

## **Current Developments in the Assessment of Attention-Deficit/Hyperactivity Disorder.**

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### ***Abstract***

*ADHD is not a benign disorder. Without appropriate treatment, this disorder can cause devastating problems. Early recognition, assessment, and management of this condition can redirect the education and psychosocial development of most children with ADHD. The absence of any single test or marker for ADHD has led various researchers to suggest a working definition or a set of assessment procedures that encompasses all of the data necessary to make a diagnosis of ADHD. This approach provides a guide and criterion for the collection and integration of the assessment data. The components of this diagnostic process are summarized along with a description of the accompanying diagnostic tools that can be used in each category. This multimethod approach to the diagnosis of ADHD includes: the DSM-IV criteria, structured, semistructured or unstructured interviews, a complete developmental history, and broad-band or narrow-band rating scales. Also included are objective measures such as brain imaging, continuous performance tests, and measures of cognitive functioning, along with careful attention to differential diagnosis and to possible comorbid conditions. Finally, a medical evaluation is also needed.*

### **Introduction**

Some children can't sit still. Others are highly distractible, forgetful, or inattentive. Some appear distracted by every little thing and don't seem to learn from their mistakes. Many of these children disregard rules, even when they are punished repeatedly. There are also those who tend to act without thinking, resulting in many accidents and reprimands. This collection of problematic features is called Attention-Deficit/Hyperactivity Disorder (ADHD).

The purpose of this article is to summarize the most recent developments in methods of diagnosing ADHD. The focus will be on information of particular interest to the clinician who works with children or with families that might have an ADHD child.

An article such as this cannot hope to contain all the relevant material. However, resources and references will be included to direct the interested reader to more in-depth descriptions and details regarding the assessment of ADHD students.

## **Need for Treating ADHD**

ADHD is the most common neurobehavioral disorder of childhood and among the most prevalent chronic health conditions affecting school-aged children. (American Academy of Pediatrics, 2000) It is a major clinical and public health problem because of its associated morbidity and disability in children, adolescents and adults. (Goldman, Genel, & Bezman, 1998)

ADHD is not a benign disorder. The core symptoms of ADHD include inattention, hyperactivity and impulsivity. (Barkley, 1998) It can cause devastating problems. Follow-up studies of clinical samples suggest that persons with ADHD are far more likely than normal people to drop out of school (32-40%), to rarely complete college (5-10%), to have few or no friends (50-70%), to under perform at work (70-80%), to engage in antisocial activities (40-50%), and to use tobacco or illicit drugs more than normal. Moreover, children growing up with ADHD are more likely to experience teen pregnancy (40%) and sexually transmitted diseases (16%), to speed excessively and have multiple car accidents, to experience depression (20-30%) and personality disorders (18-25%) as adults, and in hundreds of other ways mismanage and endanger their lives. (Barkley, 2002a, 2002b; Goldman et al., 1998; Gorski, 2002)

Early recognition, assessment, and management of this condition can redirect the education and psychosocial development of most children with ADHD. (Baumgaertel, Copeland, & Wolraich, 1996) Yet despite these serious consequences, studies indicate that less than half of those with the disorder are receiving treatment.

For those of us who are Christian in our world view, there is additional motivation for us to do the best job that we can in identifying and treating ADHD children. ADHD children, as all exceptional students, are a part of God's creation. Each special needs child is a member of the body of Christ and a part of God's eternal purpose. We need to do everything that we can to help these children achieve their full potential and to more effectively complete the purpose for which God created them.

## **Types of AD/HD**

There appears to be several types of ADHD. The DSM-IV identifies three categories under the general heading of ADHD. (American Psychiatric Association, 1994) Some children are primarily impulsive and hyperactive, while others are inattentive and distractible. Then, there is a third group who seem to have both impulsive and inattentive characteristics. Most rating scales and questionnaires used for assessment will draw upon the symptoms listed in the DSM-IV.

However, there has been some debate about the inattentive subtype. Prior to the publication of DSM-III in 1980, there was little attention given to children who may have significant attentional problems without the concomitant overactivity and impulsivity. Some have argued that the combined and inattentive types are so different as to constitute distinct and unrelated disorders. (Milich, Balentine, & Lynam, 2001, 2002)

The idea of ADHD as an impairment of executive functions has emerged as a useful way of understanding the puzzling nature of ADHD impairments. While there is no consensus for a definition of executive function, most researchers would follow Brown's description as the "wide variety of functions within the brain that activate, organize, integrate and manage other functions to allow the individual to function effectively".(Brown, 2000)

As part of the discussion of ADHD as an impairment of executive functions, there is disagreement about whether hyperactivity/impulsivity is essential to validate a diagnosis of ADHD. Russell Barkley, in developing a new theory of ADHD describes this disorder as developmental impairments of executive functions where impairment in the capacity to inhibit behavior is seen as the primary problem. Subordinate to behavioral inhibition, Barkley's model identifies four executive functions: nonverbal working memory, verbal working memory, self-regulation of affect/motivation/arousal, and reconstitution. (Barkley, 1997)

Brown has argued with the idea of establishing one executive function, that of inhibition, as primary while subordinating other executive functions to it. Brown has organized his assessment tools into five clusters: organizing and activating to work; sustaining attention and concentration; sustaining energy and effort; managing affective interference; and utilizing working memory and accessing recall.(Brown, 1996, 1999)

Brown proposes an alternative to Barkley's theory. First, he would say that impairment of one aspect of executive function, behavioral inhibition, is the core problem in the hyperactive-impulsive type of ADHD but not in the predominantly inattentive type. Second, other aspects of executive function, such as verbal working memory and self-regulation of affect, are impaired in the inattention symptoms of ADD, whether these symptoms appear in the combined type or in the inattentive type.(Brown, 2000)

In Brown's formulation, individuals with combined type of ADHD would likely have impairments in a wider range of executive functions. These functions would include those that modulate behavioral inhibition and those that modulate the wide variety of cognitive impairments currently listed as inattentive symptoms of ADD. Individuals with the predominantly inattentive type of ADD would be seen as having impairments in those aspects of executive function related to the various aspects of inattention.

The term attention-deficit disorder would be used to describe the inattentive type and hyperactivity-impulsivity disorder could be used for those with hyperactive-impulsive symptoms as currently found in DSM-IV. Persons could be diagnosed as having both disorders so long as the criteria for both impairments are met. (Brown, 2000)

With all of the research being conducted some type of changes in the terminology for ADHD will undoubtedly be contained in DSM-V scheduled for 2004 or 2005. DSM-IV is the official guide for now, but the reader should be aware of the significant debate going on within the field.

## **Incidence of ADHD**

AD/HD is one of the most common reasons children are referred to mental health professionals. It may be one of the most prevalent problems of childhood. The consensus of professional opinion is that approximately 3 to 5 percent of children have AD/HD. This translates to as many as two million school-age children. Every classroom in the country averages one AD/HD child.

Most of the research on ADHD has been done in the United States and Canada. However, Brown reports there is increasing data that indicates ADHD occurs at significant levels in countries as diverse as New Zealand, Germany, Italy, China, Japan, India, and Puerto Rico. (Brown, 2000)

The American Academy of Pediatrics (AAP) undertook a review of the research literature regarding the prevalence of ADHD and co-occurring conditions in children from primary care settings and the general population.

The AAP states that ADHD frequently co-occurs with additional emotional, behavioral, and learning problems. Disruptive behavior disorders are the most common, followed by internalizing and learning problems. Interestingly, co-occurring disruptive behavior problems seem to have more frequent associations with the hyperactive/impulsive dimension of ADHD, whereas internalizing and learning problems are more strongly associated with the inattentive dimension of the disorder. (American Academy of Pediatrics, 2001)

The clear implication is that any evaluation of ADHD should include evaluation for other conditions that may co-occur with the disorder.

## **Gender Comparisons for ADHD**

ADHD does affect both boys and girls. Females certainly share the primary features of inattention, impulsivity and hyperactivity with their male counterparts. High rates of school failure, similar comorbidity, as well as rates of mood, anxiety and learning disorders are much the same in ADHD girls as in boys. Some earlier studies suggest the prevalence of ADHD is greater in boys than girls. However, because many girls have the inattentive form of ADHD, they have gone undiagnosed and may be underrepresented in the incidence figures. When all forms of ADHD are included, the occurrence may be quite even between genders. In general, ADHD females manifest fewer primary symptoms and externalizing problems than males. In contrast, females are more likely to have comorbid conditions such as depression and anxiety than ADHD males. (Gaub & Carlson, 1997; Gershon, 2002a, 2002b)

If girls are underidentified, there are significant clinical and educational implications. This means girls are being deprived of appropriate treatment and intervention. (Wilens,

Biederman, & Spencer, 2002)

### **Causes of ADHD**

The precise cause of ADHD is still not known, but research continues to explore the sources of this disorder. Peter Jensen summarizes current research on pathophysiology and brain basis for ADHD and identifies five categories of factors that have been implicated in ADHD. These categories are (1) family and genetic factors; (2) prenatal or perinatal factors; (3) chemical “toxins”; psychosocial stressors and combined factors; and (5) brain structure and function abnormalities (which could result from the first four factors). (Jensen, 2000)

The emerging neuropsychological and neuroimaging literature points to abnormalities in frontal and/or frontostriatal networks of the brain. Reviews of a number of brain structural and functional imaging studies have demonstrated differences between ADHD individuals and matched groups. (Zametkin & Liotta, 1998) Structural magnetic resonance imaging studies in children with ADHD have shown reduced volumes in various parts of the brain.(Castellanos, Giedd, & Berquin, 2001) Earlier studies have shown reduced global metabolism in adolescent girls. (Ernst, Liebenauer, & King, 1994)

Most neurological studies find that as a group those with ADHD have less brain electrical activity and show less reactivity to stimulation in one or more regions of the brain. Neuroimaging studies of those with ADHD also demonstrate relatively smaller areas of brain matter and less metabolic activity of this brain matter than non ADHD subjects. (Barkley, 2002b; Wilens et al., 2002)

Single photon emission computed tomography (SPECT) scans have also been used to identify increased binding at the dopamine transporter protein. (Dougherty, Bonab, & Spencer, 1999)

Daniel Amen has generated a large database of SPECT scans for a variety of psychiatric conditions, including ADHD. He has created a significant amount of data to the understanding of distinct brain function and ADHD. (Amen, 1999, 2001; Amen & Carmichael, 1997)

ADHD is among the most recognized genetic based disorder in psychiatry.(McGuffin, Riley, & Plomin, 2001) For example, family studies of ADHD have shown relatives of ADHD children are at high risk for ADHD or other related problems. Additional lines of evidence from twin, adoption and segregation analysis studies suggest that there is a substantial genetic component. Twin studies, for example suggest that the heritability of ADHD ranges from 0.88 to 1.0, suggesting a substantial role for genetic factors in its cause. (Wilens et al., 2002)

The genetic contribution to these traits is routinely found to be among the highest for

any psychiatric disorder (70-95% of trait variation in the population), nearly approaching the genetic contribution to human height. (Barkley, 2002b)

Molecular genetic studies have implicated the dopamine D4 and the dopamine transporter as candidate genes. Of these candidate genes, multiple groups have independently reported on associations between ADHD and the postsynaptic D4 receptor in both children and adults with ADHD (Farone, Doyle, Mick, & Biederman, 2001). The occurrence of the postsynaptic D4 polymorphism in ADHD youth is higher than would be expected by chance. In addition, ADHD youth with the polymorphism have more severe symptomatology and impairment than those without it.

A recent report from a US and UK research team identified a specific region of chromosome 16 as contributing to ADHD susceptibility. The findings, based on 203 families in which at least two siblings had ADHD, suggest that an as yet unidentified gene within this chromosome region is a major ADHD risk factor. This region overlaps a region also implicated in autism and suggests that variations in a gene on 16p13 may contribute to common deficits found in both ADHD and autism. (Smalley, Kustanovich, & Minassian, 2002)

More study is needed, but the relationship between some type of inherited genetic predisposition that significantly alters the normal functioning of the brain, seems to be a likely source of ADHD.

The increased understanding of the biological basis for ADHD should also help counteract the allegation sometimes heard in Christian circles that ADHD is only a myth, is fabricated by the pharmaceutical companies to sell drugs, or is really just a “spiritual” problem.

### **Multimethod Diagnosis of ADHD**

The diagnosis of ADHD is a process. There is still no single test or procedure that can accurately and reliably diagnose this condition. Each child and each situation may require a slightly different set of diagnostic procedures. The clinician must evaluate what the parents say about the child’s symptoms, along with obtaining other sources of observation such as teachers. Collateral records such as report cards are combined with structured information gathering tools such as rating scales, checklists, and standardized tests. All of these activities must somehow balance science and practice. The diagnostic process must be accurate, yet cost effective. Above all, the diagnosis of ADHD must lead to helpful and practical recommendations for treatment. A collaborative plan for intervention will require multidisciplinary efforts by a team of professionals all working for the best interests of the child and his or her family. Finally, a diagnostic process should include an outline of measurable outcomes so that the effectiveness of the treatment components can be evaluated. These features can be a result of using a multimethod assessment process. (Anastopoulos & Shelton, 2001)

The absence of any single test or marker for ADD has led various researchers to suggest a working definition or a set of assessment procedures that encompasses all of the data necessary to make a diagnosis of ADHD. (Anastopoulos & Shelton, 2001; Barkley,

1998; Brown, 2000; Goldstein & Goldstein, 1990) This approach provides a guide and criterion for the collection and integration of the assessment data. The components of this diagnostic process will be summarized along with a description of the accompanying diagnostic tools or procedures which can be used in each category.

#### *DSM-IV Diagnostic Criteria.*

This is the most frequently used and best researched definition available at the present time. Therefore the child should meet these criteria.

The DSM-IV definition specifies the child should demonstrate at least 6 of either the inattentive or impulsive-hyperactive criterion. To qualify for any item, the child must have a minimum number of specific symptoms that have persisted for at least 6 months. These symptoms also need to occur to a degree that is maladaptive and inconsistent with the child's developmental level

In addition, these ADHD symptoms must be evident before age 7, there must be some impairment evident in two or more settings, such as school and at home, and there must be clear evidence of clinically significant impairment in social, academic, or occupational functioning. Finally, the symptoms must not be a result of other conditions such as mental illness, mood, or anxiety disorder.(American Psychiatric Association, 2001)

Because the symptoms of ADHD can seem to occur in an inconsistent fashion, it is necessary to include assessment procedures that provide a comprehensive sampling of the symptoms in a variety of settings. A combination of clinical interviews, rating scales, psychological tests, medical exam, records evaluation and observation can go a long ways in determining if the DSM-IV criterion are met. Barkley had stated that the three most important components in a comprehensive assessment for ADHD are the clinical interview, the medical examination and the completion and scoring of behavior rating scales. (Barkley, 1998)

#### *Interviews*

Clinical interviews are the foundation of an assessment. The general purpose is to gather background information about the child and to begin the accumulation of diagnostic criterion. Interviews can be conducted with the parents or other caregivers, as well as with the child and the child's teachers. These interviews may be **structured**, **semistructured** or **unstructured** in format.

*Structured* interviews are intended to provide information covering most childhood diagnostic conditions and provide specific questions to be read by the clinician and usually answered in a yes or no format. Two of the most common and well researched structured interviews are the Diagnostic Interview Schedule for Children-IV (NIMH DISC-IV) and the Diagnostic Interview for Children and Adolescents-IV (DICA-IV)

The NIMH DISC-IV is a highly structured diagnostic interview that is designed to assess 34 of the most common psychiatric diagnoses of children and adolescents. It takes from 70 to 120 minutes to complete the 358 stem questions and related branching questions. (Shaffer, Fisher, & Lucas, 2000) Most clinicians will find it takes too long to administer even with computer scoring, and the repetitive structure of the questions are quite tedious. However, it can be quite helpful in sorting out comorbid conditions. More information can be obtained online from the Columbia DISC Group at [www.c-disc.com](http://www.c-disc.com).

The Diagnostic Interview for Children and Adolescents–IV (DICA–IV) is a computerized version of the Diagnostic Interview for Children and Adolescents (DICA, intended for ages 6-17). There are two versions of DICA–IV: the Child/Adolescent Version and the Parent Version. The DICA–IV Child/Adolescent Version is a self-report instrument written at a fourth-grade reading level. The DICA–IV Parent Version contains the same categories as the child/adolescent versions, with two additional categories that provide information about the pregnancy/birth and the early development of the youth. The two versions work independently of each other and are administered separately. It supplements a clinical examination by covering all of the major child/adolescent categories from DSM-IV. Each of the 28 diagnostic categories takes 5-20 minutes to complete. (Reich, Welner, Herjanic, & MHS staff, 1996) More information can be obtained at MultiHealth Systems at [www.mhs.com](http://www.mhs.com).

The Barkley Interview for ADHD is a structured interview covering the various signs and symptoms of ADHD. Diagnostic information is obtained not only for ADHD, but also for possible comorbid conditions such as oppositional defiant disorder, depression and anxiety. The format for the interview may be found in Barkley's Clinical Workbook. (Barkley & Murphy, 1998)

*Semistructured* interviews may provide a more flexible approach to the clinical interview. This type of format allows more freedom to probe certain areas and more flexibility in follow-up questions. Information about symptom severity rather than just the presence of a symptom, is another advantage of the semistructured interview.

Several versions of the semistructured interview are available. Two that are described here are the Schedule for Affective Disorders and Schizophrenia for School-Age Children, present and lifetime version (K-SADS-PL), and the Semistructured Clinical Interview for Children and Adolescents (SICICA)

The K-SADS-PL is a semi-structured diagnostic interview designed to assess current and past episodes of psychopathology in children and adolescents, ages 6-17, according to DSM-III-R and DSM-IV criteria. Administration of the K-SADS-PL requires the completion of: 1) an unstructured Introductory Interview; 2) a Diagnostic Screening Interview; 3) the Supplement Completion Checklist; 4) the appropriate Diagnostic Supplements; 5) the Summary Lifetime Diagnoses Checklist; and 6) the Children's Global Assessment Scale (C-GAS) ratings. The K-SADS-PL is completed with each informant separately initially, then the Summary Lifetime Diagnoses Checklist and C-GAS ratings are completed after synthesizing all the data and resolving discrepancies in informants' reports. If there is no suggestion of current or past psychopathology, no

assessments beyond the Screen Interview will be necessary.

The Introductory Interview covers demographics, health, presenting complaints, prior psychiatric treatment, school functioning, hobbies, and peer and family relations. The Screening Interview consists of 82 symptoms divided into 20 diagnostic areas which includes ADHD.

The probes that are included in the instrument do *not* have to be recited verbatim. Rather, they are provided to illustrate ways to elicit the information necessary to score each item. The interviewer should feel free to adjust the probes to the developmental level of the child, and use language supplied by the parent and child when querying about specific symptoms.

The K-SADS-PL is typically administered to parents and then to the child, and takes 30 to 90 minutes. (Kaufman, Birmaher, & Brent, 1997; Reich et al., 1996) More information on K-SADS-PL can be obtained at [www.wpic.pitt.edu/ksads](http://www.wpic.pitt.edu/ksads).

The SCICA (Semistructured Clinical Interview for Children and Adolescents) was revised in 2001. It now features separate scoring profiles for DSM-oriented scales and for revised empirically based scales derived from new factor analyses of larger samples spanning ages 6-18.

The SCICA is designed for use by experienced interviewers and includes instructions; a protocol of questions and probes for ages 6-18; observation and self-report forms for rating what the child does and says during the interview; and a profile for scoring ratings. Administration time for the interview is 60-90 minutes.

The SCICA scoring profile includes eight syndrome scales (*Aggressive/Rule-Breaking Behavior; Anxious; Anxious/Depressed; Attention Problems; Language/Motor Problems; Self-Control Problems; Somatic Complaints* (ages 12-18 only); and *Withdrawn/Depressed*), as well as Internalizing, Externalizing, and separate Total Problems for Observation and Self-Report items.

Hand-scored and computer-scored profiles are available, as is a video for use in training interviewers and raters. (McConaughy & Achenbach, 2001)

Because the Attention Problems scale on the SCICA does not match the DSM-IV criteria, its use in an assessment battery for the diagnosis of ADHD is limited. More information can be obtained from the Achenbach System of Empirically Based Assessment web site at [www.aseba.org](http://www.aseba.org).

The Brown ADD Diagnostic Form is a semistructured interview for the assessment of children, adolescents and adults. The form provides interviewer questions for eliciting presenting symptoms, school history, developmental history, health issues, family patterns, leisure time and treatment history. A set of screening questions with follow-up probes is provided for alternative and comorbid disorders. An interview-administered checklist for the DSM-IV symptoms of ADHD is also provided, with provision for

answers from the student, parent, sibling, and interviewer. A summary section is provided to allow tabulation of data from a variety of sources.

The publisher is the Psychological Corporation. They can be contacted at 800-872-1726, or their web site is [www.psychcorp.com](http://www.psychcorp.com).

*Unstructured interviews* are flexible, easy to administer and relatively inexpensive. Such an interview can focus exclusively on ADHD criteria, encompass a mental status exam, or cover most of the DSM-IV diagnoses for children. The format and content can vary from simple to complex. The problem is lack of standardization and potential for unreliability. Anastopoulos and Shelton have argued that clinicians should refrain from using unstructured interviews, at least for the diagnosis portion of an assessment. (Anastopoulos & Shelton, 2001)

However, most structured and semistructured interviews do not routinely collect background information such as developmental and health history. At some point in the process the clinician must use some type of data gathering process to access descriptions of the child's developmental history such as pregnancy, birth and delivery, developmental milestones, and past and present health conditions. Language development, learning, school progress, and social development should also be acquired.

Often the unstructured interview, along with clinical intake or clinical history forms completed by the parent, will provide this necessary information. I will often use the Structured Developmental History from The Behavior Assessment System for Children (BASC) published by AGS ([www.agsnet.com](http://www.agsnet.com)) for collecting this type of information.

Observing the child in conversation with the clinician, as well as with other family members, provides valuable insight as to the child's interpersonal skills, language, and thinking processes.

### *Significant Developmental History*

Regardless of the type of interview or clinical history gathering techniques, Children and adolescents with ADHD often have common features in their developmental history.

From the parent interview and childhood history the clinician should look for evidence of similar problems with inattention, distractibility and impulsivity with either of the parents or with immediate relatives. The incidence of ADHD is 20-40% in adopted children.

Other notable features are irritability or unwillingness to be cuddled as an infant, eating or sleeping problems, allergies, or frequent ear infections. Parents tend to report more sleep problems among their ADHD children than parents of normals. However, research results are inconsistent regarding sleep issues. Many ADHD children are also reported to be finicky or picky eaters.

Parents will also often describe a child who was constantly into things, excessively curious, unable to play with toys for any length of time, had frequent accidents and injuries, and experienced difficulty with both large and fine motor coordination.

These children seem bright but their parents say they are forgetful, lose things, are messy, disorganized, and sometimes appear to be in a fog or constantly daydreaming. There are reports of excessive temper outbursts followed by immediate remorse and repentance, only to happen again and again. These children don't seem to learn from their mistakes, discipline seems ineffective, and some parents report their child even wears out their shoes more rapidly than other children.

Many of these children can't handle changes in plans or schedule. They can make big deal out of minor frustrations. And some are hypersensitive to texture, sound, light or touch. I often ask parents if their child has made a fuss about their stockings, and many report their child would get extremely upset if their socks weren't adjusted in a specific way.

At this time there isn't any standardized way to summarize these developmental features, but I would encourage the clinician to prepare a summary of these developmental clues. This may be among the most important and useful data you will acquire.

### *Elevated Rating Scales*

Rating scales are a critical component of an assessment for ADHD. Rating scales help provide a more objective indicator of the presence of the core symptoms (currently DSM-IV), as well as help define the severity of those characteristics. Because they are standardized, rating scales can describe whether the various features are significantly different from the "average" child of the same gender and age, as described by other parents or teachers. Thus, evidence of any functional impairment or developmental deviance can be obtained.

Rating scales can either be of the **broad-band** or **narrow-band** type. Broad-band rating scales sample a wide range of behaviors, and will usually include ADHD as one component of that description. Narrow-band scales will usually focus on identifying just ADHD symptoms or closely related features such as oppositional-defiant disorder.

Examples of *broad-band* scales include the Behavioral Assessment System for Children, Conners' Parent and Teacher Rating Scales, and the Achenbach Child Behavior Checklist.

The Behavior Assessment System for Children (BASC) developed by Reynolds and Kamphaus, (Kamphaus, Reynolds, & Hatcher, 1999) and published by AGS Publishing (800-328-2560, [www.agsnet.com](http://www.agsnet.com)) is available for ages 2 1/2 through 18-11. It includes the Teacher Rating Scales, Parent Rating Scales, and Self-Report of Personality. A Structured Developmental History and Student Observation System are also available.

The rating scales can be hand or computer-scored. In addition to scales such as anxiety, learning problems and conduct problems, there are separate scales for attention problems and hyperactivity.

The Conners' Rating Scales are widely used for identifying ADHD. They can be used for ages 3-17, with a self-report version for adolescents 12-17. Available in either a short or long version, there are Parent, Teacher and Adolescent Self-Report scales. There are separate measures of inattention and hyperactivity, as well as scales for oppositional behavior and social problems. Indices for DSM-IV symptoms are also included. (Conners, 1997) More information can be obtained at MultiHealth Systems at [www.mhs.com](http://www.mhs.com).

The Achenbach System of Empirically-Based Assessment (ASEBA) includes the Child Behavior Checklist (CBCL) and the Teacher Report Form (TRF). Ages as young as 1 1/2 can be assessed, and scales are available for adolescents up to age 18. Screening for conditions such as anxious/depressed and aggressive behavior are included, along with attention problems. There is no differentiation for inattention and hyperactivity, and the DSM-IV criterion are not followed. (Achenbach & Rescorla, 2000) Therefore, as a specific tool to diagnosis ADHD, it may not be as helpful, but can be used to describe any comorbid conditions. More information can be obtained from the Achenbach System of Empirically Based Assessment web site at [www.aseba.org](http://www.aseba.org).

*Narrow band* rating scales that zero in on specific ADHD features include the AD/HD Rating Scale-IV, the McCarney Evaluation Scales, and the Brown ADD Scales.

The AD/HD Rating Scale-IV is an 18-item instrument that is linked directly to DSM-IV diagnostic criteria for ADHD. There is a parent and teacher version of the questionnaire, and scoring profiles for boys and girls aged 5-17 are available. (DuPaul, Power, Anastopoulos, & Reid, 1998) Additional information can be obtained at [www.guilford.com](http://www.guilford.com).

The Attention Deficit Disorder Evaluation Scale-Second Edition (ADDES-2) has a school and home version. Separate norms are available for male and female students ages 4 1/2 through 18. A direct comparison to the DSM-IV criteria is available. (McCarney, 1995) For students ages 11 1/2 to 18 the Attention Deficit Disorders Evaluation Scale: Secondary Age-Students (ADDES-S) has also been developed. Hand or computer scoring is available for both scales. The publisher is Hawthorne Educational Services and can be contacted at 800-542-1673. Their web site is [www.hes-inc.com](http://www.hes-inc.com).

The Brown Attention-Deficit Disorder Scales (Brown ADD Scales) apply Thomas Brown's model of cognitive impairment to the diagnosis of ADHD. The Brown scales explore the executive functioning aspects of cognition associated with ADHD. There is a primary/preschool scale for ages 3-7, a school-age scale for ages 8-12, as well as an adolescent (12-18) and adult (18+) version.

Six clusters associated with impairments of executive functioning are assessed.

These include: Organizing, prioritizing and activating to work; Focusing, sustaining and shifting attention to tasks; Regulating alertness, sustaining effort and processing speed; Managing frustration and modulating emotions; Utilizing working memory and accessing recall; and Monitoring and self-regulating action.

The Brown ADD Scales do not contain items corresponding to the DSM-IV criteria. These scales do not directly assess features of hyperactivity or impulsivity. However, I believe they are very useful in helping identify significant problems with inattentive features, and may be in line with future revisions of the DSM-IV. (Brown, 1996, 2001) The publisher is the Psychological Corporation. They can be contacted at 800-872-1726, or their web site is [www.psychcorp.com](http://www.psychcorp.com).

Whatever scale is used, the child must score at or beyond 1.5 to 2 standard deviations difference in comparison to the same chronological age and sex on at least one questionnaire sensitive to attention problems. This criterion must be met by two independent raters, which usually will be the child's parent and teacher(s).

#### *Ratings of Functional Impairment*

The inclusion of situational data allows the evaluator to assess the impact of the child's attentional problems upon daily living. The DSM-IV criteria requires that two or more domains of the child's life must show a negative impact of the ADHD characteristics.

The Home and School Situations Questionnaires–Revised have been shown to be useful in establishing impairment in one or more settings, its pervasiveness, and specific problematic situations. There are Home and School versions which provide various situations in which problematic behaviors can occur. (Barkley & Murphy, 1998)

Children with attention disorder will often have problems across numerous situations. There is usually a consensus between parents and teachers concerning the severity and frequency of these problems. If there is not agreement between the home and school reports, the clinician needs to carefully consider why there is a disparity. The difference could result from rater disagreement or measurement errors, as well as the fact the child has more problems in one situation than the other. It certainly is true that the more pervasive the behavior the greater the need for comprehensive intervention. The standard for this criterion is that there are problems in at least half of the situations screened on the Revised Home Situations and School Situations Questionnaires.

Academic functioning is certainly a key item in determining if a student is having trouble in two or more domains of his or her life. Report cards, standardized achievement test scores and teacher observations or progress reports can be used to assess this aspect of functional impairment. The Academic Performance Rating Scale (APRS) was developed to obtain teacher ratings of academic skills deficits in students. A total score and Academic Success and Academic Productivity subscales are available. (Barkley &

Murphy, 1998)

Social functioning is another important area of possible functional impairment for ADHD students. Many ADHD students have trouble making or keeping friends. Some of the broad-band scales described earlier have scales reflecting social functioning. However, they are general in their description, and often the clinician needs more detailed information in order to set up a prosocial skills treatment program once the assessment is completed.

The most frequently used such scale is the Social Skills Rating System (SSRS). This series of questionnaires developed by Gresham and Elliot obtain information of the social behaviors of children and adolescents from teachers, parents and the students themselves. Versions are available for ages 3-18. The Student Self-Report can be used in grades 3-12. Standard scores are obtained for social skills, problem behaviors and academic competence. The publisher is AGS and information can be obtained at [www.agsnet.com](http://www.agsnet.com).

### *Objective Measures*

There is no single medical or psychological test that measures ADHD. A number of objective measures show some promise and will be summarized here. These measures can be categorized into brain imaging, continuous performance tests, and measures of cognitive functioning.

*Brain imaging.* Neuroimaging is a rapidly developing field, and as new technologies continue to be developed, new possibilities for their applications emerge. There are two basic types of brain imaging: structural and functional. Structural neuroimaging consists of computed tomography (CT) and magnetic resonance imaging (MRI). These two methods, however, can only show gross anatomic details. Functional neuroimaging scans show some activity of the brain, and although they usually display less detail than a structural scan, particularly an MRI, they often provide more information, especially for research.(Ernst & Gorelick, 2000)

The rapidly evolving field of functional neuroimaging currently includes magnetoencephalography (MEG), single photon emission computed tomography (SPECT), functional magnetic resonance imaging (fMRI), magnetic resonance spectrometry (MRS), and positron emission tomography (PET). Both PET and SPECT involve the use of radiation, which limits their repeated use in a given patient, while the others involve electromagnetic technology, which can be used safely without limitation. (Ernst & Rumsey, 2000)

SPECT imaging is a nuclear medicine study. In the 50 minute process radioactive isotopes are taken up by the brain and the imaging illustrates the metabolic activity and blood flow.

Boston Life Sciences, Inc. has released details of both phase I and II human clinical studies demonstrating that its diagnostic radioimaging agent, Altropane, has detected an abnormal elevation in the number of dopamine transporters (DATs) in the midbrains of

subjects with longstanding Attention Deficit Hyperactivity Disorder.

These initial studies indicate that ADHD appears to be associated with an excess number of DATs in the midbrain region. Altropane is now in phase III study. A second generation agent Fluoratec is also in development. If future research holds up, this type of dopamine transporter scanning may become a possible objective diagnostic procedure in confirming the diagnosis of ADHD. (Pliszka, 2002)

*Continuous Performance Tests.* Several instruments have been developed for assessing vigilance and sustained attention. Various versions of the continuous performance test (CPT) exist. Traditional versions of the CPT require subjects to respond to target stimuli interspersed with non-targets or “foils.” Various measures of subject performance can be recorded, such as speed of response, variability of response under different patterns of stimulus presentation, number of omission errors, and number of commission errors. Omission errors occur when subjects fail to respond to target stimuli and are considered to be indicative of attention loss. Commission errors are viewed as also reflecting impulsivity or poor response control.

Several CPTs have been developed. They include the Gordon Diagnostic System (Gordon, 1983), The Conners Continuous Performance Test (Conners, 1992), the Test of Variables of Attention (Greenburg & Kindschi, 1996), and the Intermediate Visual and Auditory CPT (Sandford, 1995)

The research regarding the validity of CPTs has been marginal. It can be said that ADHD samples, on average, perform more poorly on CPTs than non-ADHD samples. (Losier, McGrath, & Klein, 1996)

One problem is the number of false negatives. That is, children who obtain average or nonsignificant scores on the CPT, but who are otherwise diagnosed with ADHD. These rates are run consistently at about 30%. (Barkley, 1994; Edwards, 1998)

The general consensus seems to be that the use of CPTs can be helpful as a part of a comprehensive battery for the evaluation of ADHD, but should not be used as a sole, or even primary, diagnostic tool.

*OPTAx—optical tracking and attention test.* A more recent entry to the objective measurement field is a procedure that measures shifts in attention states. The OPTAx is a 15-minute test designed for children ages six to 12 which couples a specialized computer test with a sensitive motion-analysis camera to measure three symptoms of ADHD: inattention, impulsivity, and hyperactivity. (*New OPTAx test to detect ADHD in children*, 2001)

Small mirror-like devices are placed on the child to reflect infrared light. The system records movements as small as two-thousandths of an inch and feeds 50 measurements a second into a computer while the child responds to moving targets on a computer screen. The test analyzes a child’s attention state every 30 seconds. During each half-minute segment, the test identifies whether the child is demonstrating the highest level of

attention (on-task), slightly less attention (distracted), or whether the child is scoring no better than chance on the test (random responding).

Once a child completes the test, the evaluator transmits the test data over the Internet for analysis by the OPTAx systems computers. Within minutes a detailed report is returned that numerically and graphically displays 12 specific measurements of the child's attention and levels of impulsivity and activity. (Teicher, Yutaks, Glod, & Barber, 1996)

Very little research has been done on this test outside of its developers, so further data is needed to validate its utility.

*Measures of Cognitive Functioning.* Psychological testing can provide a great deal of information useful in the diagnosis of ADHD. Testing can provide a structured opportunity to observe the student under conditions that approximate the classroom learning situation. Measures of general intellectual functioning can be obtained, as well as a description and comparison of a student's abilities in areas relatively unaffected by ADHD with functioning in areas that are thought to be more impacted by ADHD. Memory, concentration, and aspects of executive functioning are areas most likely to be lower in the ADHD student. Because of the high coexistence of learning disabilities in ADHD students, measures of discrepancies in cognitive skills and achievement levels should always be included.

General intelligence tests most commonly used in clinical practice include the Wechsler Intelligence Scale for Children-III (WISC-III or WISC-IV), the Stanford-Binet Intelligence Scale (SB4), and the Woodcock-Johnson III Tests of Cognitive Abilities (WJ-III).

Any general ability test will give some type of coverage for the areas of verbal, performance and perceptual-motor abilities. The WISC-III includes a number of subtests grouped into verbal and performance domains, and results in a Verbal, Performance and Full Scale IQ. Several index scores are included in the WISC-III that allow comparison of clusters of related scores. These index scores are Verbal Comprehension, Perceptual Organization and Freedom from Distractibility. (Wechsler, 1991)

The Freedom from Distractibility index score has been suggested to be useful in distinguishing ADHD students. The research has been quite mixed in this regard and the Freedom from Distractibility is generally thought to be an unreliable measure for the diagnosis of ADHD. (Reinecke, Beebe, & Stein, 1999)

The comparison of the Verbal and Performance IQ scores can be a part of the determination of a learning disability, and the general measure of academic potential is useful from the WISC

III. It does not have a reliable basis for ADHD diagnosis, although I always look at the Coding and Arithmetic subtest scores to see if there is significant variation present.

The SB4 provides measures of Verbal Reasoning, Quantitative Reasoning,

Abstract/Visual Reasoning, and Short-Term Memory. (Thorndike, Hagen, & Sattler, 1986) A Fifth edition of the Stanford-Binet is scheduled for release in 2003. It will have Nonverbal and Verbal domains with five factors of Fluid Reasoning, Knowledge, Quantitative Reasoning, Visual-Spatial Processing, and Working Memory for each of the domains. (Roid, 2002) Very little research has been done with the SB4 as a specific assessment tool for ADHD. Its value in a total battery would be to obtain a general measure of academic potential.

In my own practice I prefer to use the WJ-III Tests of Cognitive Abilities. (Woodcock, McGrew, & Mather, 2000) I find that it has greater prescriptive utility than other instruments. The broadest score is the General Intellectual Ability (GIA). This is a broad measure of general intellectual ability as would be required for academic or occupational success.

Three broad cognitive clusters are identified: Verbal Ability, Thinking Ability and Cognitive Efficiency. Verbal Ability is a broad category of language based acquired knowledge and the ability to communicate that knowledge. Thinking Ability includes long-term retrieval, visual-spatial thinking, auditory processing and fluid reasoning. The cluster represents an aggregate of the abilities that allow an individual to process information that has been placed in short-term memory, but cannot be processed automatically. Cognitive Efficiency is a broad cluster of skills that sample automatic cognitive processing, processing speed and short-term memory. Cognitive efficiency represents the capacity of the student's cognitive system to process information automatically.

I have found in many ADHD students that their Cognitive Efficiency score is significantly lower than their Verbal and Thinking Abilities scores. The measures of cognitive efficiency require a student to perform under the pressure of time, whereas the other tasks do not have obvious time limits. The differences are sometimes quite dramatic.

There are also a number of cognitive performance cluster scores for the WJ-III. Often some combination of Cognitive Efficiency, Long-term Retrieval, Processing Speed, Short-Term Memory, Working Memory, Broad Attention, and Cognitive Fluency will be significantly lower than the other scores. Most often I see low scores in Processing Speed which seems to relate to the problems many ADHD students have in handwriting or in completing written assignments in an efficient manner.

Another characteristic I have seen in the WJ-III occurs when rating scale scores show mostly impulsive-hyperactive DSM-IV characteristics. In this case, the WJ-III cluster scores will tend to be average or higher. There will be no evidence of problems in the areas described above. The interpretation is that the student is able to maintain concentration, inhibit distractions, and succeed in tasks requiring working memory, but has trouble with the self-control that accompanies the hyperactive-impulsive type of ADHD.

Since learning disabilities are so common in ADHD students, one must also look for deviations or discrepancies among these cluster scores or individual subtest scores for possible underlying problems in specific aspects of cognitive functioning. If learning disabilities are suspected, I may give some of the WJ-III Tests of Achievement to determine academic levels for areas such as reading comprehension, written expression and math computation. If discrepancies are evident, I will look to providing accommodation or remedial strategies appropriate to the identified learning disability, along with interventions for ADHD.

Other tests I may use include the Matching Familiar Figures Test (MFFT), which can be sensitive to impulsivity. (Kagan, 1964, 1966) There is an elementary and adolescent/Adult version. However, there are norms provided only for the elementary version.

Also I usually give the Hand Movements subtest from the Kaufman Assessment Battery for Children (Kaufman & Kaufman, 1983), which is a nonverbal measure of working memory that may be impacted by ADHD. This can be given up to age 12 1/2.

Finally, I often use the Stroop Color and Word Test (Golden, 1978). This test seems to measure the ability to inhibit a usual response in favor of completing an unusual response. This failure of inhibition has been found to be significant for children and adolescents with ADHD (Seidman, Biederman, & Faraone, 1997) This same study also found the Wisconsin Card Sorting Test and the Rey-Osterrieth Complex Figure tests to discriminate those with ADHD.

### *Differential Diagnosis*

Studies of the comorbidity of ADHD have found very high rates of co-occurrence between

ADHD and many other disorders. Assessments of comorbidity are usually made by comparing the incidence of two given disorders in the general population and then ascertaining the incidence of one disorder among those persons identified as having the other. For example, the generally reported rate of anxiety disorders in the general population of children is about five percent. Among children with ADHD the observed rate of anxiety disorders is approximately 25 percent. Similarly elevated incidences of major depression disorder, oppositional defiant disorder, conduct disorder, learning disorders, bipolar disorder, Tourette syndrome, substance abuse, and other psychiatric diagnoses have been reported for children with ADHD. (Biederman, Faraone, & Lapey, 1992; Jensen, 2000)

Biederman et al. (1992) reported that among the children with ADHD in their sample, 51 percent met the criteria for at least one other psychiatric diagnosis. Data from the National Institute of Mental Health Multimodal Treatment Study of Children with ADHD indicated that as many as 69 percent of comorbid conditions are found with ADHD. (MTA Cooperative Group, 1999)

The nosological system advocated in the DSM-IV is a hierarchical one. That is, in the presence of two or more diagnoses, one should be considered primary and account for many of the symptoms observed in the secondary syndrome. There is mounting evidence, however, that many conditions exist concurrently with ADHD, and each component modifies the overall clinical presentation and treatment response. (Faraone, 2001)

Based on this evidence of high comorbidity, adequate assessment and treatment of ADHD requires that the clinician take into account both the unique features of ADHD but also the accompanying symptoms of other disorders. It should be remembered that accompanying disorders may fully meet current diagnostic criteria, while others may reflect some type of remission or subclinical presence. Sometimes, only one comorbid disorder may be present. In other cases, the diagnostic criteria for several comorbid disorders may be fully met. These multiple disorders may be active at the same time or intermittently. Likewise neither ADHD nor any comorbid disorders are static in their manifestations. Some features may lessen and others exacerbate over time. Symptoms may change as a result of treatment, age, situational stressors, or onset of additional conditions such as substance abuse. (Brown, 2000)

In as many as 50 percent of the cases, ADHD children also have learning disabilities. (Pastor & Rueben, 2002) With this in mind the clinician must carefully evaluate the learning characteristics of the student in order to make the most appropriate recommendations for educational intervention. Language difficulties, auditory, visual or motor processing dysfunction, short or long term memory problems, and various learning style features are examples of the kinds of considerations to be used in the differential diagnosis for ADHD and learning disabilities.

*The Coexistence of ADHD and Bipolar Disorder.* The overlap of ADHD and bipolar disorder (BPD) is currently one of the most active areas of research and professional dialogue. Previous studies of children and adolescents found rates of ADHD ranging from 57 to 98 percent in BPD children. Family studies suggest a familial link between ADHD and PD. Significantly elevated rates of ADHD were found in children of bipolar parents and significantly elevated rates of BPD were found among families of ADHD children. (Faraone, Biederman, & Wozniak, 1997)

Other researchers would argue that there have not been sufficient longitudinal, clinical, epidemiological, or genetic studies of juvenile onset of bipolar versus ADHD symptoms to confirm that BPD is as common in children as alleged. (Hechtman, 1999; Pliszka, 1999)

Despite an emerging literature from convergent sources, there continues to be much controversy about the validity of the concurrent diagnoses of ADHD and BPD. Overlap of symptoms does not account for spurious diagnosis of either BPD or ADHD. (Milberger, Biederman, & Faraone, 1995) Whereas ADHD is characterized by cognitive and hyperactive/impulsive features, BPD is characterized by mood instability, pervasive irritability, grandiosity, psychosis, cyclicity, and lack of response to structure.

When children experience both sets of symptoms, they may suffer from both ADHD and BPD. (Wilens et al., 2002)

That ADHD and BPD represent different clinical entities is supported by treatment data. An evaluation of treatment outcomes of youth with BPD treated over a 4-year period with a multitude of drugs showed that mood stabilizers selectively improved manic symptoms whereas stimulants had no effect. If these youth were to just have ADHD and mistakenly received the diagnosis of mania, they should have responded to stimulant drugs, considering the overwhelming evidence as to the efficacy of stimulant drugs in the treatment of ADHD. Furthermore, the same chart review also documented that in youngsters with BPD plus comorbid ADHD, ADHD symptoms can be addressed selectively with anti-ADHD armamentarium, but only after mood stabilization. (Biederman & Faraone, 1999; Spencer, Biederman, & Wozniak, 2001)

*Similarities of ADHD and Bipolar.* Both disorders share many characteristics. These can include impulsivity, inattention, hyperactivity, physical energy, talkativeness, and behavioral and emotional lability. Also, there is frequent coexistence of conduct disorder and oppositional-defiant disorder, as well as learning problems. Motor restlessness during sleep may be seen in both (children who are bipolar are physically restless at night when "high or manic", though they may have little physical motion during sleep when "low or depressed"). Family histories in both conditions often include mood disorder. In view of the similarities, it is not surprising that the disorders are hard to tell apart. (Geller, Warner, Williams, & Zimmerman, 1998; Geller & Williams, 1998; Geller, Zimmerman, & Williams, 2000)

More research is needed to establish the nature of these coexisting disorders and to provide guidelines for therapeutic management.

*Differences Between ADHD and Bipolar Disorder.* So what features can help in distinguishing these two disorders? Several years ago Dr. Charles Popper listed some distinctions between ADHD and BPD. While not based on field trials or complete research studies, these ideas seem to have diagnostic relevance. These distinctions are given below:

- . • Destructiveness may be seen in both disorders but differs in origin. Children who are ADHD often break things carelessly while playing ("non-angry destructiveness"), whereas the major destructiveness of children who are bipolar tends to occur in anger. Children who are bipolar may exhibit severe temper tantrums, during which they release manic quantities of physical and emotional energy, sometimes with violence and property destruction. They may even exhibit openly sadistic impulses.
- . • The duration and intensity of angry outbursts and temper tantrums in the two disorders differs. Children who are ADHD usually calm down within 20-30 minutes, whereas children who are bipolar may continue to feel and act angry for over 30 minutes and even for 2-4 hours. The physical energy that a child with ADHD "puts out" during an outburst of anger could be mimicked by an adult who tries to "enact" the tantrum, whereas the energy generated by angry children who are bipolar could not be imitated by most adults without reaching exhaustion within a few minutes.
- . • The degree of "regression" during angry episodes is typically more severe for children who are bipolar. It is rare to see an angry child who is ADHD display

disorganized thinking, language, and body position, all of which may be seen in angry bipolar children during a tantrum. Children who are bipolar may also lose memory of the tantrum.

- The "trigger" for temper tantrums is also different in these disorders. Children who are ADHD are typically triggered by sensory and affective overstimulation such as transitions or insults, whereas children who are bipolar typically react to limit-setting such as a parental "no." A child who is bipolar will often actively seek this conflict with authority.

- The moods of children who have ADHD or bipolar disorder may change quickly, but children with ADHD do not generally show dysphoria as a predominant symptom.

Irritability is particularly prominent in children who are bipolar, especially in the morning on arousal. Children with ADHD tend to arouse quickly and attain alertness within minutes, but children with mood disorders may show overly slow arousal (including several hours of irritability or dysphoria, fuzzy thinking and somatic complaints such as stomach aches and headaches) upon awakening in the morning.

- Sleep symptoms in children who are bipolar include severe nightmares (explicit gore, bodily mutilation). Children who are ADHD mainly show difficulty going to sleep, whereas children who are bipolar are more apt to have multiple awakenings each night or have fears of going to sleep (both of which may be related to the dream content described above).

- Children who are bipolar often show giftedness in certain cognitive functions, especially verbal and artistic skills (perhaps with verbal precocity and punning evident by age 2 to 3 years).

- In an interview room, children who are bipolar often demonstrate dysphoric, rejecting, or hostile responses during the first few seconds of meeting. Children who are ADHD, on the other hand, are more likely to be pleasant or at least non-hostile at first meeting, and if they are in a noisy location, they may immediately show symptoms of hyperactivity or impulsivity. Children who are bipolar are also often "interview intolerant". They try to disrupt or get out of the interview, ask repeatedly when the interview will end, or even insult the interviewer. The child who is ADHD, on the other hand, may get frustrated, bored, or more impulsive, but usually without directly challenging the interview or the interviewer.

- The misbehavior of children who are ADHD is often accidental, and caused by oblivious inattentiveness, whereas the bipolar child intentionally provokes or misbehaves. Some children with bipolar disorder are described as "the bully on the playground."

- The child who is ADHD may stumble into a fight, whereas the child who is bipolar will look for a fight and enjoy the power struggle. While a child who is ADHD may engage in self-endangering behavior without noticing the danger, the child who is bipolar enjoys the danger and seeks it out. The child who is bipolar is intentionally daredevilish. In general, the danger-seeking is grandiosity ("I'm invincible") in the child who is bipolar and inattentiveness in the child who is ADHD.

- In the child who is bipolar, danger-seeking grandiosity, energized giggling, and sexual hyperawareness may be seen early in the preschool years, and persist into adolescence and adulthood.

- Children with ADHD usually do not exhibit psychotic symptoms or reveal loss of contact with reality. Children with bipolar disorder may, on the other hand, exhibit gross distortions in perceiving reality or in interpreting affective events.

- Lithium treatment generally improves bipolar disorder but has no or little effect on ADHD. (Popper, 1989)

One of the great clues in assessing whether a child has BPD is a careful examination

of the family history. If mood disorders and/or alcoholism are coming down both the mother's and father's sides, then BPD should be strongly suspected and ruled out before settling on an ADHD diagnosis.

### *Medical Diagnosis*

There is an important place for medical evaluations in the assessment process. Although there are no medical tests that can establish an ADHD diagnosis, medical procedures are important for ruling out physical causes of any symptoms, for targeting and treating conditions that may mimic or accompany ADHD, and for ensuring that possible drug therapy is medically indicated and monitored carefully.

### **Conclusion**

Several points emerge from the previous discussion. The assessment of ADHD and any comorbid conditions is not an easy process, nor is there a single way to go about the assessment process. ADHD is not defined by any single feature. Usually we are looking for a pattern to emerge from which we can identify the symptoms and behaviors that professional consensus tells us fits the ADHD constellation. It is like putting a puzzle together. Sometimes the pieces fall together well enough that we have a clear and unmistakable picture. At other times the pieces may be incomplete or inconsistent. In the latter case we have to make our best professional judgement and proceed to help the child as best we can.

The more assessment data that is available to the clinician and the degree to which the pieces of evidence converge on a particular diagnostic criterion, the more confidence one can have in the validity of the diagnosis. Thus, a multimethod assessment battery is highly recommended. This method gathers a large amount of data relative to the DSM-IV criteria as well as possible comorbid conditions and family characteristics. With this type of assessment, the diagnostic picture is more likely to be clear enough to translate into a meaningful and effective treatment program. (Anastopoulos & Shelton, 2001) Current Developments in ADHD Page 22

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