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Parental ADHD Symptomology and Ineffective Parenting: The Connecting Link of Home Chaos

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Abstract

Objective: This study examines links between maternal and paternal ADHD symptoms and parenting practices that require inhibition of impulses, sustained attention, and consistency; the role of home chaos in these associations is also assessed.

Design: ADHD symptoms, the level of home chaos, and parenting practices (involvement, inconsistent discipline, supportive and non-supportive responses to children's negative emotions, and positive parenting) were assessed through self-reports of 311 mothers and 149 fathers of middle-childhood children. Child ADHD symptoms were assessed by teachers.

Results: Mothers reported higher home chaos when they or their children had higher levels of ADHD symptoms; for fathers, only their own ADHD symptoms predicted higher levels of home chaos. Mothers' ADHD symptoms were positively associated with inconsistent discipline and non-supportive responses to children's negative emotions, and these associations were mediated by home chaos. Higher levels of fathers' ADHD symptoms predicted more inconsistent discipline, low involvement, and a low level of supportive and a high level of non-supportive responses to children's negative emotions. Home chaos moderated the link between paternal ADHD and inconsistent discipline and mediated the link between paternal ADHD and involvement. Overall, positive aspects of parenting, and those that require attention and ability to control one's impulses, may be compromised in fathers with high levels of ADHD symptoms.

Conclusions: Effectiveness of specific parenting practices for both mothers and fathers may be compromised in parents with ADHD symptoms. In certain cases, parental ADHD symptoms translate into ineffective parenting through disorganized homes.

INTRODUCTION

Parenting is a complex task that involves patience, attention, planning, and problem solving. The importance of these basic cognitive skills has been generally overlooked in models of the determinants of parenting in favor of social and emotional characteristics of parents (e.g., Belsky, 1984) and environmental factors (e.g., McLoyd, 1998). Yet it is clear that effective parenting requires such cognitive skills as the inhibition of immediate responses to attain long-term goals, the ability to focus attention on a child and keep track of the child's activities despite the many distractions of everyday adult life, and higher-order planning and problem solving skills that contribute to maintenance of an organized and appropriate environment for childrearing.

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Certain parenting practices that require inhibition of impulses and consistency may be compromised in mothers and fathers with ADHD symptoms and may be translated into ineffective parenting through chaotic households.

Deficits in these types of cognitive skills are included in the criteria for diagnoses of Attention-Deficit/ Hyperactivity Disorder (ADHD; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005), suggesting that adults with diagnoses of ADHD or those who experience symptoms of ADHD in a non-clinical range may have considerable difficulty with parenting. Although until recently considered a disorder limited to childhood, ADHD is now known to persist into adulthood in 30 to 50% of individuals diagnosed as children (Murphy & Barkley, 1996a). Few researchers have considered the broader implications for family members when a partner or a parent has ADHD. There is some evidence that separation and divorce rates are high for couples in which one partner has ADHD (Biederman et al., 1993; Murphy & Barkley, 1996a). In addition, results of the few studies that have examined parents with ADHD show clear links with ineffective parenting and related child problems. For example, parents diagnosed with ADHD tend to be lax and inconsistent in enforcing limits with their children, possibly because of the attentional demands of monitoring child behavior and providing consistent consequences (Murray & Johnston, 2006). Among fathers who were highly involved with their children, those with symptoms of ADHD were found to be harsher in their parenting than those with no ADHD symptomology (Arnold, O'Leary, & Edwards, 1997); again, this link may relate to an inability to inhibit negative responses, especially over long periods of time. Mothers with ADHD are also reported to develop few household routines and be relatively unaware of their children's activities (Weiss et al., 2000). Despite these limitations in parenting skills, mothers with ADHD are found to be equally positive and, in fact, empathic in responding to their children when compared with mothers without ADHD (Murray & Johnston, 2006; Psychogiou, Daley, Thompson, & Sonuga-Barke, 2007). The difficulties that parents with ADHD symptoms appear to have are not in their affective ties or displays of warmth but in their ability to organize the home environment, attend closely to their children's behavior, and respond thoughtfully and consistently to their children. Thus, in the present study we focus on three specific aspects of parenting – monitoring, inconsistent discipline, and involvement -- which we expect to be compromised in parents who experience symptoms of ADHD and one – positive parenting – which we expect not to differ in parents with ADHD symptoms as compared with typical parents.

In the present study we also examine another specific dimension of parenting: response to child negative emotions. Providing support in situations where children experience negative affect is expected to be a particularly difficult task for parents who have ADHD symptoms. Children's negative emotions tend to elicit reactive parental negativity (Martin, Clements, & Crnic, 2002). To respond sensitively and help children learn from negatively charged experiences, parents must inhibit their initial negative reaction in favor of a supportive and encouraging response. We examined parental supportive and non-supportive responses to child negative emotions as important components of effective parenting that are likely to be linked to the presence of ADHD symptoms in parents.

The Role of Home Chaos

“Home chaos” describes an environment that is high in background noise and crowding and low in structural and temporal routine (Corapci & Wachs, 2002). An orderly and regulated home contributes to the well-being of both parents and children. Research indicates that family environments high in chaos increase parental negative responses, lower parental involvement in family activities, and reduce engagement in developmentally facilitative interactions with children (Corapci & Wachs, 2002; Evans, Maxwell, & Hart, 1999). Valiente, Lemery-Chalfant, and Reiser (2007) found home chaos to be negatively associated with parents' supportive reactions to children's negative emotions and parents' effortful control, which includes attention, activation, and inhibition. For children, lack of routine and structure are related to externalizing behaviors (Valiente et al., 2007) and lower levels of social and cognitive competence (Dumas, LaFreniere, & Serketich, 1995). Furthermore, research indicates that

household chaos is a useful construct in itself, not just a proxy for adverse demographic factors (Dumas et al., 2005), and it is related to child problem behavior over and above socioeconomic status and parenting (Coldwell, Pike, & Dunn, 2006).

Based on evidence that mothers with ADHD develop few household routines (Weiss et al., 2000) and that parental effortful control (including attention and inhibition of immediate responses) is negatively associated with home chaos (Valiente et al., 2007), we examined the link between parental ADHD symptoms and home chaos and also the extent to which home chaos mediates the relation between parental ADHD symptoms and effective parenting. It is our hypothesis that parents with ADHD symptoms are less likely to follow through with household chores, establish and maintain routines, and keep track of family activities, thus creating a more chaotic home environment. In turn, elevated levels of home chaos interfere with effective parenting practices. An alternative possibility is that high levels of household chaos exacerbate the associations between parental ADHD symptomology and ineffective parenting. Thus, we ask whether parental ADHD symptoms translate into ineffective parenting through a disordered and chaotic household, or whether a disordered home environment intensifies the links between parental ADHD symptoms and negative parenting.

Parenting in Mothers and Fathers

Emerging research evidence suggests that the parenting of mothers and fathers is similar in some respects but different in others (Parke, 2002). Mothers and fathers are similar in overall expression of emotion and in quantity of positive interactions with their children (e.g., McDowell, Kim, O'Neil, & Parke, 2002), but mothers tend to be more supportive when children are upset, sad, or angry (Eisenberg, Fabes, & Murphy, 1996; McElwain, Halberstadt, & Volling, 2007). Mothers and fathers may also differ in their parenting cognitions and attributions of children's noncompliance (Hoza et al., 2000). Thus, the present study examines ADHD symptoms and parenting in both mothers and fathers.

Clinical and Non-Clinical ADHD in Adults and Children

Prior research has tended to focus on parents with full-fledged ADHD diagnoses. Some clinicians, however, have described ADHD symptoms as falling at the extreme end of the continuum of typical behavioral traits (Murphy & Barkley, 1996b). In this view, the deficits in attentional focus or behavioral inhibition included among the diagnostic criteria for ADHD are best understood as quantitatively but not qualitatively different from the same traits in the general population. Because a diagnosis of ADHD requires the presence of at least 6 characteristics of the disorder for inattentive type or hyperactive-impulsive type (American Psychiatric Association, 2000), individuals may have significant dysfunction but still not reach criteria for a clinical diagnosis. The present study included individuals from a community sample who experience sub-clinical symptoms of ADHD to examine the potential role of parental ADHD symptomology in parenting effectiveness. We also include both fathers and mothers to expand our understanding of family functioning when either parent has ADHD symptoms. Because there may be differences in parenting as a function of family composition, we controlled for two-parent versus single-parent families in the analyses of mothers. Because child ADHD symptoms are known to affect parenting (Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002), we controlled for child ADHD as well.

Study Hypotheses

The specific hypotheses examined in the present study were: (1) parents with higher ADHD symptoms report higher levels of home chaos; (2) parents with higher ADHD symptoms report more ineffective parenting behaviors, such as low monitoring, inconsistent discipline, lack of involvement, and non-supportive responses to child negative emotions; but parental ADHD symptoms are not related to reports of positive parenting; and (3) home chaos mediates the

link between parental ADHD symptoms and parenting effectiveness. Because living in a chaotic home environment may exacerbate the links between parental ADHD symptoms and parenting, we also tested the moderating model as an alternative to the last hypothesis.

METHOD

Participants

Families participating in this study were part of a larger longitudinal project designed to identify early indicators of behavioral problems in young children. For the larger project families were recruited through childcare centers, the County Health Department, and the local Women, Infant, and Children program in a southeastern area of the United States. The recruitment process occurred in two stages when focal children of participating families were 2 years of age (one group was born during 1995-1996 and the second group in 1998). The aim of the recruitment process was to attain a sample representative of the surrounding counties in terms of ethnicity and socioeconomic status (SES). As such, our sample was a community sample, not a clinical one. The data used in the present report were collected at the same time point (2005-2006) for all 319 families remaining in the project (attrition rate was 27% over 8 years); thus, 213 families had a 7-year-old child and 106 had a 10-year-old child. In this sample, 72% were two-parent households; 67% were European American (coded 1), and 33% of ethnic minority (coded 2). Slightly more than half (55%) of participating families had a girl (coded 2; boys were coded 1) as the focal child. Of the mothers, 38% had less than a college education. According to the Hollingshead (1975) four-factor SES index, 49% were in non-professional occupations and 51% in professional occupations. Comparison of the demographic characteristics of the participating families with those who discontinued participation showed no differences in terms of ethnicity, marital status, or socioeconomic status. There was, however, a difference in child gender, $t(445) = 2.19, p = .029$; a higher proportion of families with girls continued participation in the project.

Mothers were the primary caregivers in all but two of the participating families; fathers were primary caregivers in these two families (one family with a step-mother and one as a single parent household). Of the 228 two-parent families, 149 fathers (65%) participated in the study. There were no significant differences between families with participating and non-participating fathers in terms of family socioeconomic status, but there were differences by child gender, $t(226) = 2.15, p = .03$, and ethnicity, $t(226) = 2.06, p = .04$. Of non-participating fathers, 60% had a girl as a focal child, and 30% were ethnic minority. Of participating fathers 46% had a girl as a focal child, and 20% were ethnic minority.

Participants who were missing two or more questionnaires were excluded from all analyses, thus reducing the number of participating mothers to 311 and the number of families where information was available for both mothers and fathers to 147. Classroom teacher reports were used to assess children's ADHD symptomology and were available for 253 children. There were no significant differences in child gender or ethnicity for available and non-available teacher reports of child ADHD symptoms. The total amount of missing data was 1.7% for mothers, 0.7% for fathers, and 19.2% for teachers¹. Missing data were replaced by scale means for categorical data and imputed using the maximum likelihood estimation method, implemented by the EM algorithm, for ordinal scales.

¹Because of the substantial amount of missing data on teacher reports of child ADHD symptoms, all analyses were run with the reduced sample as well as with missing data imputed. No differences in results were found and therefore the results for the full sample, with imputed data, are reported.

Procedure

During a laboratory visit, while children were engaged in activities as a part of the larger study, mothers completed questionnaires regarding family demographics, their own ADHD symptoms, perceived level of routine and structure in the home, and aspects of parenting practices such as monitoring, involvement, discipline, overall positive parenting, and responses to children's negative emotions. At the end of the visit a questionnaire packet with a stamped return envelope was given to the mothers to be completed by fathers and mailed back to the research team. The questionnaires included self-reported father ADHD symptoms, perceived level of routine and structure in the home, and the same aspects of parenting practices as completed by the mothers.

Measures

Demographics—All demographic information was collected by mother report.

Maternal and paternal ADHD symptoms—Mothers' and fathers' ADHD symptoms were measured by the Adult ADHD Rating Scale-IV (Murphy & Barkley, 1996a), a self-report measure that yields an overall ADHD severity index and has been shown in previous research to correlate with clinical ADHD assessments (Murphy & Barkley, 1996b). The scale consists of 18 items assessing difficulties with inhibition of immediate responses, sustaining attention, planning, and problem solving. Each item is rated on a 4-point scale, from *Rarely/Never* to *Very Often*, based on behavior in the last 6 months. Total scores were calculated by summing the individual item scores; the possible range is 0 to 54. Cronbach alphas were .90 for mothers and .87 for fathers. It is important to note that in this community sample, as expected, few parents (3% of participating mothers and 2% of fathers) reached the clinical cut-offs for ADHD diagnosis. The measure of parental ADHD symptoms was used as a continuous variable reflecting the degree of symptom presentation, not as a categorical variable identifying diagnostic categories.

Home chaos—The level of routine and structure in the home was assessed through the Confusion, Hubbub, and Order Scale (CHAOS; Matheny, Wachs, Ludwig, & Phillips, 1995) that was administered to both mothers and fathers. Participants either agreed or disagreed with 15 statements describing life in their home, such as, "We can usually find things when we need them". After reflecting the items describing orderliness, a total score (range 0-15) was calculated; higher scores indicate more chaotic home settings. Cronbach α s were .82 for mothers and .83 for fathers.

Parenting practices were assessed using two measures. The Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996) was used to assess monitoring, inconsistent discipline, parental involvement, and positive parenting. Each item was rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*) to represent "typical" frequency in the home. Scores were calculated as means for each of the subscales. The monitoring subscale consisted of 10 items (e.g., "Your child is out with friends you do not know.") with Cronbach $\alpha = .56$ for mothers and $\alpha = .59$ for fathers; inconsistent discipline included 6 items (e.g., "The punishment you give your child depends on your mood."), with Cronbach $\alpha = .70$ for mothers and $\alpha = .71$ for fathers; involvement included 10 items (e.g., "You talk to your child about his/her friends.") with Cronbach $\alpha = .72$ for mothers and $\alpha = .81$ for fathers; and positive parenting subscale included 6 items (e.g., "You compliment your child when he/she does something well.") with Cronbach $\alpha = .79$ for mothers and $\alpha = .78$ for fathers. Due to low levels of internal reliability, the monitoring subscale was excluded from the analysis.

The Coping with Children's Negative Emotions Scale (CCNES; Fabes, Eisenberg, & Bernzweig, 1990) was used to measure parental responses to children's negative affect. The

scale consists of 12 hypothetical scenarios in which the child is described as upset or angry. On a 7-point Likert-type scale, parents rate how likely they would be to express six different types of reactions in response to their children's negative emotions. Following prior work (Eisenberg & Fabes, 1994; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002), the responses were aggregated into two subscales: supportive responses (including encouraging emotional expressiveness, emotion-focused coping, and problem-focused reactions) and non-supportive responses (including distress, minimization, and punitive reactions). Cronbach α s for supportive responses were .93 for mothers and .94 for fathers, and for non-supportive responses .84 and .81, respectively.

Child ADHD symptoms—The ADHD Rating Scale-IV: School Version (DuPaul, Power, Anastopoulos, & Reid, 1998), completed by teachers, was used to assess children's ADHD symptoms. This measure is based on the diagnostic criteria for ADHD (DSM-IV; American Psychiatric Association, 2000) and was standardized and used in previous research (DuPaul, Anastopoulos, et al., 1998; Power, Costigan, Leff, Eiraldi, & Landau, 2001). The scale consists of 18 items describing symptoms, such as, "Has difficulty sustaining attention in tasks or playing activities"; each item is rated on a 4-point scale from *Rarely/Never* to *Very Often*, based on children's behavior in the last 6 months. Total scores were calculated by summing individual item scores; the possible range is 0 to 54. Cronbach α for the present sample was .96.

RESULTS

Preliminary Analyses

A series of *t*-tests was run to determine whether there were differences by child age in any of the study measures. No statistically significant differences were found, and therefore the analyses were conducted for the entire group. Correlational analyses indicated relations with study variables for child gender and ethnicity; thus, these factors were controlled in all analyses. Descriptive data on study variables for mothers and fathers, and the correlations for measures completed by both mothers and fathers within the same families, are shown in Table 1. Mothers' and fathers' reports of disorganization in the home were significantly correlated as were most of the parenting variables. Zero-order correlations between study measures for mothers and for fathers, as well as child ADHD symptoms, are shown in Table 2. Correlations were in the expected direction, and, as predicted, parents with higher ADHD symptoms reported more negative parenting in general.

Relation between Parental ADHD Symptoms and Home Chaos

Hierarchical linear regression analyses were run separately for mothers and for fathers to examine relations between parental ADHD symptoms and their reports of home chaos, controlling for child gender, ethnicity, and child ADHD symptoms and for family composition (single- vs. two-parent status) in the analysis for mothers. Results are shown in Table 3. For mothers, the block of control variables was significant, and inspection of univariate results indicated that child ADHD symptoms contributed significantly to mothers' report of chaos in the home (4% of total variance). Mothers' own ADHD symptoms were also significantly related to their reports of home chaos over and above the controls, accounting for 20% of the variance. The analyses for fathers showed that only fathers' own ADHD symptoms were related to their report of home chaos and accounted for 18% of the variance.

The models were re-run including only the sub-sample of families in which both parents participated to determine if the spouse's ADHD symptoms contributed to parent's report of home chaos over and above his or her own ADHD symptoms. For mothers, father ADHD symptoms accounted for a small but significant portion of variance, $\beta = .18, p < .05$, contributing an additional 2%. Mother ADHD was not significant in the father analyses. Thus,

for mothers, not only her own ADHD symptoms but those of her child and her partner contributed to a sense of disorganization and disorder in the home environment. For fathers, by contrast, neither their child's nor their wife's ADHD symptoms contributed to their perception of chaos in the home environment.

Parental ADHD Symptoms and Parenting Effectiveness

Hierarchical regression analyses were used to examine the relation between parental ADHD symptoms and indicators of effective parenting: inconsistent discipline, parental involvement, positive parenting, and supportive and non-supportive responses to child negative emotions. Our hypotheses were that parental ADHD symptoms would be related to indices of negative parenting effectiveness but not positive aspects of parenting, and that home chaos would mediate the relation between parental ADHD symptoms and parenting variables, as indicated by a decrease in the beta for parental ADHD symptoms when home chaos was added to the model (Baron & Kenny, 1986). We also examined an alternative hypothesis of home chaos as a moderator in the link between parents' ADHD symptoms and their parenting effectiveness by including in the final step of the regression analyses the interaction term between parental ADHD symptoms and home chaos. All analyses were run controlling for child gender, ethnicity, and ADHD symptoms; family composition (single- vs. two-parent family) was added as a control in the mother analyses.

Analyses for mothers indicated significant relations between maternal ADHD symptoms and parenting for two of the five parenting effectiveness variables: inconsistent discipline and non-supportive responses to child negative emotions. As anticipated, there were no relations between ADHD symptoms of mothers and positive aspects of their parenting. Results for inconsistent discipline and non-supportive responses are shown in Table 4.

Model 1 in Tables 4a and 4b shows that mothers' ADHD symptoms were positively and significantly related to inconsistent discipline and to non-supportive responses to child negative emotions over and above the effects of child ADHD symptoms. Mothers who reported more ADHD symptoms also reported being more inconsistent in their discipline and using more non-supportive responses to children's negative emotions. In Model 2, with the introduction of home chaos, maternal ADHD symptoms decreased, indicating that home chaos mediates the link between mothers' ADHD symptoms and parenting behavior. Results of the Sobel test of indirect effects confirms the significance of these mediation paths; for inconsistent discipline the Sobel test statistic is 4.60, $p < .001$, and for non-supportive responses it is 4.84, $p < .001$. The interaction between mothers' ADHD symptoms and home chaos (Model 3) was not significant for any of the parenting variables. Higher levels of maternal ADHD were associated with inconsistent discipline and non-supportive responses to child negative emotions through home chaos. The overall models account for relatively small (in both cases 10%) but significant amounts of the variance in mothers' parenting behavior.

Fathers' ADHD symptoms were significantly related to four of the five aspects of parenting behavior examined: inconsistent discipline, involvement, and both supportive and non-supportive responses to child negative emotions. Only the construct of positive parenting was not associated with paternal ADHD symptoms. Results for fathers are shown in Table 5.

Father ADHD symptoms were positively and significantly linked to inconsistent discipline (Model 1 in Table 5a). Home chaos also contributed significantly in predicting inconsistent discipline, but entering home chaos (Model 2 in Table 5a) did not significantly reduce the beta for fathers' ADHD symptoms. Thus, home chaos did not mediate the relation between father ADHD symptoms and inconsistent discipline for fathers. When fathers reported higher ADHD symptoms and more chaos at home, they also reported being inconsistent in their discipline. Father ADHD symptoms were also significantly related to father involvement; fathers with

more ADHD symptoms were less involved with their children. Entering home chaos into the model (Model 2 in Table 5b) reduced the beta for father ADHD symptoms to a non-significant level, suggesting that home chaos mediates the link between father ADHD symptoms and involvement. The Sobel test to indicate the significance of an indirect effect yielded a significant result of 3.29, $p < .001$.

Results for supportive and non-supportive responses to child negative emotions were similar and complementary. Fathers with higher ADHD symptoms reported lower supportive responses and higher non-supportive responses. Home chaos was not significantly associated with either supportive or non-supportive responses and did not serve as a mediator. The amount of variance accounted for in these models was low (7% and 8% respectively), but significant.

The interaction term between father ADHD symptoms and home chaos was tested for each of the parenting variables (Model 3) and was significant only for inconsistent discipline. The simple slopes depicting this interaction are shown in Figure 1. When home chaos was high, there was no relation between fathers' ADHD symptoms and inconsistent discipline (simple slope = 0.014, $p = .16$), but when home chaos was low, father ADHD symptoms were significantly linked to inconsistent discipline (simple slope = 0.026, $p = .01$). Under conditions of high home chaos, fathers on average report relatively high levels of inconsistent discipline. When home chaos is low, only those fathers who have higher levels of ADHD symptoms are inconsistent in their discipline.

DISCUSSION

This study examined associations between parental ADHD symptomology, level of home chaos, and ineffective parenting behaviors as reported by mothers and fathers of school-age children. Findings suggest that parenting practices requiring inhibition of immediate responses and the ability to focus attention on a child may be compromised in parents with ADHD symptoms at non-clinical levels. Consistent with our hypotheses, parents who experienced higher levels of ADHD symptoms also reported greater disorganization and disorder in the home. For mothers, ratings of home chaos were linked to the presence of ADHD symptoms in any family member – herself, her spouse, or her child. For fathers, only their own ADHD symptomology was related to their perception of household chaos.

Results held for both mothers and fathers. Mothers with higher levels of ADHD symptoms were more likely to report inconsistency in imposing limits with their children, supporting earlier findings that parents diagnosed with ADHD tend to be lax and inconsistent in discipline (Murray & Johnston, 2006). Mothers with more ADHD symptoms also reported a higher frequency of non-supportive responses – becoming distressed, minimizing children's distress, or punishing their children – to their children's negative emotions. As predicted, we did not find a relation between maternal ADHD symptoms and positive aspects of parenting. These findings are consistent with prior reports (Murray & Johnston, 2006; Psychogiou et al., 2007).

Although fathers showed similar patterns, our results suggest they may have more difficulties in parenting than mothers. In addition to inconsistent discipline and non-supportive responses to children's negative emotions, fathers with ADHD symptoms reported lower levels of involvement with their children and lower rates of supportive responses to children's distress. The reason for these differences is not clear. Mothers in general tend to respond to child negative emotions more supportively than fathers, and perhaps this difference is amplified when parents have ADHD symptoms. Mothers also may prioritize children's interests and attend to children's needs above their own more often than fathers do. It may also be the case that fathers with ADHD symptoms also experience greater stress outside the family, thus

compounding the negative effect on their parenting. Like mothers, fathers with ADHD symptoms did not report lower levels of positive parenting.

We found home chaos to play a role in the associations between parental ADHD and ineffective parenting. Living in a chaotic home environment seems to work as a mechanism through which maternal ADHD symptoms are translated into compromised parenting. Mothers with higher ADHD symptoms appear to have more difficulties in organizing a home environment that is conducive to effective parenting, and chaos in the home was linked to inconsistent discipline and non-supportive responses to children's negative emotions. Home chaos also mediated the association between fathers' ADHD symptoms and their level of involvement with their children and moderated the association between fathers' ADHD symptoms and inconsistent discipline. Under conditions of high home chaos, fathers as a group reported relatively high levels of inconsistent discipline. However, when home chaos was low, only those fathers who had higher levels of ADHD symptoms were inconsistent in their discipline. Thus, living in a disorganized home appears to be linked to inconsistent discipline regardless of fathers' ADHD symptomology. Home chaos was a significant moderator only in this one case, however, and therefore replication of these findings is needed for further understanding of the relation between home chaos and parent ADHD symptoms.

The present study has several strengths as well as some limitations. The inclusion of both parents addresses the need for further understanding of parenting practices in mothers and fathers. It has become clear that the mechanisms governing parenting in mothers and fathers differ from each other (Parke, 2002); however, parenting more often is studied in mothers only. By including both parents, the present study expands our understanding of overall family processes and shows different pathways through which parental ADHD symptoms may be linked to family life. The relatively large sample size of the present study allowed us to examine two-way interactions between the study variables and have more confidence in the results.

The main limitations of the study are shared method variance due to parents providing information about their ADHD symptomology, parenting, and perceived home chaos; and our reliance on self-reports rather than observational data. Although the measure of parental ADHD symptomology has been validated in prior research (Murphy & Barkley, 1996a), observational assessments of parenting practices may be more accurate than self-reports (Zaslow et al., 2006). Another limitation is the lack of ethnic diversity in the sample, especially for fathers, which made it impossible to examine the potential role of ethnic differences in these family processes and make our results generalizable to minority fathers. The present study extends our understanding of parenting behaviors in adults with ADHD symptoms and the difficulties they may be facing. The results show that parental ADHD symptoms are translated into ineffective parenting to some extent through a disorganized home environment. While the treatment of clinically diagnosed ADHD may require more extensive intervention, the results of the present study suggest that parents with non-clinical levels of ADHD symptoms who make an extra effort in creating quiet and organized homes and implementing daily routines may help to buffer any negative effects of parents' ADHD symptoms on their parenting. It is also important for mental health specialists and other professionals who work with parents to be alert to the potential links among adult ADHD symptoms, home organization, and parenting behavior. Teaching parents skills that will help them to create and maintain quiet and organized households could be an important step in alleviating possible negative effects of parental ADHD symptoms.

The present study focused on parenting practices of adults who exhibit ADHD symptoms. To maintain our focus, child ADHD symptoms were controlled in the analyses. However, recent research suggests that adult ADHD interacts with child ADHD such that mothers with ADHD are less negative in their parenting of children with ADHD than other mothers, whereas fathers

with ADHD are more negative than other fathers (Psychogiou et al., 2007). Future research is needed to address the joint and unique contributions of parent and child ADHD symptoms to parenting practices. Furthermore, it will also be important to understand family dynamics when one or both parents have ADHD symptoms. It is evident that the presence of ADHD symptoms in parents, even in the sub-clinical range, influences the quality of parenting and the supportiveness of the home environment for childrearing. By understanding the link between parental ADHD symptoms and challenges in the parent role, professionals can better address specific challenges these families face.

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Figure 1. Fathers' Inconsistent Discipline as Predicted by 2-way Interaction Between Paternal ADHD and Home Chaos (Low = -1 SD, High = $+1$ SD)

TABLE 1

Descriptive Data for Study Variables for Mothers and Fathers

Measure and Variable	Mothers (<i>N</i> = 311)		Fathers (<i>N</i> = 149)		Mother-father correlations (<i>n</i> = 147)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>r</i>
ADHD symptoms	6.34	6.55	8.07	6.30	0.10
Home chaos	3.33	3.09	2.93	2.98	0.51**
Alabama Parenting Questionnaire					
Inconsistent discipline	2.03	0.53	2.11	0.52	0.32**
Involvement	4.21	0.39	3.81	0.45	0.13
Positive parenting	4.33	0.45	4.10	0.45	0.23**
CCNES					
Supportive responses to children's negative emotions	5.68	0.75	5.24	0.82	0.18*
Non-supportive responses to children's negative emotions	2.28	0.65	2.60	0.55	0.18*

Note. ADHD = Attention-Deficit/Hyperactivity Disorder; CCNES = Coping with Children's Negative Emotions Scale.

*
p < .05,

**
p < .01.

TABLE 2
Correlations Between Study Variables for Mothers (Above the Diagonal) and for Fathers (Below the Diagonal)

Variable	1	2	3	4	5	6	7	8
1. Child ADHD symptoms	--	.03	.16**	.15**	-.04	.00	-.04	.17**
2. Parent ADHD symptoms	-.03	--	.46**	.21**	-.11*	-.09	-.11	.23**
3. Home chaos	.06	.43**	--	.28**	-.15*	-.06	-.12*	.30**
4. Inconsistent discipline	.04	.38**	.40**	--	-.22**	-.06	-.12*	.27**
5. Involvement	-.11	-.23**	-.32**	-.29**	--	.58**	.36*	-.15*
6. Positive parenting	-.11	-.16	-.11	-.24**	.67**	--	.28**	-.03
7. Supportive response to child negative emotions	-.05	-.26**	-.19*	-.25**	.45**	.52**	--	.01
8. Non-supportive response to child negative emotions	.01	.28**	.10	.21**	-.17*	-.18	-.34**	--

Note. ADHD = Attention-Deficit/Hyperactivity Disorder; Child ADHD symptoms as reported by teacher.

* $p < .05$,

** $p < .01$

TABLE 3
Regression Analyses Examining the Relation Between Parental ADHD Symptoms and Parents' Reports of Home Chaos

Variable	Mothers (N = 311)				Fathers (N = 149)			
	B	SE	β	ΔR^2	B	SE	β	ΔR^2
Step 1				0.04*				0.03
Child gender	0.46	0.33	0.07		0.53	0.47	0.09	
Ethnicity	-0.06	0.25	-0.01		-0.43	0.37	-0.09	
Two-parent family	-0.36	0.39	-0.05					
Child ADHD symptoms	0.04	0.02	0.15**		0.03	0.03	0.10	
Step 2				0.20***				0.18***
Parent ADHD symptoms	0.22	0.02	0.46***		0.20	0.04	0.43***	

Note. Mothers, final model *Adj. R*² = 0.23, *F* (5, 305) = 19.10, *p* < .001; Fathers, final model *Adj. R*² = 0.18, *F* (4, 144) = 7.61, *p* < .001.
ADHD = Attention-Deficit/Hyperactivity Disorder.

*
p < .05;
**
p < .01;
***
p < .001.

Regression Analyses Examining Home Chaos as a Mediator and Moderator of the Relation Between Mothers' ADHD Symptoms and Reports of Parenting

TABLE 4

4a. Inconsistent Discipline									
Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Step 1									
Child gender	-0.04	0.06	-0.04	-0.06	0.06	-0.05	-0.05	0.06	-0.05
Ethnicity	-0.01	0.05	-0.02	-0.01	0.05	-0.02	-0.01	0.05	-0.01
Two-parent family	-0.13	0.07	-0.11	-0.12	0.07	-0.10	-0.11	0.07	-0.09
Child ADHD symptoms	0.01	0.00	0.13**	0.00	0.00	0.09	0.00	0.00	0.09
Step 2									
Mother ADHD symptoms	0.02	0.01	0.20***	0.01	0.01	0.10	0.01	0.01	0.15
Step 3									
Home chaos	--	--	--	0.04	0.01	0.21***	0.04	0.01	0.22***
Step 4									
Mother ADHD $\times$ Chaos	--	--	--	--	--	--	-0.00	0.00	-0.08
<i>Note.</i> Model 3 <i>Adj. R</i> ² = 0.10, <i>F</i> (7, 303) = 5.60, <i>p</i> < .001.									
4b. Non-Supportive Response to Child Negative Emotions									
Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Step 1									
Child gender	0.08	0.08	0.06	0.06	0.07	0.04	0.06	0.07	0.04
Ethnicity	-0.01	0.06	-0.01	-0.01	0.06	-0.01	-0.01	0.06	-0.01
Two-parent family	-0.09	0.09	-0.06	-0.07	0.09	-0.05	-0.07	0.09	-0.05
Child ADHD symptoms	0.01	0.00	0.17**	0.01	0.00	0.13*	0.01	0.00	0.13*
Step 2									
Mother ADHD symptoms	0.02	0.01	0.22***	0.01	0.01	0.12*	0.01	0.01	0.13
Step 3									

4b. Non-Supportive Response to Child Negative Emotions

Variable	Model 1			Model 2			Model 3			ΔR^2
	B	SE	β	B	SE	β	B	SE	β	
Home chaos	--	--	--	0.05	0.01	0.22***	0.05	0.01	0.22***	0.00
Step 4										
Mother ADHD $\times$ Chaos	--	--	--	--	--	--	0.00	0.00	-0.02	

Note. Model 3 Adj. $R^2 = 0.10$, $F(7, 303) = 6.02$, $p < .001$.

ADHD = Attention-Deficit/Hyperactivity Disorder.

* $p < .05$,
** $p < .01$,
*** $p < .001$.

Regression Analyses Examining Home Chaos as a Mediator and Moderator of the Relation Between Fathers' ADHD Symptoms and Reports of Parenting

TABLE 5

5a. Inconsistent Discipline										
Variable	Model 1			Model 2			Model 3			ΔR^2
	B	SE	β	B	SE	β	B	SE	β	
Step 1										0.01
Child gender	-0.01	0.08	-0.01	-0.04	0.08	-0.04	-0.06	0.08	-0.05	
Ethnicity	0.02	0.07	0.03	0.05	0.06	0.06	0.05	0.06	0.06	
Child ADHD symptoms	0.00	0.01	0.05	0.00	0.01	0.01	0.00	0.00	-0.01	
Step 2										0.14***
Father ADHD symptoms	0.03	0.01	0.39***	0.02	0.01	0.26**	0.03	0.01	0.31***	
Step 3										0.07***
Home chaos	--	--	--	0.05	0.01	0.30***	0.06	0.02	0.34***	
Step 4										0.03*
Father ADHD $\times$ Chaos	--	--	--	--	--	--	-0.00	0.00	-0.19*	
Note. Model 3 Adj. $R^2 = 0.22$, $F(6, 142) = 7.91$, $p < .001$.										
5b. Involvement										
Variable	Model 1			Model 2			Model 3			ΔR^2
	B	SE	β	B	SE	β	B	SE	β	
Step 1										0.09**
Child gender	-0.04	0.07	-0.04	-0.02	0.07	-0.02	-0.01	0.07	-0.01	
Ethnicity	0.17	0.06	0.24**	0.16	0.06	0.22**	0.16	0.06	0.21**	
Child ADHD symptoms	-0.01	0.04	-0.15	-0.01	0.00	-0.12	-0.01	0.00	-0.11	
Step 2										0.04*
Father ADHD symptoms	-0.01	0.01	-0.20*	-0.01	0.01	-0.10	-0.01	0.01	-0.14	
Step 3										0.04**
Home chaos	--	--	--	-0.04	0.01	-0.24**	-0.04	0.01	-0.26**	
Step 4										0.01

5b. Involvement									
Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Father ADHD $\times$ Chaos	--	--	--	--	--	--	0.00	0.00	0.12
<i>Note.</i> Model 3 Adj. $R^2 = 0.14$, $F(6, 142) = 5.16$, $p < .001$. ADHD = Attention-Deficit/Hyperactivity Disorder.									

5c. Supportive Response to Child Negative Emotions									
Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Step 1									
Child gender	0.14	0.14	0.09	0.15	0.14	0.10	0.16	0.14	0.10
Ethnicity	0.19	0.11	0.14	0.18	0.11	0.14	0.18	0.11	0.13
Child ADHD symptoms	-0.00	0.01	-0.05	-0.00	0.01	-0.04	-0.00	0.01	-0.03
Step 2									
Father ADHD symptoms	-0.03	0.01	-0.22**	-0.02	0.01	-0.19*	-0.03	0.01	-0.21*
Step 3									
Home chaos	--	--	--	-0.02	0.02	-0.08	-0.03	0.03	-0.10
Step 4									
Father ADHD $\times$ Chaos	--	--	--	--	--	--	0.00	0.00	0.09
<i>Note.</i> Model 3 Adj. $R^2 = 0.07$, $F(6, 142) = 3.30$, $p < .01$.									

5d. Non-Supportive Response to Child Negative Emotions									
Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Step 1									
Child gender	-0.04	0.09	-0.04	-0.04	0.09	-0.04	-0.05	0.09	-0.05
Ethnicity	-0.08	0.07	-0.09	-0.08	0.07	-0.09	-0.08	0.07	-0.09
Child ADHD symptoms	0.00	0.01	0.01	0.00	0.01	0.02	0.00	0.01	-0.00
Step 2									
Father ADHD symptoms	0.02	0.01	0.26**	0.02	0.01	0.27**	0.03	0.01	0.33***
<i>Note.</i> Model 3 Adj. $R^2 = 0.07$, $F(6, 142) = 3.30$, $p < .01$.									

5d. Non-Supportive Response to Child Negative Emotions

Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Step 3									
Home chaos	--	--	--	-0.01	0.02	-0.03	0.00	0.02	0.01
Step 4									
Father ADHD $\times$ Chaos	--	--	--	--	--	--	-0.00	0.00	-0.18

Note. Model 3 Adj. $R^2 = 0.08$, $F(6, 142) = 3.07$, $p < .01$.

ADHD = Attention-Deficit/Hyperactivity Disorder.

- *
 $p < .05$,
- **
 $p < .01$,
- ***
 $p < .001$.
- *
 $p < .05$,
- **
 $p < .01$,
- ***
 $p < .001$.