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RELATIONSHIP BETWEEN MATERNAL/FAMILY FUNCTIONING AND
SOCIAL FUNCTIONING IN YOUTH WITH ADHD

by

E. Michael Wefelmeyer, B.S./B.A.

A Thesis submitted to the Faculty of the Graduate School,
Marquette University,
in Partial Fulfillment of the Requirements for
the Degree of Master of Science

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ABSTRACT
RELATIONSHIP BETWEEN MATERNAL/FAMILY FUNCTIONING AND
SOCIAL FUNCTIONING IN YOUTH WITH ADHD

E. Michael Wefelmeyer, B.S./B.A.

Marquette University, 2020

Affecting roughly 5% of the population, Attention-Deficit/Hyperactivity Disorder (ADHD) is a common mental health disorder characterized by deficits in attention, activity level, and/or impulse control causing impairments across multiple domains of functioning (APA, 2013). Although ADHD is most commonly associated with impairment in academic and behavioral functioning, there also exists a strong connection between the disorder and significant social impairment. Indeed, youth with ADHD typically have fewer friends and experience significantly higher levels of peer rejection than do typically developing youth (Bagwell, Molina, Pelham, & Hoza, 2001). In addition to social problems, ADHD is often associated with problems in the home, such as poor parental and family functioning (Theule, Weiner, Tannock, & Jenkins, 2013). Research also indicates that parental distress is both directly and indirectly related to child behavioral and social problems (Sanner & Neece, 2018; Fenesey, Teh, & Lee, 2019). Therefore, it is possible that the relationship between social impairment in youth with ADHD and poor parental/family functioning is bidirectional. The proposed study aimed to examine the relationship between maternal/family functioning and social functioning in young adolescents with ADHD and to examine if maternal/family functioning predicts social functioning outcomes following a 14-week friendship building intervention.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	i
LIST OF TABLES.....	v
CHAPTER	
I. INTRODUCTION.....	1
A. Social Functioning of Youth with ADHD.....	1
a. Social Competence.....	2
b. Friendship Quality.....	3
c. Social Skills Intervention.....	5
d. Program for the Education and Enrichment of Relational Skills (PEERS).....	6
B. Parental and Family Functioning in Families with ADHD.....	7
a. Parental Efficacy.....	7
b. Parenting Stress.....	8
c. Parent-Adolescent Communication.....	9
d. Home Chaos.....	10
e. Relationship between Parental/Family Functioning and Social Functioning in Youth with ADHD.....	11
II. CURRENT STUDY.....	12
III. METHOD.....	14
A. Participants.....	14
B. Procedure.....	15

a. Intake/Pre-treatment.....	15
b. Treatment.....	15
c. Post-treatment.....	16
C. Measures.....	16
a. Parenting Sense of Competence Scale (PSOC).....	16
b. Stress Index for Parents of Adolescents (SIPA).....	17
c. Parenting Relationship Questionnaire – Child and Adolescent (PRQ-CA).....	17
d. Confusion, Hubbub, and Order Scale (CHAOS).....	17
e. Social Skills Improvement System (SSIS) Rating Scales.....	18
f. Friendship Qualities Scale (FQS).....	18
IV. RESULTS.....	19
A. Preliminary Analyses.....	19
B. Primary Analyses.....	20
a. Hypothesis 1.....	20
b. Hypothesis 2.....	21
V. DISCUSSION.....	24
A. Maternal/Family Functioning and Social Functioning at Pre- Treatment.....	24
B. Predicting Response to Treatment from Pre-Treatment Maternal/Family Functioning.....	27
C. Limitations and Future Directions.....	28
D. Summary and Clinical Implications.....	29

VI. BIBLIOGRAPHY..... 31

LIST OF TABLES

Table 1: Demographic Variables.....	14
Table 2: Correlations of Demographic Variables with Primary Outcome Variables.....	19
Table 3: Correlations of Pre-treatment Mother-Reported Parental/Family Functioning with Pre-treatment Mother- and Youth-Reported Youth Social Functioning.....	20
Table 4: Correlations of Pre-treatment Mother-Reported Maternal/Family Functioning with Post-treatment Mother- and Youth-Reported Youth Social Functioning Controlling for Pre-treatment Functioning.....	22
Table 5: Hierarchical Regression Analysis for Post-treatment Mother-Reported Social Functioning.....	23

Introduction

Often considered a disorder of childhood, to be diagnosed with ADHD, youth must present with at least six symptoms of inattentive or hyperactive/impulsive behavior that cause impairment across more than one domain of functioning (APA, 2013). This can include deficits in social, academic, and occupational functioning that have serious consequences. Research has demonstrated that adolescents with ADHD are more likely to repeat a grade, engage in risky behaviors, such as substance abuse, and engage in self-harming behaviors, including suicide attempts, than teens without ADHD (Chronis-Tuscano et al., 2010; Biederman, Petty, Clarke, Lomedico, & Faraone, 2011). Furthermore, adults who are diagnosed with ADHD as youth are less likely to complete high school or college, demonstrate lower levels of social adjustment, and report higher rates of divorce than those without a childhood diagnosis of ADHD (Roy et al., 2016; Klein et al., 2012). These potential negative outcomes reflect the need for greater research into the functional impairments common in youth with ADHD.

Social Functioning of Youth with ADHD

Peer relations have long been identified as an important part of child and adolescent development; having friends is important for youth as they navigate their school-age years. Specifically, studies have shown that youth who experience peer rejection are at significantly higher risk for negative outcomes, such as substance abuse, deviant behavior, and school dropout (Parker & Asher, 1987). However, research also has suggested that having even one close friend may go a long way towards mitigating the effects of low acceptance by the larger peer group. In a study utilizing sociometric data,

Parker and Asher (1993) found that many youth with low peer acceptance were still members of a close friendship dyad and reported feeling satisfied by that friendship. However, in addition to having a close friend, friendship quality also matters; Cuadros and Berger (2016) found that the buffering effects of a close friendship were moderated by friendship quality.

Unfortunately, peer relations are another area in which youth with ADHD struggle greatly. In a survey of parents of youth with and without ADHD, Bagwell and colleagues (2001) found that parents of youth with ADHD reported that their children had significantly fewer close friendships and faced greater levels of peer rejection than did parents of youth without ADHD. Youth with ADHD also have been found to be consistently rated as less likable and as less desirable playmates by their peers (Hoza et al., 2005). Unfortunately, these social impairments have been found to persist into adolescence and adulthood (Bagwell et al., 2001; Owens, Zalecki, Gallette & Hinshaw, 2017), which places these youth at higher risk for deviant peer engagement, substance abuse, and self-harming behaviors (Bagwell et al., 2001; Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997; Chronis-Tuscano et al., 2010).

Social Competence

Although there are many reasons why a child or adolescent may struggle in social settings, it appears that youth with ADHD have a particularly difficult time when it comes to utilizing appropriate social skills and building adequate social competencies. For instance, Ronk, Hund, and Landau (2011) found that although capable of employing more effective strategies, boys with ADHD were more likely to rely on disruptive, inappropriate, and attention-seeking strategies when tasked with entering a new group of

play. Additional research suggests that youth with ADHD also may be at a social disadvantage due to their inability to adequately attend to group conversations or learn new social skills and due to their tendency to interrupt or annoy others and violate the rules of play (Mrug, Hoza, & Gerdes, 2001; Wehmeier, Schacht, & Barkley, 2010; Ray, Evans, & Langberg, 2017).

Unsurprisingly, these problematic behaviors have significant consequences for youth with ADHD. For example, Hoza and colleagues (2005) found that youth with ADHD are not only disliked but also score highly on social impact. In other words, due to their poor social skills, youth with ADHD are not simply being ignored, but rather they are being actively identified as socially undesirable members of the peer group. Furthermore, Ronk and colleagues (2011) found that when boys with ADHD utilized less effective methods of peer group entry, they were found to be more and more disliked by their peers as play continued. As such, it becomes clear that their lack of social competency leads youth with ADHD to experience low acceptance from the peer group.

Friendship Quality

Despite problems with *peers* that may arise due to their apparent deficits in social competency, youth with ADHD may still benefit greatly from having a close *friend*. As previously noted, Parker and Asher (1993), found that youth who experienced low levels of peer acceptance still gleaned a good amount of social satisfaction from the presence of just one close friend. However, the results also indicated that low-accepted youth rated their best friendships as being of a lower quality than high-accepted youth (Parker & Asher, 1993). This is concerning given that research also has suggested that the buffering effect of having a close friend depends on friendship quality. For example, Cuadros and

Berger (2016) found that friendship quality among close friends – specifically support, disclosure, and closeness – moderated the negative relationship between peer victimization and wellbeing. Similar findings have been observed in populations of youth with ADHD as well; for youth with ADHD, friendship intimacy was found to moderate the relationship between ADHD and social problems to the point that the relationship was no longer significant at one year follow up (Becker, Fite, Luebbe, Stoppelbein, & Greening, 2013). In this way, it appears that having at least one close, high quality friendship has a buffering effect for youth at risk for peer problems. This conclusion has clinical implications in that it may be easier to help youth with ADHD develop one quality friendship than it is to change their entire peer group standing.

As previously discussed, research shows that youth with ADHD tend to be disliked by their peers at a much higher rate than other youth (Hoza et al., 2005). This conclusion, although informative, serves only to demonstrate that youth with ADHD struggle with peer *acceptance*; it does not, however, help us understand the *friendships* of youth with ADHD. Whereas peer acceptance simply informs us of how much a child is liked within a social group, friendship can be thought of as “a dyadic relationship based on mutual affection and reciprocity” (Bagwell et al., 2001). Sociometric data is once again useful in assessing friendships. Compared to their classmates, youth with ADHD have been shown to be less likely to receive reciprocal positive nominations from peers (Hoza et al., 2005). Parental reports also serve to corroborate this finding (Bagwell et al., 2001).

Youth with ADHD also appear to have a different understanding of what a close friend is. Whereas youth without ADHD reported finding a great deal of emotional

support in their close friendships, youth with ADHD described close friends more often as simply play partners (Heiman, 2005). This suggests that, in addition to having fewer of them, youth with ADHD are not receiving the same level of support from those close friends. Heiman also found that youth with ADHD report that close friends mostly meet and interact at school and rarely afterwards (Heiman, 2005). This suggests that some youth with ADHD may not have many, if any, true close friends in their life. Indeed, when describing their relationship, both youth with ADHD and their friends reported fewer positive features and more negative features than youth without ADHD and their friends (Normand, et al., 2010). Overall, research suggests that youth with ADHD, do not, in number or in quality, experience the same close friendships as youth without ADHD. More research should focus on the clinical impact of interventions aimed at improving social skills and developing at least one close friendship on social outcomes for youth with ADHD.

Social Skills Intervention

To specifically address the social problems experienced by youth with ADHD, several social skills training (SST) interventions have been developed. This form of treatment follows the assumption that improvement in specific social skills will inevitably result in higher peer standing for youth with ADHD. Traditionally, SST involves clinicians providing direct instruction to youth with ADHD in a group setting over the course of eight to twelve weekly sessions each lasting around an hour. The sessions are typically geared toward specific social skills, such as making conversation, sharing, and taking turns. After a brief didactic period, participants are given the chance to practice or rehearse the skill.

Although SSTs have been found to increase the use of prosocial skills in the treatment setting, there is little evidence to suggest any carryover to the real world (Mikami, 2015). Indeed, in an RCT on the efficacy of SST, Antshel and Remer (2003) found that despite significant change in a specific social skill domain (assertion), the group that received SST did not demonstrate significant change in any other social skill. Given that SST rests on the assumption of improved social skills leading to greater peer acceptance, it is unsurprising that evidence for improved peer regard after SST is remarkably lacking (Mikami, 2015; Antshel & Remer, 2003). As such, treatments have been developed that focus more on building individual friendships rather than simply on improving social skills.

Program for the Education and Enrichment of Relational Skills (PEERS)

PEERS is a 14-week friendship building intervention that was originally designed to help adolescents with Autism Spectrum Disorder learn social competence and establish new dyadic, or reciprocal, friendships. PEERS has been found to significantly improve participants' knowledge of social skills and increase the amount of social gatherings they host (Laugeson, Frankel, Mogil, & Dillon, 2009). Although designed for individuals with ASD, research indicates that comparable results are possible for youth with ADHD. Upon completion of PEERS, adolescents with ADHD demonstrated a statistically significant improvement in social knowledge, and the majority of adolescent and parent reports indicated the establishment of at least one new friendship (Gardner, Gerdes, & Weinberger, 2015). Given that youth with ADHD are known to struggle with social competency and suffer from having few, or no, close dyadic friends, it is understandable that such a program could produce meaningful change in this population.

In addition to improving social competency and friendship quality for youth and adolescents with ADHD, PEERS also has been found to improve certain aspects of parental functioning for youth with ASD and youth with ADHD. Specifically, parents that participated in PEERS reported significantly improved rates of parental self-efficacy, parenting stress, and parent-child communication (Gonring, Gerdes, & Gardner, 2017; Karst et al., 2015). These findings reflect the fact that PEERS has been shown to be dually effective in addressing peer functioning for youth with ADHD and parental functioning for their parents, two domains known to be impaired in youth and families with ADHD.

Parental and Family Functioning in Families with ADHD

As mentioned previously, youth with ADHD also experience impairments in parental and family functioning, including parental efficacy, parenting stress, parent-adolescent communication, and chaos in the home.

Parental Efficacy

Parental efficacy is generally conceptualized as a parent's perception of his/her own competence as a parent. In other words, parental efficacy is how successful a parent believes him/herself to be in managing child behavior (Johnston & Mash, 1989). When parents have a high sense of efficacy and confidence in their ability to fulfill their roles as parents, they typically engage in warmer, more positive parenting methods, and practice better parental monitoring from a young age (Jones & Prinz, 2005). These practices, in turn, lead to better socioemotional development for their children. High levels of parental efficacy in parents also have been found to predict greater levels of warmth and

positivity in their youth, two characteristics that also positively impact a child's social outlook (Jones & Prinz, 2005).

Given the preponderance of disruptive behaviors exhibited by the typical child with ADHD, it is no surprise that parents of youth with ADHD generally view themselves as less competent than parents of typically developing youth (for a review, see Johnston & Mash, 2001). Given that participation in skill building interventions has been shown to increase feelings of parental efficacy across multiple clinical populations (Gonring et al., 2017; Karst et al., 2015), it is likely that having a child with significant behavioral challenges leaves parents who are unequipped to deal with those problems feeling helpless or inefficacious. Given that these feelings are related to a poorer social outlook, their overrepresentation in families afflicted by ADHD is concerning.

Parenting Stress

Parenting stress has been defined as “set of processes that lead to aversive psychological and physiological reactions arising from attempts to adapt to the demands of parenthood” (Deater-Deckard, 2004). Parenting stress is not unique to parents of youth with ADHD, rather it is a product of a parent's adjustment to their new role. Parenting stress can arise from a variety of sources including, economic hardship, the parent-child relationship, or simply, the daily demands of parenting (McLoyd, 1990; Deater-Deckard, 2004; Crnic, Gaze, & Hoffman, 2005). This parenting stress affects youth too; when stressed parents consider their child's disruptive behavior, they tend to make more blaming attributions for it, a pattern of social cognitions they often pass down to their children (Deater-Deckard, 2004). Children of parents that experience lower levels of stress also tend to be more socially competent (Deater-Deckard, 2004).

Compared to parents of non-clinical youth, parents of youth with ADHD experience significantly higher levels of parenting stress resulting both from the parent-child relationship and the daily hassles of having a child with ADHD (Johnston & Mash, 2001; Theule et al., 2013; Barroso, Mendez, Graziano, & Bagner, 2018). This relationship is stronger for mothers than fathers and often begins as early as preschool (Crnic et al., 2005). Additionally, results from Crnic and colleagues' study indicate that parents who experience those higher levels of stress tend to remain highly stressed throughout their child's development. Once more, the relationship between a parenting factor, in this case parenting stress, and social problems is cause for particular concern in families affected by ADHD given the relationship between ADHD and parenting stress.

Parent-Adolescent Communication

As a child transitions towards adolescence, one aspect of family functioning that changes is the nature of the parent-adolescent communication. As they search for more and more independence, the adolescent can benefit greatly from a secure and positive communication system with their parents (Noller & Bagi, 1985). Indeed, a recent study found that adolescents with more positive family communication were more satisfied with their life, reporting higher self-esteem and fewer feelings of loneliness (Cava, Buelga, & Musitu, 2014). Furthermore, positive communication between adolescents and their mothers and fathers is related to less psychosocial risk as they enter early adulthood (Marta, 1997).

Unfortunately, for parents of youth with ADHD, the parent-adolescent relationship is characterized by high levels of conflict and more stress for the parent (Barkley, 2015; Wehmeier et al., 2010). The relationship also consists of less warmth and

less positivity than other families (Barkley, 2015; Theule et al., 2013; Johnston & Mash, 2001). Overall, parent-child communication of families of youth with ADHD is more contentious and less supportive than for families of typically developing youth. Given the research on parent-adolescent communication and social adjustment, it is clear that the patterns of parent-adolescent communication most common in families with ADHD place these adolescents at a much higher risk for poor social outcomes.

Home Chaos

Home chaos, also known as environmental chaos, occurs when a microsystem context such as the home environment is characterized by a lack of structure and routine, in addition to high levels of noise and disorganization (Wachs & Corapci, 2003; Matheny, Wachs, Ludwig, & Phillips, 1995). There is a large body of research to suggest that higher levels of chaos are consequential to both parental well-being and child development. For parents, higher reports of home chaos were closely related to greater feelings of ineffectiveness as a parent (Dumas et al., 2005). For youth, home chaos has been linked to higher levels of conduct problems, disruptive behavior in and out of the home, poor school achievement, and difficulty regulating emotions (Shamamah-tus-Sabah & Gillani, 2011; Dumas et al., 2005, Hanscombe, Haworth, Davis, Jaffee & Plomin, 2011; Jaffee, Hanscombe, Haworth, Davis, & Plomin, 2012). Moreover, research suggests that chaos in the home has a social effect on youth as well; youth from more chaotic homes were found to demonstrate lower social skills and experienced more difficulty in recognizing social cues (Shamamah-tus-Sabah & Gillani, 2011; Dumas et al., 2005).

Chaos in the home is yet another area of difficulty for families of youth with ADHD. In a study of chaos in the home, Mokrova, O'Brien, Calkins, and Keane (2010) found that both parent and youth ADHD symptoms explained significant variance in reported levels of home chaos. Further, it has been found that families of youth with ADHD engage in more conflict and are less organized than comparison families (Barkley, 2016). These higher levels of home chaos experienced by youth with ADHD may be related to their social problems outside the home.

Relationship between Parental/Family Functioning and Social Functioning in Youth with ADHD

Although it is clear that the parents of youth with ADHD report less parental efficacy, more parenting stress, more conflictual communication, and greater home chaos (Johnston & Mash, 2001; Theule et al., 2013; Barkley, 2015; Mokrova et al., 2010), it is difficult to determine if these parental/family functioning domains are products of parenting a child with ADHD or factors contributing to the onset of the disorder. Johnston and Chronis-Tuscano discuss the developmental-transactional model of ADHD and family functioning (2015), in which ADHD and its related impairments in family functioning are conceptualized as concurrently influencing and being influenced by each other, due to the strong heritability of ADHD and the general strain ADHD places on a family. Regardless, parental/family functioning has been shown to be related to social functioning in youth with ADHD. Specifically, low levels of parental efficacy and high levels of parenting stress have both been linked to social problems (Jones & Prinz, 2005; Deater-Deckard, 2004)

Current Study

Thus, the current study examined whether maternal/family functioning factors are related to social functioning for youth with ADHD and whether treatment outcomes from a friendship building intervention could be predicted from those factors. Specifically, the study investigated (1) whether measures of maternal and family functioning (i.e., parental efficacy, parenting stress, parent-adolescent communication, and home chaos) are correlated with social functioning (i.e., social competency and teen perception of friendship quality) in young adolescents with ADHD and (2) if pre-treatment maternal/family functioning (i.e., parental efficacy, parenting stress, parent-adolescent communication, and home chaos) predicted social functioning outcomes (i.e., social competency and teen perception of friendship quality) following a 14-week friendship building intervention for young adolescents with ADHD.

First, it was hypothesized that better maternal/family functioning at pre-treatment would be positively correlated with better social functioning at pre-treatment, in young adolescents with ADHD. Specifically, it was predicted that at pre-treatment, higher parental efficacy, lower parenting stress, better parent-adolescent communication, and less home chaos would be associated with higher social competency and teen perceived friendship quality. Second, it was hypothesized that better pre-treatment maternal/family functioning would predict greater improvement in social functioning outcomes following a 14-week friendship building intervention for young adolescents with ADHD. Specifically, it was predicted that, after controlling for demographic variables and for pre-treatment social functioning (social competency and friendship quality), pre-treatment maternal/family functioning (parental efficacy, parenting stress, parent

adolescent communication, and home chaos) would account for additional variance in post-treatment social functioning (social competency and friendship quality), such that better maternal/family functioning would predict better social functioning.

Method

Participants

Participants in the current study included 21 dyads of adolescents with ADHD and their mothers (i.e., the parent who attended the PEERS sessions). In order to participate, adolescents had to be demonstrating symptoms consistent with ADHD and exhibiting current parent-reported social impairment. The adolescent, along with their mother, had to verbally express interest in and be willing to attend 14 weeks of PEERS with a maximum of two absences. Adolescents and mothers had to be proficient in English and free of any cognitive or developmental delays that would impair comprehension of treatment material.

The youth were predominantly European Americans males (67%) ages 11 to 17 years. Most were diagnosed with ADHD, Combined Presentation (68%) and on medication (84%). Just under half the participants (48%) also presented with a comorbid diagnosis (such as anxiety disorder, mood disorder, learning disability, or ODD), and one participant presented with comorbid high functioning ASD. See Table 1 for additional demographic information.

Table 1.
Demographic Variables

Adolescent	
Sex, <i>n</i> (%)	
Male	14 (66.7%)
Female	7 (33.3%)
Race/Ethnicity, <i>n</i> (%)	
European American	14 (66.7%)
Non-European American	7 (33.3%)
Family	
SES, <i>M</i> (SD)	48.53 (12.12)
Parental Marital Status, <i>n</i> (%)	
Married/Living Together	15 (71.4%)
Single	5 (23.8%)

Note. SES=socioeconomic status.

Procedure

Intake/Pre-treatment.

All families interested in participating in PEERS were contacted for a phone screening to confirm that both the adolescent and their mother met inclusion criteria. A two-hour intake session was then scheduled, and families were mailed an intake packet with various behavioral measures to be completed prior to the in-clinic session. At the intake session, families were briefed on the PEERS program and the accompanying research so that informed consent and assent could be obtained from mothers and adolescents, respectively. Additionally, mothers participated in an unstructured interview regarding their child's current social functioning while adolescents took part in a structured interview to assess their own views of their social functioning and to gauge their motivation to participate in the treatment. In addition to the interviews, mothers and adolescents completed several measures. Specifically, mothers completed the Parenting Sense of Competence Scale (PSOC), the Stress Index for Parents of Adolescents (SIPA), the Parenting Relationship Questionnaire - Child and Adolescent (PRQ-CA), the Confusion, Hubbub, & Order Scale (CHAOS), and the Social Skills Improvement System Rating Scales (SSIS Rating Scales). Adolescents completed the Friendship Qualities Scale (FQS). Measures are described below.

Treatment.

Consisting of 14 weekly sessions each lasting 90 minutes, the PEERS intervention is a manualized friendship building intervention originally developed for youth with Autism Spectrum Disorder (Laugeson & Frankel, 2010). Parents and teens attend

simultaneous sessions led by graduate students and supervised by a certified PEERS provider. For the teens, sessions typically involve homework review, a lesson on a new social skill, role play and rehearsal of that skill, and homework assignments designed to practice the newly learned skill. Parent sessions also include homework review and a lesson on the new social skill, but with more focus on how to support their teen's implementation and practice of it. Throughout the intervention, parents are provided with feedback on how to overcome any obstacles to homework completion. The session topics include Trading Information, Two-Way Conversations, Electronic Communication, Choosing Appropriate Friends, Appropriate Use of Humor, Entering a Conversation, Exiting a Conversation, Get-Togethers, Good Sportsmanship, Teasing and Embarrassing Feedback, Bullying and Bad Reputations, Handling Disagreements, Rumors and Gossip, and Graduation and Termination (Laugeson & Frankel, 2010).

Post-treatment.

Following treatment, mothers and adolescents completed several measures again; Specifically, mothers completed the PSOC, SIPA, PRQ-CA, CHAOS, and SSIS Rating Scales, and adolescents completed the FQS.

Measures

Parenting Sense of Competence Scale (PSOC).

The parental efficacy subscale of the PSOC is a parent-report measure of parental efficacy (Johnston & Mash, 1989). The PSOC contains Likert-scale items with higher scores indicating greater parental efficacy. The internal consistency for the parental

efficacy subscale has been found to be .75 (Johnston & Mash, 1989). Internal consistency for the current study was .89.

Stress Index for Parents of Adolescents (SIPA).

The SIPA is a 90-item parent-report measure assessing parenting stress across multiple domains. The Total Parenting Stress score was used in the current study. It has demonstrated strong internal reliability consistency (.97) and test-retest reliability (.93), as well as content validity (Sheras et al., 1998). For the current study, internal consistency for the Total Parenting Stress score was .93.

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

The PRQ is a parent-report of the parent-adolescent relationship, which assesses several domains (Kamphaus & Reynolds, 2006). The communication subscale, which measures quality of information exchange between parent and teen and parental listening skills, was examined in the current study. The communication scale has been found to have strong internal consistency (.83-.87) and construct validity. The PRQ-CA also correlates well with other measures of parental functioning (Rubinic & Schwickrath, 2010). Internal consistency for the current study was .84.

Confusion, Hubbub, and Order Scale (CHOAS).

The CHAOS is a 15-item parent-report measure assessing parental perceptions of chaos in the home. An overall score is calculated with higher scores indicating higher levels of perceived chaos in the home. The CHAOS has been shown to have strong internal consistency (.79), and higher scores have been found to correlate with higher

levels of observed home chaos (Matheny et al., 1995). For the current study, internal consistency was .86.

Social Skills Improvement System (SSIS) Rating Scales.

The SSIS Rating Scales assess three domains: social skills, problem behaviors, and academic competence. The social skills domain was examined in the current study. Internal consistency for the social skills subscale .96; the measure also has demonstrated strong validity (Gresham & Elliot, 2008). For the current study, internal consistency was .96 at pre-treatment and .87 at post-treatment.

Friendship Qualities Scale (FQS).

The FQS is a youth-report measure of the quality of friendship between a youth and their best friend across five domains: companionship, conflict, help/aid, security and closeness. The FQS contains 23 Likert-scale items with higher scores indicating higher levels of each domain. The responses are computed into an overall friendship quality score, which was examined in the current analyses. The FQS has demonstrated strong internal consistency and validity for all subscales (.71-.86; Bukowski et al., 1994). Internal consistency for the current study was .89 at pre-treatment and .95 at post-treatment.

Results

Preliminary Analyses

Prior to conducting primary analyses, correlations between key demographic variables (i.e., adolescent sex, ethnicity/race, family socioeconomic status, and parental marital status) and outcome variables (i.e., pre-treatment parental efficacy, parenting stress, parent-adolescent communication, and home chaos, as well as pre- and post-treatment social competency and friendship quality) were conducted. Results indicated one statistically significant, positive correlation between parental marital status and pre-treatment social competency; having two parents living in the home was related to greater social competency for teens at pre-treatment. No other statistically significant relationships emerged. See Table 2.

Table 2.
Correlations of Demographic Variables with Primary Outcome Variables

	PSOC	TS	COMM	CHAOS	Pre-SSTOT	Pre-FQSTOT	Post-SSTOT	Post-FQSTOT
Sex	.27	-.24	.22	-.28	.19	-.26	.26	-.17
Race/Ethnicity	.39	-.16	-.03	-.11	-.18	-.13	.10	.12
SES	-.13	-.03	.06	.12	.43	.05	.26	-.15
Marital Status	.02	-.37	.10	.07	.54*	.17	.10	-.22

Note. PSOC=Pre-treatment Parenting Sense of Competence Scale (PSOC); TS=Pre-treatment Stress Index for Parents of Adolescents (SIPA): Total Stress; COMM=Pre-treatment Parenting Relationship Questionnaire - Child & Adolescent (PRQ-CA): Communication; CHAOS=Pre-treatment Confusion, Hubbub, & Order Scale (CHAOS); Pre-SSTOT=Pre-treatment Social Skills Improvement System Rating Scales (SSIS Rating Scales): Social Skills; Pre-FQSTOT=Pre-treatment Friendship Qualities Scale (FQS): Total Friendship Quality; Post-SSTOT=Post-treatment SSIS Rating Scales: Social Skills; Post-FQSTOT=Post-treatment FQS: Total Friendship Quality; SES=socioeconomic status (range=8-66). n = 20-21; * $p \leq .05$.

Primary Analyses

Hypothesis 1.

First, it was hypothesized that at pre-treatment, better parental/family functioning (i.e., greater parental efficacy and parent-adolescent communication and less

parenting stress and home chaos) would be positively correlated with better social functioning (i.e., higher social competency and more positive perceptions of friendship quality) in young adolescents with ADHD. To examine this hypothesis, correlational analyses were conducted comparing scores on parental efficacy, parenting stress, parent-adolescent communication, and home chaos with social competency and friendship quality. As can be seen in Table 3, a statistically significant, negative correlation emerged between maternal parenting stress and social competency. This finding suggests that higher levels of maternal stress are associated with lower levels of mother-reported social competency.

Table 3.

Correlations of Pre-treatment Mother-Reported Parental/Family Functioning with Pre-treatment Mother- and Youth-Reported Youth Social Functioning

	SSTOT	FQSTOT
PSOC	.17	-.02
TS	-.52*	.01
COMM	.41	.35
CHAOS	-.24	.12

Note. PSOC=Pre-treatment Parenting Sense of Competence Scale (PSOC); TS=Pre-treatment Stress Index for Parents of Adolescents (SIPA): Total Stress; COMM=Pre-treatment Parenting Relationship Questionnaire - Child & Adolescent (PRQ-CA): Communication; CHAOS=Pre-treatment Confusion, Hubbub, & Order Scale (CHAOS); SSTOT=Pre-treatment Social Skills Improvement System Rating Scales (SSIS Rating Scales): Social Skills; FQSTOT=Pre-treatment Friendship Qualities Scale (FQS): Total Friendship Quality.

n = 21; * $p \leq .05$.

Hypothesis 2.

It was predicted that, after controlling for significant demographic variables and for pre-treatment social functioning (social competency and friendship quality), pre-treatment maternal/family functioning (parental efficacy, parenting stress, parent

adolescent communication, and home chaos) would account for additional variance in post-treatment social functioning (social competency and friendship quality), such that better maternal/family functioning would predict better social functioning.

First, partial correlations were examined between pre-treatment mother-reported maternal/family functioning and post-treatment mother- and youth-reported youth social functioning while controlling for pre-treatment values of mother- and youth-reported youth social functioning. Given preliminary analyses results, parental marital status also was controlled for when examining correlations for mother-reported social functioning. The pattern of findings remained the same. Thus, results without controlling for parental marital status are reported here to preserve power.

As can be seen in Table 4, two statistically significant, positive partial correlations emerged between parental efficacy and social competency, as well as between parent-adolescent communication and social competency. These findings suggest that higher levels of parental efficacy and higher levels of parent-adolescent communication at pre-treatment are associated with higher levels mother-reported social competency at post-treatment.

Table 4.
Correlations of Pre-treatment Mother-Reported Maternal/Family Functioning with Post-treatment Mother- and Youth-Reported Youth Social Functioning Controlling for Pre-treatment Functioning

	SSTOT	FQSTOT
PSOC	.47*	.09
TS	-.21	.25
COMM	.47*	-.24
CHAOS	.21	-.00

Note. Note. PSOC=Pre-treatment Parenting Sense of Competence Scale (PSOC); TS=Pre-treatment Stress Index for Parents of Adolescents (SIPA): Total Stress; COMM=Pre-treatment Parenting Relationship Questionnaire - Child & Adolescent (PRQ-CA): Communication; CHAOS=Pre-treatment Confusion, Hubbub, & Order Scale (CHAOS); SSTOT=Post-treatment Social Skills Improvement System Rating Scales (SSIS Rating Scales): Social Skills; FQSTOT=Post-treatment Friendship Qualities Scale (FQS): Total Friendship Quality.

n = 21; * $p \leq .05$.

Based on these partial correlation results, one hierarchical regression was conducted to examine whether pre-treatment parental efficacy and parent-adolescent communication account for significant variance in post-treatment social competency above and beyond pre-treatment social competency. Pre-treatment social skills scores on the SSIS Rating Scales were entered at Step 1. Pre-treatment PSOC and PRQ-CA Communication scores were entered at Step 2. As can be seen in Table 5, the inclusion of parental functioning variables at Step 2 resulted in a significant change in R^2 ; however, the individual betas for each predictor were not significant. This finding suggests that together pre-treatment parental efficacy and parent-adolescent communication significantly predicted change in social competency following treatment after controlling for pre-treatment social competency.

Table 5.
Hierarchical Regression Analysis for Post-treatment Mother-Reported Social Functioning

	<i>Predictors Included</i>	<i>R² for Model</i>	<i>F for Model</i>	<i>R² Change</i>	<i>F for R² Change</i>
1	SSTOT	.19	F(1, 19) = 4.51*	.19	F(1, 19) = 4.51*
2	SSTOT, PSOC, COMM	.47	F(3, 17) = 5.01*	.28	F(2, 17) = 4.44*
	<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>p</i>
	SSTOT	.15	.12	.23	.24
	PSOC	4.11	2.32	.33	.09
	COMM	.93	.52	.36	.09

Note. SSTOT=Pre-treatment Social Skills Improvement System Rating Scales (SSIS Rating Scales): Social Skills; PSOC=Pre-treatment Parenting Sense of Competence Scale (PSOC); COMM=Pre-treatment Parenting Relationship Questionnaire - Child & Adolescent (PRQ-CA): Communication.
 n = 21; * $p \leq .05$.

Discussion

The goal of the current study was to investigate whether maternal/family functioning factors are related to social functioning in youth with ADHD and to determine whether treatment outcomes from a friendship building intervention could be predicted from these factors. The findings suggest that some aspects of maternal functioning are related to social functioning in youth with ADHD. Specifically, higher levels of maternal parenting stress were associated with lower levels of mother-reported social competency. The findings also suggest that response to treatment can be predicted from maternal functioning at pre-treatment; after controlling for pre-treatment levels of mother-reported social competency, parental efficacy and parent-adolescent communication served to explain a significant amount of variance in post-treatment levels of mother-reported social competency. Specifically, the results indicated that higher levels of pre-treatment parental efficacy and parent-adolescent communication were associated with higher levels of post-treatment mother-reported social competency.

Maternal/Family Functioning and Social Functioning at Pre-Treatment

Partial support was found for the first hypothesis, which predicted significant correlations between maternal/family functioning (parental efficacy, parenting stress, parent-adolescent communication, and home chaos) and youth social functioning and friendship quality at pre-treatment. Specifically, a significant negative correlation between maternal parenting stress and mother-reported social competency emerged, suggesting that higher levels of parenting stress were associated with lower levels of youth social competency. This finding is consistent with previous research examining

parenting stress and youth social development. Specifically, previous research has demonstrated that stressed parents tend to exhibit less warmth and positivity toward their children, which impairs the child's development of secure attachments and healthy relationships (Deater-Deckard, 2004). Additionally, it is likely that the behaviors exhibited by parents experiencing higher levels of stress may set a poor example of appropriate social interaction for their children.

The part of the first hypothesis concerning parental efficacy, parent-adolescent communication, and home chaos was not supported in the current study. Although correlations between these variables and mother-reported social functioning were in the expected direction, none reached significance. Given the small *n* in the current study, this could simply be a result of low power; however, if similar significant relationships are not found in future studies with larger samples, other explanations may be warranted.

For example, a significant, positive relationship between parental efficacy and youth social functioning was expected based on previous research demonstrating that mothers with high levels of parental efficacy are more likely to engage in positive parenting practices and demonstrate more engagement in their role as a parent, which have been shown to be important factors in social development (Jones & Prinz, 2005). It is possible that the relationship between parental efficacy and youth social competency is mediated by aspects of positive parenting practices that were not directly measured in the current study.

Similarly, the prediction that parent-adolescent communication would be positively related to youth social competency was informed by research demonstrating that youth who experience consistent open communication with their parents exhibit

greater self-esteem and social competency and by research demonstrating that families of youth with ADHD are not often characterized by such patterns of parent-adolescent communication (Cava et al., 2014; Marta, 1997; Barkley, 2015; Wehmeier et al., 2010; Theule et al., 2013; Johnston & Mash, 2001). Given that the current study only assessed information exchange and parental listening skills, it is possible that other aspects of the parent-adolescent relationship may play a larger role in socioemotional development.

Finally, the prediction of a negative relationship between home chaos and youth social competency was based on a study examining a community sample of school children that found greater home chaos was related to lower social competency (Shamama-tus-Sabah & Gillani, 2011). The current study consisted of a clinical sample of youth with ADHD and their families, a population found to exhibit group differences in home chaos compared to families of typically developing youth (Huang, Xu, Au, Xu, & Wu, 2018). Although research has clearly demonstrated the relationship between home chaos and poor child outcomes in community samples, more research is needed to clarify the relationship for clinical populations.

Interestingly, no significant correlations emerged when examining maternal/family functioning and friendship quality. Previous research has demonstrated a relationship between maternal/family functioning and friendship quality; however, this relationship was largely mediated by security of the parent-adolescent attachment (Rubin et al., 2004). Despite research suggesting a link between the variables included in the current study and attachment security (Deater-Deckard, 2004), it is possible that a more direct measure of attachment security would better clarify the relationship between maternal/family factors and friendship quality.

Predicting Response to Treatment from Pre-treatment Maternal/Family Functioning

Partial support also was found for the second hypothesis, which predicted that maternal/family functioning would account for additional variance in post-treatment social competency and friendship quality above and beyond pre-treatment social competency and friendship quality, respectively. For social competency, a model including pre-treatment parental efficacy and parent-adolescent communication explained additional variance beyond pre-treatment social competency. Specifically, higher levels of pre-treatment mother reported parental efficacy and parent-adolescent communication predicted greater response to treatment for mother-reported social competence. However, neither predictor served to independently explain a significant portion of the variance.

The current results suggest that response to a friendship building intervention can be predicted from aspects of maternal/family functioning. Specifically, youth with ADHD showed greater improvement in social competency following treatment when their mothers reported higher levels of parental efficacy and better communication with their teen at the beginning of treatment. This is consistent with previous research demonstrating a relationship between higher parental efficacy and greater parental involvement (Shumow & Lomax, 2002). Given the important role parents play in supporting their youth through the PEERS program, it is not surprising that higher parental efficacy and better communication between the parent and adolescent at the outset of treatment predicted better response to treatment. Taken together, it appears that positive aspects of the maternal/family functioning (i.e., parental efficacy and parent-

adolescent communication) may be more predictive of success in PEERS than negative aspects (e.g., parenting stress and home chaos).

Surprisingly, the prediction that pre-treatment maternal/family functioning would also explain additional variance in post-treatment friendship quality beyond pre-treatment friendship quality was not supported. Friendship quality is a very different construct than social competence, which may explain why maternal/family functioning predicted social competence, but not friendship quality. Future work into these unique relationships with a larger sample is needed before conclusions can be drawn.

Limitations and Future Directions

Several limitations of the current study should be noted. For the current study, data on both parent/family functioning and youth social competency were collected via mother-report measures; future research should gather information on youth social competency from multiple informants to clarify the relationship between parental/family functioning and youth social functioning. The sample for the current study was predominantly European-American males, which may limit the generalizability of the findings. Future research should focus on replicating these findings in a more diverse sample. Although a majority (71%) of families in the current study reported having two parents in the home, it was not possible to include information from fathers due to a small number of fathers completing measures. Future research should attempt to collect data from all caregivers in the home. Future work with a larger sample of families also is important for a number of reasons. This would allow for an investigation of which subgroups of parents and families of youth with ADHD are most at risk for poor response to treatment. Identifying such groups would allow for the current findings to be more

applicable to a clinical setting. Additionally, future research with a larger sample of families should include a waitlist control to better understand the relationship between parental/family functioning and youth social functioning beyond the context of a friendship building intervention. Finally, future research should follow up with families to determine whether parental functioning predicts long-term improvements in social functioning after treatment.

Summary and Clinical Implications

The current study examined the relationship between maternal/family functioning and social functioning in families of youth with ADHD. At pre-treatment, parenting stress was negatively related to social competency, whereas, maternal/family functioning was not significantly correlated with friendship quality. Additionally, pre-treatment parental efficacy and parent-adolescent communication predicted improved response to treatment for social competency, but not friendship quality.

The current study has important clinical implications. Previous research has demonstrated that the social impairments experienced by youth with ADHD place them at significantly increased risk for negative outcomes later in life (Bagwell et al., 2001; Greene et al., 1997; Chronis-Tuscano et al., 2010). The finding that greater maternal parenting stress was related to poorer youth social competency at pre-treatment suggests the need to address all aspects of impairment for youth with ADHD and their families. The finding that youth demonstrated greater improvement in social competency when their mothers reported higher parental efficacy and better parent-adolescent communication at the outset of treatment suggests that it may be important to address some aspects of parental and family functioning prior to beginning PEERS. For example,

it is possible that family therapy to address existing communication problems between youth and their parents could serve to improve the youth's response to a friendship building intervention. Clinicians engaged in PEERS should keep this in mind as they work to address obstacles to positive treatment outcomes for youth with ADHD and their families

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