, Frankel, Mogil, & Dillon, 2009), are goal-oriented and aim to improve social competence and development of close friendships for youth with mild to severe social impairments (Laugeson et al., 2009).

The PEERS® intervention is an adaptation of CFT (Frankel & Myatt, 2003), with the key difference being that PEERS® is adapted for adolescents, whereas CFT was designed for second through seventh graders. Specifically, PEERS® modified the curriculum and methods of instruction and added new modules in order to be more applicable for teens (Laugeson et al., 2009). PEERS® is a 14-week parent-assisted group-based intervention that addresses the social impairment of children and adolescents with ASD. The main goal of PEERS® is for adolescents to gain knowledge of social skills and

develop at least one, meaningful, dyadic friendship (per parent and child report) by the end of treatment (Laugeson et al., 2009). Similar to the CFT, PEERS® is comprised of social skills curriculum, parental coaching, and a structured lesson-based format for parents and youth (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2012). The weekly didactic lessons are based on social etiquette principles, and cover topics such as entering and exiting a conversation, appropriate use of electronic communication, choosing appropriate friends, and handling teasing, bullying, arguments, rumors, and gossip.

Laugeson and colleagues' (2012) examination of PEERS® with high functioning teens with ASD demonstrated improvements in social knowledge, frequency of hosted get-togethers, friendship quality, and overall social skills. The intervention also resulted in significant decreases in ASD symptomatology following treatment, which was maintained at a 14-week follow-up assessment (Laugeson et al., 2012). These findings were replicated and extended by Schohl and colleagues (2013), who also demonstrated a decrease in social anxiety following PEERS® with high functioning adolescents with ASD. Additionally, Karst and colleagues' (2015) examination of the effect of PEERS® on parental and family functioning in parents of youth with ASD demonstrated significant improvements in family chaos and disorganization in the home environment following the intervention.

### **Current Study**

In an effort to replicate these findings for the first time in an ADHD sample, Gardner and colleagues (2015) examined the effectiveness of PEERS® in a sample of adolescents with ADHD. Consistent with the findings of Laugeson and colleagues (2009, 2012) and Schohl and colleagues (2014), adolescents with ADHD demonstrated

improved social knowledge and an increase in the frequency of hosted get-togethers following this pilot study. Notably, the majority of parents and adolescents also reported the initiation of a new, mutual friendship following treatment. However, parental and family outcomes of PEERS® has yet to be examined with an ADHD sample.

The goal of the current study was to examine the effect of PEERS® on parental functioning, quality of the parent-adolescent relationship, and family functioning in the same sample of teens with ADHD. It was predicted that parents who completed PEERS® would demonstrate statistically significant improvements in parental functioning, specifically a decrease in total parenting stress (as measured by the Stress Index for Parents of Adolescents); an increase in parental efficacy (as measured by the Parenting Sense of Competence Scale); and a decrease in child-blaming casual attributions for their teen's negative peer interactions (as measured by the Peer Interaction Attribution Measure) relative to baseline. It also was predicated that parents would report statistically significant improvements in the quality of the parent-adolescent relationship, specifically increased parent-adolescent communication and increased parent-adolescent involvement (as measured by the Parenting Relationship Questionnaire) relative to baseline. Lastly, it was predicted that parents would demonstrate statistically significant improvements in family functioning, specifically decreased family chaos (as measured by the Confusion, Hubbub, and Order Scale) relative to baseline. In order to examine statistically reliable change at the individual level, reliable change scores were computed for several of the outcome measures, including parenting stress, parent-adolescent communication, parent-adolescent involvement, and family chaos.

## METHOD

### Participants

The current study included 25 parents of adolescents, ages 11-17 years, who met inclusion criteria for enrollment in PEERS®<sup>1</sup>. First, participating adolescents had to have received a previous diagnosis of ADHD with impairment in social functioning per primary parent(s) report. Secondly, parent(s) and adolescents had to verbally express interest in participating in PEERS® and agree to attend weekly sessions for the duration of the intervention, with a maximum of two absences allowed. Lastly, parent(s) and adolescents had to speak English and be without any cognitive or developmental delays that would impact reading comprehension or understanding of treatment material.

Descriptive statistics for adolescent and parent demographic characteristics are provided in Table 1. Adolescents were predominantly male (72%) and Caucasian (68%) with a mean age of 12.5 years. The majority were diagnosed with ADHD, Combined Presentation (68%) and taking ADHD medication (84%). Forty eight percent also had a comorbid diagnosis (i.e., anxiety disorder, mood disorder, learning disability, and/or ODD), and one adolescent presented with comorbid high functioning ASD, per parent report. All primary caregivers were invited to participate in PEERS®; however, primary parental attendees were determined for each family based on session attendance and were included in the analyses. The primary parental attendees were mostly middle to upper class mothers (76%) who were married and had completed at least a bachelor's degree (56%).

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<sup>1</sup> This includes the 19 participants reported in Gardner and colleagues (2015), plus an additional wave of data (n=6).

**Table 1. Demographic Characteristics**


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<b>Adolescent Demographics</b>	
Age (M $\pm$ SD)	12.5 $\pm$ .80
Gender (n, %)	
Boys	18 (72)
Girls	7 (28)
Ethnicity (n, %)	
Caucasian	17 (68)
Latino/Hispanic	3 (12)
African American	3 (12)
Asian	1 (4)
Biracial	1 (4)
ADHD Subtype (n, %)	
ADHD, Predominantly Inattentive Presentation	8 (32)
ADHD, Predominantly Hyperactive Presentation	0 (0)
ADHD, Combined Presentation	17 (68)
ADHD Medication Status	
Medicated	21 (84)
Not Medicated	4 (16)
Comorbid Diagnoses	
Yes	13 (52)
No	12 (48)
<b>Parent Demographics</b>	
Primary Parent Attendee	
Mother	19 (76)
Father	6 (24)
Marital Status (n, %) $\blacklozenge$	
Married	19 (76)
Single/Divorced	5 (20)
Education (n, %) $\blacklozenge$	
Partial high school/high school graduate/GED	2 (8)
Partial college or specialized training	6 (24)
Standard college degree	7 (28)
Graduate degree/professional training or degree	7 (28)
Socioeconomic Status (SES; M $\pm$ SD)	

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*Note:*  $n = 25$ ;  $\blacklozenge$  denotes missing values; SES was computed using the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975).

## **Recruitment**

Several recruitment methods were employed. First, families who had previously completed a parent training intervention through a university-based ADHD clinic were sent a letter briefly describing PEERS®, followed by a phone call to determine their interest in participating in the intervention. Second, mental health professionals in the immediate geographical area of the authors were contacted and asked to distribute PEERS® flyers to eligible families. These included school psychologists, guidance counselors, and special education teachers at local public and private middle and high schools were contacted and asked to distribute PEERS® flyers to eligible families. Finally, participating families were given flyers and were asked to distribute them to other families who may be interested in participating.

Thirty-four families were initially recruited for the study; however, nine families did not complete the assessment or treatment and are not included in the analyses. Differences in ADHD symptomatology and degree of social impairment at the time of the assessment were examined for the two groups, and no statistically significant differences emerged.

## **Procedure**

**Phone Screening.** All families interested in participating in PEERS® completed a telephone “screening” to ensure that the parent(s) and adolescent met inclusion criteria. A two-hour intake appointment at a university-based ADHD clinic was scheduled with families who met inclusion criteria based on the screening. Prior to the intake appointment, families were sent a pre-assessment packet of questionnaires that they were asked to complete and return at their intake appointment. The packet included the Child

Behavior Checklist for Ages 6-18 (CBCL/6-18; Achenbach & Rescorla, 2001), the Disruptive Behavior Disorders (DBD) Rating Scale (Pelham, Gnagy, Greenslade, & Millich, 1992), and the ADHD-FX Scale (Haack, Gerdes, & Lawton, 2014). In conjunction with the parent interview, these measures assessed current ADHD symptomatology and functional impairment in peer relationships using the cutoff scores provided by the measures.

**Assessment at Pre-Treatment.** Prior to the first session of PEERS®, the parent(s) and adolescent attended a two-hour intake appointment at a university-based ADHD clinic. The intake appointment began with parent informed consent and adolescent assent for participation in PEERS® and research accompanying the intervention. In separate rooms, parent(s) participated in an unstructured interview focused on the current social functioning of their adolescent and other relevant psychosocial information, while adolescents completed a structured interview focused on their current social functioning and assessing motivation to participate in PEERS®.

Parent(s) completed several measures including, the Stress Index for Parents of Adolescents (SIPA), Parenting Sense of Competence Scale (PSOC), Peer Interaction Attributions Questionnaire (PIAM), Parenting Relationship Questionnaire – Child and Adolescent (PRQ-CA), and Confusion, Hubbub, and Order Scale (CHAOS). Adolescents also completed several measures assessing domains of social functioning and self-efficacy, which were examined by Gardner and colleagues (2015).

**PEERS® intervention.** The PEERS® intervention is a 14-week, parent-assisted, manualized friendship-building intervention that meets for weekly 90-minute sessions (Laugeson & Frankel, 2010). Parent and teen sessions were led by advanced graduate

students (the “group leader”) in a clinical psychology doctoral program, under the supervision of an ADHD expert and certified PEERS® provider. Parent(s) and teens met simultaneously but separately to receive the weekly didactic lesson. The teen sessions followed a structured format each week that began with homework review, followed by a didactic lesson, role play, behavioral rehearsal by the teens with constructive feedback given by the leaders and coaches, and review of the newly learned lesson and homework for the upcoming week. Concurrently, parent sessions included homework review and problem solving obstacles of homework non-completion, discussion of the new weekly didactic lesson via a parent handout describing the new skill in detail, and troubleshooting barriers to homework completion for the upcoming week.

Each week, during the didactic portion of the session, parents and teens learned a different core social skill, such as choosing appropriate friends, peer group entry and exit, good sportsmanship, get-togethers, and handling arguments and disagreements. Parents were encouraged each week to practice the skills with their adolescent at home in order to help their teen gain mastery and support them in the completion of the associated homework assignment. Each session concluded with parents and teens reuniting to review the new lesson content and discuss homework assignments for the upcoming session.

To ensure strict adherence to the PEERS® manual, one of the PEERS® coaches performed weekly fidelity checks. If the group leader missed a main point of instruction, the coach would alert the group leader and ensure that it was discussed. Following each PEERS® session, the coach confirmed that all components of the PEERS® session were delivered as outlined in the PEERS® manual.

**Post-Treatment.** Following the completion of PEERS®, the parent(s) and adolescents independently completed the same measures as those completed at the intake session, with the exception of the CBCL/6-18, DBD, and ADHD-FX Scale.

### **Parental Outcome Measures**

**Stress Index for Parents of Adolescents (SIPA).** The SIPA is a 90-item parent-report measure designed to assess stress in parents of adolescents. The SIPA examines parenting stress in the context of adolescent characteristics, parental characteristics, the quality of the adolescent-parent relationship, and stressful life circumstances. All item responses are summed to derive a Total Parenting Stress score, with higher scores representing greater levels of parenting stress. In previous studies, the majority of subscale coefficient alphas range from .80 to .90, and the test-retest reliability coefficients range from .74 to .91. For the current study, the internal consistency for the Total Parenting Stress scale was .94 (pre-treatment) and .93 (post-treatment).

**Parenting Sense of Competence Scale (PSOC).** The Parental Efficacy subscale of the PSOC is a parent-report measure assessing parental efficacy. There are 7 items on this subscale that are rated on 6-point scale Likert scale ranging from “Strongly Agree” to “Strongly Disagree.” The scores are compiled to produce an overall mean with high scores representing greater parental efficacy. Based on reports from Johnston and Mash (1986), the internal consistency of the parental efficacy subscale has been found to be .76; the PSOC also has been shown to have adequate validity (Ohan, Leung, Johnston, 2000). For the current study, the internal consistency for the Parental Efficacy subscale was .89 (pre-treatment) and .90 (post-treatment).

**Peer Interaction Attributions Questionnaire (PIAM).** The Child-Blaming subscale of the PIAM is a parent-report measure designed to assess parental attributions for adolescent negative social interactions. Parents are asked to imagine their teen in six negative peer interactions and asked to indicate on a 4-point Likert scoring system from “Not at all” to “Very much,” the degree to which a child-blaming causal attribution explains why the situation happened to their teen. Item responses were averaged to yield a Child-Blame subscale, with higher scores indicating a perceived internal locus of control for their teen’s negative social interactions. The internal consistency of the child-blaming subscale has been found to be .78 (Rubin, 2007). For the current study, the internal consistency for the Child-Blaming subscale was .66 (pre-treatment) and .83 (post-treatment).

**Parenting Relationship Questionnaire - Child and Adolescent (PRQ-CA).**

The PRQ-CA is a 71-item parent-report measure that assesses domains of the parent-child relationship, including attachment, communication, discipline practices, involvement, parenting confidence, satisfaction with school, and relational frustration. Each item is responded to using a 4-point Likert scoring system from “Never” to “Almost always.” Item responses are summed to derive scores for each domain assessed, with higher scores representing characteristics of that domain. The current study examined the Communication and Involvement subscales. The scales of the PRQ-CA demonstrate adequate internal consistency, with Cronbach’s alphas ranging from .78 to .93, and strong convergent validity with similar measures assessing the parent-child relationship (Rubinic & Schwickrath, 2010). For the current study, the internal consistency for the

Communication subscale was .86 (pre-treatment) and .87 (post-treatment) and Involvement subscale was .85 (pre-treatment) and .87 (post-treatment).

**Confusion, Hubbub, and Order Scale (CHAOS).** This CHAOS is a 15-item, parent-report measure designed to assess the level of confusion and disorganization in the home environment. Each item is responded to using a 6-point Likert scoring system from “Strongly Agree” to “Strongly Disagree.” All item responses are summed to derive a single score, with higher scores representing characteristics of a more chaotic, disorganized, and hurried home. According to Matheny et al. (1995) the measure has good internal consistency (.79) and correlates highly with observational measures of home disorganization, suggesting strong construct validity of the CHAOS. For the current study, the internal consistency for the CHAOS was .88 (pre-treatment) and .86 (post-treatment).

## RESULTS

### Data Analytic Plan

Possible changes in parental functioning (i.e., parenting stress and parental efficacy), quality of the parent-adolescent relationship (i.e., parent-adolescent communication and parent-adolescent involvement), and family functioning (i.e., family chaos) were examined using a series of paired-samples t-tests. Effect sizes (as measured by eta squared) were computed and compared to Cohen's recommendations (Cohen, 1988) and Jacobson and Truax's (1991) method of computing reliable change was used. Pre-treatment and post-treatment measures completed by the primary parental attendee, (i.e., the parent who attended the majority of the 14-sessions, 19 mothers and 6 fathers) were used in the analyses.

### Statistically Significant Analyses and Effect Sizes

**Parental Functioning.** There was a statistically significant decrease in parenting stress, as measured by the SIPA, from pre to post-treatment,  $t(24) = 2.61, p < .05$ . The eta squared statistic (.22) indicated a large effect size. There also was a marginally significant increase in parental efficacy, as measured by the PSOC, from pre to post-treatment,  $t(24) = -1.94, p < .10$ . The eta squared statistic (.14) indicated a large effect size. While the observed change in child-blaming casual attributions for their teen's negative social interactions, as measured by the PIAM, was in the expected direction, it did not reach statistical significance, and the eta squared statistic (.06) indicated a moderate effect size.

**Quality of the Parent-Adolescent Relationship.** There was a statistically significant improvement in parent-adolescent communication, as measured by the PRQ-CA, from pre to post-treatment,  $t(24) = -2.75, p < .05$ . The eta squared statistic (.24) indicated a large effect size. While the observed change in post-treatment parent-adolescent involvement, as measured by the PRQ-CA, was in the expected direction, it did not reach statistical significance. The eta squared statistic (.08) indicated a moderate effect size.

**Family Functioning.** The observed change in post-treatment family chaos, as measured by the CHAOS, was in the expected direction but did not reach statistical significance. The eta squared statistic (.03) indicated a small effect size.

**Table 2. Pre-Treatment to Post-Treatment Mean Differences in Parental Outcome Measures – Statistically Significant**

Parental Outcome Measure	Pre-Treatment ( <i>M, SD</i> )	Post-Treatment ( <i>M, SD</i> )	<i>t</i>	$\eta^2$
<b>Parental Functioning</b>				
Total Parenting Stress (SIPA)	216.56 (32.17)	205.12 (33.65)	2.61*	.22
Parental Efficacy (PSOC)	4.09 (.93)	4.29 (.82)	-1.94+	.14
Child-Blaming Attributions (PIAM) ♦	2.15 (.42)	2.04 (.54)	1.04	.06
<b>Quality of Parent-Adolescent Relationship</b>				
Communication (PRQ-CA)	15.44 (4.57)	16.84 (4.66)	-2.75*	.24
Involvement (PRQ-CA)	9.92 (4.73)	10.48 (4.23)	-1.40	.08
<b>Family Functioning</b>				
Family Chaos (CHAOS)	43.24 (10.33)	41.76 (9.68)	1.26	.03

*Note:*  $n = 25$ ; ♦ denotes missing values; \*  $p < .05$ , +  $p < .10$ ; .01 = small effect, .06 = moderate effect, .14 = large effect (Cohen, 1988)

Stress Index for Parents of Adolescents (SIPA)

Parenting Sense of Competence Scale (PSOC)

Peer Interaction Attributions Questionnaire (PIAM)

Parenting Relationship Questionnaire – Child and Adolescent (PRQ-CA)

Confusion, Hubbub, and Order Scale (CHAOS)

### Reliable Change Analyses

Reliable change scores were computed to determine whether the degree of change demonstrated by *each parent* was statistically reliable. The reliable change index formula developed by Jacobson and Truax (1991) requires the pre-treatment and post-treatment scores of an individual, the standard deviation of the pre-treatment group, and the test-retest reliability of the outcome measure. For the current study, test-retest reliability scores were available for the Total Parenting Stress score of the SIPA, the

Communication and Involvement subscales of the PRQ-CA, and the total score from the CHAOS. For each of these outcomes measures, reliable change index scores were computed by dividing the difference between the pre-treatment and post-treatment scores for each parent by the standard error of difference for each outcome measure. The standard error of difference was computed using the standard deviation of the pre-treatment group and test-retest reliability; these are presented in Table 3. The individual reliable change index scores were compared to the standard deviation (for z-scores) of 1.65, which is thus equivalent to a one-tailed test with an alpha of .05. A one-tailed test was considered appropriate given the predictions of improvement. Parents with RCI scores that exceeded 1.65 were considered to demonstrate reliable improvement.

**Table 3.  $S_{diff}$  Scores for Computing Individual RC Indices for Parental Outcome Measures**

Parental Outcome Measure	$S_{diff}$ Score for Computing Individual RC Indices
<b>Parental Functioning</b>	
Total Parenting Stress (SIPA)	12.04
<b>Quality of Parent-Adolescent Relationship</b>	
Communication (PRQ-CA)	2.59
Involvement (PRQ-CA)	3.07
<b>Family Functioning</b>	
Family Chaos (CHAOS)	5.84

*Note:*  $S_{diff}$  for computing individual RC indices were determined based on Jacobson and Traux's model (1991).

Stress Index for Parents of Adolescents (SIPA)

Parenting Relationship Questionnaire – Child and Adolescent (PRQ-CA)

Confusion, Hubbub, and Order Scale (CHAOS)

The percent of parents who made reliable change from pre to post-treatment on the SIPA (parenting stress), PRQ (quality of the parent-adolescent relationship), and CHAOS (family chaos) are presented in Table 4. As can be seen, not only did parents exhibit statistically significant change in total parenting stress, 9 parents (36%) demonstrated reliable change in parenting stress over the course of treatment. Similarly, when examining parent-adolescent communication, which also was statistically significant, three parents (12%) demonstrated reliable change in parent-adolescent communication from pre to post-treatment; and one parent (4%) demonstrated reliable

change in parent involvement. Finally, three parents (12%) demonstrated reliable change in family chaos from pre to post-treatment.

**Table 4. Pre-Treatment to Post-Treatment Individual Differences in Parental Outcome Measures – Reliable Change**

Parental Outcome Measures	Reliable Change <i>n</i> (%)
<b>Parental Functioning</b>	
Total Parenting Stress (SIPA)	9 (36%)
<b>Quality of Parent-Adolescent Relationship</b>	
Communication (PRQ-CA)	3 (12%)
Involvement (PRQ-CA)	1 (4%)
<b>Family Functioning</b>	
Family Chaos (CHAOS)	3 (12%)

*Note: n = 25*

Stress Index for Parents of Adolescents (SIPA)

Parenting Relationship Questionnaire – Child and Adolescent (PRQ-CA)

Confusion, Hubbub, and Order Scale (CHAOS)

## DISCUSSION

In conjunction with Gardner and colleagues' (2015) findings, the current study provides support for the effectiveness of PEERS® with an ADHD sample. Specifically, the current study examined the effect of PEERS® on parental functioning, quality of the parent-adolescent relationship, and family functioning in families of adolescents with ADHD. Overall, results were in the expected direction, with several results reaching statistical significance. Moderate to large effect sizes also were observed for the majority of the outcome measures. Finally, reliable change was noted for all outcomes assessed (i.e., total parenting stress, parent-adolescent communication, parent-adolescent involvement, and family chaos).

### **Parental Functioning**

As predicted, parents demonstrated a statistically significant decrease in parenting stress following PEERS®, with a large effect size emerging. Further, more than one-third of parents demonstrated reliable change in total parenting stress over the course of treatment. This finding is particularly noteworthy, given that reductions in parenting stress have been linked to increased efficacy of ADHD treatments (Kazdin & Whitley, 2003). Although the current study did not examine the exact mechanisms that contributed to these reductions in parenting stress, both direct and indirect effects are likely at play. As previously discussed, parenting stress for many parents of youth with ADHD may stem from feeling like they do not have the resources to cope with the demands of parenting a challenging child (Cooper et al., 2009; Heath, Curtis, Fan, McPherson, & 2015)

The dyadic model of PEERS® is designed to provide parents with the resources and skills necessary to deliver direct instruction and appropriate feedback to their teen in social situations. This model likely resulted in parents feeling better equipped to meet the social needs of their teen, resulting in parents feeling less overwhelmed and distressed. Improvements in teen social functioning (i.e., initiation of a new friendship, improved social knowledge, and increased frequency of hosted get-togethers) as noted by Gardner and colleagues (2015) also may have indirectly improved parenting stress. As their teens learned the rules of social etiquette and began making and keeping friends, parents likely felt less pressure and stress to take charge of their teen's social growth.

Parents also reported a marginally statistically significant increase in parental efficacy over the course of treatment; the effect size was large. This finding is particularly meaningful for an ADHD sample, given that previous research has noted a significant negative correlation between parental efficacy and adolescent behavioral problems, meaning adolescents of parents who feel more competent in their ability to parent effectively demonstrate fewer behavioral problems (Bogenschneider, Small, & Tsay, 1997). The improved efficacy that parents felt may be due to the integral role that they played as their teen's social coach over the course of the intervention. Specifically, parents were encouraged on a weekly basis to practice the skills being taught and role-play hypothetical social situations with their teen, which may have allowed parents to build confidence in their ability to assist in their teen's social development. Karst and colleagues (2015) also found improved parental efficacy in parents of adolescents with ASD following PEERS®.

Contrary to our prediction, parents did not report a statistically significant decrease in child-blaming casual attributions for adolescent negative social interactions over the course of treatment; however, results were in the expected direction and a moderate effect size emerged. This suggests that over the course of treatment, parents placed less blame on their adolescent when envisioning them in negative social interactions. It is possible that parents attributed less internal factors as the cause of negative social interactions following treatment because their adolescent had learned and practiced ways to effectively handle arguments, disagreements, and other combative behavior (i.e., rumors, gossip, teasing, and bullying). Given that previous research has demonstrated a positive relationship between blaming attributions and negative affect and behavior in parents of youth with ADHD (Johnston & Leung, 2001; Johnston & Patenaude, 1994), the current findings are encouraging and suggest that PEERS® has a positive effect on parental cognitions.

### **Quality of the Parent-Adolescent Relationship**

With regard to the parent-adolescent relationship, parents reported a statistically significant improvement in parent-adolescent communication over the course of treatment, with a large effect size, and 12% of parents demonstrated reliable change. The communication subscale of the PRQ-CA captures both the quality of the information exchanged and parental listening skills. As part of PEERS®, parents were educated on how to give constructive feedback to their adolescent in social situations, while providing their adolescent with an appropriate level of autonomy in their social relationships. This alliance often facilitated genuine conversations between parents and adolescents about the adolescent's strengths and weaknesses in social situations, and may have been

perceived by parents as valuable to their understanding of their teen's social functioning. Moreover, group leaders encouraged and coached parents on ways to initiate casual discussions with their teens about choosing appropriate friends, brainstorming activities for get-togethers, and trouble-shooting difficult social interactions. Collectively, this approach likely promoted a trusting relationship between parents and adolescents and improved the quality of their communication over the course of treatment. This finding is encouraging, as several studies have sought to improve communication in families with adolescents with ADHD through family-based interventions but have not been proven to be effective (Barkley, Edwards, Laneri, Fletcher, & Metevia, 2001; Barkley, Guevremont, Anastopolous, & Fletcher, 1992).

Contrary to our prediction, parents did not report a statistically significant increase in parent-adolescent involvement over the course of treatment; however, results were in the expected direction and a moderate effect size emerged. One parent also reported reliable change in parent-adolescent involvement over the course of treatment. The involvement subscale of the PRQ-CA captures the extent to which the parent and adolescent participate in activities together and parental knowledge of the adolescent's activities. As part of the PEERS® curriculum, parents are expected to play an integral role in their adolescent's social development. Specifically, parents assisted in the organization of extracurricular activities in their school and community, supported the development of peer-to-peer relationships, and encouraged their adolescent to spend increased time with their new peer group. Given this proactive approach, it is not surprising that parents reported increased involvement in their adolescent's activities and knowledge of their adolescent's social life over the course of treatment. Although their

findings did not reach statistical significance, Karst and colleagues (2015) also found results in the expected direction when they examined the effect of PEERS® on the parent-adolescent relationship in an ASD sample.

### **Family Functioning**

Finally, parents did not report a statistically significant decrease in family chaos from pre to post-treatment; however, results were in the expected direction and a small effect size was observed. Twelve percent of parents demonstrated reliable change. Despite a lack of significance, it is impressive that a portion of parents reported reduced chaos over the course of treatment given the weekly commitment and workload required by PEERS®. Not only were parents and adolescents held accountable for organizing weekly get-togethers, but also as their adolescent's social coach, parents were responsible for practicing the skills with their teens and providing in-vivo feedback. Perhaps concentrating on tangible rules of social etiquette for initiating peer relationships provided parents and adolescents with a sense of stability and structure, which helped reduce chaos in the home over the course of treatment. Karst and colleagues' (2015) found a similar reduction in parent-reported chaos following PEERS® in an ASD sample.

### **Limitations and Future Directions**

Although the current study provides initial evidence that PEERS® results in statistically significant and reliable changes in parental outcomes with an ADHD sample, several limitations should be noted. First, while the study established adequate effect sizes across outcomes, the small sample size may have reduced the level of power, making it more challenging to detect significant findings. Future research should employ

a larger sample size. A second limitation is the lack of a wait-list control group. This inclusion would have allowed the authors to establish the effectiveness of PEERS® at improving parental outcomes above a non-treatment condition. Third, although a substantial number of parents made reliable change over the course of treatment, others did not. Identifying potential moderating and mediating variables, such as parenting behavior, parental psychopathology, and additional environmental stressors would allow clinicians to tailor interventions to best suit each family and enhance treatment gains. Finally, the PEERS® curriculum does not directly address parental and family functioning over the course of treatment. Future research should consider including additional content to the PEERS® parent handouts, such as healthy coping strategies for managing parenting stress, education on developmentally appropriate adolescent social behavior, and education on social functioning of adolescents with ADHD.

### **Clinical Implications**

Several clinical implications are important to note. First, although PEERS® was specifically developed for adolescents with ASD, the intervention should be examined with other clinical populations, such as adolescents with depression and anxiety who also demonstrate comparable difficulties in social functioning (Ginsburg, La Greca, & Silverman, 1998; Katz, Conway, Hammen, Brennan, & Najman, 2011). Second, by demonstrating that PEERS® is an effective clinical intervention for improving parental functioning, quality of the parent-adolescent relationship, and family functioning in parents of adolescents with ADHD, the current study provides evidence that the benefits of PEERS® extends beyond the adolescent. Finally, the current study also supports the need for the inclusion of parents in social interventions for teens with ADHD.

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