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What is This?
Maternal ADHD, Parenting, and Psychopathology Among Mothers of Adolescents With ADHD

Dara E. Babinski1,2, William E. Pelham Jr.1, Brooke S. G. Molina2, Elizabeth M. Gnagy1, Daniel A. Waschbusch1, Brian T. Wymbs3, Margaret H. Sibley1, Karen J. Derefinko1, and Aparajita B. Kuriyan1

Abstract

Objective: This study describes the parenting and psychopathology of mothers with ADHD of adolescents with ADHD (MCA), non-ADHD mothers of adolescents with ADHD (CA), and non-ADHD mothers of adolescents without ADHD (COMP). Method: Two sets of pairwise comparisons: (a) COMP versus CA and (b) CA versus MCA were conducted. We hypothesized that CA would experience greater distress in parenting and psychopathology compared with COMP and that MCA would experience even more impairment compared with CA. Results: Few differences emerged in comparisons of CA and COMP, with the exception of CA reporting greater parent–adolescent conflict and internalizing problems. In contrast, differences consistently emerged in comparisons of MCA and CA showing more difficulty for MCA in parenting and psychopathology. Conclusion: These findings underscore the need for treatments that address parental ADHD when adolescent ADHD is the intended target. (J. of Att. Dis. 2012; XX(X) 1-XX)

Keywords
mothers, ADHD, adolescent

The stress of raising a child with ADHD has been related to a range of difficulties for parents (see Johnston & Mash, 2001, for a review). Given that mothers are more than nine times more likely to be the primary caregivers of children (U.S. Bureau of the Census, 2011), more often responsible for day-to-day caretaking, discipline, and treatment seeking and implementation for their children compared with fathers, the stress and the associated problems of raising a child with ADHD are a particular concern for mothers.

Mothers of children with ADHD experience higher rates of marital conflict and divorce (Wymbs, Pelham, Molina, & Gnagy, 2008), mood problems (Elgar, Waschbusch, McGrath, Stewart, & Curtis, 2004), and substance use disorders (Chronis et al., 2003), and each of these negative outcomes is related to further impairment to maternal and child functioning (e.g., Johnston & Mash, 2001).

Although efforts to understand the manifestation and treatment of these maternal difficulties in ADHD families have grown, there is little research on mothers of children with ADHD, who have ADHD themselves. This is surprising considering that ADHD is one of the most heritable mental health disorders, and it is estimated that at least one out of every four children with ADHD has a mother with the same disorder (Chronis et al., 2003). Given the prevalence of maternal ADHD, most studies of mothers of children with ADHD likely include a significant proportion of mothers with ADHD, although their co-occurring ADHD is almost never identified. Furthermore, emerging studies have shown that ADHD is a relevant disorder for some adult women (at least 3.6% of the population; Kessler et al., 2006). Many women with ADHD experience problems related to inattention, hyperactivity, and impulsivity in addition to many of the same difficulties that have been investigated individually for mothers raising a child with ADHD, including depression, anxiety, and single-parent status (Babinski, Pelham,
Molina, Waschbusch, et al., 2011; Biederman et al., 2010). However, in studies of ADHD in adult women, whether the women were mothers has rarely been considered. Altogether, these studies suggest that mothers with ADHD who also have a child with ADHD may be a particularly impaired population in need of further study.

Recently, some studies of mothers with ADHD have emerged. These studies provide consistent evidence that parenting problems exist for these mothers of children in early through middle childhood. For example, in a study of first time expecting mothers, high levels of maternal ADHD symptomatology were related to less positive expectations of parenting, less perceived control about parenting, and less attendance at prenatal examinations (Ninowski, Mash, & Benzie, 2007). In a sample of mothers of children ages 3 to 6 years old, maternal ADHD was related to lax parenting, greater overreactivity with children, and lower parental control and satisfaction by self and collateral reports (Banks, Ninowski, Mash, & Semple, 2008), and studies of mothers with school-age children with and without ADHD show a similar pattern of findings (e.g., Chen & Johnston, 2007; Chronis-Tuscano, Raggi, et al., 2008). Despite the relative consistency in these studies of maternal ADHD and parenting children, to our knowledge, no studies have explored the daily life functioning of mothers with ADHD who are parenting adolescent children.

Adolescence is often described as a time marked by significant conflict and disruption in the parent–child relationship (Robin & Foster, 2002; Steinberg & Morris, 2001). The adolescent’s push for autonomy from the parent, as well as the parent’s entrance into middle age, have been related to negative family outcomes and stress (Steinberg & Morris, 2001). There is some evidence that parent–adolescent relationships for adolescents with ADHD are particularly high in conflict (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001; Walther et al., 2012), but the influence of co-occurring maternal ADHD has not been studied at this age. Furthermore, it is unknown whether ineffective parenting strategies used by mothers with ADHD with children continue into adolescence. Effective parenting strategies for adolescents (e.g., consistent discipline, parental awareness, parental involvement) have been related to a range of adaptive outcomes, including resistance to substance use initiation as well as better academic achievement (Hill et al., 2004; Petit, Laird, Dodge, Bates, & Criss, 2001; Walther et al., 2012). These effective parenting strategies involve consistent limit-setting, but also promote adolescent autonomy, which may be a challenge for mothers with ADHD, given the problems noted for mothers with ADHD who have younger children. It may well be expected that the combination of maternal ADHD and related impairments with the adolescent’s ADHD and related impairments contributes to high conflict and that parenting an adolescent with ADHD may be particularly stressful and difficult for mothers with ADHD.

In addition to exploring the parenting behavior of mothers with ADHD, it is also important to explore psychopathology in mothers with and without ADHD. Although it appears that many mothers raising a child with ADHD (even without separating for presence or absence of maternal ADHD) experience a range of psychopathology, including depression, anxiety, and substance use disorders (Chronis et al., 2003), mothers with ADHD may likely experience even higher rates of psychopathology. The few existing studies of mothers with ADHD raising children in middle childhood have generally not extended their analyses to functioning in areas outside of parenting behavior. When they have reported psychopathology outcomes, they have shown that mothers with ADHD experience more comorbid psychopathology, including more internalizing problems, compared with mothers without ADHD (Minde et al., 2003). The existing studies of females with ADHD, from preadolescence into adulthood have clearly shown that females with ADHD experience a range of psychopathology more than females without ADHD, including higher rates of depression and anxiety disorders (Biederman et al., 2010). Some studies have also shown that women with ADHD are more likely to experience substance use problems (Biederman et al., 2010), but other studies have not (Babinski, Pelham, Molina, Waschbusch, et al., 2011). However, in these studies, the females have generally not been mothers or have included such a small number of mothers that the role of maternal ADHD in comorbid psychopathology could not be assessed. The combined stress of raising an adolescent with ADHD and managing their own ADHD may well increase their risk of experiencing comorbid psychopathology.

The goal of this study is to describe the parenting and psychopathology of mothers with ADHD who also have an adolescent child with ADHD (MCA). Given the large literature on the difficulties of parents of children with ADHD compared with parents of children without ADHD (e.g., Chronis et al., 2003; Johnston & Mash, 2001), we planned to first compare non-ADHD mothers with and without an adolescent with ADHD (CA and COMP, respectively) and hypothesized that CA would experience greater impairment in parenting and psychopathology compared with COMP. Then, we compared MCA with CA and hypothesized that MCA would experience even greater impairment in parenting and psychopathology compared with CA.

**Method**

**Participants**

Participants in the current study were mothers of adolescents from the Pittsburgh ADHD Longitudinal Study (PALS). The PALS is a prospective longitudinal study of 364 adolescents and young adults with childhood ADHD who were diagnosed with *Diagnostic and Statistical Manual of Mental*
Disorders (3rd ed., rev.; DSM-III-R; American Psychiatric Association [APA], 1987) or DSM-IV (APA, 1994) ADHD at the ADD Clinic and Western Psychiatric Institute and Clinic (WPIC) in Pittsburgh, PA, during the years from 1987 to 1996, and 240 non-ADHD participants, who were recruited from the greater Pittsburgh area between 1999 and 2001 for their demographic similarity (i.e., age within 1 year, ethnicity, and parental education) to the ADHD group.

All adolescents with ADHD in this study met diagnostic criteria for ADHD in childhood according to the guidelines in the DSM-III-R or DSM-IV depending on their year of assessment. Diagnostic information was collected through a standard battery of multi-method, multi-informant assessments, including the Disruptive Behavior Disorder (DBD) Rating Scale to assess DSM-III-R and DSM-IV symptoms of the disruptive behavior disorders (Pelham, Gnagy, Greenslade, & Milich, 1992), and parent reports on a semistructured diagnostic interview with a PhD level clinician consisting of DSM-III-R or DSM-IV descriptors for ADHD, oppositional defiant disorder (ODD), and conduct disorder (CD) with supplemental probe questions regarding situational and severity factors. The interview also included queries about other comorbidities to determine whether additional assessment was needed (instrument available at http://ccf.fiu.edu). Following DSM guidelines, diagnoses were made if a sufficient number of symptoms were endorsed (considering information from parents and teachers) to result in diagnosis. Two PhD level clinicians independently reviewed all ratings and interviews to confirm DSM diagnoses and when disagreement occurred, a third clinician reviewed the file and the majority decision was used.

Exclusionary criteria were assessed in childhood, including a full-scale IQ < 80, a history of seizures or other neurological problems, and/or a history of pervasive developmental disorder, schizophrenia, or other psychotic or organic mental disorder. All children with ADHD participated in the Summer Treatment Program (STP), an 8-week intervention that included behavioral modification, parent training, and psychoactive medication trials where indicated (Pelham & Hoza, 1996). Ages at initial evaluation and treatment ranged from 5 to 16 years of age, with over 90% of individuals in the ADHD group within elementary school age.

These same families were recontacted and admitted to the PALS follow-up study on a rolling basis between the years of 1999 and 2003 and completed their first follow-up interview immediately upon enrollment. At the initial PALS follow-up interview, participants with ADHD were between the ages of 11 and 28; an average of 8.3 years had passed since their initial childhood evaluation at referral to the STP (baseline).

In addition to the adolescents with ADHD, 240 demographically similar adolescents and young adults without ADHD (controls) and their parents were recruited locally from 1999-2001 to participate in the PALS. Most adolescent controls were recruited through several large pediatric practices (40.8% of control sample) that serve patients from diverse socioeconomic backgrounds. The remaining controls were recruited via advertisements in local newspapers and the university hospital newsletter (27.5%), local universities and colleges (20.8%), and other methods (e.g., word of mouth). A telephone screening interview administered to parents of potential controls gathered basic demographic characteristics, presence of exclusionary criteria, and a checklist of ADHD symptoms. Comparison recruitment lagged 3 months behind recruitment of adolescents and young adults with ADHD to facilitate efforts to obtain demographic similarity. Comparison participants were selected based on four demographic characteristics: age (within 1 year), gender, race, and parent education level. A comparison individual was eligible if his or her enrollment increased the comparison groups’ demographic similarity to the ADHD group. Individuals who met DSM-III-R criteria for ADHD—either currently or historically—were excluded. Control participants were not excluded on the basis of subthreshold ADHD or other psychiatric disorders.

There was a total of 147 mothers with an adolescent child with ADHD (ages 11-18) and 107 mothers of non-ADHD adolescents (COMP) who provided information on their own symptoms and functioning in the current study. Because the purpose of the current study was to explore associations between maternal ADHD and relevant areas of psychosocial functioning, fathers were not included. Although there are some participating fathers in the PALS, the small number of fathers precludes a comprehensive understanding of paternal ADHD and adult functioning.

Mothers reported on their current DSM ADHD symptoms using an adult ADHD scale developed by Barkley (Barkley, 2006). This questionnaire assessed all DSM-IV symptoms of ADHD from 0 (rarely or not at all) to 3 (very much). Total symptom scores and separate inattention and hyperactivity/impulsivity total scores were calculated for the purposes of the study. For the current study, if mothers rated themselves as having at least four current DSM symptoms of inattention or hyperactivity/impulsivity at the threshold level (2 or 3) on the measure developed by Barkley (2006), they were coded as having a current ADHD diagnosis, and all other mothers were coded as not having a current ADHD diagnosis. Internal consistency was .93 for inattentive symptoms, .90 for hyperactive/impulsive symptoms, and .94 for the total current symptom score. Evidence-based guidelines do not yet exist regarding diagnosis of adult ADHD, but a four-symptom diagnostic threshold has been shown to be diagnostically relevant for adults with ADHD (McGough & Barkley, 2004), and this criterion has been used frequently in recent research on mothers with ADHD (e.g., Chronis-Tuscano, Seymour, et al., 2008). Out of 147 mothers of adolescents with ADHD, 37 (25.17%) reported four or more current ADHD symptoms. No mothers of adolescents without ADHD met maternal ADHD
criteria. Demographic comparisons between these three groups of mothers (i.e., MCA, CA, and COMP) were conducted in pairwise comparisons (COMP vs. CA and CA vs. MCA), and revealed significant differences regarding current ADHD symptoms, including total symptoms, and symptoms of inattention and hyperactivity, separately (see Table 1). In addition, a significant difference was found regarding adolescent age in comparison of CA with MCA.

### Procedure

Follow-up interviews were conducted annually in the ADD program offices by postbaccalaureate research staff, and included parent and child assessments of functioning. Interviewers were not blind to recruitment source (i.e., presence or absence of ADHD in childhood), but they were trained to avoid bias in data collection. Moreover, many of the questionnaires were completed privately by participants (e.g., substance use measures) to minimize interviewer contamination. Informed consent was obtained and all participants were assured confidentiality of all disclosed materials, except in cases of impending danger or harm to self or others (reinforced with a DHHS Certificate of Confidentiality). In cases where distance prevented participant travel to WPIC, information was collected through a combination of mailed and telephone correspondence; home visits were offered as need dictated. Parent self-report questionnaires were completed either with paper and pencil or computerized versions. For the current study, follow-up data were collected from the first wave of data follow-up, which included the most comprehensive data on maternal and parenting variables.

### Measures

**Parenting.** The degree of conflict and communication difficulty in the mother–adolescent relationship was measured by self-report on the 20-item Conflict Behavior Questionnaire (CBQ-20; Robin & Foster, 2002). Mothers were asked to answer “true” or “false” to statements about the parent–adolescent relationship. Higher scores are indicative of higher levels of conflict, and parent ratings had an internal consistency estimate of .94.

Parental knowledge and attempted monitoring of their adolescents’ activities and interests were assessed using parent reports on an adapted 10-item measure by Steinberg (Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Five items are about attempted monitoring (i.e., how well the parent tries to know the adolescent’s activities) and have a response scale from 1 “didn’t try” to 5 “tried all of the time.” In addition, five items are about parental knowledge (i.e., how well the parent really knows the adolescent’s activities) and are scaled from 1 “didn’t know” to 5 “knew all of the time.” Internal consistency estimates for attempted monitoring and parental knowledge were .86 and .90, respectively.

Discipline practices were adapted from the parenting scale used in the Pittsburgh Youth Study (Loeber, 1989), which has been used in assessing parenting practices in at-risk families (Tarter, Blackson, Martin, Loeber, & Moss, 1993). This scale includes 18 items to reflect three domains—effective discipline (e.g., problem-solving discussions, changing antecedents, assigning chores or extra work), ineffective discipline (e.g., scolding, slapping or hitting, locking

### Table 1. Demographic Characteristics and Maternal ADHD Symptomatology

<table>
<thead>
<tr>
<th></th>
<th>COMP (1) N = 107</th>
<th>CA (2) N = 110</th>
<th>MCA (3) N = 37</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age, M (SD)</td>
<td>45.32 (5.45)</td>
<td>44.27 (5.88)</td>
<td>46.57 (6.44)</td>
<td>.114 .508</td>
</tr>
<tr>
<td>Child age, M (SD)</td>
<td>15.50 (2.09)</td>
<td>15.16 (2.07)</td>
<td>17.30 (1.38)</td>
<td>.858 .000</td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>85.29</td>
<td>86.39</td>
<td>86.49</td>
<td>.834 .886</td>
</tr>
<tr>
<td>Mother married (%)</td>
<td>67.16</td>
<td>65.09</td>
<td>51.35</td>
<td>.249 .085</td>
</tr>
<tr>
<td>Maternal education (% post high school)</td>
<td>80.98</td>
<td>84.52</td>
<td>78.38</td>
<td>.371 .447</td>
</tr>
<tr>
<td>Child gender (% male)</td>
<td>90.60</td>
<td>92.98</td>
<td>86.49</td>
<td>.834 .060</td>
</tr>
<tr>
<td>Child ODD/CD diagnosis (%)</td>
<td>—</td>
<td>81.62</td>
<td>82.86</td>
<td>— .445</td>
</tr>
<tr>
<td>Current hyperactivity score</td>
<td>1.41 (1.76)</td>
<td>3.30 (2.93)</td>
<td>13.75 (6.03)</td>
<td>.000 .000</td>
</tr>
<tr>
<td>Current inattention score</td>
<td>2.03 (2.73)</td>
<td>3.41 (3.00)</td>
<td>17.00 (3.74)</td>
<td>.000 .000</td>
</tr>
<tr>
<td>Current total score</td>
<td>3.45 (3.83)</td>
<td>6.70 (5.29)</td>
<td>30.75 (8.77)</td>
<td>.000 .000</td>
</tr>
</tbody>
</table>

Note: COMP = non-ADHD mothers of adolescents without ADHD; CA = non-ADHD mothers of adolescents with ADHD; MCA = mothers with ADHD and adolescents with ADHD; ODD = oppositional defiant disorder; CD = conduct disorder. Child ODD/CD diagnosis was assessed by the Disruptive Behaviors Interview and Rating Scale (Pelham, Gnagy, Greenslade, & Milich, 1992) from baseline. Current hyperactivity, inattention, and total scores were calculated from the sum of the respective DSM symptoms for ADHD, measured from 0 (rarely or not at all) to 3 (very much) on the adult ADHD symptom scale developed by Barkley (2006).
him or her out), and consistency. Items have a response scale from 1 “never” to 5 “always.” Internal consistency estimates for mother reports were .71 for effective discipline, .59 for negative discipline, and .61 for consistency.

Parental involvement was assessed using items from measures developed for the Adolescent and Family Development Project (e.g., Chassin & Barrera, 1987). On this measure, parents rated the degree of their involvement (e.g., helped with homework or checked over homework when son/daughter asked, went to school programs for parents) on a 5-point scale ranging from 1 (never) to 5 (always). Parent ratings had an internal consistency estimate of .75.

Psychopathology. The Beck Depression Inventory (BDI; Beck & Steer, 1987) was used to assess symptoms of depression. The BDI includes 21 self-report items measuring depressive symptomatology. Responses range from 0 (e.g., “I do not feel sad”) to 3 (e.g., “I am so sad or unhappy that I can’t stand it”), and level of depression is measured based on the sum total of the items. Higher scores are indicative of greater levels of depression and total scores range from 0 to 63. The BDI has been used in previous studies of adult ADHD (e.g., Safren et al., 2005) and studies of parents with children with ADHD (e.g., Chacko et al., 2009; Chronis, Gamble, Roberts, & Pelham, 2006), and has been shown to have good reliability and construct validity in clinical and nonclinical populations (Beck & Steer, 1987). In the current sample, internal consistency was .89.

The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) is a 16-item measure used to assess symptoms related to generalized anxiety disorder. The PSWQ is recommended for assessing the central feature of generalized anxiety disorder (i.e., worry; Crits-Christoph & Connolly, 1997). It shows high internal consistency and has been found to be highly related to trait anxiety, state anxiety, and emotionality (Brown, Antony, & Barlow, 1992; Meyer et al., 1990). Scores range from 16 to 80, with higher scores indicating higher levels of worry. Internal consistency in the current sample was .80.

The Structured Clinical Interview for DSM-IV–Nonpatient Edition (SCID-NP; First, Spitzer, Gibbon, & Williams, 1997) was used to assess psychiatric symptoms and diagnose the mothers according to DSM-IV criteria. The SCID-NP utilizes an open-ended format designed to approximate the differential diagnosis of an experienced clinician during a clinical diagnostic interview. Axis I current and lifetime disorders from the mood (i.e., depression, bipolar, dysthymia), anxiety (i.e., panic, agoraphobia, social, specific, obsessive-compulsive disorder [OCD], posttraumatic stress disorder [PTSD]), and substance use (i.e., alcohol, sedative, cannabis, stimulant, opiod, cocaine, phencyclidine [PCP], polydrug, other) modules were included for the current study. Interrater agreement for psychiatric diagnoses was conducted by comparing independent ratings of tape-recorded interviews of 137 cases, sampled across young adult and parents within the PALS. Kappa coefficients ranged from 0.47 to 0.70 for depressive disorders, 0.55 to 0.70 for anxiety disorders, and 0.79 to 1.00 for substance use disorders.

Data Analytic Plan
Two sets of planned comparisons—(a) COMP versus CA and (b) CA versus MCA—were conducted. In comparisons between CA and MCA, adolescent age was used as a covariate to control for the group difference (see Table 1). Effect sizes (Cohen’s d) are also presented to assist the reader in interpreting the results. Analysis of psychological functioning from the SCID was determined using binary logistic regressions of the presence or absence of the disorders. Prevalence rates and odds ratios are presented to assist the reader in interpreting the findings.

Results
Parenting
Compared with COMP, CA experienced more parent–child conflict (see Table 2, for parenting and internalizing symptom results). However, no differences emerged regarding parental knowledge, monitoring, ineffective discipline, effective, and consistent discipline, or parental involvement. Compared with CA, MCA reported more parent–adolescent conflict, less parental knowledge, monitoring, and consistent discipline, and more ineffective discipline. No differences emerged regarding effective discipline and involvement.

Psychopathology
Compared with COMP, CA reported more depressive symptoms (i.e., BDI), but no differences emerged regarding anxiety symptoms. Compared with CA, MCA reported more depressive and anxiety symptoms.

On the SCID mood, anxiety, and substance use modules, no differences emerged between COMP and CA. However, MCA were more likely to experience current mood disorders compared with CA. No other differences emerged in comparisons (see Table 3, for diagnostic prevalence rates for all mothers). Because the data suggested increasing likelihood of maternal psychopathology with increasing ADHD in the family, we additionally explored the presence of group differences between COMP and MCA. When compared with COMP, MCA were more likely to experience current mood disorders compared with MCA. No other differences emerged in comparisons between COMP and MCA, when compared with COMP, MCA were more likely to experience current mood disorders, as well as current (OR = 3.98 95% CI = [1.36, 1.61], p < .05) and lifetime (OR = 3.24 95% CI = [1.41, 7.41], p < .05) anxiety disorders, but no
differences regarding current (OR = 3.84 95% CI = [0.21, 69.46], p > .05) and lifetime (OR = 1.92 95% CI = [0.66, 5.64], p > .05) substance use disorders emerged.

Discussion

The goal of this study was to explore the parenting and psychopathology of MCA. In our sample of mothers of adolescents with ADHD, 25.17% of mothers were given a diagnosis of ADHD, which is consistent with other samples of mothers of children with ADHD (Chronis et al., 2003). Planned comparisons between MCA and CA, and between CA and COMP were conducted. Compared with COMP, CA reported few differences in parenting and psychopathology with the exception of more conflict with their adolescent and more depressive symptoms. In contrast, MCA were consistently more impaired in parenting and psychopathology compared with CA, with the exception of substance use disorders. This study extends findings of maternal ADHD and impaired parenting from previous studies (e.g., Chen & Johnston, 2007; Chronis-Tuscano, Raggi, et al., 2008) to understand maternal ADHD and parenting adolescents with childhood ADHD. Furthermore, this study evaluated another area of psychosocial functioning (i.e., psychopathology) for mothers with ADHD, which has not specifically been explored for mothers with adolescent children, and found some evidence of additional impairments.

Table 2. Parenting, Relationship Functioning, and Internalizing Problems for Mothers With and Without ADHD

<table>
<thead>
<tr>
<th></th>
<th>COMP (1)</th>
<th>CA (2)</th>
<th>MCA (3)</th>
<th>Effect sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 107</td>
<td>N = 110</td>
<td>N = 37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Parenting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBQ</td>
<td>2.14 (0.59)</td>
<td>2.77 (0.74)</td>
<td>3.14 (0.63)</td>
<td>0.94*** 0.54***</td>
</tr>
<tr>
<td>Parental knowledge</td>
<td>4.36 (0.55)</td>
<td>4.23 (0.73)</td>
<td>3.63 (0.77)</td>
<td>0.20 0.80***</td>
</tr>
<tr>
<td>Monitoring</td>
<td>4.56 (0.56)</td>
<td>4.48 (0.68)</td>
<td>3.96 (0.83)</td>
<td>0.13 0.69***</td>
</tr>
<tr>
<td>Ineffective discipline</td>
<td>1.68 (0.32)</td>
<td>1.77 (0.40)</td>
<td>2.00 (0.58)</td>
<td>0.25 0.46***</td>
</tr>
<tr>
<td>Consistent discipline</td>
<td>3.62 (0.51)</td>
<td>3.55 (0.52)</td>
<td>3.18 (0.55)</td>
<td>0.14 0.69**</td>
</tr>
<tr>
<td>Effective discipline</td>
<td>3.05 (0.57)</td>
<td>3.16 (0.46)</td>
<td>2.93 (0.81)</td>
<td>0.21 0.35</td>
</tr>
<tr>
<td>Involvement</td>
<td>3.91 (0.77)</td>
<td>3.72 (1.01)</td>
<td>3.44 (0.98)</td>
<td>0.21 0.28</td>
</tr>
<tr>
<td>Internalizing problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI</td>
<td>5.45 (6.12)</td>
<td>6.79 (6.62)</td>
<td>10.57 (9.51)</td>
<td>0.21*** 0.46***</td>
</tr>
<tr>
<td>PSWQ</td>
<td>37.42 (8.65)</td>
<td>38.04 (9.54)</td>
<td>43.56 (9.14)</td>
<td>0.07 0.59***</td>
</tr>
</tbody>
</table>

Note: COMP = non-ADHD mothers of adolescents without ADHD; CA = non-ADHD mothers of adolescents with ADHD; MCA = mothers with ADHD and adolescents with ADHD; CBQ = Conflict Behavior Questionnaire (Robin & Foster, 2002); BDI = Beck Depression Inventory (Beck & Steer, 1987); PSWQ = Penn State Worry Questionnaire. Parental knowledge and monitoring were measured on a scale by Steinberg, Lamborn, Dornbusch, and Darling (1992). Ineffective, consistent, and effective discipline were measured on the Parenting Scale (Loeber, 1989). Involvement was assessed by measures from the Adolescent and Family Development Project (Chassin & Barrera, 1987). On knowledge, monitoring, involvement, and effective discipline, higher scores indicate better functioning, and on the remaining measures, higher scores indicate poorer functioning. Effect sizes are computed by Cohen’s d.

Table 3. Psychopathology Outcomes of Mothers With and Without ADHD

<table>
<thead>
<tr>
<th></th>
<th>COMP (1)</th>
<th>CA (2)</th>
<th>MCA (3)</th>
<th>(1) vs. (2) OR</th>
<th>(2) vs. (3) OR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 107</td>
<td>N = 110</td>
<td>N = 37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current mood disorder (%)</td>
<td>4.55</td>
<td>7.02</td>
<td>16.23</td>
<td>2.48 CI = [0.78, 7.91]</td>
<td>3.48*** CI = [1.01, 10.49]</td>
</tr>
<tr>
<td>Lifetime mood disorder (%)</td>
<td>35.87</td>
<td>49.71</td>
<td>56.71</td>
<td>1.22 CI = [0.57, 2.60]</td>
<td>1.30 CI = [0.63, 2.66]</td>
</tr>
<tr>
<td>Current anxiety disorder (%)</td>
<td>6.52</td>
<td>17.64</td>
<td>18.92</td>
<td>1.13 CI = [0.49, 3.61]</td>
<td>1.10 CI = [0.44, 2.73]</td>
</tr>
<tr>
<td>Lifetime anxiety disorder (%)</td>
<td>16.85</td>
<td>26.71</td>
<td>35.14</td>
<td>1.96 CI = [0.86, 4.46]</td>
<td>1.47 CI = [0.69, 3.13]</td>
</tr>
<tr>
<td>Current substance use disorder (%)</td>
<td>0.34</td>
<td>1.76</td>
<td>2.70</td>
<td>1.21 CI = [0.10, 14.41]</td>
<td>1.56 CI = [0.16, 5.39]</td>
</tr>
<tr>
<td>Lifetime substance use disorder (%)</td>
<td>8.70</td>
<td>10.58</td>
<td>16.22</td>
<td>1.66 CI = [0.56, 4.90]</td>
<td>1.65 CI = [0.60, 4.48]</td>
</tr>
</tbody>
</table>

Note: COMP = non-ADHD mothers of adolescents without ADHD; CA = non-ADHD mothers of adolescents with ADHD; MCA = mothers with ADHD and adolescents with ADHD; Diagnoses were assessed on the SCID (First, Spitzer, Gibbon, & Williams, 1997); OR = odds ratio of mother diagnosis. Mood disorders include major depression, bipolar disorder, and dysthymia. Anxiety disorders include panic, agoraphobia, social, specific, obsessive-compulsive disorder, posttraumatic stress disorder, and generalized anxiety disorder. Substance use disorders include alcohol, sedative, cannabis, stimulant, opioid, cocaine, PCP, polydrug, and other substance use disorders. CI = 95% confidence interval of odds ratio. **p < .05. ***p < .01.
Results regarding parent-reported use of parenting practices generally reflected previous studies of maternal ADHD and parenting younger children, which find that maternal ADHD is associated with less adaptive parenting (Chen & Johnston, 2007; Chronis-Tuscano, Raggi, et al., 2008; Murray & Johnston, 2006), and extended previous research by focusing on adolescent-specific measures of parenting. Compared with CA, MCA reported higher levels of conflict in their relationship with their adolescent child, less knowledge and monitoring of their adolescent’s whereabouts, less consistent discipline, and more ineffective discipline strategies. At the same time, differences were not found regarding effective discipline, or involvement, which is somewhat consistent with previous studies of maternal ADHD which have not reported differences in some areas of parenting. For example, Chronis-Tuscano, Raggi, et al. (2008) did not find a relation between maternal ADHD and monitoring and supervisory behaviors. In addition, some research suggests that mothers with higher levels of ADHD symptomatology are more positive and affectionate with their children (Psychogiou, Daley, Thompson, & Sonuga-Barke, 2008), as parents with ADHD may be more sensitive to understanding of their children’s ADHD-related impairments. No differences in parenting were found in comparisons of CA and COMP with the exception of CA reporting more parent–adolescent conflict, which is consistent with a large body of literature on parent–adolescent conflict within ADHD families (Edwards et al., 2001) and with the focus on parent–child communication and negotiation in treatments for adolescents with ADHD (e.g., Edwards et al., 2001). The lack of differences in most areas of parenting may reflect that CA in this study, as reflected in their enrollment of their children in an intensive treatment in childhood, are also mothers who may give greater attention to the use of effective parenting skills. In addition, these parenting variables were assessed by maternal report, and there is some evidence that parents may overestimate their parenting skills to provide more socially desirable responses (Molina, Donovan, & Belendiuk, 2010; Schwarz, Barton-Henry, & Puzinsky, 1985).

The higher rates of psychopathology, particularly internalizing problems, among MCA, were consistent with studies of parents with ADHD raising younger children (Minde et al., 2003) and studies of adult women with ADHD (Biederman et al., 2010). MCA reported higher levels of depressive (i.e., BDI) and anxiety (i.e., PSWQ) symptoms compared with CA, and differences were even more pronounced when rates of psychopathology were explored in comparison with COMP. CA reported experiencing more depressive symptoms compared with COMP, but no other statistically significant differences emerged on other items. Although the pattern of findings generally shows that CA experience greater psychopathology compared with COMP, the lack of statistically significant findings may be due to the age of the adolescents. Adolescence is often regarded as a time of considerable family stress for all families, regardless of the adolescent’s ADHD status (Steinberg & Morris, 2001). The rates of psychopathology reported among CA and COMP in our study are generally higher than those reported in clinic-referred ADHD samples of mothers of younger children (e.g., Chronis et al., 2003), and the increase in internalizing problems among women during middle age (i.e., the age of the mothers of adolescents in this study) in general (Olsson et al., 2000) suggests that internalizing problems may be a concern for some mothers of adolescents regardless of their adolescent’s ADHD status at this age.

Significant group differences were not found regarding current or lifetime substance use disorders. Although some evidence of substance use problems has emerged in the literature on parents with ADHD (Minde et al., 2003), women with ADHD (Biederman et al., 2010), and parents of children with ADHD (Chronis et al., 2003; Pelham et al., 1997), other studies, including exploration of the daughters of these mothers within the PALS during late adolescence and young adulthood have not found evidence of substance use problems at a statistically significant level (Babinski, Pelham, Molina, Gnagy, et al., 2011; Babinski, Pelham, Molina, Waschbusch, et al., 2011). It may be that only some substances are relevant for women with ADHD, and grouping all of the substance use categories into one broad category may conceal larger group differences at the individual substance level. For example, in a study of young women with ADHD within the PALS sample (Babinski, Pelham, Molina, Waschbusch, et al., 2011), women with and without ADHD reported relatively similar rates of problematic alcohol and cigarette use, but the rates of marijuana use for women with ADHD were approximately three times that of women without ADHD. In addition, Minde and colleagues (2003) reported that parents with ADHD compared with non-ADHD parents experienced more alcohol use disorders but not other drug disorders, although mothers were not analyzed separately from fathers. The results found in the current study, in light of other studies showing some evidence of substance use problems among women with ADHD (Biederman et al., 2010) and mothers of children with ADHD (Chronis et al., 2003; Pelham et al., 1997), suggest that substance use disorders for mothers with ADHD who also have an adolescent with ADHD may still be a relevant issue in need of further exploration.

The majority of variables assessed in this study were self-reported. Individuals with ADHD have been shown to have problems with self-perception and have been found to underestimate their impairments (e.g., Hoza et al., 2004; Sibley et al., 2010). However, several marked differences were found in this study between MCA compared with CA, which suggests that at least some mothers with ADHD are...
more aware of their impairments compared with individuals referred for treatment in childhood. Using the SCID in addition to self-report measures in this study is a strength of the current investigation, and future studies of maternal ADHD may benefit from multi-method, multi-informant assessment procedures, including collateral reports (Belendiuk, Clarke, Chronic, & Raggi, 2007) as well as observational methods, such as laboratory-based parent–child interactions (Chronis-Tuscano, Raggi, et al., 2008; Mash, Johnston, & Kovitz, 1983; Wymb & Pelham, 2010).

We are limited in our ability to determine whether the women in this study would meet diagnostic criteria for ADHD in adulthood. The women in the study were parental informants in a longitudinal study of childhood ADHD, who were categorized on maternal ADHD status based on post hoc self-ratings. We categorized mothers with a diagnosis of ADHD if they endorsed four or more symptoms of ADHD. Although there is mounting evidence that a four-symptom diagnosis may be appropriate for adults with ADHD (www.dsm5.org; McGough & Barkley, 2004), a four-symptom diagnosis is less stringent than the current DSM-IV criterion of six or more symptoms of inattention or hyperactivity/impulsivity. We also relied only on their current self-reports and do not have collateral reports from family members or significant others familiar with their functioning, and did not require a childhood history of ADHD, which is consistent with current DSM guidelines. Some research suggests that women who endorse ADHD symptomatology in adulthood are less impaired and have greater insight into their problems than women diagnosed in childhood with ADHD (Barkley, 2006). In fact, the women in the current study are likely more aware of their difficulties, as they initially sought treatment at WPIC for their children’s difficulties. Therefore, the results of this study may actually provide an underestimation of the problems that mothers with ADHD who have had a childhood diagnosis of ADHD may experience. Furthermore, although we did not assess the impact of paternal ADHD in maternal and adolescent functioning, it is important that future studies address the role of paternal ADHD to further clarify the family impairment associated with raising an adolescent with ADHD.

To our knowledge, this is the first study to explore the functioning of mothers with ADHD who also have adolescents with ADHD, and one of very few studies exploring functioning among non-ADHD mothers of adolescents with ADHD. Mothers with ADHD and adolescents with ADHD consistently reported difficulties parenting their adolescent and internalizing problems. These findings underscore the need for treatments that address parental ADHD when adolescent ADHD is the intended target, especially when parenting behavior has been shown to moderate ADHD-related risk for outcomes such as delinquency and alcohol use (Molina et al., 2012). Few difficulties in functioning emerged for non-ADHD mothers of adolescents with ADHD in comparisons with non-ADHD mothers of adolescents without ADHD, with the exception of mothers of adolescents with ADHD reporting higher parent–adolescent conflict. These findings highlight the impaired parent–adolescent relationship for adolescents with ADHD regardless of maternal ADHD status. Currently, few treatments exist to address parent–adolescent conflict in families with ADHD (e.g., Edwards et al., 2001), and these studies find only modest evidence for the efficacy of these interventions. In addition, there is little research on effective treatments for adults and parents with ADHD other than medication (Adler & Chua, 2002; Chronis-Tuscano, Seymour, et al., 2008) and some very recent research on psychosocial approaches (Chronis-Tuscano et al., 2011; Safren et al., 2005). Our results suggest that interventions tailored to families of adolescents with ADHD, particularly families in which the mother and adolescent have ADHD, are greatly needed.

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