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Parental Influence on Children with Attention-Deficit/Hyperactivity Disorder: I. Relationships Between Parent Behaviors and Child Peer Status

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Abstract

We examined associations between children's peer relationships and (a) their parents' social competence as well as (b) their parents' behaviors during the children's peer interactions. Participants were families of 124 children ages 6–10 (68% male), 62 with ADHD and 62 age- and sex-matched comparison youth. Children's peer relationships were assessed via parent and teacher report, and sociometric nominations in a lab-based playgroup. Parental characteristics were assessed via parent self-report and observations of behavior during their child's playgroup. After statistical control of relevant covariates, parents of children with ADHD reported poorer social skills of their own, arranged fewer playdates for their children, and displayed more criticism during their child's peer interaction than did parents of comparison youth. Parents' socialization with other parents and facilitation of the child's peer interactions predicted their children having good peer relationships as reported by teachers and peers, whereas parental corrective feedback to the child and praise predicted poor peer relationships. Parents' ratings of their child's social skills were positively associated with ratings of their own social skills, but negatively associated with criticism and facilitation of the child's peer interactions. Relationships between parental behaviors and peer relationships were stronger for youth with ADHD than for comparison youth. The relevance of findings to interventions is discussed.

Keywords

ADHD; Peer relationships; Parenting

Within only hours of meeting unfamiliar peers, it is typical for children with Attention-Deficit/Hyperactivity Disorder (ADHD) to become disliked by their peer group (Erhardt and Hinshaw 1994). Over 50% of youth with ADHD are estimated to be peer-rejected, relative to 15% of comparison youth (Hoza et al. 2005b). In addition, youth with ADHD often have few or no friendships (Blachman and Hinshaw 2002). The high prevalence of social difficulties among ADHD populations is concerning, because negative peer experiences in childhood predict later delinquency, depression, and school failure (Parker and Asher 1987), even with statistical control of the original, childhood levels of problem behavior. Moreover, peer-rejected children with ADHD face maladjustment in adolescence relative to accepted children with ADHD, with both groups at higher risk for poor outcomes than are comparison youth (Greene et al. 1997; Mikami and Hinshaw 2006).

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Parental Contributions to Children's Peer Relationships

The majority of the research examining reasons for social impairment in ADHD has focused on deficient behaviors displayed by the child with ADHD that are off-putting to peers (Landau et al. 1998). Relatively less studied is the potential for factors in the social context, such as parental behaviors, to contribute to the child's peer functioning. Note that the influence of parents on their children's peer relationships has received attention for typically-developing youth. Parke et al. (1994) propose a tripartite model whereby parents promote children's social competence via: (1) having positive interactions with their children; (2) didactically instructing their child in social skills; and (3) structuring their child's social environment in such a way that encourages friendships and acceptance.

In regards to the first process, warm and non-critical parenting may provide a model of positive interpersonal interaction which children carry over to their behavior with peers. Supporting this hypothesis, in two studies of elementary school-age youth, parents of popular children were observed to have less critical interactions with their children relative to parents of rejected or neglected children (Franz and Gross 2001; Putallaz 1987). Similarly, McDowell and Parke (2009) found that observed warmth in a parent-child interaction predicted sociometrically-assessed popularity 1 year later among a sample of 159 fourth grade children.

Evidence for the second process, in which parents didactically instruct their children in social skills, has been mixed. One study found that mothers of preschoolers nominated by teachers as “having many friends,” relative to mothers of friendless preschoolers, more often report that they have discussions with their child before and after peer interactions regarding friendship-making behaviors (Russell and Finnie 1990). Similarly, in a prospective study of 138 adolescents ages 12–14 who had recently moved to a new community, mothers' reports of having talked to the youth about ways to make friends predicted greater companionship and intimacy in youth's friendships 8 months later (Vernberg et al. 1993). Yet other work has found that parental advice about skilled behavior is correlated with lower social competence among elementary school-age youth (McDowell and Parke 2009); this is hypothesized to occur because socially incompetent children may elicit parental guidance.

The third process, in which parents create social opportunities for their children, has been the least explored. McDowell and Parke (2009) found that the extent to which parents enrolled their children in extracurricular activities (presumed to allow children to meet peers) and reported that social interaction occurs in their neighborhood predicted children's popularity 1 year later. Other work has focused on the role of parents in arranging playdates (prearranged play sessions between children outside of organized activities), which are important for close peer relationships (Ladd and Hart 1992). Crucially, the ability of a parent to set up playdates for a child is related not only to the child's social competence but also to the *parent's* social competence. Although preadolescent youth request playdates with certain peers, parents also initiate playdates with the children of their own adult friends. No matter how much two children like each other, research suggests that a playdate will not occur unless both parents think that the other child comes from a “nice family with a likeable mother” (Howes 1996). Thus, parent involvement in playdates may create an environment for the child that facilitates good peer relationships. In a study of early adolescents, parents' arrangement of social activities for their adolescent and peers predicted the youth's likelihood of good friendships 8 months later (Vernberg et al. 1993). Work with younger children has also found that the frequency with which parents set up playdates is positively correlated with children's popularity (Ladd and Hart 1992).

Another way parents promote their child's acceptance and friendship is to judiciously facilitate during their child's playdates to help them go smoothly. If the child and peer experience conflict

or disengagement, parents can assist by helping children to find fun things to do together, interpreting the rules of a game for children, or diffusing squabbles. In support of this hypothesis, mothers of children ages 4–5 with many friends were observed to more often facilitate their children's interactions with previously unacquainted peers, relative to mothers of friendless children (Russell and Finnie 1990). Another study found that preschoolers displayed better social skills in a peer interaction when their parents were instructed to facilitate the interaction, versus when parents were told to observe (Bhavnagri and Parke 1991).

Parents' own social competence may also be related to their children's peer relationships. Parents with good relationships of their own may be equipped to teach skilled behaviors to their children, either via didactic instruction or through modeling. Also, parental social competence may help a parent to arrange playdate opportunities for the child and to facilitate the child's peer interactions. Among samples of children in preschool through 4th grade, parental self-reported social skills and number of friends in their own social network (Prinstein and La Greca 1999), parental self-report of the quality of their own friendships (Simpkins and Parke 2001), and observations of parents' skillfully interacting with other adults (Putallaz 1987) have all been found to be positively correlated with their children's sociometric status and friendship. In the study of early adolescents, the extent to which the mother met other parents in the community prospectively predicted the youth's social success with peers (Vernberg et al. 1993).

Relevance of Parental Behaviors to the Peer Relationships of Children with ADHD

Despite the considerable literature reviewed above with typically-developing samples, few studies exist regarding effects of parental behaviors on the peer relationships of youth with ADHD. Hinshaw et al. (1997) found that parents' self-reported authoritative parenting beliefs were correlated with sociometrically-assessed peer acceptance for elementary school-age boys with ADHD. Similarly, in a sample of boys with ADHD ages 7–12, fathers' self-reports of greater warmth and lower power assertion predicted children's peer acceptance, but only for children who were lonely (Hurt et al. 2007). We are not aware of work examining observations of parental behaviors, parents' arrangement of social opportunities for children, or parents' social skills, and their associations with the peer functioning of youth with ADHD.

Unfortunately, parents of children with ADHD may be likely to struggle with helping their children get along with peers. Many parents of children with this condition are impaired by their own ADHD symptoms (Levy et al. 1997) or depression (Chi and Hinshaw 2002), which may impede parents' own social skills and ability to plan playdates. Furthermore, parent-child relationships in this population are frequently conflictual (Johnston and Mash 2001), restricting a parent's ability to instruct her child in social skills in a way to which the child would be receptive. Children with ADHD also complete homework, chores, and morning routine slowly and only after multiple reminders (Johnston and Mash 2001), which limits the time parents have to attend to their child's peer relationships.

Yet there is reason to believe that parental strategies, if enacted, may have more influence on the peer relationships of children with ADHD than of comparison children. In the study by Hinshaw et al. (1997), the positive correlation between authoritative parenting and peer status existed only for boys with ADHD, and not comparison boys. It is theorized that children with ADHD need reminders in vivo during peer situations to assist them in performing skilled behavior (Pfiffner et al. 2000). A parent's natural proximity to the child with ADHD may allow the parent to give the child those reminders. Parents' ability to construct an environment that encourages good peer relationships may also matter more for youth with ADHD relative to comparison youth, because of stigma associated with ADHD (Canu et al. 2008). A likeable,

proactive parent may be needed to seek the peer interactions for her child that would occur naturally for comparison youth.

Study Hypotheses

We explored differences between parents of youth with ADHD and parents of comparison youth in behaviors theorized to contribute to children's peer relationships. We hypothesized that parents of children with ADHD would report lower social competence and fewer friends of their own, would arrange fewer playdates for their children, and would be observed during their child's peer interaction to socialize less with other parents, to facilitate less, to show less praise and warmth, and to criticize more. Given the mixed findings regarding parental corrective feedback—that is, whether it improves children's competence or is elicited by socially inept children—we were unsure about the directionality of group differences in this behavior. We expected that ADHD-comparison differences would exist after statistical control of child sex, oppositional defiant disorder (ODD), aggression, income, and parental education.

We next examined correlations between parental behaviors and children's social functioning. After control of child ADHD status, ODD, sex, aggression, IQ, and parental income and education, we hypothesized that children's good peer relationships would be positively predicted by parents (a) having higher social competence and (b) more friends of their own; (c) arranging playdates for children; (d) socializing with other parents; (e) facilitating the child's peer interactions; (f) praise; and (g) warmth; and negatively predicted by (h) parental criticism. Again, because of the mixed findings regarding the correlation between corrective feedback and child social competence, we were unsure about the directionality of this behavior. Our third hypothesis was that there would be interactions such that the influence of parental behaviors on social functioning would be stronger for youth with ADHD than for comparison youth.

Method

Participants

Participants were 62 children (42 boys; ages 6–10) with ADHD, and 62 age- and sex-matched comparison youth, recruited from a suburban area in the southeastern United States. Child racial composition was 85% white, 5% African American, 2% Asian American, 1% Latino, and 7% mixed. Each child participated with one parent. Any parent or legal guardian was eligible to participate so long as s/he was “the parent most involved in the child's social life” and the child resided with that adult at least 50% of the time. Participating parents were biological mothers (83%), adoptive mothers (7%), female relatives with legal custody (4%), biological fathers (6%), and adoptive fathers (1%). Median yearly family income was $71,000, with a range from less than $10,000 to greater than $150,000. Around 30% of the parents did not graduate from college, 30% were college graduates, and 40% had a graduate or professional degree.

Children with ADHD were recruited from local schools, clinics, and pediatricians. Children needed to surpass clinical cutoffs of at least six symptoms of inattention based on parent and teacher responses on the Child Symptom Inventory (CSI; Gadow and Sprafkin 1994). Using an “or” algorithm in accordance with DSM-IV field trials (Lahey et al. 1994), a symptom was considered present if either the parent or teacher endorsed it as occurring “often” or “very often.” Diagnosis was confirmed via the Schedule for Affective Disorders and Schizophrenia —School Age Children (K-SADS; Kaufman et al. 1997), a clinical interview with the parent administered by trainees in psychology. A clinical psychologist oversaw all interviews and agreement was 100%. Children were classified as ADHD-Inattentive Type (ADHD-I; *n*=16) if they had six or more symptoms of inattention and fewer than six symptoms of hyperactivity/

impulsivity. ADHD-Combined Type (ADHD-C; *n*=46) children had six or more symptoms of inattention and of hyperactivity/impulsivity. Because the Hyperactive/Impulsive form of ADHD is most salient for preschoolers (Lahey et al. 1998), it was not included.

Comparison children were recruited from the same local schools as the ADHD sample and from a database of families who had previously participated in research at the university. They could possess no more than three inattentive or three hyperactive/impulsive symptoms, and no more than four total symptoms, using the "or" algorithm based on parent and teacher report on the CSI. Comparison children could not receive a diagnosis of ADHD on the K-SADS.

Exclusion criteria for both ADHD and comparison groups were pervasive developmental disorder, Full Scale IQ below 70, or Verbal IQ below 75. The IQ criteria were chosen because the symptoms of ADHD may artificially depress performance on the timed perceptual reasoning, processing speed, and working memory indices but be less detrimental to the verbal subtests (Sattler and Dumont 2004). Anxiety and depressive disorders, ODD, and conduct disorder (CD) were not exclusion criteria for either group because of the high comorbidity of these conditions with ADHD, and so that we might have a non-ADHD but not "super-normal" comparison sample (see Hinshaw 2002 for rationale for a similar procedure). Comorbid disorders were considered present if the parent endorsed criteria for the disorder on the K-SADS and the teacher also reported elevated symptoms (*T*-score >60). For ODD/CD, teacher report on the Oppositional Behavior scale of the Conners' Form (Conners 2001) was used; for anxiety and depressive disorders, teacher report on the Anxiety Problems and Affective Problems scales of the Teacher Report Form (Achenbach 1991) were used. However, no child met criteria for CD.

As many medicated children with ADHD remain impaired in their peer relationships (Hoza et al. 2005a), medication was not an exclusionary criterion, nor did children discontinue use prior to participation. However, medicated children (*n*=40, all with ADHD) were required to have been receiving the same type and dosage of medication for at least 3 months before the start of the study and to continue the same regimen through the study period. Although there were no inclusion/exclusion criteria regarding peer relationships in either the ADHD or comparison group, the study tested a treatment for the social problems of children with ADHD, so parents in the ADHD sample may have volunteered only if their child had peer problems. Data in this paper are from assessments before treatment was provided. However, the ADHD group scored similarly to other ADHD samples not recruited for treatment on parent and teacher-rated measures of social functioning (Solanto et al. in press); that is, they were about one standard deviation (SD) below the national mean.

Table 1 displays that there were no significant differences between the ADHD and comparison samples in most demographic variables. However, comparison parents had higher education levels and a trend toward higher income than did parents of youth with ADHD. As in other samples (Hinshaw 2002), the ADHD group had more comorbid disorders and lower IQ.

Procedure

Interested parents contacted the study and provided informed consent to all study procedures, after which each child's teacher was contacted and consent was obtained from them as well. Once children were determined to meet inclusion criteria (based on parent and teacher responses during the screening), children attended the lab for a visit where they gave assent. Parents and teachers completed additional questionnaires about the child's behavior, parents self-reported their own social competence, and children were administered an IQ test.

Children were then assigned to playgroups with previously unacquainted peers. Each playgroup consisted of two children with ADHD and two comparison children who were all

the same age and sex. Each child had one parent present during the playgroup, the same parent who completed all questionnaires about the child. The playgroup was held for 1 h. During the first 10 min the children completed a structured game as a group. Children engaged in free play during the next 35 min, where they were given access to toys and were told that they could choose any activity they wished. Parents were given the instruction to do what they thought would best help their child make friends and get along with the other children. However, parents were not told specific behaviors they should do, and parents could engage with their child, socialize with other adults, or read magazines provided. After the free play, each parent-child dyad was given 4 min in a private room. Parents were asked to give their child feedback about his/her behavior in the playgroup, particularly as it related to social skills and in such a way as to help their child to make friends and get along with the other children.

At the end of the playgroup each child was privately administered a sociometric procedure (Coie et al. 1982) where the child nominated the peers in the playgroup s/he liked (positive nominations), did not like (negative nominations), and who s/he considered a friend (friendship nominations). Children were explicitly allowed to nominate none, one, two, or all three of their peers in the playgroup for each category. To aid recall, the child was shown pictures of the peers. Similar observational and sociometric procedures have been demonstrated to be valid in playgroups this size with children with ADHD (Hodgens et al. 2000). The lab-based playgroup offered the unique opportunity to assess parents' and children's behaviors in a controlled interaction. The limitations on external validity in this procedure may be offset by the opportunity for the interaction to be uncontaminated by idiosyncratic features of the home environment, siblings or distractions which vary between participants, and the child's previously established reputation with his/her peers.

Parental Behavior Measures

Interpersonal Competence Questionnaire (ICQ; Buhrmester et al. 1988)—On the ICQ, adults self-report their own competence in initiating relationships, disclosing information about oneself, expressing displeasure, providing advice and emotional support, and managing conflict. Sample item: “Carrying on conversations with someone new whom you think you might like to get to know.” Each of 40 items is scored on a five-point Likert scale ranging from 1 (*I'm poor at this, I'd feel so uncomfortable and unable to handle the situation*) to 5 (*I'm extremely good at this, I'd feel very comfortable and could handle this situation very well*). Alpha in our sample was 0.93. Buhrmester et al. (1988) report good reliability and validity statistics. Parents' overall scores, composed of the average of all items, were used.

Parent's Friends—In this procedure, used by Prinstein and LaGreca (1999), parents listed the initials of adult individuals who they would currently describe as their own friends, not including relatives or members of the same household. A frequency count was then obtained of the raw number of individuals listed. Prinstein and LaGreca (1999) report positive correlations between this measure and social competence on the ICQ.

Playdates Hosted—Parents indicated the raw number of playdates in which they invited a friend over to play with their child during the past month. This procedure has been used by Frankel and colleagues (1997). We note that parents also indicated the number of playdates their child attended as a guest at another family's house. However, the correlation between host and guest playdates was high ($r = 0.72$; $p < 0.01$), precluding both variables being used as predictors in the same model. Therefore, only hosted playdates were examined as they were hypothesized to be more influenced by the participating child's parent than were guest playdates.

Parental Behavior in Playgroup—Trained observers, unaware of study hypotheses and participants' diagnoses, viewed videotapes of the playgroup and coded parents' behavior during the free play period. The first behavior, socializing, was coded on a scale of 0–10 representing the proportion of time that the parent socialized, such that a 0 meant the parent never socialized and a 10 meant that the parent was socializing 100% of the time. All other behaviors were rated on a Likert scale: (0 = *absence*; 1= *one minor incident*; 2= *more than one minor instance or one major but no minor instances*; 3 = *more than one major instance or one major and at least one minor instance*). To assess inter-rater reliability, *n*=62 videos were selected at random to be double coded, and intra-class correlations (ICCs) were calculated between the two raters. We also report the occurrence-only agreement within one step, defined as the proportion agreement for occurrences only (e.g, where agreement on a zero value is not included), within one step of the scale (e.g., a "2" and a "3" would be counted, but a "1" and a "3" would not). Codes are below.

a. *Socializing*. The parent engages in conversation with other parents in the playgroup. This code can potentially be seen as an indicator of the parents' own social comfort and ability to network with other parents. ICC=0.96; occurrence only agreement within one step=87%.

b. *Facilitation*. The parent assists the child in positively engaging in activities with the other children. Example 1 (minor instance): A child and a peer are parallel playing with blocks next to one another. The parent says, "Why don't the two of you build a tower together?" Example 2 (major instance): A parent, noticing that her child and a peer are starting to argue about who goes first in a game, takes out a coin and proceeds to lead a flip between the two children to decide. ICC=0.83; occurrence only agreement within one step=88%.

c. *Corrective feedback*. The parent instructs the child in an effort to get the child to behave in a desired manner with peers. Example 1 (minor instance): (parent to child) "Remember to share the toy." Example 2 (major instance): parent gives child a time out. In comparison to facilitation, in which a parent attempts, by *her own* actions, to help her child engage well with a peer, corrective feedback involves the parent instructing her child to change *the child's* behavior. ICC=0.74; occurrence only agreement within one step=85%.

Parental Behavior in Parent-child Interaction—Identical procedures were used to code behaviors in the parent-child interaction that occurred after the playgroup. All behaviors were scored using the 0–3 Likert scale as described for playgroup constructs.

a. *Praise*. The parent gives the child praise about his or her actions or character, related to behaviors demonstrated in the playgroup that just occurred. Example: "It was nice of you to let the other boy choose the game." Comments must be framed positively, sound genuine, and be specifically directed at the child. ICC=0.79; occurrence only agreement within one step=90%.

b. *Warmth*. The parent seems happy to be in the child's presence and interested in the child. The parent might display smiling, matched affect with the child, good-natured humor, and/or physical affection. Example: (parent hugs child) "Come here sweetie, tell me what you thought about the playgroup." ICC=0.72; occurrence only agreement within one step=100%.

c. *Criticism*. The parent makes a negative statement about the child's actions or character. The parent must also use a tone of irritation, hostility, or contempt. Example: (said harshly) "You're the only child here who can't control his body." ICC=0.83; occurrence only agreement within one step=93%.

Child Peer Relationship Measures

Social Skills Rating System (SSRS; Gresham and Elliott 1990)—Parents and teachers each independently completed this measure, in which adults rate children's social skills on a three-point scale (*never, sometimes,* or *very often*). Domains assessed are Cooperation, Assertion, and Self-control; the parent version has an additional Responsibility subscale. The teacher version contains 30 items relevant to the child's classroom behavior (e.g., "Volunteers to help peers with classroom tasks"), and the parent version, with 38 items, relates to home (e.g., "Accepts friends' ideas for playing"). The SSRS has strong normative data, good criterion validity and high test-retest reliability. We used the child's total social skills score, converted into a standard score based on age and sex norms. Alpha in our sample was 0.84 for both parent and teacher versions.

Dishion Social Acceptance Scale (DSAS; Dishion 1990)—The DSAS is completed by teachers only. Teachers report the percentage of classmates who "like and accept" and who "dislike and reject" the child, using a five-point scale: 1 (*almost none, less than 25%*); 2 (*a few, 25–50%*); 3 (*about half, 50%*); 4 (*most, 50–75%*); 5 (*nearly all, over 75%*). Dishion (1990) and Dishion and Kavanagh (2003) reports moderate correlations between this measure and peer sociometric nominations. The correlation between the "like and accept" and "dislike and reject" items was $r=-0.66$; $p<0.01$. However, given conceptual reasons as to why liking and disliking by peers should be differentiated (Parker and Asher 1987), we examined these questions separately.

Peer Sociometric Status in Playgroup—Using the sociometric procedure at the end of the playgroup, proportion scores for each child of positive nominations and negative nominations received were calculated by dividing the number of total nominations received by the number of peers providing nominations (in most cases, three peers). Only reciprocated friendship nominations were counted (e.g., where the child and peer mutually nominated one another as friends), and a proportion score for friendships was also calculated.

Covariates

Family Income, Parental Education, Child Sex—These variables were reported by parents.

Full Scale IQ (IQ)—This was estimated from six subtests on the Wechsler Intelligence Scale for Children, 4th edition (WISC-IV; Wechsler 2003).

ODD—This was assessed using the procedure for comorbid disorders described above.

Observed Child Aggression in Playgroup—This was defined as instances of verbal or physical aggression expressed by the child, coded on the same 0–3 Likert metric as were the playgroup parental behaviors. ICC=0.66; occurrence only agreement within one step=85%.

Data Analytic Plan

Of the 124 children, at least some data was present for $n=123$ on parent questionnaires, $n=122$ on teacher questionnaires, and $n=122$ on playgroup observations/sociometrics. Full information maximum likelihood methods were used to handle missing data (Enders 2001). Continuous variables were centered, based on the suggestions of Raudenbush and Bryk (2002).

Our first aim was to explore differences between parents of children with ADHD and comparison children in parental behaviors hypothesized to contribute to children's peer relationships. To test this aim for the dependent variables that were parent questionnaire

measures, we conducted ANCOVAs for (a) parent interpersonal competence (ICQ); (b) parent's friends; and (c) playdates hosted. The independent variable was child ADHD status (dichotomous; dummy coded). Given the high comorbidity between ODD and ADHD plus findings that poor parent-child relationships may be more linked to child ODD than ADHD (Burke et al. 2008), we included ODD as a covariate. Family income, parental education, and child sex were covariates because of theorizing that they might influence parental behaviors, and because of ADHD-comparison group differences in parental education. We did not include child IQ as a covariate because we did not have any rationale that this construct would contribute to parental social competence; a measure of parent IQ was not available.

To test our first aim for the dependent variables of parental behaviors observed in the lab-based playgroup, we used Hierarchical Linear Modeling (HLM; Raudenbush and Bryk 2002) because the structure of the data is such that families were nested in playgroups. Importantly, unconditional models revealed that the intraclass correlation coefficients—the measure of the variability at the playgroup level—for most playgroup measures fell between 10–30%, exceeding the cutoff recommended as necessary to require HLM (Guo 2005). Therefore, when examining ADHD-comparison group differences for the dependent variables of parental behaviors observed in the playgroup, we used HLM to account for shared variance at the playgroup level in estimation of effects. The main predictor of interest continued to be child ADHD status. Child ODD, sex, income, and parental education were again covariates. For these analyses, we included an additional covariate of child observed aggression in the playgroup because concurrent aggression might influence the parents' behaviors towards the child (Burke et al. 2008). We interpreted the results using robust standard errors. The model was as follows:

$$\begin{aligned}
\text{Level 1}: \quad & Y_{ij} = \beta_{0j} + \beta_{1j}(\text{ADHD}) + \beta_{3j}(\text{IQ}) + \beta_{4j}(\text{sex}) \\
& \quad + \beta_{5j}(\text{income}) + \beta_{6j}(\text{education}) \\
& \quad + \beta_{7j}(\text{child aggression}) + e_{ij} \\
\text{Level 2}: \quad & \beta_{0j} = \gamma_{00} + u_{0j} \\
& \beta_{1j} = \gamma_{10} \\
& \beta_{2j} = \gamma_{20} \\
& \beta_{3j} = \gamma_{30} \\
& \beta_{4j} = \gamma_{40} \\
& \beta_{5j} = \gamma_{50} \\
& \beta_{6j} = \gamma_{60} \\
& \beta_{7j} = \gamma_{70}
\end{aligned}$$

In the Level 1 equation, Y_{ij} is the outcome variable for a given participant in a playgroup. β_{0j} is the intercept coefficient. β_{1j} through β_{7j} are the estimated standardized coefficients of each predictor variable on the outcome variable, and e_{ti} is the error term. Level 2, the playgroup level, had no predictors but was included simply to control for shared playgroup variance.

The second aim of the study was to examine relationships between parental behaviors and children's social functioning. Analyses were conducted with each of the measures of children's peer relationships as criterion variables: (a) parent and (b) teacher report of social skills (SSRS); (c) teacher report of peers who “like and accept” (DSAS) and (d) “dislike and reject” the child (DSAS); (e) positive nominations; (f) negative nominations; and (g) friendship in the playgroup. Child ADHD, ODD, sex, and observed aggression in the playgroup, as well as parental income and education, were again included as covariates. We added child IQ as an additional covariate because there were ADHD-comparison differences on this variable, and because IQ may contribute to child social functioning (Asendorpf and Van Aken 1994). Predictors of interest were the parental behaviors hypothesized to be related to children's social

functioning: parental social competence (ICQ), parent's friends, playdates hosted, and the observed parental behaviors of socializing, facilitation, corrective feedback, praise, criticism, and warmth.

Because the variables involved again included observations of behaviors in the playgroups, HLM procedures were also used for these analyses. In order to reduce the total number of analyses conducted, we placed all parental behaviors together in the same model listed previously at Level 1, with the coefficients β_{8j} through β_{16j}. We included all interaction terms between each parental behavior and ADHD status in the same model, again in order to reduce the number of analyses conducted. Significant interactions were probed in the manner recommended by Holmbeck (2002), in which coefficients are generated for the ADHD group by dummy coding ADHD status as 0 and entering the group, predictor, and interaction term between group and predictor together on the same step in a regression; the same procedure is followed for the comparison group when comparison status is dummy coded as 0. Although the large number of predictors given the sample size raises the risk for reduced power and instability in models, we considered this preferable to testing each predictor and each predictor by ADHD interaction in a separate model, which would have dramatically increased the number of analyses conducted.

If parents of children with ADHD displayed lower interpersonal competence scores, reported fewer friends of their own, arranged fewer play dates, and were observed to show more criticism and less socializing, facilitation, praise, and warmth, relative to parents of comparison children, then our first hypothesis would be confirmed. If significant positive associations were found between the child's social competence and parent social competence, parent's friends, playdates hosted, and observed parental socializing, facilitation, praise, and warmth (and conversely, negative associations with criticism), then our second hypothesis would be confirmed. We considered results for corrective feedback to be exploratory, as we were not sure what the direction of this effect would be. If there were significant interaction terms, and probing revealed that the impact of parental behaviors on social functioning was stronger for children with ADHD than for comparison youth, then our third hypothesis would be confirmed.

We note that we re-conducted all analyses using ADHD subtype (ADHD-I, ADHD-C, comparison) as opposed to ADHD versus comparison. Also, although there was a small age range of the children, we placed age as a covariate in models. Results were highly similar to those without these terms and did not appear to differ by subtype or age, so we collapsed children with ADHD-I and ADHD-C together and omitted age from the final models.

Results

Descriptive Statistics

Table 1 displays raw group means and SDs on study variables. As expected, youth with ADHD displayed poorer functioning than did comparison youth on most peer relationship measures. Table 2 displays findings that parental behaviors were modestly correlated with one another, justifying their inclusion as separate predictors in the same model.

Most parental variables were normally distributed. However, parent's friends (self-reported), playdates hosted (self-reported), corrective feedback (observed), and criticism (observed) were right-skewed. A square root transformation was conducted on parents' friends and playdates, which made distributions normal, and the transformed variables were used in analyses. We did not transform observed corrective feedback and criticism, however, because we thought that the variability on these constructs was meaningful and not influenced by reporting bias relative to number of friends and playdates arranged. Corrective feedback and criticism, scored on a four-point Likert scale, were less skewed than were parents' friends and playdates.

As expected in a clinical sample, the measures of children's observed aggression, teacher report of peers who "dislike and reject" the child (DSAS), and negative sociometric nominations were also right-skewed. Because we wished to adequately reflect the actual, high impairment experienced by a sizable proportion of youth with ADHD, we did not transform these variables. All other child variables were all normally distributed. Outliers exceeding 3.5 SDs from the mean were trimmed to a value of 3.5 SDs from the mean. This procedure was necessary for the variables of negative nominations (n=1), observed child aggressive behavior (n=3; all the same value), and teacher report of "dislike and reject" on the DSAS (n=3; all the same value).

ADHD-Comparison Group Differences in Parental Behaviors

Parent Interpersonal Competence (ICQ)—None of the covariates of family income, parental education, child ODD, and child sex was significantly associated with parental self-reports of their own social competence. However, after statistical control of these covariates, parents of children with ADHD self-reported lower interpersonal competence relative to parents of comparison children, $F(1,122)=7.61$; $p<0.01$. Effect size was medium, $d=0.56$.

Parent's Friends—None of the covariates, nor ADHD status after control of covariates, significantly predicted the number of parents' own friends.

Playdates Hosted—None of the covariates was significant. However, parents of children with ADHD reported hosting fewer playdates, relative to parents of comparison children, $F(1,120)=5.25$; $p=0.02$. Effect size was medium, $d=0.55$.

Parental Behaviors in Playgroup—Higher parental education was positively correlated with observations of the parent socializing with other parents, $t(115)=2.45$; $p=0.02$. However, none of the other covariates (nor child ADHD status) predicted parental socializing. There were no significant predictors of corrective feedback or parental facilitation.

Parental Behaviors in Parent-child Interaction—Child aggression was positively associated with parental criticism, $t(115)=6.91$; $p<0.01$. Family income was negatively associated with criticism, $t(115)=-2.72$; $p<0.01$. However, after control of covariates, parents of children with ADHD were also observed to be more critical than were parents of comparison children, $t(115)=2.89$; $p<0.01$. The effect size was between medium and large, $d=0.74$.

Parents of children with ODD provided more praise in the interaction, $t(115)=3.09$; $p<0.01$. However, none of the other covariates predicted praise, nor were there differences between parents of children with ADHD versus parents of comparison youth. Observed child aggressive behavior predicted less parent warmth, $t(115)=-2.51$; $p=0.01$. None of the other covariates predicted warmth, nor did ADHD status.

Associations Between Parental Behaviors and Child Peer Functioning

Social Skills-Parent Report (SSRS)—After accounting for covariates, parental interpersonal competence (ICQ) was positively associated with parental report of the child having higher social skills. Conversely, observed parental criticism and parental facilitation were negatively associated with parental report of child social skills. See Table 3. There was one significant interaction between parental criticism and child ADHD status, $t(88)=-2.14$; $p=0.04$. Probing revealed that the negative relationship between observed parental criticism and SSRS applied to youth with ADHD, $\beta=-0.25$; $p=0.01$, but not to comparison youth, $\beta=0.04$; $p=0.81$.

Social Skills-Teacher Report (SSRS)—No parental behavior had a main effect, or interaction effect, in predicting teacher report of the child's social skills on the SSRS. See Table 3.

Teacher Report "Like and Accept"(DSAS)—The amount that the parent was observed to be socializing with other parents was positively associated with teacher reports that the child was "liked and accepted" in his/her regular classroom. However, the amount that the parent was observed to be providing corrective feedback to his/her child in the playgroup was negatively associated with teacher reports of peer liking. See Table 3.

There were interactions between ADHD status and the parental behaviors of socializing, $t(86) = 2.22$; $p = 0.03$, warmth, $t(86) = 2.66$; $p = 0.01$, and praise, $t(86) = -2.03$; $p < 0.05$. The relationship between parental socializing and teacher ratings of the child's peer acceptance was significant for youth with ADHD, $\beta = 0.37$; $p < 0.01$, but not for comparison youth, $\beta = 0.08$; $p = 0.46$. Similarly, the positive correlation between parental warmth and teacher-reported peer acceptance applied to youth with ADHD, $\beta = 0.27$; $p = 0.01$, and not to comparison youth, $\beta = -0.16$; $p = 0.19$. There was a marginally significant negative association between praise and teacher reports of liking among youth with ADHD, $\beta = -0.20$; $p = 0.06$, but no association for comparison youth, $\beta < 0.01$; $p = 0.97$.

Teacher Report "Dislike and Reject"(DSAS)—No parental behaviors or interaction predicted teacher reports of the proportion of peers who dislike and reject the child. See Table 3.

Positive Nominations—After control of covariates, greater observed parental socializing in the playgroup predicted a greater proportion of positive nominations their children received from playgroup peers. There were no interaction effects. Please see Table 4.

Negative Nominations—After control of covariates, parents' observed facilitation in the playgroup predicted fewer negative nominations received from playgroup peers. However, parents' praise was associated with more negative nominations. See Table 4. In addition, there was an interaction between the number of playdates arranged and ADHD status, $t(88) = 2.13$; $p = 0.04$. Probing revealed that having more playdates was associated with fewer negative nominations for youth with ADHD, $\beta = -0.60$; $p < 0.01$, but not for comparison youth, $\beta = 0.04$; $p = 0.70$.

Reciprocal Friendship—Parental warmth positively predicted the number of reciprocated friendship nominations received in the playgroup. There were no interaction effects. See Table 4.

Discussion

This study tested the hypothesis that parents of youth with ADHD would have difficulty enacting behaviors thought to foster their children's good peer relationships. Consistent with predictions, parents of children with ADHD self-reported lower interpersonal competence of their own, hosted fewer playdates for their children, and were observed to be more critical after their children engaged in a peer interaction, relative to parents of age- and sex-matched comparison youth. Group differences persisted after control of relevant covariates.

We also tested the hypothesis that associations would exist between parental behaviors and the child's peer relationships. After statistical control of covariates, parental self-reports of their own interpersonal competence were positively correlated with parental reports of children's social skills. The amount that the parent was observed to be socializing with other parents in

the playgroup predicted teacher ratings of more classroom peers who “like and accept” the child, and more positive sociometric nominations received by the child. Greater observed parental facilitation was associated with parent report of poorer social skills but also fewer negative sociometric nominations received from peers. Observed corrective feedback was associated with teacher reports of fewer classroom peers who “like and accept” the child. In the parent-child interaction after the playgroup, parental warmth was correlated with the child receiving more friendship nominations, and parental criticism was associated with poorer parent ratings of the child's social skills. Parents' praise was correlated with more negative nominations received.

Collectively, findings from this cross-sectional study suggest that parental behaviors, as assessed by self-report and observations, are related to children's peer relationships as assessed by parents, teachers, and peers. However, a large question pertains to the direction of these effects. It could be that, consistent with our hypotheses, these parental behaviors set a social context where children are optimally likely to be successful with peers. However, it is also possible that children who are socially competent elicit more warmth and less criticism from their parents, and allow their parents the freedom to socialize with other adults. Nonetheless, there are reasons to believe that the effect is likely, at least to a certain degree, to flow from parent to child. It seems implausible that having a socially competent child would elicit parents to facilitate their child's interactions more (correlated with better peer sociometric status), or would increase the parent's own social skills. Given that parents are much older than their children, parents' social patterns of interaction likely predate their child's peer relations at least to some extent.

Regarding our finding that corrective feedback was negatively associated with teacher-reported peer acceptance, it is possible that, even though we controlled for child aggression, parents provide more feedback to children who they know struggle socially. However, despite thoughts that corrective feedback encourages good peer relationships because the children learn from such instruction, it is conceivable that parents giving feedback to their children in front of peers or without sensitivity may prove detrimental to their child's acceptance. Interestingly, parental facilitation was associated with lower parent-report of the child's social skills, but also fewer negative sociometric nominations received from peers. It is possible that parents facilitate more when they perceive their child to have poor social skills, but in fact, that facilitation (after statistical control of other child behaviors) predicts less rejection from the child's peers.

Contrary to hypotheses, observed parental praise was positively correlated with the child receiving more negative nominations in the playgroup and, at a trend level of $p = 0.06$, with poorer teacher-reported acceptance for children with ADHD only. However, follow-up analyses (not presented herein) suggest that the relationship between praise and poor social functioning may occur exclusively for children who are highly aggressive, and not for nonaggressive youth. Although interpretation is speculative, it may be that parents who praise when their child has behaved badly are failing to give the child a realistic impression of the way the child is perceived by peers, which hurts peer acceptance in the long run. Alternatively, peers who observe a parent praise a child who has behaved aggressively may dislike the child more as a result of viewing the extreme contrast between the child's behavior and the parental feedback received.

The majority of the interaction effects between parental behaviors and child ADHD status in predicting child peer relationships were not significant. However, in all that were present, parental behaviors were more associated with child social functioning for the ADHD sample than for the comparison sample. The positive relationship between observed parental socializing, and also parental warmth, with teacher ratings of the child's social acceptance were found for youth with ADHD but not for comparison youth. Similarly, the correlation between

more hosted playdates and fewer negative peer nominations received primarily applied to children with ADHD. The negative associations between parental criticism and parent reports of the child's social skills, as well as between parental praise and teacher report of the child's social acceptance, also pertained to children with ADHD and not to comparison children.

Taken together, results suggest that parents of children with ADHD may have greater impact on the peer relationships of their children relative to parents of comparison youth. Part of the deficit in ADHD is specifically thought to be a difficulty with enacting skilled behavior in the heat of the moment (Pfiffner et al. 2000), and the parent may be able to give the child the in vivo reminders s/he needs during peer interactions. Alternatively, it may simply be that children with ADHD have behaviors that are quite off-putting to peers, and therefore they need optimal environmental supports to succeed in peer relationships. The current study also suggests the importance of parental behaviors for the social competence of youth with ADHD in middle childhood. It has been speculated that parents have less direct effects on the peer relationships of adolescents (Parke et al. 1994), but importantly, research has still found such parental influences among youth age 12–14 (Vernberg et al. 1993). Crucially, children with ADHD may continue to require more parental guidance at older ages than do comparison youth (Landau et al. 1998).

We note that our study recruited the parent who was most involved in the child's social life, which resulted in a sample of predominantly mothers and few fathers. In addition, we had a high ratio of boys to girls in our sample, which reflects the population of children with ADHD. Unfortunately, these factors limited our ability to examine potential differences in the parental influences as a function of parent sex, child sex, or the match between parent and child sex. Importantly, Parke and colleagues (1994) do not theorize mother-father differences in the tripartite model of parental influences on child's peer relationships, or variation based on child sex. Although other work has found differences in the ways in which mothers versus fathers interact with their children, such findings may not apply to our sample as fathers selected for high involvement in their child's social life may behave similarly to mothers.

Strengths of the study include the multi-method, multi-informant design, including observations of parental behaviors. Inclusion of a matched comparison sample is another strength, which allows examination of effects across diagnostic groups. The major limitation is that it is impossible to assess directionality in our design. Longitudinal work is needed and/or work where parental behaviors are altered via treatment, a design used in (Mikami, Lerner, Griggs, McGrath, and Calhoun, this issue). Another limitation is that the lab playgroup configuration, with a high ratio of ADHD to comparison youth and the parents present, is not typical of naturalistic playdate settings. In addition, the inter-rater agreement for some observations of playgroup behaviors was low. A third limitation concerns the covariance of child problem behaviors in analyses. We covaried aggression because of research suggesting that this is probably the single behavior that negatively affects peer status the most quickly (Erhardt and Hinshaw 1994). Nonetheless, there may be other problem behaviors to which parents are responding, which we did not include in our models. A final limitation is that measures of parental psychopathology, such as parents' own depression or ADHD symptoms, were not assessed. Given the elevated rates of psychopathology among parents of children with ADHD, as well as the influence of such psychopathology on parenting behaviors (Chi and Hinshaw 2002; Levy et al. 1997), these constructs are important to consider in future work.

In summary, we found suggestions that parents may affect the peer relationships of their children, and that the influence of parental behaviors may be particularly strong for youth with ADHD. Similar to what has been suggested by other scholars conducting research on this topic in typically-developing samples (Putallaz 1987), we contend that targeting parental behaviors may be a fruitful avenue for intervention to improve the peer relationships of children with

ADHD. Existing work with ADHD samples suggests that actively involving parents in children's social skills training may increase the effectiveness of such treatments (Frankel et al. 1997; Pfiffner and McBurnett 1997). Our findings raise the possibility that directly training parents in strategies to improve their child's peer relationships, without any child treatment, may be useful. We test such an intervention in our companion manuscript (Mikami, Lerner, Griggs, McGrath, and Calhoun, this issue).

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Table 1

ADHD and Comparison Group Differences in Study Variables

Variables	ADHD (*n*=62)	Comparison (*n*=62)	Difference (*p*)
Child age (years)	8.26 (1.21)	8.23 (1.19)	0.98
Child male (*n*)	42	42	1.00
White (*n*)	50	55	0.38
Medicated (*n*)	40	0	<0.01
Comorbid ODD (*n*)	20	0	<0.01
Comorbid anxiety/depression (*n*)	11	1	<0.05
Full Scale IQ	107.07 (14.49)	116.77 (11.69)	<0.01
Social Skills- Parent (SSRS)	84.10 (14.43)	110.22 (13.54)	<0.01
Social Skills- Teacher (SSRS)	86.94 (11.16)	108.97 (12.45)	<0.01
Like/accept- Teacher (DSAS)	3.08 (1.35)	4.58 (0.85)	<0.01
Dislike/reject- Teacher (DSAS)	1.87 (1.11)	1.10 (0.48)	<0.01
Positive nominations	0.63 (0.29)	0.72 (0.25)	<0.05
Negative nominations	0.10 (0.20)	0.08 (0.14)	0.54
Reciprocated friendships	0.30 (0.27)	0.30 (0.33)	0.98
Parent age	38.63 (6.70)	40.84 (6.03)	0.08
Parent female (*n*)	57	58	0.84
Parent education level	4.72 (1.05)	5.32 (0.83)	<0.01
Household income	$66,913 (19,103)	$76,724 (14,665)	0.07
Adults in household	2.02 (0.43)	2.01 (0.34)	0.99
Interpersonal competence (ICQ)	3.34 (0.52)	3.60 (0.40)	<0.01
Parent's friends (square root)	1.85 (1.16)	2.60 (1.13)	<0.01
Playdates hosted (square root)	1.15 (0.81)	1.65 (1.01)	<0.01
Corrective feedback	0.58 (0.93)	0.31 (0.65)	<0.05
Facilitation	1.45 (0.98)	1.32 (1.23)	0.36
Socializing	3.10 (3.06)	3.43 (3.07)	0.15
Praise	0.91 (0.97)	0.89 (0.98)	0.90
Warmth	1.95 (0.74)	2.04 (0.63)	0.51
Criticism	0.82 (0.97)	0.25 (0.51)	<0.01

Except where otherwise noted, numbers are raw group means with SDs in parentheses. Parental education: 1 = eighth grade or less; 2= some high school; 3 = high school graduate; 4 = some college; 5 = college graduate; 6 = graduate degree.

Table 2

Correlations Between Parent Social Behaviors and Child Peer Status

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Int. Comp.	–															
2. Friends	0.17	–														
3. Playdates	0.23*	28**	–													
4. Socializing	0.02	0.17	0.09	–												
5. Facilitation	−0.06	−0.03	0.02	−0.27**	–											
6. Corr. Feed.	0.01	0.04	−0.11	−0.09	0.27**	–										
7. Praise	−0.02	0.01	−0.01	−0.03	0.22*	0.13	–									
8. Criticism	0.02	−0.14	−0.02	0.11	−0.06	0.13	−0.19*	–								
9. Warmth	−0.01	0.11	0.12	−0.07	0.10	0.02	0.21*	−0.37**	–							
10. SSRS-P	0.32**	0.32**	0.25**	0.06	−0.20*	−0.23*	0.01	−0.38**	0.07	–						
11. SSRS-T	0.22*	0.23*	0.22*	0.09	−0.10	−0.20*	−0.07	−0.29**	0.04	0.63**	–					
12. Like/Accept	0.07	0.23*	0.15	0.18*	−0.14	−0.32**	−0.17	−0.35**	0.13	0.49**	0.63**	–				
13. Dislike/Rej.	−0.03	−0.14	−0.11	−0.07	0.04	0.22*	0.23*	0.24*	−0.08	−0.43**	−0.47**	−0.66**	–			
14. Pos. Noms.	0.11	0.08	−0.00	0.27**	−0.12	−0.05	0.02	−0.14	0.05	0.08	0.08	0.02	0.01	–		
15. Neg. Noms.	−0.03	−0.06	−0.19*	−0.13	−0.06	0.16	0.18	0.12	0.13	−0.06	−0.12	−0.07	0.02	−0.27**	–	
16. Recip. Fr	−0.04	0.05	−0.04	0.04	−0.05	0.01	−0.16	−0.00	0.10	0.04	−0.08	−0.03	−0.07	0.36**	−0.06	–

*$p<0.05$;

**$p<0.01$.

Pearson product moment correlations calculated for all variables. *Int. Comp*: Parent Interpersonal Competence Questionnaire (ICQ). *Corr. Feed*: Corrective Feedback. *SSRS-P*: Parent report of child social skills. *SSRS-T*: Teacher report of child social skills. *Like/Accept*: Like & Accept scale of DSAS. *Dislike/Rej.*: Dislike & Reject scale of DSAS. *Pos. Noms*: Positive nominations. *Neg. Noms*: Negative nominations. *Recip. Fr.*: Reciprocated friendships.

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Table 3

Parent and Teacher Ratings of Children's Social Competence Predicted by Parental Behaviors

Fixed Effects- Parameter		SSRS-Parent			SSRS-Teacher			DSAS "like/accept"			DSAS "dislike/reject"		
		Coeff	(SE)	T(97df)	Coeff	(SE)	T(95df)	Coeff	(SE)	T(95df)	Coeff	(SE)	T(95df)
Level 1 Intercept	β_{0j}	0.70	(0.16)	4.29**	0.54	(0.17)	3.10**	0.27	(0.20)	1.33	−0.66	(0.20)	−3.30**
ADHD=1; Comparison=0	β_{1j}	−0.95	(0.15)	−6.30**	−0.97	(0.17)	−5.70**	−0.78	(0.21)	−3.77**	0.52	(0.20)	2.60*
ODD=l; no ODD=0	β_{2j}	−0.12	(0.20)	−0.60	−0.59	(0.22)	−2.72**	−0.71	(0.25)	−2.84**	0.84	(0.33)	2.54*
Full Scale IQ	β_{3j}	0.08	(0.07)	1.08	0.24	(0.09)	2.74**	−0.14	(0.09)	−1.56	0.10	(0.10)	0.99
Sex (1=boy; 2=girl)	β_{4j}	−0.18	(0.12)	−1.47	0.04	(0.12)	0.36	0.17	(0.12)	1.39	0.20	(0.13)	1.53
Family income	β_{5j}	−0.11	(0.08)	−1.51	0.05	(0.07)	0.73	0.17	(0.08)	2.32*	−0.11	(0.07)	−1.46
Parent education	β_{6j}	0.21	(0.08)	2.74**	−0.02	(0.08)	−0.24	−0.05	(0.10)	−0.54	−0.02	(0.11)	−0.14
Child aggression	β_{7j}	−0.02	(0.07)	−0.27	0.01	(0.09)	0.12	0.02	(0.09)	0.22	−0.08	(0.11)	−0.71
Interpersonal competence (ICQ)	β_{8j}	0.15	(0.06)	2.52*	0.06	(0.06)	1.09	−0.02	(0.07)	−0.34	0.05	(0.09)	0.52
Parents' friends	β_{9j}	0.04	(0.09)	0.39	−0.09	(0.07)	−1.42	0.04	(0.08)	0.56	0.02	(0.10)	0.20
Playdates hosted	β_{10j}	0.01	(0.06)	0.24	0.00	(0.07)	0.03	−0.03	(0.06)	−0.43	0.00	(0.09)	0.05
Facilitation	β_{11j}	−0.12	(0.06)	−2.21*	0.00	(0.07)	0.06	−0.01	(0.07)	0.21	−0.05	(0.07)	−0.68
Socializing	β_{12j}	−0.02	(0.05)	−0.32	0.07	(0.06)	1.19	0.20	(0.05)	4.30**	−0.08	(0.07)	−1.22
Corrective feedback	β_{13j}	−0.07	(0.06)	−1.10	−0.05	(0.05)	−0.88	−0.23	(0.07)	−3.45**	0.17	(0.10)	1.61
Praise	β_{14j}	0.01	(0.06)	0.25	−0.01	(0.07)	−0.17	−0.09	(0.07)	−1.21	0.14	(0.09)	1.65
Criticism	β_{15j}	−0.24	(0.09)	−2.70**	−0.06	(0.09)	−0.68	−0.12	(0.10)	−1.23	0.10	(0.12)	0.84
Warmth	β_{16j}	−0.03	(0.06)	−0.43	−0.04	(0.07)	−0.61	0.06	(0.07)	0.82	−0.09	(0.09)	−0.96
Random Effects		σ^2	τ	χ^2	σ^2	τ	χ^2	σ^2	τ	χ^2	σ^2	τ	χ^2
Conditional Model		0.458	<0.000	23.02	0.536	0.001	22.51	0.567	0.001	23.98	0.711	<0.000	18.79
Unconditional Model		0.999	<0.000	13.24	0.991	<0.000	15.44	0.999	<0.000	25.14	0.908	<0.000	21.41

* $p<0.05$;

** $p<0.01$.

Level 2 was included to account for families' nesting into playgroups, but no predictors were tested.

Table 4

Children's Sociometric Nominations Predicted by Parental Behaviors

Fixed Effects-Parameter		**Positive nominations**			**Negative nominations**			**Reciprocal friendship**		
		Coeff	**(SE)**	**T(97df)**	**Coeff**	**(SE)**	**T(97df)**	**Coeff**	**(SE)**	**T(97df)**
Level 1 Intercept	β_{0j}	0.20	(0.36)	0.57	−0.01	(0.27)	−0.05	0.32	(0.43)	0.78
ADHD=1; Comparison=0	β_{1j}	−0.41	(0.24)	−1.66	−0.21	(0.21)	−1.04	−0.19	(0.15)	−1.24
ODD = 1; no ODD=0	β_{2j}	0.00	(0.25)	0.01	0.01	(0.31)	0.04	0.00	(0.20)	0.00
Full Scale IQ	β_{3j}	−0.19	(0.11)	−1.80	0.02	(0.09)	0.27	−0.26	(0.06)	−4.22**
Sex (1=boy; 2=girl)	β_{4j}	−0.03	(0.27)	−0.12	0.07	(0.18)	0.42	−0.22	(0.26)	−0.84
Family income	β_{5j}	0.13	(0.09)	1.43	−0.05	(0.10)	−0.13	0.05	(0.07)	0.77
Parent education	β_{6j}	0.01	(0.09)	0.07	−0.14	(0.11)	−1.30	−0.06	(0.07)	−0.75
Child aggression	β_{7j}	−0.19	(0.09)	−2.10*	0.21	(0.13)	1.60	0.05	(0.08)	0.69
Interpersonal competence (ICQ)	β_{8j}	0.09	(0.06)	1.45	0.00	(0.08)	−0.02	0.01	(0.06)	0.19
Parents' friends	β_{9j}	0.02	(0.10)	0.23	0.04	(0.08)	0.53	0.07	(0.05)	1.52
Playdates hosted	β_{10j}	−0.12	(0.06)	−1.80	−0.13	(0.11)	−1.15	−0.03	(0.06)	−0.50
Facilitation	β_{11j}	−0.08	(0.09)	−0.86	−0.18	(0.07)	−2.35*	−0.08	(0.09)	−0.89
Socializing	β_{12j}	0.26	(0.11)	2.35*	−0.14	(0.09)	−1.67	0.06	(0.10)	0.55
Corrective feedback	β_{13j}	−0.05	(0.10)	−0.53	0.14	(0.13)	1.13	−0.10	(0.07)	−1.47
Praise	β_{14j}	0.10	(0.08)	1.28	0.16	(0.07)	2.24*	−0.03	(0.06)	−0.45
Criticism	β_{15j}	0.02	(0.10)	0.15	0.20	(0.13)	1.54	0.01	(0.07)	0.08
Warmth	β_{16j}	0.08	(0.08)	1.02	0.17	(0.09)	1.85	0.14	(0.06)	2.29*
Random Effects		σ^2	τ	χ^2	σ^2	τ	χ^2	σ^2	τ	χ^2
Conditional Model		0.628	0.325	76.69**	0.733	0.060	31.35	0.389	0.531	168.65**
Unconditional Model		0.709	0.297	80.00**	0.811	0.053	37.80	0.429	0.586	192.26**

* $p<0.05$;

** $p<0.01$.

Level 2 was included to account for families' nesting into playgroups, but no predictors were tested.