

Understanding Girls with Attention-Deficit/Hyperactivity Disorder (ADHD): Applying Research to Clinical Practice

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Abstract

To date, the majority of research on Attention-Deficit/Hyperactivity Disorder (ADHD) has been completed with boys as the predominate participants in study samples. Over the past decade there has been increased attention focused on the characteristics and needs of girls with ADHD. Although much of the research comparing boys and girls with ADHD indicates that both experience significant symptoms and impairment, a growing body of study suggests some important gender differences. The purpose of this paper is to summarize the findings of research examining girls with ADHD and highlight key characteristics that can inform clinical practice. A case study is presented to illustrate the unique pattern of symptoms, associated problems, and functional impairment for girls with ADHD.

Keywords: Attention-Deficit/Hyperactivity Disorder (ADHD), girls with ADHD, symptoms, associated problems, functional impairment.

Attention-deficit/hyperactivity disorder (ADHD) is a chronic and relatively common psychiatric condition characterized by a wide range of deficits in behavior control and attention (American Psychiatric Association, 2000). There are three subtypes of ADHD described by the *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition, Text Revision (DSM-IV, TR)* (American Psychiatric Press, 2000): ADHD, Combined Type (ADHD/COM) is characterized by high levels of hyperactive/impulsive and attention problem symptoms; ADHD, Predominantly Inattentive Type (ADHD/I) refers to individuals with significant attention problem symptoms in the absence of clinically significant hyperactivity/impulsivity; and ADHD, Predominantly Hyperactive/Impulsive Type (ADHD/HI) refers to the least common subtype for individuals with substantial hyperactive/impulsive symptoms without attention problem symptoms. Children with ADHD typically experience problems related to academic performance, interactions with other family members, and peer relationships (Barkley, 2006; DuPaul & Stoner, 2003). Prevalence estimates of ADHD in school-age child samples in the United States range from 4-10% (Pliszka & AACAP Work Group on Quality Issues, 2007). Survey research has consistently indicated that ADHD is more frequently identified in boys than girls, with estimates ranging from three times more likely in community samples to upwards of nine times more frequent in clinical samples (Barkley, 2006; Biederman & Faraone, 2004).

The majority of research related to ADHD has been completed with boys as the predominate members of study samples. However, over the past decade there have been increased efforts dedicated to learning about the characteristics of girls with ADHD, both in comparison to girls without this condition and in relation to boys with ADHD. Such research is essential in developing a more thorough understanding of the specific characteristics presented by girls with ADHD to help inform assessment and intervention efforts on behalf of this under-studied population. This is particularly important in the context of recent research findings establishing that, just as boys with ADHD, girls with this disorder compared with non-affected girls experience significant symptoms, comorbidity, and impairment across home, school, and social settings (Gaub & Carlson, 1997; Gershon, 2002; Hinshaw, 2002; Hinshaw and Blachman, 2005). Additionally, similar to boys with ADHD, a majority of girls diagnosed with ADHD continue to demonstrate significant symptoms and impairment due to their symptoms as they grow into adolescence (Hinshaw, Owen, Sami, Fargeon, 2006). There is a growing research base to support the

conclusion that girls, much like boys, with ADHD and their families are coping with a serious, chronic condition that generally has a negative impact on multiple areas of functioning and development.

Girls with ADHD Compared with Non-ADHD Girls

Although it has been known for some time that girls are diagnosed with ADHD at lower rates than boys, only a few studies have focused on examining the differences between ADHD and non-ADHD samples for girls compared to boys. Such research is important to building an understanding of the symptom profiles and comorbidity patterns, as well as types and quality of impairment of girls with ADHD when compared to girls without this disorder.

Symptoms, Comorbidity, and Impairment

Several descriptive studies have demonstrated that girls with ADHD, compared with non-ADHD girls, exhibit a range of characteristic symptoms of this condition, comorbid disorders, and other associated problems. One of the initial studies specifically examining ADHD in a large sample of female participants was completed by Biederman and colleagues (1999). These researchers examined a sample of 140 girls with ADHD and 122 girls without ADHD, who were between ages 6 and 18 years and recruited from pediatric and psychiatric care facilities. The samples were compared with regard to the presence of comorbid psychiatric disorders, performance on tests of intelligence and academic achievement, socioeconomic status, ethnicity, and family structure. Findings for this sample of girls indicated that the ADHD group, when compared to the non-ADHD participants, demonstrated higher rates of the core ADHD symptoms (hyperactivity, impulsivity, and inattention). The ADHD group demonstrated higher rates of school problems and earned lower scores on tests of intelligence and academic skills. Further, the ADHD group was more likely to have comorbid disruptive behavior, mood, anxiety, tic, and substance abuse disorders, and was rated by clinicians as having lower overall functioning. Although ADHD participants had higher rates of other psychiatric conditions compared with non-ADHD girls, a large proportion of girls with ADHD (55%) did not meet criteria for any comorbid condition. The authors concluded that the characteristic symptoms of ADHD appear in girls in a similar manner as with boys, and like boys, girls with ADHD experience clinically significant impairment in their school, family, and peer functioning (Biederman et al., 1999).

The largest descriptive study of elementary-school age children to date included an initial examination of a sample of 6- to 12-year-old girls with ADHD who were subsequently followed into adolescence (Hinshaw, 2002; Hinshaw, Owens, Sami, & Fargeon, 2006). The study compared 140 girls with ADHD to 88 girls not meeting diagnostic criteria for this disorder (although some of the girls in this sample were diagnosed with other behavioral health conditions). Initial analyses indicated that girls with ADHD (Combined and Inattentive types) compared with non-ADHD peers were more likely to receive special education services and had higher rates of grade retention, other disruptive behavior disorder symptoms/diagnosis, internalizing disorder symptoms, and lower social preference ratings (Hinshaw, 2002). Consistent with the results of Biederman and colleagues (1999), non-ADHD girls in this sample earned higher scores on tests of intelligence and academic achievement than both of the ADHD groups. Interestingly, different than boys with ADHD, rates of the occurrence of a reading disability in this sample did not differ between groups (ADHD/COM, ADHD/I, comparison).

One of the more interesting lines of research emerging related to girls with ADHD is the nature of the social impairments present in this population. Blachman and Hinshaw (2002) and Hinshaw (2002) presented some of the initial data on this topic from their study of girls with and without ADHD participating in a summer camp program. Both ADHD groups (ADHD/COM and ADHD/I) received fewer positive peer nominations than comparison girls. Further, girls with ADHD/COM received the

fewest friendship nominations of any of the groups. Prior research also indicated that girls with ADHD/COM are more rejected by peers than girls with ADHD/I (Biederman et al. 1999).

Girls with ADHD were also less likely than non-ADHD girls to maintain friendships across the duration of the camp program, with ADHD/COM girls again somewhat more impaired than ADHD/I. The ADHD/COM group was found to be unable to maintain even one friendship, whereas the ADHD/I group was unable to maintain multiple friendships. The ADHD/I group was rated by observers as demonstrating a greater degree of social withdrawal than either the ADHD/COM or comparison girls, a finding consistent with prior studies indicating that girls with ADHD/I are rated as more socially isolated, though not necessarily actively rejected by peers, than girls with ADHD/COM and girls without ADHD (Biederman et al. 1999).

Additional findings indicate that girls with ADHD experience a higher degree of conflict in their social interactions with other girls when compared with non-ADHD peers (Blachman & Hinshaw, 2002; Hinshaw, 2002), thus leading to lower quality friendships than their non-ADHD peers. However, unlike boys, poor social interactions between girls are not typically characterized by overt aggression, such as pushing, hitting, or fighting. Research investigating the nature of problematic peer interactions between girls has focused on the phenomenon of relational aggression. Relational aggression is a term referring to actions taken by individuals with an intent to manipulate and damage peer relationships through spreading rumors and gossip, withdrawing friendship, and excluding peers from activities (Crick and Grotpeter, 1995). Further investigation of the social behavior of girls with ADHD by Hinshaw and colleagues has illuminated the types of conflict and aggression that may characterize the interactions of ADHD girls.

Research on the nature of the peer interaction problems of girls with ADHD has found that ADHD/COM girls exhibit higher rates of overt aggression than girls with ADHD/I or non-ADHD girls, and greater levels of relational aggression have been found for both ADHD groups when compared to girls who do not have ADHD (Zalecki & Hinshaw, 2004). Results also revealed that girls with ADHD/COM tend to exhibit higher rates of relational aggression than girls with ADHD/I according to staff observations and peer nominations, but this difference was not apparent on parent and teacher ratings of social interaction problems. This finding suggests that although relational aggression is a significant concern for girls in general, and even more so for girls with ADHD, this type of aggression may be a particularly challenging target for assessment and intervention, as it is not easily captured by traditional clinical methods (i.e. parent and/or teacher behavioral ratings).

Developmental Trajectory

Little research has been conducted with girls examining the developmental emergence and progression of ADHD symptoms, comorbidity, and impairment through childhood and adolescence. This has been noted as a significant gap in the knowledge base of girls who have ADHD (Hinshaw & Blachman, 2005). In an investigation of the characteristics of this disorder among young girls, Hartung et al. (2002) examined a clinic-referred sample of children between the ages of 3 and 7 years. Girls with ADHD when compared to same-gender, non-ADHD peers were more likely to have disruptive behavior and internalizing symptoms, as well as a greater degree of peer interaction problems. These findings support a conclusion that ADHD symptoms emerge when girls with this disorder are young and that there are noticeable differences between girls with and without ADHD in the preschool and early elementary years.

Hinshaw and colleagues (2006) recently published findings of describing 5-year developmental outcomes for girls who were initially examined in elementary school. Diagnostically, most girls who did not meet criteria at the initial assessment continued to fall below diagnostic criteria for ADHD. Interestingly, a minority (39%) of the girls diagnosed with ADHD/COM as elementary-school students

maintained this diagnostic classification many of the girls later met criteria for ADHD/I or no longer met diagnostic criteria. However, the majority (63%) of girls diagnosed with ADHD/I at baseline continued to meet criteria for this condition at 5-year follow-up point. Overall, girls diagnosed with ADHD/COM or ADHD/I at the start of the study continued to demonstrate many more problems (i.e., presence of ADHD symptoms, disruptive behavior disorders, internalizing symptoms, social competence difficulties, academic performance deficits, need for special education services) compared with non-ADHD girls. By and large, girls diagnosed with ADHD/COM and ADHD/I at baseline assessment did not differ from each other related to degrees of impairment on multiple measures of functioning when evaluated five years later. Hinshaw and colleagues (2006) interpreted their findings to support the persistence from childhood to adolescence of ADHD symptoms (inattention more so than hyperactivity/impulsivity) and clinically significant impairment in their well-defined sample of girls.

Comparing Girls and Boys with ADHD

In addition to the recent advances in our knowledge base focused on the characteristics of girls with ADHD compared with their non-ADHD peers of the same gender, during the past decade there has been a substantial increase in efforts to understand the similarities and differences between boys and girls with ADHD regarding the expression of ADHD symptoms, associated comorbid diagnosis and problems, and functional impairment.

Gaub and Carlson (1997) conducted the initial meta-analytic review of the literature examining differences between boys and girls with ADHD related to symptoms and functional impairment. Reflective of the state of research at that point, the authors were able to identify 18 studies directly comparing boys and girls with ADHD. Results of the analyses indicated that boys and girls with ADHD demonstrated similar levels of problems related to impulsivity, academic performance, and peer interactions. However, boys with ADHD exhibited greater levels of hyperactivity, conduct disorder and other externalizing behaviors, internalizing symptoms, and peer aggression than girls. Upon examining only clinic-referred samples in their study, they found that many of these male-female differences were no longer present. The authors concluded that although community samples of boys and girls with ADHD display differences in ADHD symptoms, other behavioral/emotional symptoms, and associated impairment, boys and girls referred for clinical services for ADHD demonstrate similar symptom profiles and degrees of impairment. Gaub and Carlson (1997) speculated that their results may indicate that the girls referred for clinical services due to ADHD may represent a particularly impaired group with this condition given their similarity with clinic-referred boys with ADHD.

Other findings indicate that boys and girls diagnosed with ADHD experience similar degrees of functional impairment due to ADHD symptoms, although their symptom profiles may differ. For instance, Biederman and Faraone (2004) found that although boys in their sample were more likely than girls to be diagnosed with ADHD/COM, girls were diagnosed with ADHD/I twice as frequently as boys.

Gershon (2002) conducted a more recent meta-analysis of 38 studies (13 of the studies were the same as those included in the Gaub and Carlson [1997] meta-analysis) that directly compared male and female children diagnosed with ADHD. Similar to the findings of Gaub and Carlson (1997), Gershon's analysis indicated that compared to boys with ADHD, girls with this disorder displayed fewer ADHD and externalizing symptoms, primarily related to lower ratings of hyperactivity across parents and teachers. However, Gershon found that only teachers rated ADHD girls as less inattentive than their male counterparts, as parent ratings of inattention symptoms were similar across gender. Additionally, girls with ADHD performed more poorly compared to boys with ADHD on measures of intellectual functioning and manifested a greater degree of symptoms associated with internalizing disorders. The finding related to comorbid internalizing symptoms represents a distinct difference between the results of the Gershon (2002) and Gaub and Carlson (1997) meta-analyses.

Hartung and colleagues (2002) also compared boys and girls with ADHD in their sample of young children. Their findings supported a conclusion that both young boys and girls experience significant impairment due to ADHD symptoms; however, overall boys with ADHD demonstrated a wider range of problems when compared with girls with the disorder. Boys with ADHD in this sample demonstrated a greater degree of externalizing behavior symptoms, though a similar level of internalizing symptoms, when compared to girls with ADHD. Additionally, teacher-rated (although not parent-rated) inattention and hyperactivity/impulsivity symptoms were greater for boys with ADHD than girls with ADHD. In the overall group of children with ADHD, girls comprised a greater proportion of the sample diagnosed with ADHD/I than boys.

DuPaul, Jitendra, Tresco, Vile Junod, Volpe, and Lutz (2006) recently published findings that further supported the conclusion that both girls and boys with ADHD experience significant functional impairment. However, rather than examining a community or psychiatric clinic sample, these investigators gathered their data from a public school-based sample of elementary-school age boys and girls with ADHD. Findings comparing boys ($n = 133$) and girls ($n = 42$) with ADHD supported the presence of similar levels of problems related to academic functioning, although girls were rated by their teachers as appearing somewhat less impaired related to academic motivation and study skills than boys. Similar to prior research findings, DuPaul and colleagues (2006) found that boys demonstrated higher levels of core ADHD symptoms than girls. However, when comparisons were made using gender-specific standard scores (as opposed to raw scores), the researchers found that girls with ADHD were rated as displaying greater levels of inattention symptoms than boys with ADHD. Additionally, unlike most prior investigations, girls with ADHD were rated by their teachers as having greater levels of externalizing and internalizing problems than boys with ADHD. Both boys and girls with ADHD demonstrated significant social skills impairments, although there were no significant differences between these groups.

Summary of Research Findings

Similar to boys with ADHD, girls with ADHD clearly experience clinically significant symptoms and functional impairment that differentiates them from individuals without this condition. Overall, girls with ADHD demonstrate levels of symptoms at a greater degree than samples of comparison girls. Additionally, girls with ADHD, when compared to their peers without this condition, have considerable problems related to academic performance, social competence, and family functioning, as well as symptoms of comorbid externalizing and internalizing disorders.

Historically the majority of studies regarding ADHD largely ignored girls; however, emerging data are clearly indicating that girls experience patterns of symptoms and problems at a level similar to boys. Although there are some discrepancies among studies, in general, boys with ADHD may be rated as having a greater degree of symptoms and comorbid externalizing problems, whereas girls present with increased risk for intellectual and academic impairment, as well as internalizing disorders. A recent school-based study (DuPaul et al., 2006) highlights the importance of using gender specific norms for evaluation of ADHD symptoms.

The research also indicates that the setting in which ADHD screening and evaluation is conducted has a substantial effect on rates of identifying girls and boys with this disorder. In community samples, there are significant discrepancies between boys and girls with regard to the degree of ADHD symptoms, rates of externalizing and internalizing problems, and ADHD-related impairment (Gaub & Carlson, 1997; Hinshaw & Blachman, 2005). In contrast, in clinic-based samples boys and girls with ADHD are quite similar with regard to rates of ADHD symptoms, demographic characteristics, and levels of functional impairment (Gaub & Carlson, 1997). As noted above, boys account for a much greater proportion of children diagnosed with ADHD in clinic samples as opposed to community samples, suggesting that there may be a bias against referring girls to clinics. These findings suggest that the symptoms of girls often

need to be relatively severe in order to trigger a referral to a clinic-based program. Alternatively, informants (e.g., parents and teachers) may be biased to rate symptoms more highly for boys than girls (Sciutto, Nolfi, & Bluhm, 2004). Combined, such findings have led researchers to conclude that girls who are seen in clinical settings for assessment and treatment regarding ADHD may be among the most complex and difficult to help.

Thus, it is quite clear that clinicians working with children who have ADHD should be cognizant of the findings that both girls and boys are likely to manifest clinically significant symptoms and experience meaningful impairment relative to same-gender peers without the disorder. Such findings highlight the need for clinicians to tailor their assessments of children referred for possible ADHD to appreciate both the similarities and potential differences between male and female patients. Further, the extant research underscores the need for screening in community settings (e.g., school and primary care practice) to identify girls with or at risk for ADHD who otherwise may not receive needed services.

Best Practices in the Assessment of ADHD

As discussed above, there appear to be several notable differences between boys and girls presenting with attention problems, and these differences have implications for evaluation procedures. The following section provides an overview of recommended assessment procedures used with children presenting with attention and impulse control problems. The differences between boys and girls tend to be more pronounced in community samples, and girls' impairment may be more significant by the time they are referred for clinical services (Hinshaw & Blachman, 2005). Universal screening (e.g., in schools or primary care practices) for attention and impulse control difficulties may be an effective method for early identification of girls with or at-risk for ADHD. Early identification and intervention provides an opportunity to reduce the severity of outcomes related to ADHD symptoms, such as school performance deficits, parent-child interaction problems, and limited development of peer relationships. Children presenting with more complex needs, which often involve questions about comorbidity or more significant functional impairment, may be referred for more comprehensive clinical evaluation, as described below.

Universal Screening

School professionals and primary care providers have regular contact with large groups of children, and therefore, they are in a position to conduct universal screenings to identify children who have or are at-risk for attention problems. Because of the potential gender differences related to ADHD symptomatology and impairment, it is important that the screening measures employed include gender-specific norms. The *ADHD Rating Scale-IV (ADHD-IV)* (DuPaul, Power, Anastopoulos, & Reid, 1998) and *IOWA Conners Teacher Rating Scale* (Loney & Milich, 1982) are examples of psychometrically sound rating scales with gender-specific norm groups that may be used in schools to screen for attention problems. The *ADHD-IV* is an 18-item questionnaire that maps to the *DSM-IV* criteria for ADHD. Ratings are made on a 4-point Likert scale (never or rarely, sometimes, often, very often) to determine the frequency of *DSM-IV* symptoms of ADHD (DuPaul et al. 1998). The *IOWA Conners Teacher Rating Scale* (Loney & Milich, 1982) includes 10 items that assess symptoms of ADHD and Oppositional Defiant Disorder that manifest in the school environment. Items are rated on a scale from 0 (not at all) to 3 (very much). The *Pediatric Symptom Checklist-17 (PSC-17)* (Gardner et al., 1999) is a brief behavioral health screening measure designed for use in primary care settings. The measure has been proposed to include three subscales: externalizing, internalizing, and attention problems, and the attention problems subscale has been shown to have a relatively high level of predictive validity (Gardner, Lucas, Kolko, & Campo, 2007).

The results of school- and primary care-based universal screenings may be used to identify children who are at-risk for attention problems and who might benefit from early intervention to prevent more significant difficulties. Additionally, children who screen within clinically significant levels and who demonstrate moderate to severe impairment might require more comprehensive evaluation and targeted treatment, so they could be referred to a clinic-based provider.

Clinic-based Diagnostic Evaluation

Practice guidelines suggest that the assessment of ADHD should include a clinical interview conducted with the child and parent, information from the child's school about academic, behavioral, and social functioning, screening for comorbid conditions, and standardized, norm-referenced ratings from parents and teachers (American Academy of Pediatrics, 2000; Pliszka & AACAP Work Group on Quality Issues, 2007). The main purpose of the diagnostic evaluation is to identify whether the child meets criteria for ADHD and/or another disorder and to determine the areas and levels of impairment. In addition, assessment results should be used to inform treatment planning (Barkley, 2006; DuPaul & Stoner, 2003).

The clinical interview serves to identify the presence, duration, and severity of symptoms, age of onset, and settings of impairment (i.e., determine whether the child's presenting problems are consistent with a *DSM-IV* diagnosis). This categorical approach to assessment provides a framework for the diagnostic evaluation; however, there are limitations that should be considered (Power, DuPaul, Shapiro, & Kazak, 2003). One significant limitation of categorical approaches relative to the diagnostic assessment of girls is that they do not account for gender differences (i.e., *DSM-IV, TR*; [American Psychiatric Press, 2000] criteria for diagnosis are applied regardless of the individual's gender). Therefore, in assessing ADHD, it is essential that clinicians include behavioral rating scales that have separate norms for boys and girls, such as the *ADHD-IV* or the *IOWA Conners* (DuPaul et al., 2006). The dimensional approach to assessment allows the clinician to obtain information from multiple informants (e.g., parent, child, teacher) and evaluate the child's functioning along a continuum and in comparison to peers of the same gender and age using assessment instruments that are psychometrically sound (Power et al., 2003).

Clinicians using the categorical approach to assessment also must determine whether the child experiences impairment and whether the impairment is present in two or more settings (e.g., home, school), consistent with *DSM-IV TR* diagnostic criteria. However, this assessment approach does not allow for the evaluation of the degree of the impairment. Rating scales, such as the *Impairment Rating Scale* (Fabiano et al., 2006), can be incorporated into the assessment to provide dimensional information about the degree of the child's impairment due to ADHD symptoms. Parent and teacher ratings on the *Impairment Rating Scale* assess functional impairment related to the child's relationship with parents, siblings, and peers; the influence of ADHD symptoms on family functioning, academic progress, and classroom behavior; the child's self-esteem; and overall impairment. The measure has been shown to have acceptable temporal stability and concurrent validity (Fabiano et al., 2006).

It should be noted that categorical and dimensional approaches to assessment tend to focus on within-child factors. Although these assessment models provide valuable information, it also is important to consider environmental and relational influences that may be contributing to problem behaviors (DuPaul & Stoner, 2003; Power et al., 2003). Therefore, functional and ecological assessments are critical components in assessing attention and behavior difficulties and developing treatment plans. Functional assessment allows the clinician to identify contingencies that may serve to elicit or maintain problem behaviors (DuPaul & Stoner, 2003). Data collected during the functional assessment can be used to develop an individualized intervention plan that is matched to the child's specific behavioral needs.

In addition, in conducting a diagnostic evaluation and developing a treatment plan, it is important to consider the child's development within multiple systems (e.g., home, school, community;

Bronfenbrenner, 1979). Through the completion of an ecological assessment, the clinician obtains information about the child's functioning within multiple contexts. This method is useful for understanding relationships among individuals within systems (e.g., family and school) as well as understanding relationships between systems (e.g., family and school, school and health system). Ecological assessments may include parent and teacher rating scales or direct observation. For example, the *Parent-Child Relationship Questionnaire (PCRQ)*; Furman & Giberson, 1995) and *Student-Teacher Relationship Scale (STRS)*; Pianta, 1999) provide information about parent and teacher perceptions of the strength of parent-child and teacher-student relationships, respectively. In addition, the *Classroom Assessment Scoring System (CLASS)*; Pianta, La Paro, & Hamre, 2008) is a direct observation of classroom context. The observation assesses the classroom climate, teacher sensitivity to student needs/perspectives, classroom organization, and instructional support provided by the teacher.

The inclusion of functional and ecological assessment data allows the clinician to tailor the evaluation and treatment plan to the child's individual needs. As discussed, functional assessment data provide valuable information about the environmental conditions under which the problem behaviors tend to occur. In addition, ecological assessment allows for evaluation of the child's relationships with individuals who have a significant influence on development (e.g., parents, teachers). Combined, functional and ecological assessment data can be used to develop hypotheses about potential contingent relationships existing between a child's behavior and environmental conditions that could inform the development of interventions. This individualized approach to assessment inherently allows for the consideration of gender differences.

Assessment Applications of Research on Girls with ADHD

As the literature review above highlights, girls diagnosed with ADHD present with a range of challenges with which the child and family must cope. In addition, professionals who work with girls with attention disorders (e.g., school staff, primary care providers, clinic-based providers) should consider gender-specific issues in their assessment and treatment planning. Although there are many similarities between girls and boys with ADHD, there are also several important differences that may not be readily apparent to clinicians, particularly given the relative infrequency of girls presenting for clinical services for this condition. However, as discussed above, a thorough individualized assessment that results in the identification of target symptoms and areas of impairment is an essential process in the effective care of children with ADHD (Pliszka & AACAP Work Group on Quality Issues, 2007). In order to meet this goal for girls with ADHD, it is ideal for clinicians to have an awareness of the key characteristics about the symptom presentation, associated problems, and quality of impairment for girls with ADHD. Table 1 summarizes the issues clinicians may find unique to girls with ADHD and suggested assessment strategies. The case illustration presented below also highlights several of these important issues.

Table 1.

Key Issues and Related Assessment Strategies for Girls with ADHD

<u>ADHD Assessment Issue for Girls Compared to Boys</u>	<u>How to Address in Practice</u>
<ul style="list-style-type: none"> • Present for clinical evaluation later in development • Different ADHD symptom profile • Greater chance of internalizing rather than externalizing symptoms 	<ul style="list-style-type: none"> • Improve methods for universal screening; collect records from early school years to establish symptom pattern • Use norm-referenced rating scales with gender-specific comparison data • Multi-method assessment of internalizing symptoms – behavioral ratings, self-report measures, parent and child interviews

- | | |
|--|--|
| <ul style="list-style-type: none">• Unique social problems – relational aggression | <ul style="list-style-type: none">• Inquire about possible social victimization, exclusion from social activities, changes in peer relationships |
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Case Illustration

Theresa is a 12-year-old, seventh-grade student brought to the clinic by her parents with concerns related to her academic performance, increasing problems with social relationships, and growing conflict with other family members. Although there are no concerns about disruptive behavior, since early elementary school Theresa's teachers have consistently reported to her parents that she appears to daydream during classroom instruction, is slower to complete assignments than other students, and seems to become fatigued during academic work.

During second grade, Theresa's parents and teacher raised concerns about attention problems. As a result, the school's student support team was consulted and decided to have Theresa's teacher complete standardized behavioral rating scales. The results of this screening indicated that Theresa was exhibiting ADHD symptoms in the "at-risk" range relative to same-age girls. The team worked with Theresa's parents and teacher to implement several classroom accommodations, including having her sit closer to the teacher, providing frequent positive reinforcement (i.e. verbal and non-verbal praise) contingent on meeting goals for work completion and accuracy, and increased availability of small-group instruction. Theresa's classroom performance was noted to improve after these interventions were initiated, and this plan continued throughout elementary school.

Fifth grade presented more challenges for Theresa, particularly related to completing class assignments and handing in homework. Additionally, Theresa started to complain to her parents that some girls were "being mean," teasing her, and excluding her from activities outside of school. Parents again consulted with the school's student support team. At this point, the team decided to implement several additional intervention strategies, including having Theresa participate in an after-school homework support group and a social skills/friendship group with the guidance counselor and establishing a school-home daily report card.

Theresa's sixth grade teachers (first year of middle school) continued to utilize the interventions developed during fifth grade and noted that her academic performance was average. However, the current seventh grade year has presented considerable difficulty for Theresa, and her grades have declined to a point that she often appears frustrated about her performance. The seventh grade teachers require students to demonstrate independence regarding completion of homework assignments and studying and determined that Theresa can no longer receive credit for homework assignments turned in late. Additional problems include not completing tests within the time allotted and failing to meet deadlines for projects.

The student support team requested that the school psychologist complete a behavioral assessment to obtain additional information about Theresa's classroom behavior and performance. The school psychologist completed a direct observation of Theresa in several of her classrooms. Results of this assessment indicated that Theresa was spending much less time actively engaged in academic activities compared with other girls in the classroom and was often observed looking around the classroom or drawing rather than working on assignments.

Theresa has also been complaining to her parents that she worries that she will not be able to complete her homework most nights, and she frequently worries about completing tests and assignments in class. In addition, Theresa's parents have noticed her crying while using their home computer. When

asked about this, Theresa reported that several girls at school have been sending her insulting Instant Messages and emails, as well as spreading rumors about her. Due to these increasing concerns and after further consultation with her school team, Theresa's parents decided to pursue a clinical evaluation.

Theresa's primary care physician was initially consulted, but he referred the family to a child psychologist due to the potential for comorbidity (i.e., concerns about anxiety) and the fact that Theresa's complaints include growing problems with peer relationships. During the evaluation, the psychologist asked Theresa's parents to complete an extensive clinical interview covering her developmental history, family interactions, peer relationships, academic skill development, teacher reports of strengths and weaknesses throughout school years, and responses to prior intervention efforts. Additionally, Theresa and her parents completed a semi-structured diagnostic interview, the *Schedule for Schizophrenia and Affective Disorders – Child Version (KSADS-IV; Ambrosini, 2000)*, designed to present an organized sequence of questions inquiring about a range of externalizing and internalizing symptoms. Theresa was also engaged in an interview to obtain her perspective on the presenting problems, peer interactions, relationships with family members, and goals for improvement. Theresa's parents and two of her teachers were asked to complete behavioral rating scales regarding the presence of *DSM-IV-TR* ADHD symptoms (*ADHD Rating Scale-IV; DuPaul et al., 1998*) and characteristics associated with other potential internalizing or externalizing disorders (*Behavior Assessment System for Children – Second Edition; BASC-2; Reynolds & Kamphaus, 2004*). Rating scales were scored and interpreted utilizing gender-specific normative data. A brief battery of tests was administered to gain an understanding of Theresa's general cognitive ability (*Wechsler Abbreviated Scale of Intelligence; WASI; The Psychological Corporation, 1999*) and development of academic skills (*Wechsler Individual Achievement Test-Second Edition; WIAT-II; The Psychological Corporation, 2001*) compared with other students in her age range. Theresa's assessment data are summarized in Table 2.

Table 2.
Results of Theresa's Evaluation for Possible ADHD

	Mother	Father	L.A. ¹ Teacher	Math Teacher
Diagnostic Interview Symptoms ²				
Inattention	9	9	7	6
Hyper/Impuls. ³	2	1	1	0
<i>ADHD Rating Scale IV (%ile)*</i>				
Inattention	97 th	93 rd	94 th	99 th
Hyper/Impuls.	40 th	10 th	25 th	10 th
<i>BASC-2 (%ile)*</i>				
Attention Prob.	98 th	89 th	95 th	99 th
Hyperactivity 25 th	17 th	23 rd	25 th	25 th
Anxiety	99 th	85 th	93 rd	91 st
Depression	88 th	78 th	91 st	94 th
Somatization 65 th	57 th	40 th	68 th	68 th
Withdrawal	92 nd	98 th	77 th	83 rd
Social Skills 65 th	57 th	50 th	63 rd	
Testing Results				

Instrument/Scale	Standard Score	Range
Wechsler Abbreviated Scale of Intelligence (WASI)	113	High Average
Wechsler Individual Achievement Test – Second Edition (WIAT-II)		
Word Reading	116	High Average
Reading Comprehension	107	Average
Numerical Operations	112	High Average
Math Reasoning	103	Average
Spelling	114	High Average
Written Expression	101	Average
Listening Comprehension	115	High Average

¹ L.A. – Language Arts

² Teacher symptom endorsements obtained from the ADHD Rating Scale – IV responses

³ Hyper/Impuls. – Hyperactivity/Impulsivity

* Scores between 85th and 94th percentiles are considered to be “at-risk” elevations for individual subscales, and elevations at the 95th percentile or above are clinically significant.

During their interview, Theresa’s parents speculated that their daughter’s declining academic performance was causing her to experience considerable anxiety and become increasingly argumentative. In addition, they noted that she often appears preoccupied by the rumors being circulated about her in school and through Instant Messaging. Further, parents expressed frustration about their relationship with Theresa, as they are finding that she frequently appears angry with them, particularly after discussing poor test grades or when parents restrict her involvement in activities so she can continue working on school assignments.

Theresa also acknowledged that she often finds herself fighting with her parents, with whom she previously had a very good relationship. She stated that she is “really stressed out” because she does not understand the reasons for her declining school grades and is equally confused by the “mean” emails and Instant Messages she has received from girls whom she believed to be friends. Theresa indicated that she has always been easily distracted during school and when completing homework but has never believed this to be a problem. Although she agreed that her parents are attempting to help when they ask to review her assignment book and completed homework, she finds them to be “too involved” and “nagging.” Overall, Theresa and her parents agreed that they are frustrated and perplexed by her somewhat sudden decline in academic performance, problems with friends, and escalating arguments in the home.

Examination of Theresa’s evaluation data reveals several consistencies across clinical interviews and rating scales. Of primary importance, Theresa’s two teachers and both parents endorsed the presence of significant ADHD symptoms across multiple measures (behavioral ratings and diagnostic interviews). The ADHD symptoms endorsed on the diagnostic interview in combination with above average ratings on norm-referenced measures across informants are consistent a pattern of ADHD, Predominantly Inattentive Type. Testing results indicated solidly average to high average performance across measures of general cognitive ability and academic achievement. Additionally, parent and teacher responses on the *BASC-2* suggest the presence of symptoms consistent with internalizing disorders, particularly related to anxiety. Finally, results of the *Impairment Rating Scale* (Fabiano et al., 2006) completed by parents and teachers suggested clinically significant impairment on items related to parent-child interactions, peer

relationships, academic functioning, and global functioning. Based on the information collected during the evaluation process, the psychologist concluded that Theresa's symptoms were best described by the *DSM-IV TR* diagnoses of Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type and Adjustment Disorder with Mixed Anxiety and Depressed Mood.

Following a description of the diagnostic decision-making process and outcome, Theresa and her parents were engaged in a discussion about the development of an intervention plan to target her needs in school, the family, and with peer relationships. Theresa and her parents expressed some relief in understanding that her problems were not due to a lack of academic skills or desire to do well in school, but a progressively greater mismatch between the organizational and work completion demands placed on middle school students and Theresa's deficient capacity to sustain attention, manage time demands, and organize the assignments of multiple classes. Components of the intervention plan were proposed to address Theresa's unique needs as girl with ADHD.

First, the clinician and family discussed the role of medication as a means to improve Theresa's capacity for maintaining attention during academic tasks at school and home. A brief course of family behavioral therapy was outlined with goals of assisting parents and Theresa in building strategies for improving their communication, establishing behavioral routines for homework completion and studying, and reducing parent-adolescent conflict. Individual therapy was also recommended for Theresa to learn skills to effectively cope with the anxiety she was experiencing related to keeping up to date with academic demands and the transitions occurring in her peer network. Theresa and the psychologist also discussed the role of individual therapy in assisting her to develop effective responses to the relational aggression she has been experiencing through Internet communications with peers. The psychologist also supported the family in arranging a meeting with Theresa's school support team to create a formal accommodation plan (i.e., Section 504 plan) to address the impact of ADHD symptoms on academic performance. Finally, the family's clinician consulted with the school psychologist at Theresa's middle school regarding peer interaction difficulties. The school psychologist arranged for Theresa to participate in a group for girls to help them cope with interpersonal aggression and become involved as a student representative on the school-wide anti-bullying program.

Discussion of the Case

As illustrated, girls with ADHD, like boys, experience significant impairment due to the disorder. Theresa's case highlights several important points that should be considered by clinicians working with girls with attention disorders (see Table 1 for a summary of these issues).

Early identification of the presence of ADHD is an important component to preventing the frustration experienced by children and families due to the impact of this condition on school, home, and peer interactions. The issue of early identification is even more salient for girls with ADHD and other mental health disorders, as girls represent one of the segments of the United States population at greatest risk for not receiving needed mental health services (Power, Eiraldi, Clarke, Mazzuca, & Krain, 2005). Although early identification and intervention are understandably goals for all children with ADHD, this may be particularly important for girls with ADHD due to a potential bias to underestimate the potential significance of inattention and self-control problems among girls. In Theresa's case, the school support team and her parents identified the presence of a potential problem in second grade, so several interventions were implemented relatively early in her academic career.

Although some classroom-based accommodations were put in place during Theresa's elementary school years, clinicians should make note that girls, like Theresa, may present for clinical evaluation and services later in development than boys. By the time Theresa presented to a

psychologist for a clinical evaluation, she was experiencing comorbid internalizing problems and significant difficulty with relational aggression. This delayed onset of clinical services resulted in a complex clinical presentation that presented challenges for the psychologist in prioritizing targets for intervention. The psychologist was faced with the need to address ADHD symptoms, relational aggression, the parent-child relationship, and internalizing difficulties concurrently.

Conclusion

There are several challenges faced by clinicians and researchers working to understand ADHD in girls. First and most importantly, evidence supports ADHD as a serious condition that results in an identifiable pattern of symptoms, associated deficits, and significant impairment in girls to a degree very similar to what is already well understood for boys. However, as noted, girls often present for clinical services later in their development than boys, so their problems at the time of referral may be more complex or challenging. Such concerns illustrate the importance of developing more effective methods of screening for ADHD in community-based settings, such as primary care practices and schools.

Clinicians need to have a solid understanding of the differences in expression of ADHD symptoms and related problems between boys and girls. The social impairments associated with ADHD in girls are somewhat unique from those among boys given the high prevalence of relational aggression and victimization among girls with this condition. Further, clinicians should be aware of the potential presence of internalizing disorders in girls with ADHD, given research findings that such conditions may be present more often for girls than boys with ADHD (particularly in clinical samples).

In conclusion, over the past 10 years, there has been a significant expansion of research efforts on behalf of girls with ADHD related to better characterization of the distinctions between girls with ADHD and non-ADHD peers, as well as comparisons of girls and boys with ADHD. Ongoing research with larger samples of girls with ADHD is needed to describe more precisely the issues unique to girls with this disorder that require attention during assessment and treatment planning. In addition, future research examining the developmental trajectories of girls with ADHD is needed.

The existing research base strongly supports the need for early identification of girls with ADHD and other mental health problems. Providers working in community-based settings, especially primary care practices and schools are alerted about the need for screening of children for attention, behavior, and learning problems early in their development, and certainly by the preschool years. Of course, the more frequent identification of children at younger ages will tax the capacity of community-based programs to address the needs of these youth and their families. Therefore, effective, efficient, and feasible programs of service delivery for young children with or at risk for ADHD and behavioral health problems will be needed to reduce current health disparities related to gender and other factors (e.g., socioeconomic status, minority status).

References

- Ambrosini, P. J. (2000). Historical development and present status of the Schedule for Affective Disorders and Schizophrenia for School-age Children (K-SADS). *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 49-58.
- American Academy of Pediatrics. (2000). Clinical practice guidelines: Diagnosis and evaluation of the child with Attention-Deficit/Hyperactivity Disorder. *Pediatrics, 105*, 1158-1170.

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, 4th edition, text revision. Washington, DC: American Psychiatric Press.
- Barkley, R. A. (2006). *Attention-deficit hyperactivity disorder, 3rd ed.: A handbook for diagnosis and treatment*. New York, NY, US: Guilford Press.
- Biederman, J., & Faraone, S. V. (2004). The Massachusetts general hospital studies of gender influences on attention-deficit/hyperactivity disorder in youth and relatives. *Psychiatric Clinics of North America. Special Issue: Adult Attention-Deficit Hyperactivity Disorder*, 27, 225-232.
- Biederman, J., Mick, E., Faraone, S. V., Braaten, E., Doyle, A., Spencer, T., et al. (2002). Influence of gender on attention deficit hyperactivity disorder in children referred to a psychiatric clinic. *American Journal of Psychiatry*, 159, 36-42.
- Blachman, D. R., & Hinshaw, S. P. (2002). Patterns of friendship among girls with and without attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 30, 625-640.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66, 710-722.
- DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *ADHD rating scale --IV: Checklists, norms, and clinical interpretation*. New York, NY: Guilford Press.
- DuPaul, G. J., & Stoner, G. (2003). *ADHD in the schools: Assessment and intervention strategies* (2nd ed.). New York, NY: Guilford Press.
- DuPaul, G. J., Jitendra, A. K., Tresco, K. E., Vile Junod, R. E., Volpe, R. J., & Lutz, J. G. (2006). Children with attention deficit hyperactivity disorder: Are there gender differences in school functioning? *School Psychology Review*, 35, 292-308.
- Fabiano, G. A., Pelham, W. E., Jr., Waschbusch, D. A., Gnagy, E. M., Lahey, B. B., Chronis, A. M., et al. (2006). A practical measure of impairment: Psychometric properties of the impairment rating scale in samples of children with attention deficit hyperactivity disorder and two school-based samples. *Journal of Clinical Child and Adolescent Psychology*, 35, 369-385.
- Furman, W., & Giberson, R. S. (1995). Identifying the links between parents and their children's sibling relationships. In S. Shuman (Ed.), *Close relationships in social-emotional development* (pp. 95-108). Norwood, NJ: Ablex.
- Gardner W, Lucas A, Kolko D, & Campo, J. (2007). Comparison of the PSC-17 and alternative mental health screens in an at-risk primary care sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46, 611-618.
- Gardner, W., Murphy, M., Childs, G., Kelleher, K., Pagano, M., Jellinek, M. et al. (1999). The PSC-17: A brief pediatric symptom checklist with psychosocial problem subscales. A report from PROS and ASPN. *Ambulatory Child Health*, 5, 225-236.

- Gaub, M., & Carlson, C. L. (1997). Gender differences in ADHD: A meta-analysis and critical review. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*, 1036-1045.
- Gershon, J. (2002). A meta-analytic review of gender differences in ADHD. *Journal of Attention Disorders, 5*, 143-154.
- Hartung, C. M., Willcutt, E. G., Lahey, B. B., Pelham, W. E., Loney, J., Stein, M. A., et al. (2002). Sex differences in young children who meet criteria for attention deficit hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology, 31*, 453-464.
- Hinshaw, S. P. (2002). Preadolescent girls with attention-deficit/hyperactivity disorder: I. Background characteristics, comorbidity, cognitive and social functioning, and parenting practices. *Journal of Consulting and Clinical Psychology, 70*, 1086-1098.
- Hinshaw, S. P., & Blachman, D. R. (2005). Attention-deficit/hyperactivity disorder in girls. In D. Bell, S. L. Foster, & E. J. Mash, (Eds.), *Handbook of behavioral and emotional problems in girls* (pp 117-147). New York, NY: Kluwer Academic/Plenum Publishers.
- Hinshaw, S. P., Owens, E. B., Sami, N., & Fargeon, S. (2006). Prospective follow-up of girls with Attention-Deficit/Hyperactivity Disorder into adolescence: Evidence for continuing cross-domain impairment. *Journal of Consulting and Clinical Psychology, 74*(3), 489-499.
- Loney & Milich (1982). Hyperactivity, inattention, and aggression in clinical activity. *Advances in Developmental and Behavioral Pediatrics, 3*, 113-147.
- Pianta, R. C. (1999). *Enhancing relationships between children and teachers*. Washington, DC: American Psychological Association.
- Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom assessment scoring system*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Pliszka, S. & AACAP Work Group on Quality Issues. (2007). Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*, 894-921.
- Power, T. J., DuPaul, G. J., Shapiro, E. S., & Kazak, A. E. (2003). *Promoting Children's Health: Integrating School, Family, and Community*. New York, NY: Guilford Press.
- Power, T. J., Eiraldi, R. B., Clarke, A. T., Mazzuca, L. B., & Krain, A. L. (2005). Improving mental health service utilization for children and adolescents. *School Psychology Quarterly, 20*, 187-205.
- Reynolds, C. R., & Kamphaus, R. W. (2004). *Manual for behavioral assessment system for children* (2nd ed.). Circle Pines, MN: American Guidance Service.
- Sciutto, M. J., Nolfi, C. J., and Bluhm, C. (2004). Effects of child gender and symptom type on referrals for ADHD by elementary school teachers. *Journal of Emotional and Behavioral Disorders, 12*, 247-253.
- The Psychological Corporation (1999). *Wechsler Abbreviated Scale of Intelligence*. San Antonio, TX: The Psychological Corporation.

The Psychological Corporation. (2001). *Wechsler Individual Achievement Test – Second Edition*. San Antonio, TX: The Psychological Corporation.

Thurber, J. R., Heller, T. L., & Hinshaw, S. P. (2002). The social behaviors and peer expectation of girls with attention deficit hyperactivity disorder and comparison girls. *Journal of Clinical Child and Adolescent Psychology, 31*, 443-452.

Waschbusch, D. A., King, S., & Northern Partners in Action for Children and Youth, NS, Canada. (2006). Should sex-specific norms be used to assess attention-Deficit/Hyperactivity disorder or oppositional defiant disorder? *Journal of Consulting and Clinical Psychology, 74*, 179-185.

Zalecki, C. A., & Hinshaw, S. P. (2004). Overt and relational aggression in girls with attention deficit hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology, 33*, 125-137.

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