Attributions for Parents' Behavior by Boys with and without Attention-Deficit/Hyperactivity Disorder

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Abstract

Attributions for parents' behavior were examined in a sample of boys with and without Attention-Deficit/Hyperactivity Disorder (ADHD). Sixty-six boys (mean age = 9.75 years) rated attributions for their mothers' and their fathers' behavior, across positive and negative scenarios, and along four attribution dimensions (parent ability, parent effort, task difficulty, and child responsibility). Three-way interactions emerged among child ADHD status, parent gender, and attribution type, and among scenario valence, parent gender, and attribution type. All children rated attributions higher in the positive scenarios, and attributions of child responsibility higher for fathers than mothers. Children rated task-related attributions higher for mothers in negative scenarios, but higher for fathers in positive scenarios. Boys with ADHD rated child responsibility attributions higher than controls, across all scenarios. Results highlight important differences in children's perceptions of their parents' behavior that may have implications for understanding parent-child relationships in families of children with and without ADHD.

Keywords: child attributions, ADHD, mother, father, parent-child relationships

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Cognitive processes in the family context are related to parenting behavior and to child outcomes, and family members' maladaptive cognitions about each other contribute to the development and maintenance of problematic family relationships [1]. Many studies have focused on parental attributions for their children, as well as how these attributions relate to parenting practices and how they differ across families of children with and without behavior problems [2, 3]. Fewer studies have examined how children with and without behavior problems interpret the behavior of their parents, although such child attributions are likely central to understanding the reciprocal influences in parent and child interactions [4]. This study examines these important child cognitions, and tests whether children who have Attention-Deficit/Hyperactivity Disorder (ADHD) offer different attributions for parental behavior compared to typically developing children. In addition, we extend the research in this area by examining whether children make different attributions about the behavior of their mothers versus fathers, and across positive versus negative parent-child interactions.

Children's Attributions in the Family Context

Before reviewing the existing research on attributions in families of children with and without ADHD, we first consider the literature on children's perceptions of their parents in general. Although child perceptions are not frequently studied, it can be argued that they are closely tied to both parent-child interactions and child outcomes. Children are active participants in the dynamic, transactional relationships they have with their mothers and fathers [5, 6]. The way that children choose to respond to their parents is expected to be dependent, at least in part, on their understanding of and explanations for their parents' behavior. For example, a child who

believes that he or she was disciplined in fairness by a parent, may be less likely to have feelings of hostility and resentment toward the parent than a child who believes that he or she was disciplined because that parent was mean and intended harm. Similar to the importance of children's hostile attributions for the behavior of their peers in understanding aggressive behavior (e.g., [7, 8]), it is reasonable to suspect that children's interpretations of their parents' actions also are important.

The few existing studies of children's attributions for parents appear to confirm this prediction and show that, across both elementary-school aged children and adolescents, in both clinical and community samples, youth and parents who offer more negative attributions for each other's behavior experience greater conflict (e.g., [9, 10]). For example, Brody, Arias, and Fincham [11] examined attributions for parents' behavior among 170, 10 to 12 year-old children. Children provided attributions for their parent's negative behavior (e.g., "Imagine your dad/mom yelled at you", "Imagine your dad/mom criticized you") along three dimensions: causality, responsibility, and blame. Child conflict-promoting attributions for both mothers and fathers (i.e., believing the parent caused the negative behavior, that the behavior was stable and global, and the parent's behavior was intentional, selfish, and blameworthy) were associated with more difficulties in the parent-child relationship. Such findings confirm the importance of understanding children's attributions for their parents' behavior. However, less is known about how these attributions are linked to the presence of child problems, such as ADHD, or how they vary across different types of family interactions. These questions are addressed in the present study.

Attributions in families of children with ADHD

The family difficulties associated with child ADHD suggest that attributional processes may differ in families of children with and without ADHD. In this study, we examine attributions for parent behavior in children with and without ADHD, focusing specifically on boys given the higher prevalence of ADHD in this gender [12]. It is already known that child ADHD is associated with different parent attributions, and that negative parent attributions for child behavior are associated with both parent-child interaction difficulties and comorbid child oppositional problems in families of children with ADHD (e.g., [13, 14]). Importantly, these negative parent attributions also contribute to the development of child behavior problems over time, over and above the influence of initial levels of child problems and ADHD status [15,16]. However, beyond these studies of parent attributions, within families of children with ADHD as in the general literature, much less is known about children's perceptions of the cause of parents' behavior or whether these differ between children with and without ADHD.

Despite the lack of research in this area, it is reasonable to expect that children with ADHD will make attributions for their parents' behavior that differ from those of their typically developing peers. This expectation is founded, in part, in an extrapolation of evidence regarding the peer interaction difficulties of children with ADHD and the negative attributions that accompany these peer conflicts [19]. For example, one study found that hyperactive/aggressive children made significantly more hostile intent attributions for peer behavior than did controls [17]. More recently, Andrade et al. [18] also showed that children with ADHD attributed more negative and less positive intent to their peers in a series of hypothetical vignettes compared to controls. Given that children with ADHD experience similar difficulties in peer and family relationships [19, 20, 21], it is reasonable to expect that the conflict experienced in families of

children with ADHD may be related, at least in part, to the tendency of children with symptoms of ADHD to explain others' behavior, including their parents, in a negative light.

Other research, which also suggests that attributions for parental behavior will differ in children with and without ADHD, has focused on differences in the children's general perceptions of parent behaviors; however, findings from such studies are inconsistent. For example, although Gerdes et al. [13] did not find differences in boys' perceptions of their relationship with their parent as a function of ADHD status, another study by the same group [22] found that, compared to control children, children with ADHD did see their parents as more power assertive. The discrepancies in findings across these studies addressing children's overall perceptions of their parents may be resolved by focusing more specifically on the attributions that children offer for their parents' behavior, as we do in this study. Thus, given the higher levels of parent-child conflict in families of children with ADHD [21, 23] and preliminary evidence of these children seeing their parents in a more negative light [22], we expect that children with ADHD will make more negative attributions for their parents' behavior than will typically developing children. Furthermore, given that the difficulties experienced in families of children with ADHD are enhanced when children display comorbid oppositional-defiant symptoms [21], we also consider child oppositional behavior in relation to children's attributions.

Child Attributions for Mothers' v. Fathers' Behavior

In addition to differences in attributions between children with and without ADHD, child attributions also may vary according to parent gender. Attributional processes in the family have most often been examined in mother-child dyads (e.g., [2, 24]). However, there is growing evidence that fathers play a unique role in child development and that the father-child

relationship is independently related to child well-being (e.g., [25, 26]). Consistent with the differences in mothers' and fathers' roles, there is evidence that children view their mothers and fathers differently. For example, in a validation study of the Parent Perception Inventory, a scale assessing children's reports of positive and negative parental behaviors, children reported more negative behaviors for their mothers compared to their fathers [27]. Furthermore, young children's perceptions of the closeness in their relationships with their fathers, but not their mothers, were related to their levels of externalizing problems [28].

Father-child and mother-child relationships also have been shown to differ in families of children with ADHD. In a longitudinal investigation, Lifford, Harold, and Thapar [29] found that elevated child ADHD symptoms were related to children's subsequent feelings of rejection from their mothers, but the opposite pattern was found for fathers, with higher perceived rejection at the initial assessment predicting subsequent child ADHD symptoms. However, in contrast to these findings, the studies by Gerdes and colleagues [13, 22] reviewed above did not find differences between children's perceptions of their mothers versus their fathers.

Beyond these studies of children's general perceptions of the parent-child relationship, few studies have specifically examined differences in children's attributions for mothers versus fathers. Two notable exceptions are studies by MacKinnon-Lewis and colleagues. In the first study, mothers and their 7 to 9 year-old sons provided attributions for each other's negative behavior, and then interacted to perform challenging tasks on two occasions several months apart [30]. Mothers' initial negative behavior predicted sons' subsequent negative attributions for their mothers, and the children's initial negative attributions for their mothers predicted their own subsequent negative behavior and aggression toward their mothers. In a second study examining fathers' and children's attributions, MacKinnon-Lewis, Castellino, and Fincham [31] found that,

for both fathers and children, earlier negative attributions did not predict subsequent negative behavior. However, in line with their study of mothers and sons, fathers' negative behavior did predict children's subsequent negative attributions. Although these studies suggest differences in attributional processes between mother-child and father-child dyads, other research has not revealed such differences. Markel and Wiener [32] asked adolescents with and without ADHD to provide attributions for parent-adolescent conflict and found no parent gender differences in the attributions provided by youth with ADHD or typically developing youth.

These previous studies suggest that children's perceptions of and attributions for their mothers' versus fathers' behavior may differ, but the evidence remains unclear. In this study, we compare attributions for mothers' and fathers' behavior across boys with and without ADHD. However, the available evidence remains too incomplete to afford specific predictions regarding the specific nature of expected differences.

Scenario Valence and Attribution Type

Other variables that may impact children's attributions that have received limited attention are the valence of the parents' behavior and the type of attribution. Although previous studies have supported the importance of children's cognitions regarding their parents, they have focused exclusively on children's attributions for negative parent behaviors, and have not considered attributions for positive parent behaviors. Although negative events are most likely to elicit more attributions and may be particularly relevant to clinical contexts [11, 33], they are not representative of the entire repertoire of parental behavior, which may include many positive aspects such as parental praise and support. The present study incorporates this important contextual dimension of parent-child relationships, and examines children's attributions in parent-child interaction scenarios that have both positive and negative outcomes for the child. In

line with previous research on attributions for the causes of conflict in parent-child relationships, we predict that children will make more unfavorable attributions for their parents' behavior in negative compared to the positive scenarios. Based on research by Andrade and colleagues [18] which found that children with ADHD not only offered more negative intent attributions for peer behavior in negative scenarios, but also more positive intent attributions for peer behavior in positive scenarios, we will test whether a similar pattern emerges in child attributions for parent behavior.

Finally, we examine children's attributions for parental behavior along four dimensions: parent ability, parent effort, task difficulty, and child responsibility. In investigations of children's self-perceptions, notable differences have emerged between the ability-related and effort-related attributions (e.g., [34, 35]). Furthermore, Hoza, Pelham, Waschbusch, Kipp, and Owens [36] found that, in explaining their own successes and failures, boys with ADHD made fewer internal effort-related attributions and more external attributions of task difficulty than control boys. This is consistent with other research showing that children with ADHD overestimate their own performance (e.g., [37]). Although still somewhat speculative, we hypothesize that, compared to control children, children with ADHD may attribute less self-blame in negative parent-child interaction scenarios and take greater responsibility for themselves in positive parent-child interactions.

In summary, the present study examines attributions for parents' behavior in a sample of boys with and without ADHD. Gaps in the current literature are addressed by including attributions for both mothers' and fathers' behavior, by assessing attributions for behaviors across parent-child interaction scenarios that have both positive and negative outcomes for the child, and by evaluating child attributions along multiple dimensions. Overall, we predict a main

effect of ADHD status, such that boys with ADHD will make more negative attributions for their parents' behavior and will see their own contributions to parent behavior in a more positive light than boys without the disorder. Differences between attributions for positive and negative events, mothers and fathers, and type of attribution, as well as possible interactions among these variables will be explored.

Method

Participants

Sixty-six boys (28 with ADHD) participated in the study. Children ranged in age from 7.7 to 12.2 years (M = 9.8). Families were recruited from the Greater Vancouver Area through advertisements in community centers, elementary schools, health professionals' offices, and laboratory newsletters. All boys had parents who were married or in common-law relationships and the average yearly family income was $75,000. The majority of mothers in the families were of Caucasian European descent (62.5% Caucasian, 15.6% Chinese, 19.1% other). The ADHD group and the typically developing group did not differ significantly in terms of child age, $t(64)$= .60, p = .564, mother ethnicity, $\chi^2(2)$ = .77, p = .680, family socioeconomic status, $\chi^2(3)$ = 2.18, p = .543, or mother, $\chi^2(1)$ = 2.83, p = .092, and father, $\chi^2(1)$ = .26, p = .613, employment status. Additional information is presented in Table 1.

Mothers and teachers completed the ADHD Rating Scale-IV (ADHD-IV) [38] to determine boys' ADHD status. The ADHD-IV is an 18-item questionnaire assessing ADHD symptoms directly overlapping with DSM-IV criteria. Nine items make up the Inattention subscale and nine items make up the Hyperactivity/Impulsivity subscale. A final item assessing children's impairment due to their symptoms at home and at school was also included. Respondents rated on a 4-point scale the frequency with which each symptom occurred for the

child over the past 6 months (0 = *Never or rarely*, 1 = *Sometimes*, 2 = *Often*, 3 = *Very often*). ADHD status was coded as present if boys received a score of at least 2 on six or more items, on either subscale, as well as a score of at least 2 on the item assessing impairment, via mother- or teacher-reports. In addition, onset of symptoms had to have been prior to age 7 according to mother report, and the child had to have been diagnosed with ADHD by a mental health professional.

The ADHD-IV has demonstrated good internal consistency (*a*s ranging from .86 to .96) and moderate inter-rater agreement (*r*s ranging from .40 to .45) [38]. Scores on the ADHD-IV have also been shown to correlate with children's observed classroom behavior and to significantly discriminate between children with and without ADHD [38]. In the current sample, Cronbach's alphas for mother- and teacher-report of inattention symptoms were .80 and .87 respectively. Alphas for mother- and teacher-report of hyperactivity/impulsivity symptoms were .87 and .88 respectively. The mean age that children were diagnosed with ADHD was 6.32 years. Mean levels of inattention and hyperactivity/impulsivity symptoms ranged from 1.42 to 2.39, and mean level of impairment was 2.39 and 2.05 for mother and teacher reports respectively. Of the 28 boys who met criteria for ADHD, 20 were taking medication for their symptoms, and of those, 10 had suspended their medication for their participation in the study.

Oppositional defiant disorder (ODD) symptoms in the boys were rated by mothers and fathers, who each completed the Oppositional Defiant Disorder Rating Scale (ODDRS) [39]. The ODDRS is an 8-item questionnaire overlapping directly with DSM-IV-TR symptoms for ODD. Parents rated on a 4-point scale the frequency with which each symptom occurred for the child in the last 6 months (0 = *Not at all*, 1 = *Just a little*, 2 = *Pretty much*, 3 = *Very much*). The scale has demonstrated high internal consistency (*a*s ranging from .83 to .92) in samples of children with

and without ADHD, good inter-rater reliability (r = .70), and moderate test-retest reliability (r = .54) [40]. In the current sample, Cronbach's alphas for mother and father ratings were .91 and .90 respectively. Mother and father ratings were significantly positively correlated, $r(56) = .71$, $p < .001$, thus a composite score created by averaging the two ratings was used in the analysis.

Dependent Measure

Child attributions. Boys completed the Children's Attribution Measure (CAM) twice, to provide attributions for both their mothers' and fathers' behavior. The CAM was developed for this study and includes eight short scenarios involving a parent and child. Four of the scenarios have positive outcomes for the child and four have negative outcomes. The particular parent behaviors were generated as being typical of parent-child interactions for children in the 9-12 year-old age range and are shown in Table 2. The scenarios were presented in alternating order (positive, negative).

Boys completed the questionnaire once to assess attributions for their mother's behavior, and once to assess attributions for their father's behavior, in counterbalanced order. A research assistant read each of the scenarios and attributions to the child, who was asked to imagine that he and his mother or father were the people in the scenarios. For each scenario, boys were asked to indicate the extent to which each of four explanations for the parent's behavior was true using a 6-point scale ranging from "*Not at all true*" to "*Really true*", by marking an "X" in the appropriate place on the scale. Attributions were made along the dimensions of parent ability (e.g., "My mom/dad doesn't help me because she/he isn't good at fixing toys"; "My mom/dad helps me because she/he is good at doing homework"), task difficulty or ease (e.g., "My mom/dad doesn't help me because the toy is hard to fix"; "My mom/dad helps me because the homework is easy"), parent effort (e.g., "My mom/dad doesn't help me because she/he doesn't

want to"; "My mom/dad helps me because she/he wants to"), and child responsibility (e.g., "My mom/dad doesn't help me because of something I did"; "My mom/dad helps me because of something I did"). These dimensions have been used in previous studies of child attributions, both in samples of children with ADHD (e.g., [40, 41]) and typically developing children (e.g., [34]).

A research assistant who administered the measure rated each child's comprehension of the CAM on a scale of 1 (*Did not understand*) to 5 (*Understood completely*) at the time of administration. The average comprehension was 4.75 and 4.79 for the mother and father versions of the CAM respectively. Comprehension ratings did not differ across ADHD vs. control children for the mother, $t(62) = 1.01$, $p = .316$, or the father, $t(60) = .26$, $p = .799$, versions of the CAM. Following administration, scores for each dimension were averaged within the positive and negative scenarios for each parent. Internal consistency of the boys' ratings was moderate to strong for the task difficulty/ease (*a*s ranging from .59 - .71), parent effort (*a*s ranging from .65 - .76), and child responsibility (*a*s ranging from .76 - .88) dimensions. However, the internal consistency was very low ($a = .24$) for ratings of ability attributions for fathers' behavior in negative scenarios (although it was higher for ratings of mothers' ability in negative situations and for ability ratings in positive scenarios, *a*s ranging from .48 - .70). However, given that our analysis plan required scores for both parents, for both positive and negative scenarios, this attribution dimension was subsequently excluded from analyses.

Supporting the validity of the CAM, we examined correlations between scores on each dimension and boys' reports of their general perceptions of their relationships with their mothers on the Parent Perception Inventory (PPI) [27]. Children's perceptions of mothers' positive behaviors on the PPI were significantly negatively correlated with the ratings of effort

attributions for mothers' behaviors in negative scenarios on the CAM, $r(65) = -.53$, $p < .001$, indicating that children who perceived less positive relationships with their mothers were more likely to endorse lack of effort as the reason for their mothers' negative behavior. In contrast, PPI scores for positive maternal behaviors were positively correlated with attributions to mothers' effort, $r(65) = .49$, $p < .001$, as well as to task ease, $r(65) = .34$, $p = .005$, and child responsibility, $r(65) = .29$, $p = .020$, for mothers' behavior in positive scenarios on the CAM. That is, the more positive the child's perception of his relationship with his mother, the more likely he was to see her positive behavior as due to her effort, task ease, or to himself. Unfortunately, boys did not complete the PPI for their fathers, so it was not possible to examine these validity correlations for fathers.

Procedure

This study was approved by our university's Research Ethics Board. Eligible families were invited to take part in a lab visit at the University of British Columbia. After a thorough explanation of the procedures of the study, mothers provided their consent to participate and children provided assent. Confidentiality of both parent and child responses was assured. During the visit, mothers completed an assessment of their child's ADHD symptoms and children responded to the questionnaire assessing attributions for their mothers' and their fathers' behavior.

Data Analysis and Results

Means and standard deviations of child responses on the CAM are presented in Table 3. On average, children's ratings for all the attribution dimensions were distributed approximately normally, and the means across the dimensions ranged from 1.96 – 4.91. To examine the possibility that medication status may have influenced the ratings of the boys' with ADHD, we

compared ratings provided by children who were taking medication vs. not taking medication at the time of their participation. Ratings on each of the attribution dimensions did not differ significantly between children with ADHD who were on or off medication during the visit, *p*s ranging from .131 – .882.

To address the primary research questions, a 2 x 2 x 2 x 3 repeated measures analysis of variance (ANOVA) was conducted to examine differences in children's attributions for their parents' behaviors. Child ADHD status served as the between-subjects variable and parent gender (mother, father), scenario valence (positive, negative), and type of attribution (task, effort, child) were the within-subjects variables. The sphericity assumption was violated in one case; the Greenhouse-Geisser correction was applied and did not change the pattern of results. A visual inspection of a Q-Q plot of the ANOVA indicated no problems with normality. In addition, no influential outliers were observed, and there was no evidence of heteroscadesticity in the model, Bartlett's $K^2 = 2.10$, $p = .147$.

The four-way interaction between ADHD status, parent gender, scenario valence, and attribution type was not significant. Two significant three-way interactions were observed among (1) ADHD status, parent gender, and attribution type, $F(2, 128) = 3.23$, $p = .043$, partial $\eta^2 = .05$, and (2) scenario valence, parent gender, and attribution type, $F(2, 128) = 10.82$, $p < .001$, partial $\eta^2 = .15$. Each of these interactions is described further below

ADHD status x parent gender x attribution type. To breakdown this three-way interaction, we examined the two-way interaction between ADHD status and parent gender at each level of the attribution type factor. For task difficulty/ease attributions, there was no two-way interaction between parent gender and ADHD status ($p = .126$). However, there was a significant main effect of parent gender, $F(1, 64) = 5.59$, $p = .021$, partial $\eta^2 = .08$, such that all

children rated attributions to task characteristics higher for their mothers compared to their fathers. No main effect was found for ADHD status. For parent effort-related attributions, there was no two-way interaction between parent gender (p = .111) and ADHD status and no main effects were found. Finally, for child responsibility attributions, the two-way interaction between ADHD status and parent gender was not significant (p = .593). Main effects of ADHD status, $F(1, 64) = 4.50$, p = .038, partial η^2 = .07, and of parent gender, $F(1, 64) = 4.39$, p = .040, partial η^2 = .06, were observed. Children with ADHD rated child responsibility attributions higher than typically developing children and all children gave higher ratings on attributions of child responsibility for their fathers' behavior compared to their mothers'.

Scenario valence x parent gender x attribution type. As above, we broke down this three-way interaction by examining the two-way interaction between scenario valence and parent gender at each level of the attribution type factor. For task difficulty/ease attributions, a two-way interaction between scenario valence and parent gender was found, $F(1, 65) = 34.87$, $p < .001$, partial η^2 = .28. Analysis of simple main effects indicated that children rated task difficulty attributions in negative scenarios higher for their mothers' behavior than their fathers', $F(1, 130) = 13.18$, $p < .001$. For parent effort attributions, the two-way interaction was not significant (p = .530). There was a main effect of scenario valence, $F(1, 65) = 102.92$, $p < .001$, partial η^2 = .61, but not of parent gender. All children rated parent effort attributions higher in positive, compared to negative, scenarios. For child responsibility attributions, there was no two-way interaction between scenario valence and parent gender (p = .774). However, significant main effects of parent, $F(1, 65) = 4.90$, p = .030, partial η^2 = .07, and of scenario valence, $F(1, 65) = 28.05$, p< .001, partial η^2 = .30, were observed. All children rated child responsibility attributions higher

for positive, compared to negative, scenarios. Moreover, children rated child responsibility attributions higher for their fathers' behavior, compared to their mothers'.

Child ODD symptoms. To test whether the boys' level of oppositional behavior was related to the types of attributions offered, ODD symptoms were first compared across the ADHD and control groups. As would be expected, a *t*-test indicated that the boys with ADHD displayed significantly higher levels of ODD symptoms than typically developing children, $t(55) = 4.25$, $p < .001$. We then re-ran the repeated measures ANOVA and included the child ODD symptoms as a covariate; the pattern of results for the three-way interactions was unaltered.

Discussion

The present study assessed children's attributions for their parents' behavior in boys with and without ADHD. This investigation added new information regarding attributions for both mother and father behavior, across both positive and negative parent behaviors, and along several dimensions.

Differences between Children with and without ADHD

We predicted that children with ADHD would make more negative attributions for their parents' behavior than typically developing children. Thus, in negative scenarios, we expected higher ratings of parent-internal attributions (parent effort) and lower ratings for parent-external attributions (task difficulty and child responsibility). In positive scenarios, we expected the reverse pattern, with lower ratings for parent-internal attributions and higher ratings for parent-external attributions. This hypothesis was not fully supported, given that there was no main effect of ADHD status on parent effort or task difficulty/ease attributions. In fact, all children viewed their parents as trying to be helpful in positive scenarios. Furthermore, boys with ADHD were no more likely than controls to say that their parent's negative behaviors were due to the

parent's lack of effort (e.g., "didn't help me because he/she didn't want to"). Thus, the boys' attributions for parent behavior also were in contrast to the findings of Andrade et al. [18] that children with ADHD made more positive intent attributions for peer behavior in positive scenarios, as well as more negative intent attributions for peer behavior in negative scenarios, than control children. This difference in findings might be explained by differences in the individuals for whom the children were providing attributions – parents in the current study, and peers in Andrade et al. [18]'s study. The lack of similarity across the two studies highlights the importance of considering social cognitions across a variety of domains (family, peer, etc.). Although contrary to our predictions, the finding that children with and without ADHD did not differ in their effort-related attributions for their parents' behavior is in line with previous work [13, 32] showing no differences in perceptions of parents or conflict-related attributions between these groups. Provided they are replicated, these results suggest that the higher levels of conflict associated with families of children with ADHD may be related to factors other than the children's inferences regarding their parents' negative intentions. However, the very limited number of studies in this area indicates the need for further research, including that using measures of both attributions and parent-child conflict, before confidence can be placed in this interpretation.

Within the first three-way interaction detected in this study, the effect of ADHD emerged in children's ratings of the child responsibility dimension. Compared to controls, boys with ADHD consistently assigned more responsibility to themselves in explaining their parents' behavior. That is, whether explaining why their parents acted positively (e.g., helped them with their homework) or negatively (e.g., did not fix their toy), children with ADHD were more likely to indicate that the behavior was caused by something they did. The greater responsibility

assumed by boys with ADHD in both the positive and negative scenarios is contrary to our prediction of children with ADHD taking more credit for positive and less blame for negative parent behaviors. However, it is consistent with other research indicating that these children show a tendency toward egocentric interpretations of events. For example, Braaten and Rosén [42] found that boys with ADHD were less likely than controls to match their own emotion to that of a fictional character's or to reference the character's feelings in explaining their own emotions. These findings were interpreted as evidence that boys with ADHD may display delays in the development of perspective taking or empathy [43], and are consistent with other research suggesting that children with ADHD display reduced ability to take the perspective of others as well as general deficits in social cognition in comparison to their age-matched peers [44]. These delays can be argued to explain what might be seen in this study as the more egocentric stance of children with ADHD in endorsing of their own responsibility for their parents' behavior. The developmental literature indicates a more egocentric approach to perspective taking is typical of young children. Children under the age of four or five, for example, are less able to distinguish their own perspectives from those of others, and display less of an understanding of others' beliefs and how they may differ from their own [45, 46]. Other research also has demonstrated that attention problems and impulsivity are negatively related to theory of mind and that these two factors may underlie difficulties in social functioning in children with symptoms of ADHD [47]. Although there was no difference in chronological age between boys with and without ADHD in the present sample, it is possible that the boys with ADHD were less mature in their social cognitive skills. Post-hoc analyses showed that, in fact, child responsibility attributions were negatively correlated with age within the ADHD group, *r*s ranging from -.30 – -.51, but not within the control group, *r*s ranging from -.08 – -.18. Thus, among the boys with ADHD, those

who were younger (i.e., approximately age 7) endorsed a pattern of higher ratings for child responsibility attributions, but those who were older (i.e., approximately age 11) did not, and the latter group rated child-related attributions in a similar manner to their typically developing peers. The developmental literature cited above [45, 46] would lead us to expect that a tendency toward egocentric interpretations of events (indicated by the higher levels of assumed responsibility by the children in the ADHD group overall) should decline by age 4 or 5. However, in the current sample, this tendency seems to persist to a later age in boys with ADHD. In sum, we believe our findings are consistent with an interpretation that highlights potential developmental delays in social cognition among children with ADHD.

Other explanations for the effect of ADHD on child responsibility attributions may also be considered. In positive scenarios, it might be that boys with ADHD were portraying themselves in a more positive light relative to typically developing children, by taking credit for the positive behaviors their parents displayed. This finding compliments the literature supporting ADHD children's tendency to show a positive bias in their perceptions of their role in social relationships [37]. Our findings might suggest that this bias toward positive views of the self may also emerge in the explanations that boys with ADHD offer for the behavior of their parents. On the other hand, boys with ADHD also took more responsibility than typically developing children for negative parent-child interactions. Previous research has shown that boys with ADHD are more likely to experience internalizing problems such as depressive or anxiety symptoms than typically developing control children (e.g., [48, 49]) and perhaps related to these internalizing problems, children with ADHD assume greater personal responsibility for negative family events. As such, it is possible that different mechanisms underlie ADHD boys' higher ratings of child responsibility attributions for positive versus negative parenting behaviors

(positive bias and depressive distortions). However, a focus on a single developmental explanation seems more parsimonious.

Differences in Attributions for Positive and Negative Mother and Father Behavior

The prediction that children would make more unfavourable attributions for their parents' behavior in negative scenarios was not supported. For both mothers and fathers, and across attribution dimensions, children rated all attributions higher for positive than negative parent behaviors. Furthermore, this result contradicts previous research with adult populations showing that negative events, particularly if unexpected, elicit more causal attributions than positive ones [50, 51, 52]. Social desirability may offer a possible explanation for the greater endorsement of attributions in positive rather than negative scenarios by boys in this study. That is, boys may be eager to offer explanations for positive parent behaviors in order to convey that these types of scenarios are more applicable to their families. Furthermore, although confidentiality of their responses was assured, it is possible that children were more reluctant to provide attributions for their parents' negative behavior than positive behavior, if they felt there was a chance that their responses would be shared with the parent or evaluated as inappropriate by the researchers. Further research is needed to clarify the pervasiveness of this tendency of children to endorse more attributions for positive than negative parent behaviors and to disentangle the influence of reactivity from true attributions differences.

Differences did emerge between the attributions children endorsed for mothers and fathers, although these differences depended on the type of attribution made, and whether children were rating parent behaviors in scenarios with positive or negative outcomes. All children rated task difficulty as a more likely explanation for their mothers' behavior, compared to their fathers', in negative scenarios. In other words, when explaining negative interactions

with their mothers (e.g., “Imagine your toy is broken and your mom doesn’t help you fix it”), children indicated that the behaviors were caused by a characteristic of the task (“the toy is too hard to fix”), more so than when explaining negative interactions with their fathers. This finding may reflect children’s beliefs about gender and family roles. Mother-child interactions typically involve caregiving and household tasks, whereas father-child interactions more often involve physical and outdoor play, especially with their sons [53, 54]. Previous research in social cognition has also shown that women conceptualized as traditional caregivers or housewives are stereotypically perceived as warm but incompetent [55, 56]. The task difficulty attributions made by children when explaining mothers’ unhelpful behavior are consistent with this view of mothers as being caring but not fully competent: my mother didn’t fix my toy (even though she may have wanted to) because the toy is too hard for her to fix. Children showed the opposite pattern in their ratings of task ease attributions in positive scenarios; these ratings were higher for fathers’ compared to mothers’ behavior. This finding is also consistent with a gender competence interpretation implying that fathers are perceived as more skilled and competent than mothers: my father fixed my toy because the toy is easy for him to fix. Within the current sample, a McNemar test indicated a significantly higher proportion (p = .015) of employed fathers (90.8) compared to employed mothers (70.8). This would be consistent with a description of more mothers in our sample filling traditional roles (unemployed, stay-at-home) than fathers, supporting our interpretation.

In a post-hoc consideration of the results for children’s attributions of parent behavior to task ease or difficulty, particularly for negative scenarios, the findings may be seen to have implications for the quality of family relationships through the role of reconciliation and forgiveness. Previous research has shown that benign (i.e., external) attributions for the

transgressions of others are related to forgiveness and relationship quality in parent-child dyads [57] and that forgiveness may vary across different types of parent-child relationships, with children being more likely to forgive apologies from their mothers, but not their fathers [58]. Although not predicted, our finding that children rated external, benign attributions to task difficulty higher for their mothers' negative behavior than their fathers' may represent a potential mechanism underlying children's greater willingness to forgive mothers. Nevertheless, this interpretation is post hoc and should be received with caution given that there were no mother-father differences on the parent effort dimension and all parents were perceived as wanting to be helpful.

All boys rated attributions along the dimension of child responsibility higher for their fathers' compared to their mothers' behavior. This result may be explained by the children's tendency to identify more with their same-sex parent; perhaps boys see more similarity in the behavior of themselves and their fathers, and thus rate their own responsibility attributions higher for fathers than for mothers. However, we were unable to fully test this hypothesis given that our sample did not include girls, which would be necessary to allow for appropriate comparisons of parent-child dyads of same and different genders. Alternatively, because children typically spend less time with their fathers than mothers [59], a relative unfamiliarity with their father's typical actions and motivations may contribute to children looking more to their own behavior as an explanation in interactions with their fathers. On the other hand, spending more time with mothers may provide children with a deeper understanding of the causes of their mothers' behavior, and make them less likely to look to their own behavior as an explanation.

Strengths and Limitations

A major strength of this investigation was the inclusion of child attributions for both mothers' and fathers' behavior, extending much of the previous research that has focused exclusively on mothers (e.g., [2]). Furthermore, a unique contribution of this study is the assessment of attributions for positive interactions in addition to negative ones, thus providing a more comprehensive picture of children's perceptions of their parents. Despite these strengths, limitations of this study must be acknowledged. First, our sample consisted exclusively of boys. We were therefore unable to test for potential interactions between parent and child gender in children's attributions for their parents' behavior. Second, our sample consisted of boys from relatively advantaged and stable two-parent families. It is possible that the attributions for parent behavior offered by children from single parent or more dysfunctional families will differ from the patterns found in this study. Future research should examine children's attributions in a more heterogeneous sample of families. Furthermore, we were unable to include the parent ability dimension in our analysis due to unreliability. The reliability coefficient for this dimension was lowest for father behavior in negative scenarios (a = .24). Attribution scores for this dimension spanned the smallest range (1 – 4.75, compared to 1 – 6 for all other dimensions, including mother ability in positive and negative scenarios) and displayed the lowest variability (SD = .83). This restricted variability might explain the low internal consistency for the father ability dimension in negative scenarios. However, ability attributions remain an important area for future study and we encourage researchers to include this dimension in investigations of child attributions.

The present findings represent a broad description of children's attributions for their parents' behavior. Interactions among the different factors in this study illustrate the complexity of children's attributions for parents' behavior, and the importance of considering variables such

as parent gender, type of behavior, and the specific type of attribution being assessed. This investigation has been a promising first step in disentangling the differences in attributions made by children with and without ADHD, for their mothers' and fathers' behavior. We encourage future researchers to replicate and extend the patterns found here, and broaden the focus of subsequent studies to include assessment of the links between child attributions and measures of parent-child interactions.

Summary

This study was the first to assess attributions for mothers' and fathers' behavior made by children, and involved 66 boys (mean age 9.75) with and without ADHD. The children made attributions of parent effort, task difficulty, and child responsibility for parents' behavior in scenarios depicting parent-child interactions with either positive or negative outcomes for the child. Overall, children rated all attribution dimensions higher in the positive scenarios, potentially reflecting the boys' motivation to provide socially-desirable responses. Furthermore, all children rated child responsibility attributions higher for scenarios involving their fathers compared to mothers. Two explanations are brought forth for this finding: a tendency for boys to identify more with their same-sex parent, or, alternatively, children's relative unfamiliarity with the motivations underlying their fathers' compared to mothers' behavior. Across positive and negative scenarios, boys with ADHD rated child responsibility attributions higher than typically developing controls. This evidence supports the idea that children with ADHD may display developmental delays in social cognition, and offer more child-centric interpretations. Consistent with a gender competence interpretation, boys saw task-related attributions as more important for mothers' behavior in negative scenarios, but more important for fathers' behavior in positive scenarios. Results from this study illustrate the intricacies of child attributions for parents'

behavior, and underscore the need to consider these attributions for both mothers and fathers, across different dimensions, as well as in a variety of contexts.

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Table 1

Sample Characteristics

	ADHD *M (SD)*	Control *M (SD)*
Child age in years	9.85 (1.19)	9.68 (1.09)
Socioeconomic status[a]	2.15 (.88)	1.89 (.73)
ODDRS[b]	1.41 (.61)	.72 (.39)
Fathers employed (%)	92.9	89.2
Mothers employed (%)	82.1	63.2
Mother ethnicity (%)		
Caucasian	70.4	62.2
Chinese	11.1	18.9
Other	18.5	18.9

[a] The socioeconomic status is calculated using the Hollingshead Four Factor Index of Social Status [60] scaled score. Values range from 1 – 5, with 1 representing the highest SES.

[b] ODDRS scores were derived from an average of mother and father responses to items assessing child oppositional defiant symptoms. Higher scores reflect more symptoms.

Table 2

CAM Scenarios

Positive
Imagine your mom/dad helps you with your homework.
Imagine your mom/dad offers to teach you a new magic trick.
Imagine you and your mom/dad spend an afternoon building a model together.
Imagine your mom/dad plays a board game with you one day.
Negative
Imagine one of your toys is broken and your mom/dad doesn't help you fix it.
Imagine you want to practice playing catch and your mom/dad doesn't practice with you.
Imagine your mom/dad doesn't go swimming with you at the pool.
Imagine you are playing a video game and your mom/dad doesn't play with you.

Table 3

Children's Attribution Measure (CAM) Descriptives[a]

Child attributions	ADHD		Control	
	M	*SD*	*M*	*SD*
Mother behavior				
Negative				
Task difficulty	2.80	1.04	2.90	1.27
Parent effort	2.88	1.07	2.66	1.10
Child responsibility	2.30	1.25	1.96	.94
Positive				
Task difficulty	3.57	1.32	3.12	1.04
Parent effort	4.91	1.14	4.67	1.33
Child responsibility	3.51	1.43	2.68	1.34
Father behavior				
Negative				
Task difficulty	2.28	1.16	2.07	.98
Parent effort	2.57	1.54	2.74	1.31
Child responsibility	2.37	1.23	2.32	1.35
Positive				
Task difficulty	3.95	1.45	3.22	1.21
Parent effort	4.81	1.19	4.81	1.01
Child responsibility	3.75	1.41	2.83	1.53

[a] Scores on the CAM reflect responses made on a 6-point scale ranging from "*Not at all true"* to *"Really true".*