Psychopathology and Substance Abuse in Parents of Young Children With Attention-Deficit/Hyperactivity Disorder

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ABSTRACT

Objective: To compare the prevalence of psychological disorders in parents of young children with and without attention-deficit/hyperactivity disorder (ADHD) and comorbid disruptive behavior disorders (DBD).

Method: Subjects included 98 three- to seven-year-old children with DSM-IV ADHD (68 with ADHD and comorbid oppositional defiant or conduct disorder [ADHD+ODD/CD]) and 116 non-ADHD comparison children recruited in 1995–96 during the first wave of a longitudinal study. Biological mothers were administered interviews to assess ADHD and DBD in their children and mood, anxiety, and substance use disorders in themselves. In addition, they were queried about symptoms of childhood ADHD and DBD, and antisocial personality disorder in themselves and their children’s biological fathers.

Results: Child ADHD was associated with increased rates of maternal and paternal childhood ADHD relative to comparison children. Child ADHD+ODD/CD was associated with maternal mood disorders, anxiety disorders, and stimulant/cocaine dependence, and paternal childhood DBD. Mothers of children with ADHD+ODD/CD also reported increased drinking problems in their children’s fathers.

Conclusions: These findings indicate that many young children with ADHD, particularly those with comorbid ODD/CD, require comprehensive services to address both their ADHD and the mental health needs of their parents. J. Am. Acad. Child Adolesc. Psychiatry, 2003;42(12):1424–1432. Key Words: attention-deficit/hyperactivity disorder, parental psychopathology, hyperactivity.

Numerous observational studies have documented impaired parent–child interactions in families of children with attention-deficit/hyperactivity disorder (ADHD). During task and free-play situations, mothers of children with ADHD are more negative and reprimanding, issue more frequent commands, and are less responsive to their children’s requests for attention than mothers of comparison children (Barkley, 1988). In turn, children with ADHD typically display more noncompliance, defiance, and difficulty following parental requests through to completion. More negative interactions have been observed between preschool-aged hyperactive children and their mothers relative to elementary school-aged hyperactive children and their mothers. Likewise, mothers of younger hyperactive children report relatively more stress than mothers of older hyperactive children (Mash and Johnston, 1982). This suggests that families of young children referred for inattention and hyperactivity often experience heightened levels of family distress.

Higher-than-average prevalence rates of psychological disorders have also been found in parents of children with ADHD (Fischer, 1990; Johnston and Mash, 2001). Mothers of children with ADHD report more depression, self-blame, and social isolation (Mash and Johnston, 1990) and seek treatment for their own problems more often than mothers of controls (Gillberg et al., 1983). Fathers also report more depressive symptoms and perceive their families as less supportive (Brown and Pacini, 1989).
Therefore, there is often a reliance on behavioral techniques to manage young children with ADHD. In fact, the evidence base for the effectiveness of parent training is stronger for younger children with ADHD than for elementary school-aged children and adolescents (Pelham et al., 1998b).

Parents play a vital role in the delivery of pharmacological and behavioral treatments for ADHD. They are responsible for obtaining and consistently administering their children’s medication. Furthermore, they are the agents by which skills taught in parent training programs shape child behavior. Not surprisingly, then, parental negative affect, drinking, and deviant child behavior may have reciprocal effects on one another.

Despite these findings, it has been suggested that the link between child ADHD and parent psychopathology and substance abuse may be better explained by co-occurring conduct disorder (CD) and/or aggression (Lahey et al., 1988, 1989; Stewart et al., 1980). However, Nigg and Hinshaw (1998) found that regardless of antisocial diagnoses, boys with ADHD were more likely to have mothers experiencing depression or anxiety symptoms in the past year than were comparison boys. Still, comorbid ADHD/CD in children is associated with the most severe cases of parental aggression, illegal activity, and generalized anxiety disorder (GAD) (Lahey et al., 1988, 1989; Nigg and Hinshaw, 1998). These results suggest a greater prevalence of psychopathology among parents of children with ADHD or CD, with parents of children with comorbid ADHD/CD at the greatest risk for severe psychopathology. Given the role that parenting has been theorized to play in the maintenance of behavior problems (Patterson, 1982), this is an important area of consideration.

Behavioral interventions and stimulant medication have empirical support in the treatment of ADHD (Pelham et al., 1998b; Swanson et al., 1995). Despite beneficial effects of stimulant medication for young children with ADHD (Monteiro-Musten et al., 1997), preschoolers with ADHD may experience somewhat more side effects than elementary school-aged children (Firestone et al., 1998). Consequently, many physicians and parents remain reluctant to medicate preschool-aged children with the disorder. Indeed, professionals working with young ADHD children are often directed to first introduce behavioral treatments, and to prescribe medication only if behavior modification produces insufficient effects (Vitiello, 2001). Therefore, there is often a reliance on behavioral techniques to manage young children with ADHD. In fact, the evidence base for the effectiveness of parent training is stronger for younger children with ADHD than for elementary school-aged children and adolescents (Pelham et al., 1998b).

Parents play a vital role in the delivery of pharmacological and behavioral treatments for ADHD. They are responsible for obtaining and consistently administering their children’s medication. Furthermore, they are the agents by which skills taught in parent training programs shape child behavior. Not surprisingly, then, parental depression and marital distress predict poorer compliance with (McMahon et al., 1981) and response to (Griest and Forehand, 1982) parent training for noncompliant and aggressive children. Similarly, in the Multi-Modal Treatment Study for ADHD, low parenting self-esteem and efficacy were associated with poorer response to behavioral, pharmacological, and combined treatments (Hoza et al., 2000). These findings highlight the need to obtain a broader understanding of family functioning in children with ADHD in order to address potential barriers to optimal treatment response.

The present study, based on data from the first wave of a large, ongoing longitudinal study (Lahey et al., 1998), intends to provide a description of parental psychopathology in young children with ADHD, and to compare these families to families of children without behavior problems. Since a large proportion of the sample was diagnosed with comorbid oppositional defiant disorder (ODD) or CD, the degree to which the presence of these disorders was associated with parent psychopathology was also examined. It was hypothesized that there would be a greater prevalence of parental psychopathology in families of ADHD children relative to controls, and that comorbid child ADHD+ODD/CD would be associated with the most significant parental psychopathology.

METHOD

Participants

Two cohorts of participants, ranging in age from 3 years 10 months to 7 years, were recruited from among referrals to child psychiatry clinics at the Universities of Chicago and Pittsburgh during 1995–96 due to problems with inattention and/or hyperactivity. In Pittsburgh, children were also recruited from schools and newspaper advertisements. No differences between children recruited from these sources or sites were found on demographic or impairment measures; thus, participants were combined into one group (Lahey et al., 1998).
Participants were included if they resided with their biological mother and were enrolled in a structured educational program. Twenty probands received methylphenidate and one received Dexedrine; however, assessments were conducted while children were unmedicated (parents and teachers rated child behavior after the child was off medication for 2 days). Children diagnosed with pervasive developmental, psychotic, or neurological disorders or with estimated scores below 70 on the Stanford-Binet Intelligence Scale, Fourth Edition (Thorndike et al., 1986) were excluded. Eight children recruited through advertisements were ineligible because their parent stated that they had been diagnosed with pervasive developmental disorder, mental retardation, or seizure disorder. Of 315 eligible participants recruited, 259 participated (82.2%). After the assessments were completed, seven children were excluded due to intelligence scores below 70.

Non-ADHD comparison children were recruited from the probands' schools and neighborhoods, and approximately matched the probands in terms of gender, ethnicity, and age. Comparison children had never been referred for mental health services. As reported by Lahey et al. (1998), 2 children who met the symptom criteria for ADHD were originally recruited into the study as controls and 12 children recruited as probands did not meet the symptom criteria for ADHD. For the purpose of these analyses, inclusion in the ADHD and comparison groups was based on a child meeting the symptom and impairment criteria for ADHD, regardless of whether the child was recruited for the proband or comparison group. This was deemed the most conservative method of dealing with these participants, as it would tend to increase similarities between the ADHD and comparison groups. Twenty-nine children who met the symptom but not impairment criteria for ADHD were excluded from these analyses because it was determined that they were not appropriate for either the ADHD or comparison group.

Ten of these children met the full DSM-IV criteria for ODD (n = 5), CD (n = 4), or both ODD and CD (n = 1). Another nine children who met the full criteria for ODD or CD but neither symptom nor impairment criteria for ADHD were also excluded.

Measures

Child Diagnostic Measures. The NIMH Diagnostic Interview Schedule for Children (DISC) (Shaffer et al., 1993) was administered to mothers of probands and comparison children to assess DSM-III-R symptoms of ADHD, ODD, CD, and anxiety, mood, and tic disorders. In addition, a module from the DISC home impairment item (Chamorro-Premuzic et al., 2001). Mothers were asked whether or not a problem existed that affected the child's home or school behavior. Based on these criteria, 98 children met the full DSM-IV criteria for ODD or CD (ADHD+ODD/CD). According to parental report on the DISC, 13.3% (n = 4) and 3.3% (n = 1) of children in the ADHD group met the DSM-III-R criteria for a co-occurring anxiety or mood disorder, respectively. Within the ADHD+ODD/CD group, 41.2% (n = 28) and 11.8% (n = 8) of children met the criteria for co-occurring anxiety or mood disorders, respectively. Of the probands included in these analyses, 39 were recruited from Pittsburgh and 59 were recruited from Chicago.

A total of 116 comparison children were included in these analyses (21 from Pittsburgh; 95 from Chicago). Approximately 7% (n = 8) of comparison children met the criteria for an anxiety disorder; none met the criteria for a mood disorder. Participant characteristics are presented in Table 1.

Parent Symptoms and DSM-III-R Diagnoses. The Structured Clinical Interview for DSM-III-R, Non-Patient Edition (SCID-NP) (Spitzer et al., 1990) is a widely employed, semistructured interview with adequate psychometric properties that assesses current and lifetime symptoms of DSM-III-R disorders. Mothers were administered SCID-NP modules assessing major depressive disorder (MDD), dysthymia, bipolar disorder, panic disorder, social phobia, simple phobia, obsessive compulsive disorder (OCD), GAD, and alcohol, sedative, cannabis, stimulant, opioid, cocaine, and hallucinogen abuse/dependence.

In addition, mothers completed supplemental SCID modules to assess the presence of lifetime antisocial personality disorder and childhood ADHD, ODD, and CD in themselves and the child's father (Piacentini and Fisher, 1993). Maternal reports of paternal antisocial behavior are highly correlated with fathers' own reports of their antisocial behavior; however, compared to fathers' own reports of their antisocial behavior, mothers tend to report fewer paternal antisocial symptoms (Caspi et al., 2001). Still, this method is preferable to obtaining direct reports from fathers, as fathers who live in the home and consent to participate in research tend to possess fewer antisocial characteristics than unmarried fathers (Pfiffner et al., 2001).

Interviewers often had difficulty making determinations regarding MDD bereavement and organic etiology criteria and left this item blank. Review of interview notes suggested that in all cases there was no indication that individuals meeting the symptom criteria would not have received an MDD diagnosis due to bereavement or organic etiology. However, inclusion of these criteria resulted in missing data. Therefore, these criteria were not considered in the diagnosis of MDD. In addition, 4 of 14 DSM-III-R ADHD items were omitted on the parent diagnostic interview. For this reason, we required that six rather than eight symptoms be present to assign parents an ADHD diagnosis.

The Beck Depression Inventory (Beck et al., 1961) is a 21-item self-report instrument assessing depressive symptoms. Participants indicate which of four statements most accurately reflects how they felt over the preceding 2 weeks. A total score is obtained by summing the items, with higher scores indicating a greater degree of depression.
The Short Michigan Alcoholism Screening Test (MAST-S) provides information regarding individual differences in drinking history and behavior (Selzer et al., 1975). On the modification used in this study, subjects report alcohol problems in their child’s biological father in addition to themselves (Sher and Descutner, 1986).

The Drinking History Questionnaire is a measure of drinking behavior that provides information regarding drinking frequency and quantity and allows a frequency/quantity quotient to be calculated as a measure of typical alcohol consumption (Armor and Polich, 1982; Marlatt, 1973).

**Procedure**

During one clinic visit, mothers and children were interviewed simultaneously by a team of two lay interviewers who were blind to child diagnosis. Interviewers held at least a bachelor’s degree in psychology, social work, or education, had experience in working with children, and went through extensive training. Teacher ratings were obtained following this initial visit.

**Statistical Analysis**

Planned comparisons were conducted using logistic regression to examine associations between child ADHD and ADHD+ODD/CD and parent mood disorders (MDD, dysthymia, and bipolar disorder), anxiety disorders (panic disorder, social phobia, simple phobia, OCD, and GAD), childhood ADHD and DBD (i.e., ODD and CD), antisocial personality disorder, and substance abuse/dependence disorders, relative to the comparison group. Planned comparisons were also made between the ADHD and ADHD+ODD/CD groups. Whenever possible, relationships between individual parent diagnoses and child subgroups were made; however, the absence or small number of some parent diagnoses within child subgroups sometimes made these comparisons impossible. For continuous self-report measures of parental depressive symptoms and drinking, planned comparisons were conducted using t tests to examine whether differences existed between each of the two clinical groups and the comparison group, and between the two clinical groups.

**RESULTS**

Parent DSM-III-R Diagnoses

Marginally significant associations between child ADHD+ODD/CD and current maternal mood disorders were found, as were highly significant associations between child ADHD+ODD/CD and lifetime maternal mood disorders. Child ADHD and ADHD+ODD/CD groups did not differ from each other. Percentages of mothers with mood disorders and odds ratios (ORs) are presented in Table 2. When individual mood disorders were examined separately, the odds of maternal current MDD were 5.61 times higher in the ADHD+ODD/CD group relative to the comparison group (CI 1.10–28.62). The odds of maternal lifetime MDD were 2.22 times higher in the ADHD group (CI 0.93–5.31, \( p < .1 \)) and 2.78 times higher in the ADHD+ODD/CD group (CI 1.44–5.35) relative to the comparison group. Dysthymia and bipolar disorder diagnoses could not be examined because only one and two participants in the entire sample met the criteria for dysthymia and lifetime bipolar disorder, respectively; none met current bipolar disorder criteria. To determine whether co-occurring mood disorders in the children were responsible for associations between child subgroup and maternal mood disorders, logistic regressions were run with child mood disorder (dummy coded) entered on the first step and ADHD and ADHD+ODD/CD entered on the second step. When child mood disorders were controlled, significant associations between child ADHD+ODD/CD and lifetime maternal mood disorders remained (OR 2.31; CI 1.18–4.55), as did associations between child ADHD+ODD/CD and both current (OR 5.38; CI 1.02–28.41) and lifetime (OR 2.43; CI 1.23–4.81) MDD.

Significant associations were found between both current and lifetime anxiety disorders and child ADHD+ODD/CD. Child ADHD and ADHD+ODD/CD groups did not differ from each other. Per-

### TABLE 1

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Comparison (n = 116)</th>
<th>ADHD Only (n = 30)</th>
<th>ADHD+ODD/CD (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age, yr</td>
<td>5.18 (0.80)</td>
<td>5.07 (0.81)</td>
<td>5.3 (0.73)</td>
</tr>
<tr>
<td>Child gender, % male</td>
<td>79.3</td>
<td>76.7</td>
<td>83.8</td>
</tr>
<tr>
<td>Maternal education, yr</td>
<td>14.46 (2.37)</td>
<td>14.00 (2.36)</td>
<td>13.85 (2.31)</td>
</tr>
<tr>
<td>Total family income</td>
<td>$47,911 (34,908)</td>
<td>$47,286 (41,932)</td>
<td>$37,809 (33,810)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% White</td>
<td>62.9</td>
<td>60.7</td>
<td>64.7</td>
</tr>
<tr>
<td>% African American</td>
<td>31.0</td>
<td>25.0</td>
<td>30.9</td>
</tr>
<tr>
<td>% Hispanic</td>
<td>0</td>
<td>0</td>
<td>1.5</td>
</tr>
<tr>
<td>% Other</td>
<td>6.0</td>
<td>14.3</td>
<td>2.9</td>
</tr>
</tbody>
</table>

*Note:* Data were collected during 1995–1996. ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder.
percentages of mothers with anxiety disorders and ORs are presented in Table 2. Relationships between individual anxiety disorders and child subgroups were examined whenever possible. Significant relationships were found between child ADHD+ODD/CD and maternal lifetime social phobia (OR 4.35; CI 1.28–14.71) and OCD (OR 4.39; CI 1.10–17.61), such that odds of social phobia and OCD were greater in the comorbid group relative to the comparison group. No significant relationships between child diagnosis and lifetime panic disorder, lifetime simple phobia, or current GAD were found. Rates of other anxiety disorders occurred at too rare a rate to be examined independently. To determine whether co-occurring anxiety disorders in the children were responsible for associations between child subgroup and maternal anxiety disorders, logistic regressions were rerun with child anxiety disorders entered on the first step and ADHD and ADHD+ODD/CD entered on the second step. Marginally significant associations between child ADHD+ODD/CD and current maternal anxiety disorders remained when child anxiety disorders were controlled (OR 3.64; CI 0.97–13.63). Likewise, associations between child ADHD+ODD/CD and lifetime social phobia (OR 4.37; CI 1.20–15.96) and OCD (OR 4.53; CI 1.04–19.64) remained significant when child anxiety disorders were controlled.

Child ADHD and ADHD+ODD/CD were significantly associated with maternal childhood ADHD, while child ADHD was associated with paternal ADHD. Child ADHD and ADHD+ODD/CD groups did not differ in their associations with parental ADHD, DBD, and antisocial personality disorder. The proportions of parents with these disorders are presented in Table 2.

Associations between maternal substance disorders and child diagnoses were largely nonsignificant, but interesting findings were apparent with respect to stimulant and cocaine dependence. As depicted in Table 3, child comorbid ADHD+ODD/CD was asso-

### TABLE 2

Percentages of Parents Within Each Child Diagnostic Group That Met Criteria for DSM-III-R Disorders, Odds Ratios, and 95% Confidence Intervals

<table>
<thead>
<tr>
<th>DSM-III-R Disorder</th>
<th>Comparison (n = 116)</th>
<th>ADHD Only (n = 30)</th>
<th>ADHD+ODD/CD (n = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal current mood disorder</td>
<td>2.6%</td>
<td>6.7% OR = 2.79 (CI = 0.44–17.52)</td>
<td>9.0% OR = 3.70 (CI = 0.90–15.33)</td>
</tr>
<tr>
<td>Maternal lifetime mood disorder</td>
<td>22.4%</td>
<td>36.7% OR = 2.12 (CI = 0.89–5.04)</td>
<td>43.3% OR = 2.64 (CI = 1.38–5.07)</td>
</tr>
<tr>
<td>Maternal current anxiety disorder</td>
<td>3.5%</td>
<td>6.7% OR = 2.06 (CI = 0.36–11.81)</td>
<td>11.9% OR = 3.76 (CI = 1.09–13.02)</td>
</tr>
<tr>
<td>Maternal lifetime anxiety disorder</td>
<td>14.7%</td>
<td>23.3% OR = 1.85 (CI = 0.69–5.01)</td>
<td>26.9% OR = 2.14 (CI = 1.01–4.51)</td>
</tr>
<tr>
<td>Maternal childhood ADHD</td>
<td>0.9%</td>
<td>16.7% OR = 23.94 (CI = 2.68–214.18)</td>
<td>11.8% OR = 15.32 (CI = 1.87–125.34)</td>
</tr>
<tr>
<td>Paternal childhood ADHD</td>
<td>4.3%</td>
<td>16.7% OR = 4.63 (CI = 1.24–17.24)</td>
<td>8.8% OR = 2.15 (CI = 0.63–7.33)</td>
</tr>
<tr>
<td>Maternal childhood ODD/CD</td>
<td>8.6%</td>
<td>16.7% OR = 2.21 (CI = 0.69–7.05)</td>
<td>14.7% OR = 1.83 (CI = 0.72–4.65)</td>
</tr>
<tr>
<td>Paternal childhood ODD/CD</td>
<td>15.5%</td>
<td>13.3% OR = 0.87 (CI = 0.27–2.80)</td>
<td>30.9% OR = 2.43 (CI = 1.19–4.99)</td>
</tr>
<tr>
<td>Maternal antisocial personality disorder</td>
<td>0.9%</td>
<td>3.3% OR = 4.11 (CI = 0.25–67.64)</td>
<td>4.4% OR = 5.31 (CI = 0.54–52.02)</td>
</tr>
<tr>
<td>Paternal antisocial personality disorder</td>
<td>6.0%</td>
<td>6.7% OR = 1.15 (CI = 0.23–5.87)</td>
<td>14.9% OR = 2.73 (CI = 0.99–7.55)</td>
</tr>
</tbody>
</table>

Note: OR refers to odds of parent diagnosis given child diagnosis relative to the comparison group. ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder; CI = confidence interval.

### TABLE 3

Percentages of Mothers Within Each Child Diagnostic Group That Met Criteria for DSM-III-R Lifetime Substance Use Disorders, Odds-Ratios, and 95% Confidence Intervals

<table>
<thead>
<tr>
<th>DSM-III-R Disorder</th>
<th>Comparison (n = 116)</th>
<th>ADHD Only (n = 30)</th>
<th>ADHD+ODD/CD (n = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any substance abuse or dependence</td>
<td>29.3%</td>
<td>14.1% OR = 0.63 (CI = 0.24–1.68)</td>
<td>31.5% OR = 1.18 (CI = 0.62–2.25)</td>
</tr>
<tr>
<td>Any drug (not including alcohol) abuse or dependence</td>
<td>16.4%</td>
<td>14.1% OR = 0.82 (CI = 0.26–2.62)</td>
<td>31.5% OR = 1.35 (CI = 0.63–2.90)</td>
</tr>
<tr>
<td>Stimulant dependence</td>
<td>2.6%</td>
<td>6.7% OR = 2.79 (CI = 0.44–17.52)</td>
<td>9.0% OR = 3.70 (CI = 0.90–15.33)</td>
</tr>
<tr>
<td>Cocaine dependence</td>
<td>2.6%</td>
<td>6.7% OR = 2.79 (CI = 0.44–17.52)</td>
<td>11.9% OR = 5.11 (CI = 1.31–19.97)</td>
</tr>
</tbody>
</table>

Note: OR refers to odds of parent diagnosis given child diagnosis relative to the comparison group. ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder; CI = confidence interval.
associated with greater odds of maternal cocaine and stimulant dependence. Child ADHD and ADHD+ODD/CD groups did not differ from each other. Proportions of mothers meeting diagnostic criteria for substance use disorders are presented in Table 3.

Parent Symptoms and Drinking Behavior

Mothers of comorbid ADHD+ODD/CD children reported significantly more depressive symptoms than mothers of comparison children ($t_{182} = −3.26$, $p = .001$). Results suggested no significant differences between the ADHD and comparison groups ($t_{144} = 0.66$, $p = .50$) or between the ADHD and ADHD+ODD/CD groups ($t_{94} = 1.60$, $p = .11$) on the Beck Depression Inventory. Descriptive statistics for the Beck Depression Inventory and other continuous measures are presented in Table 4.

No differences were found between the ADHD and comparison groups or the ADHD and ADHD+ODD/CD groups on the mother or father MAST-S. Mothers of children in the ADHD+ODD/CD group reported slightly more drinking problems relative to mothers of comparison children ($t_{179} = 1.94$, $p = .05$), while fathers of children in the ADHD+ODD/CD group were reported to have more drinking problems than fathers of controls ($t_{178} = 2.38$, $p = .01$).

On the Drinking History Questionnaire, there were no significant differences between child subgroups on the frequency × quantity of maternal drinking behavior ($t_{165} = 1.39$, $p > .10$). When frequency and quantity were examined separately, there was a trend for mothers of children with ADHD only to drink somewhat more frequently than mothers of comparison children ($t_{130} = −1.81$, $p < .10$) and a trend for mothers of children with ADHD+ODD/CD to drink slightly greater quantities than mothers of children with ADHD only ($t_{88} = −1.81$, $p > .10$).

**DISCUSSION**

The present study extends our understanding of ADHD in young children by examining the presence of psychopathology in their biological parents. Overall, results suggested that ADHD in young children is associated with parent problems beyond those found in families of nonreferred children, particularly for children with ADHD and comorbid ODD/CD. Specifically, child ADHD was associated with increased odds of parental ADHD, but not other forms of psychopathology. In contrast, comorbid ADHD+ODD/CD appeared to be associated with a greater likelihood of parent mood, anxiety, childhood disruptive behavior, and substance use disorders.

Child ADHD was associated with higher odds of both maternal and paternal childhood ADHD. This finding is consistent with findings suggesting an increased risk for ADHD in offspring of ADHD parents (Biederman et al., 1992). Unfortunately, current parental ADHD was not assessed. Given that ADHD persists in approximately 50% to 65% of individuals diagnosed with the disorder during childhood (Weiss and Hechtman, 1993), it is likely that a large proportion of parents who reported childhood ADHD con-

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### TABLE 4

<table>
<thead>
<tr>
<th>Measure</th>
<th>Comparison ($n = 116$)</th>
<th>ADHD Only ($n = 30$)</th>
<th>ADHD+ODD/CD ($n = 68$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother BDI</td>
<td>6.85 (7.25)</td>
<td>7.84 (7.49)</td>
<td>10.59 (7.96)**</td>
</tr>
<tr>
<td>Mother MAST-S</td>
<td>3.26 (1.16)</td>
<td>3.61 (1.26)</td>
<td>3.65 (1.52)**</td>
</tr>
<tr>
<td>Father MAST-S</td>
<td>3.41 (1.72)</td>
<td>3.50 (2.13)</td>
<td>4.15 (2.43)**</td>
</tr>
<tr>
<td>Mother DHQ Frequency</td>
<td>0.80 (1.24)</td>
<td>1.32 (1.74)*</td>
<td>0.92 (1.56)*†</td>
</tr>
<tr>
<td>Mother DHQ Quantity</td>
<td>1.84 (1.44)</td>
<td>1.57 (1.29)</td>
<td>2.21 (1.65)*†</td>
</tr>
<tr>
<td>Mother DHQ F×Q</td>
<td>1.89 (3.38)</td>
<td>2.54 (3.12)</td>
<td>2.87 (5.70)</td>
</tr>
</tbody>
</table>

*Note. ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder; BDI = Beck Depression Inventory; MAST-S = Michigan Alcohol Screening Test, Short Form; DHQ = Drinking History Questionnaire; F×Q = frequency times quantity of drinks typically consumed.*

* Different from comparison group at $p < .10$.
** Different from comparison group at $p < .05$.
*** Different from comparison group at $p < .01$.
† Different from ADHD only group at $p < .10$. 

**ADHD AND PARENTAL PSYCHOPATHOLOGY**

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continue to have the disorder. Recent studies have suggested that high levels of maternal ADHD symptoms interfere with improvement shown by children with ADHD following parent training (Sonuga-Barke et al., 2002). For example, ADHD parents may experience difficulty consistently adhering to a treatment plan, may be disruptive or inattentive during parent training sessions, and may forget to administer their children’s medication (Weiss et al., 2000). These findings highlight the clinical relevance of parental ADHD to treating children with the disorder.

The presence of maternal mood and anxiety disorders was associated with child comorbid ADHD+ODD/CD. In fact, the odds of current and lifetime maternal mood and anxiety disorders were two to three times greater for comorbid children than for controls. These findings were most apparent for lifetime MDD, social phobia, and OCD. Importantly, these associations remained significant when child mood and anxiety disorders were controlled. This is consistent with the large literature suggesting a greater prevalence of depression and anxiety in parents of children with ADHD, and supports previous reports that parents of children with comorbid ADHD and CD are at greatest risk for psychopathology (Lahey et al., 1988, 1989; Nigg and Hinshaw, 1998).

Comorbid ADHD+ODD/CD was also associated with increased odds of maternal lifetime stimulant or cocaine dependence. The link between comorbid ADHD/CD and substance abuse has been well established; that is, parents of children with comorbid ADHD and CD are at greater risk for psychopathology (Lahey et al., 1988, 1989; Nigg and Hinshaw, 1998). Consistent with our predictions and existing literature, comorbid ADHD+ODD/CD was associated with greater maternal depressive symptoms and paternal drinking problems. The vast literature supporting the deleterious effects of maternal depressive symptoms and paternal antisocial personality disorder reported in this sample is likely an underestimate of the actual antisocial behavior present in these fathers.

Taken together, our findings suggest that higher rates of psychopathology are present in parents of young children with ADHD and DBD. In its pure form, ADHD was associated with parental ADHD. However, even at this young age, the majority of children with ADHD were diagnosed with comorbid ODD/CD. Parents of comorbid children experienced a wider range of psychological problems, including mood, anxiety, and substance use disorders.

Limitations

The limitations of this study should be taken into account when interpreting its findings. First, most information presented was based on maternal reports. Clearly, a selection bias would have been introduced had we only collected information from fathers who were involved in their children’s lives and agreed to participate. Another limitation is that parent diagnoses were based on DSM-III-R rather than the current version. Although reliance on outdated diagnostic categories was clearly a limitation of this study, the longitudinal design will allow us to examine patterns of child and parent symptoms over time. Finally, the small number of children with pure ADHD may have resulted in insufficient power to detect differences between the ADHD and comparison groups. Likewise, the small number of children within some of the DSM-IV ADHD subtypes (i.e., the predominantly inattentive subtype) did not allow us to examine whether different patterns of parental psychopathology existed.
for children with different ADHD subtypes. Future studies should examine observed parent–child interactions to explore associations between maternal psychological disorders, observed parenting behaviors, and the trajectory of these problems in a larger sample that includes a sufficient number of children with pure ADHD and children within each of the ADHD subtypes.

Clinical Implications

Parental psychopathology likely contributes to reciprocal patterns of negativity between parents and children that may escalate or maintain existing problems (Patterson, 1982). Thus, stronger associations between child disorders and parental psychopathology may be found in an older sample of children. Moreover, the treatment literature suggests that parental/family problems predict poor treatment compliance and less favorable treatment outcomes (Hoza et al., 2000). Given that many of the parental disorders assessed herein follow a chronic (e.g., ADHD) or recurrent course (e.g., depression), even associations with lifetime parental disorders may contribute to less optimal treatment outcomes. This highlights the importance of conducting comprehensive, family-based assessments to maximize long-term outcomes for young children with ADHD. Future studies are recommended that attempt to improve our understanding of the relationship between parent and child functioning so that early intervention/prevention programs may be developed to directly address family factors associated with negative long-term trajectories of children with ADHD. The present findings suggest also that a prescription of stimulant medication for children is likely insufficient to treat the multiple mental health needs of these families (Chronis et al., 2003). Rather, treatment should begin with a thorough assessment of child and family problems so that the appropriate empirically supported treatment components may be implemented.

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