

ADHD IS A CHRONIC BRAIN DISORDER that is often inherited. It can occur frequently in many members of the same family, sometimes for generations, often creating a new normal within that family. But the symptoms of ADHD can wreak havoc in the life of the individual as well as those around him or her, especially for those without the disorder.

Investigators have been conducting research into this disorder for years. Differences in brain structure, impairments in functioning as early as preschool, and a number of genetic abnormalities have all been implicated. Despite these findings, the diagnosis of ADHD remains a diagnosis based upon the presence of certain symptoms seen over a period of time that are outside of the range expected based on the person's age. Practitioners conduct interviews and ask questions to determine if the individual displays the symptoms characteristic of the disorder and to inquire about a history of similar symptoms in other family members.

Rating scales

To aid in this process, rating scales that include symptoms of ADHD have been used for decades. Clinicians will often ask an adult or parents of a child to complete one of these rating scales to help collect information on symptoms and functioning. Many of the rating scales for children also include a form for the child's teacher to complete.

When the scales were originally created, the scores of large numbers of people, both with and without ADHD, were collected and norms were created statistically. These norms help a clinician interpret the score you or your child obtains, and are used to indicate if ADHD is present and how severe it might be. If you find that the results of the evaluation make

Patricia O. Quinn, MD, is the director of the National Center for Girls and Women with ADHD. She is a developmental pediatrician based in Washington, DC.

Rating Scales

Help or Hindrance in the Diagnosis of ADHD?

sense to you and are consistent with other information, then the process has worked well. But if you find that you are not in agreement with the results of a rating scale, there might be some valid reasons.

First, rating scales are extremely subjective. Scores not only depend on personal observation, but also on a person's frame of reference and experience. What about rating scales completed by two separate observers of the same child—say the mother and the father? Often, for whatever reasons, these rating scales, when scored, differ significantly. Maybe the mother spends more time with the child. Or the same behavior is not as important to or doesn't bother the dad quite as much. Or maybe one of the parents has his or her own agenda—either to prove or disprove that the child has ADHD.

If everyone filling out the rating scales is in agreement about the problems, then there is likely to be much better consistency. But when the mother and father disagree about the possibility or severity of the symptoms of ADHD in their child, asking them to complete rating scales may yield very disparate results. Parents or family members need to be aware that these disagreements will ultimately affect the scores.

What about the self-rating scales completed by adults? How do these scores compare to other informants? If the individual is old enough, a self-rating scale may be completed, but this may be fraught with difficulties. Studies have shown that girls, teens, and college students lack good self-perception and commonly over- or underestimate their level of difficulty compared with other informants.

What can a clinician do to help sort out these issues? When the individual in question is a school-aged child, one could have the child's teacher complete a rating scale. Experienced teachers have an excellent frame of reference and may have a perspective that parents lack. However, these ratings, too, can be subjective and often do not agree with parental ratings.

In one study looking at this issue, researchers found that the correlations between parent and teacher ratings were low for both inattentive and hyperactive-impulsive symptom subtypes, with individual values for specific symptoms even lower. Conditional probabilities suggest that teachers are only moderately likely to agree with parents on the presence or absence of symptoms. On the other hand, parents were



FOR MORE INFO

Find more information on rating scales and checklists on the website of CHADD's National Resource Center on ADHD (help4adhd.org/en/treatment/scales).



quite likely to agree with teachers when the teachers acknowledged the presence of a symptom, but much less likely to agree when teachers indicated that a symptom was not present.

Many rating scales are based on ADHD symptoms of hyperactive, elementary school-aged boys, with a strong emphasis on the external symptoms such as hyperactivity and impulsivity. Other behaviors associated with ADHD that are more likely to be present in girls, those with inattentive type ADHD and adults, are not as well documented in many of the scales.

One study, designed to determine how mothers rated items on typical ADHD questionnaires, confirmed that mothers felt most items on standard ADHD rating scales more accurately described boys than girls. Inattentive girls, often overlooked by their teachers, were seen by their parents as having characteristics of ADHD. These findings have led experts to conclude that parents may have been comparing their daughters to other girls, while teachers were comparing the same girls to their male classmates with ADHD. By comparing girls to their male counterparts, teachers may tend to dismiss the less obvious signs of ADHD in girls and not refer them for services.

Since most of the scales used in the diagnosis of ADHD are made up of the symptoms of ADHD, it would be reasonable to expect that they would be highly accurate in distinguishing between individuals who have ADHD and those who do not have the disorder. However, the sensitivity and specificity data for these measures is not as great as one might expect. In a paper reviewing the use of behavior rating scales to assess ADHD, the sensitivity and specificity data reported for the most widely used rating scales ranged from 49 to 84 percent. The lower the percentage, the weaker the predictive value of the rating scale.

Keeping all of this in mind, what else can be done? Is there any other objective testing available to aid in the diagnosis and help sort out the dilemma of conflicting rating scales reports? Are there any other objective tests available to clinicians that can be administered in an office rather than a laboratory or research setting?

Objective tests for ADHD

Neurocognitive testing that evaluates executive functioning and working memory skills can provide an estimate of dysfunction in those specific areas. For example, the Wisconsin Card Sorting Test, Stroop Word-Color Association Test, the Stop Signal Task, and the Trail Making Test have been used in research settings as objective measures of sustained attention, impulsivity, and frontal lobe function for years. These tests have recently been made available for use in a clinical setting. They are not able to diagnose ADHD, but they do provide additional evidence. Poor performance can also identify specific cognitive deficits (such as executive dysfunction or learning disabilities) in addition to ADHD. This is important information for clinicians, parents and adults.

Continuous Performance Tests (CPT) have been employed for years to aid in the

diagnosis of ADHD with results being considered a measure of inattention, distractibility, and impulsivity. The CPT is a vigilance test that requires a person to remain attentive to changing stimuli. The ability of these tests to correctly identify individuals with ADHD is moderate at best, however. Examples are the Gordon Diagnostic System (GDS), the Test of Variables of Attention (TOVA), and the Conners Continuous Performance Test (CCPT).

CPTs are particularly problematic in identifying girls with ADHD who work hard to please the examiner and to not let anyone know they are having problems. Often, they can “hold it together” for the twenty minutes of such testing. Thus, CPTs have characteristically provided false negative results, underestimating the existence of ADHD in girls.

The Quotient ADHD System is a more recent form of the CPT. It is the first test that measures the motion, attention, and impulsivity domains of ADHD and helps to quantify deficits in these areas in response to a non-stimulating task. The Quotient test has proven to be highly sensitive to the deficits seen in ADHD, and it is 88.9 percent accurate in discriminating between ADHD and non-ADHD.

Brain wave patterns or Quantitative EEG (QEEG) have also been used to ascertain the likelihood of a child having ADHD. The EEG pattern typical in individuals with ADHD involves reduced electrical activity in the prefrontal cortex. QEEG data for an individual patient are evaluated mathematically to determine whether the patient’s brain activity is more similar to either the brain activity of the normal population or to individuals who have been diagnosed with ADHD. Results of a recent study indicated that 86 percent of individuals with ADHD showed this elevated theta/beta ratio. In contrast, the theta/beta ratio was below this level in 98 percent of normal non-ADHD controls.

Resolving differences

By now it is clear that no test is a hundred percent accurate in identifying those individuals with ADHD. But adding objective testing to a comprehensive clinical assessment and rating scales can often resolve differences in parent versus parent or parent versus teacher responses on rating scales, provide documentation of the inattentive type of the disorder (which characteristically has been more difficult to diagnose), and assist in the identification of females with ADHD (which DSM criteria and symptom checklists have characteristically overlooked). In addition, objective testing may allow for a more accurate diagnosis when the symptoms of coexisting conditions cloud the diagnostic picture.

Although no single test, no matter how accurate, should ever be used in isolation to make diagnostic decisions about any child or adult, objective testing can play an important role in helping to establish or quantify the degree of deficit. Objective tests may also provide the “black and white” critical evidence that is needed to convince an adult that he or she has ADHD, or to help parents to pursue diagnosis and follow up with treatment that can make a world of difference for their child with ADHD. **A**

Broadband Rating Scales

- › The Early Childhood Attention Deficit Disorder Evaluation Scale (ECADES)
- › Child Behavior Checklist (CBCL)
- › Child Behavior Checklist Report Form Parent (CBCL-PRF)
Teacher (CBCL-TRF)
Youth Self-Report (CBCL-YSR)
- › Conners/Wells Adolescent Self-Report of Symptoms (CAAS)
- › Adolescent Symptom Inventory-4 (ASI-4)
- › Behavior Assessment Scale for Children (BASC)

Narrowband Scales

- › ACTeRS, 2nd ed (Parent, teacher, self-report)
- › ADHD Rating Scale (DSM-IV)
- › Conners Global Index Scale Parent (CGIS-P),
teacher (CGIS-T)
- › Conners Rating Scale Parent (CPRS),
teacher (CTRS)
- › Vanderbilt ADHD Rating Scale
(Teacher, parent)
- › Swanson, Nolan and Pelham IV
Questionnaire (SNAP-IV)
- › Attention Deficit Disorder Evaluation
Scale (ADDES-2; Parent, Teacher)
- › SKAMP
- › Brown Attention-Deficit Disorder Scales
 - Children and adolescents
 - Parent/teacher form
 - Parent/teacher/self-report form
 - Self-report form