Screening and Diagnostic Utility of Self-Report Attention Deficit Hyperactivity Disorder Scales in Adults

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Attention deficit hyperactivity disorder (ADHD) in adults is associated with significant social, legal, occupational, and psychiatric difficulties. The estimated prevalence of ADHD in the adult population is between 0.3% and 5%. Recent interest in the condition in adults has been accompanied by the appearance of a number of readily available scales for screening adults and aiding in the diagnosis of ADHD in this age group. However, there are few published data on the validity and reliability of such measures. We examined the diagnostic and screening utility of three ADHD scales (Adult Rating Scale [ARS], Attention-Deficit Scales for Adults [ADSA], and Symptom Inventory for ADHD) in 82 adults presenting for ADHD evaluation. All three instruments were sensitive to the presence of symptoms in adults with ADHD (correctly identifying 78% to 92% of patients with ADHD), but a high proportion of individuals with non-ADHD diagnoses screened positive (incorrectly identifying between 36% and 67% of non-ADHD patients). Our results suggest that the use of such measures for screening and as an aid in diagnosis should be approached with considerable caution.

ATTENTION-DEFICIT hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity and affects approximately 8% of children in the United States.[1] ADHD in children and adolescents is associated with poor school achievement, conduct problems, and substance use.[2-5] Data from longitudinal studies suggest that 30% to 60% of children with ADHD will continue to exhibit impairment associated with the disorder as adults.[5] The estimated prevalence of ADHD in the adult population is between 0.3 and 5%.[6,7] In adults, associated problems may include legal difficulties, use of illicit substances, marital problems, frequent change of jobs, inconsistent work performance, and underemployment.[5,8-13] Significant psychiatric comorbidity is also present in adults with ADHD, and includes mood disorders, anxiety disorders, antisocial personality disorder, and various forms of substance use disorders.[6]

The diagnosis of ADHD is challenging because it is based on largely subjective criteria regarding the presence of maladaptive inattention, hyperactivity, and impulsivity in excess of what would be regarded as developmentally appropriate given chronological age. Some of these symptoms must have been present and causing impairment prior to age 7 years, and impairment must be present in two or more settings.[14] In children, the diagnosis of ADHD is facilitated by the availability of standard rating scales for which extensive normative data exist.[15] These standard scales are completed by parents and teachers, and thus address behaviors in at least two settings.

The accurate diagnosis of ADHD in adults based on current DSM-IV criteria is difficult for three reasons.[16] First, according to the criteria, symptoms of inattentiveness and/or hyperactivity and impulsivity must have been present and causing impairment prior to age 7.[14] Although recent studies have suggested this age cut-off may be too stringent,[17] onset prior to adolescence is probably still required for the diagnosis to be valid. In adults, retrospective recall bias and elapsed time limit the accuracy of information on childhood behavior, although recent studies suggest this is not a major problem.[18] A second, more complicated reason for the diagnostic difficulty is that many of the symptoms of ADHD are also present in other disorders. Many of these disorders are often present in ADHD patients as comorbid conditions, particularly among adults who are more likely to have passed through the age of risk for mood and anxiety disorders.[6] The inattentiveness of ADHD may resemble the impaired concentration of a major depressive episode, dysthymia, post-traumatic stress disorder, and generalized anxiety disorder; or the distractibility of a manic or hypomanic episode. ADHD hyperactivity, characterized by motoric restlessness and excessive talking, may be difficult to differentiate from the psychomotor agitation associated with mania, hypomania, or major depressive disorder, or the restlessness of general-

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0010-440X/04/4503-0006$30.00/0

doi:10.1016/j.comppsych.2004.02.006

ized anxiety disorder. Impulsivity seen in ADHD may be difficult to distinguish from characteristics of manic and hypomanic episodes. In one recent study, only 72% of clinically referred adults with ADHD and comorbid depression retained the ADHD diagnosis when two symptoms reflecting major depressive disorder were removed from consideration.[19] When the required number of symptoms for the ADHD diagnosis was proportionately adjusted, the percentage of those retaining the ADHD diagnosis increased to 83%. Although the majority of ADHD cases in this study did not depend on symptom overlap with comorbid depression for the diagnosis, it is noteworthy that approximately one in five did. Third, unlike mood and anxiety disorders, where symptoms are often intrinsically abnormal (e.g., panic attacks, insomnia, phobic avoidance), many ADHD symptoms, particularly the attentional ones, represent an excess of otherwise normal behavior. For example, Murphy and Barkley showed that 68% of a normal adult sample endorsed difficulty sustaining attention.[12] Therefore, the question is often "how severe should it be to be considered abnormal?" For children, hyperactivity is often assessed by determining whether the child stands out from others with respect to this behavior. For adults, a more in-depth interview in which specific examples are provided for each symptom or behavior is often necessary to determine whether a symptom is present (e.g., whether the degree of inattentiveness is abnormal).

There has been an explosion of interest in adult ADHD, reflected in a number of readily available scales for screening and as an aid in diagnosis. These scales include measures closely linked with DSM-IV diagnostic criteria[15,20] and measures based on broader definitions of the ADHD construct. Included in the latter category are the Adult Rating Scale (ARS),[21] the Attention-Deficit Scales for Adults (ADSA),[22] the Connors' Adult ADHD Rating Scales (CAARS),[20] the Wender Utah Rating Scale (WURS),[23] and the Copeland Symptom Checklist.[24]

In reviewing the literature, we found no published data on the validity of the Copeland Symptom Checklist. The ADSA and the CAARS provide data on the validity and reliability of these instruments in their respective test manuals.[20,22] The ADSA is a 54-item questionnaire that lists symptoms commonly associated with ADHD. The ADSA yields a total score and nine content subscales. Normative data were obtained on 306 controls who did not show any evidence of ADHD based on never having been treated for the disorder as a child, having no history of drug and alcohol abuse (to eliminate possible individuals who were self-medicating ADHD symptoms), and no history of felony convictions. Internal consistency and reliability were deemed adequate based on a number of routine checks, including split-half correlation and Cronbach's alpha. A clinical sample used to establish validity consisted of 97 subjects who had been diagnosed as having ADHD based a on a clinical interview, review of each subject's history, and collateral interviews with significant others whenever possible. An initial stepwise discriminant function analysis accepted four of the nine subscales (Consistency/Long Term, Attention-Focus/Concentration, Behavior-Disorganized Activity, and Negative-Social). These four subscales correctly classified 89% of the subjects (cases and controls combined). When considered separately, 91% of the normative group was classified correctly, and 82% of the ADHD cases were classified correctly. The Attention-Focus/Concentration and Behavior-Disorganized Activity subscales reflect core aspects of the ADHD diagnosis (inattention and hyperactivity/impulsivity). Consistency/Long Term appears to reflect persistency with tasks, and the Negative-Social subscale is thought to reflect some of the social skill deficits often reported in individuals with ADHD. The express purpose of the ADSA is to aid in the diagnostic process.[22]

The CAARS is similarly presented as an aid in the diagnostic process, as well as a useful screening tool for ADHD.[20] The CAARS consists of long, short, and screening versions of the basic instrument that can be completed by the individual under evaluation, or by an observer. The long form, which consists of all of the available subscales and indicies, contains 66 items. The subscales are factor-derived and include Inattention/Memory Problems, Hyperactivity/Restlessness, Impulsivity/Emotional Lability, and Problems with Self-Concept. Three subscales assess DSM-IV criteria (Inattentive, Hyperactive-Impulsive, and Total). An empirically derived ADHD Index is also provided, along with an Inconsistency Index to aid in identifying random or careless responding. The ADHD index, consisting of 12 items, correctly identified 85% of individuals with ADHD, and 87% of nonclinical individuals. Excellent data on