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.
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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-

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 sub-

scales. 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

the validity of and the reliability of the CAARS are described in the manual and have been published in a peer-reviewed journal.[25,26]

The ARS contains 25 items tapping inattention, impulsivity, and hyperactivity.[21] The questions were derived from DSM-III-R criteria. The psychometric properties of the ARS were studied in a sample of 770 male and female college students. The internal consistency of the measure was .86, and 2-week test-retest reliability was .80. In a study comparing 21 adults with ADHD to 19 adults with developmental reading disorder and 24 controls, adults with ADHD obtained significantly higher scores on the ARS than the other two groups.[27] The author of the ARS acknowledges that it, along with similar self-report instruments, can be used as one aspect of an ADHD evaluation.[27]

The WURS retrospectively assesses ADHD-relevant childhood behaviors and symptoms in adults.[23,28] The original WURS had 61 items reflecting signs and symptoms of ADHD, and was later shortened to the 25 items which distinguished patients with ADHD from a non-patient comparison group.[28] This 25-item version was found to distinguish ADHD patients from patients with unipolar depression, to differentiate responders from nonresponders to methylphenidate in a controlled medication trial, and to be modestly correlated with a rating scale completed by parents.[28,29] Two additional studies replicated the adequate internal consistency of the WURS, established good temporal stability with 1-month test-retest reliability, and explored the scale's factor structure with respect to gender.[30,31] More recently, the factor structure and discriminant validity of the 25-item WURS was examined in adults seeking evaluation for ADHD. Three factors (Dysthymia, Oppositional/Defiant, and School Problems) accounted for 59.4% of the variance in the instrument. In a stepwise discriminant function analysis, age and childhood School Problems emerged as significant variables. This classification procedure correctly classified 64.5% of patients, but of those who did not have a diagnosis of ADHD, only 57.5% were correctly classified compared to 72.1% among those with ADHD.

As can be seen from the foregoing review, there are few published data in peer-reviewed publications on the validity and reliability of screening or diagnostic instruments for adult ADHD. Here, we examine the diagnostic and screening utility of three ADHD scales for use in adults, in a population of patients presenting for ADHD evaluation. Although ADHD rating scales obviously have an important use in qualifying symptoms for longitudinal follow-up and treatment monitoring, our focus is on the diagnostic and screening utility of these scales. While it is usually emphasized that such scales are not meant to be used for diagnosis,[1] in practice they are often weighed heavily by clinicians evaluating adults and arriving at a diagnostic formulation.[32] Because the majority of psychiatrists who treat adults have minimal experience with adult ADHD evaluations, they often rely on such scales to aid in assessment.

For comparison purposes, we have also examined the extent to which individuals experiencing a major depressive episode (MDE) or dysthymic disorder (DD) at the time of the evaluation differ from those who do not have these disorders using the three scales. We selected these conditions for comparison because of the aforementioned overlap in symptoms, and because both conditions are common in psychiatric populations.

METHOD

Participants

Eighty-two patients evaluated during 1997 to 1999 in an adult ADHD specialty clinic provided data for this study. These patients presented for evaluation based on the reputation of the clinic in the Seattle area as a university-affiliated clinic that would provide a thorough, several-hour evaluation based on self-report, review of corroborating documents (e.g., grade school report cards, performance evaluations), and interview of parents or other family members. Some patients presented to our clinic for a second opinion, after receiving a diagnosis of ADHD and stimulant medication elsewhere following a more cursory examination. They had significant ongoing complaints that led them to suspect the original diagnosis. The majority were Caucasian (96.3%), and male (59.8%). The mean age of patients was 37.5 years (SD 10.1). Because this study is based on data that are routinely collected as part of the clinical evaluation and care of all patients, no informed consent was obtained. Permission to use these clinical data for publication was granted by the University of Washington Human Subjects Protection Committee.

Measures

Patients completed a DSM-IV-based inventory of ADHD symptoms, the ARS,[21] and the ADSA.[22] A semistructured clinical interview, performed as part of a comprehensive evaluation in the ADHD specialty clinic, served as the standard for criterion validity.

Symptom Inventory for ADHD. An inventory based on the 18 DSM-IV symptoms of ADHD[14] was developed for clinic use. Patients were asked to rate how much they were troubled by each of the symptoms during the past week. Each symptom was rated on a 4-point Likert-type scale, ranging from 0 ("not at all") to 3 ("almost always"). Sample items include: "Problems sustaining attention at work or in other settings," and "The feeling that you weren't listening to others when they were speaking to you." The number of items rated as troubling "quite a bit," or "almost always" was tabulated, with separate tabulations for items assessing inattentiveness and items assessing hyperactivity/impulsivity. This scale is similar to other Adult ADHD rating scales based on the 18 symptoms described in DSM-IV.[15] Based on DSM-IV criteria, an individual endorsing six or more of the inattentive symptoms and/or six or more of the hyperactivity/impulsivity symptoms would qualify for a diagnosis of ADHD. To establish reliability, this scale was administered to a convenience sample of 35 patients with substance use disorders who were in residential treatment. Approval for the reliability study was obtained from the University of Washington Human Subjects Protection Committee. Coefficient alphas were .89 for all symptoms, .83 for the hyperactivity/impulsivity symptoms, and .87 for the inattentive symptoms.

Adult Rating Scale. The ARS[21] contains 25 items, which yield a total score derived from DSM-III-R criteria for ADHD.[33] Each item is rated in terms of "how much of a problem each one is for you" on a 4-point scale ranging from 0 ("Not at all") to 3 ("Very much"). Higher scores indicate greater severity and/or frequency of problems stemming from the symptoms. In a sample of 770 college students, the 2-week test-retest reliability was .80 and internal consistency was .86.[21]

Attention-Deficit Scales for Adults. The ADSA[22] consists of 54 items, which assess symptoms associated with ADHD. In addition to a total score, there are nine content subscales. Four of these subscales were examined in the present study: Attention-Focus/Concentration, Behavior-Disorganized Activity, Consistency/Long-Term, and Negative-Social. We used only these four subscales in the present analyses because they correctly classified 89% of subjects (87 adults with ADHD and 306 controls) in a discriminant function analysis.[22] Coefficient alphas for these subscales ranged from .53 to .79 in the original normative sample.

Semistructured Clinical Interview. Psychiatric diagnoses were assessed using a semistructured diagnostic interview previously validated against the Structured Clinical Interview for DSM-III-R[34-36] and modified to incorporate DSM-IV criteria, including criteria for ADHD. The rate of disagreement between the semistructured interview and the Structured Clinical Interview for DSM-III-R is less than 3%.[37] Probe questions provided by Dr. J. Biederman were also employed for the ADHD portion of the interview. For each major diagnostic category, the interviewer indicated whether the diagnosis was absent, present at the time of the interview (current), or present at some time during the past (lifetime). Patients were interviewed by a senior psychologist (B.S.M.), as well as one of three board-certified psychiatrists experienced in diagnosing ADHD in adults. DSM-IV diagnoses were arrived at by consensus between the psychologist and psychiatrist. All patients received a Principal Diagnosis, which accounted for their presenting problem and reason for referral.

Statistical Analyses

Descriptive statistics and scale properties were computed for each screening measure. Alpha coefficients were computed for each scale in order to provide an estimate of internal consistency. As a gross measure of the scales' ability to differentiate groups of patients, ADHD and non-ADHD patients were compared on each measure using *t* tests for independent samples. Current MDE or DD patients were similarly compared. We also examined age differences between ADHD and non-ADHD patients using a *t* test for independent samples.

The diagnostic utility of the Symptom Inventory for ADHD and the ARS was assessed by performing cross tabulations of various cutoff scores for each instrument with ADHD diagnosis (present/absent). This resulted in identification of true positives, false positives, true negatives, and false negatives. Sensitivity and specificity were determined using the following equations: Sensitivity = true positives/(true positives + false negatives) and Specificity = true negatives/(true negatives + false positives). These analyses were repeated using presence or absence of MDE or DD as the criterion variable.

Diagnostic utility of the four ADSA subscales previously reported[21] was determined using a discriminant function analysis in which all four subscale scores were entered together in a single step. The sensitivity and specificity of the total ADSA was computed as for the cutoff score corresponding to a T-score of 70 based on the scale authors' original sample.

RESULTS

Based on the diagnostic interview, 38 patients were identified with ADHD, and 44 received a non-ADHD principal diagnosis. Patients with ADHD were significantly younger than non-ADHD patients [34.2 *v* 40.3 years; $t(80) = 2.80$, $P < .01$]. Most of the patients were white, and this did not differ by diagnosis (ADHD 97.4%, non-ADHD 95.5%). A higher proportion of the non-ADHD group was male (63.6%) than the ADHD group (55.3%), but this was not a statistically significant difference. The principal diagnoses for non-ADHD patients included major depressive disorder (25.0%), dysthymia (22.7%), bipolar disorder (11.4%), anxiety disorders (9.1%), obsessive-compulsive personality disorder (6.8%), drug abuse or dependence (6.8%), learning disorder (2.3%), or other psychiatric condition (11.4%). Two patients in the non-ADHD group did not meet criteria for any axis I or axis II disorders (4.5%). By definition, ADHD was the principal diagnosis in all individuals in the ADHD group.

A significant percentage (41.5%) of the entire cohort carried a lifetime diagnosis of dysthymia or met criteria for a MDE at the time of the evaluation. This represented 28.9% (11/38) of individuals in the ADHD group, and 52.3% (23/44) of individuals in the non-ADHD group. A current diag-

Table 1. Means and Standard Deviations on Self-Report Measures of Adult ADHD Between ADHD and Non-ADHD Patients

Variable	ADHD (N = 38)		Non-ADHD (N = 44)		
	Mean	SD	Mean	SD	t Test
ADSA Attention-Focus/Concentration	51.6	5.7	45.9	7.3	3.75‡
ADSA Behavior-Disorganized Activity	84.0	7.3	78.2	10.5	2.77†
ADSA Consistency/Long-Term	42.1	4.4	39.7	5.4	2.05*
ADSA Negative/Social	20.5	4.7	19.7	4.0	0.75
No. of DSM-IV inattention symptoms	6.3	1.9	4.9	2.8	2.59*
No. of DSM-IV hyperactivity symptoms	5.1	2.6	3.0	2.5	3.85‡
ARS	43.4	10.0	37.6	12.9	2.21*

Abbreviations: ADSA, Attention-Deficit Scales for Adults; ARS, Adult Rating Scale; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, Ed. 4.

*$P < .05$.
†$P < .01$.
‡$P < .001$.

nosis of MDE or DD was more likely to occur in the non-ADHD group than in the ADHD group [$\chi^2(1) = 4.57, P < .05$]. Current MDE was present in 15.8% of patients in the ADHD group, and 27.3% of patients in the non-ADHD group. Current dysthymia was present in 26.3% of the ADHD group and 31.8% of the non-ADHD group.

Internal consistencies for each scale were determined by examining alpha coefficients. Cronbach's alpha was .91 for the combined inattention and hyperactivity/impulsivity items of the DSM-IV–based scale, .84 for the inattention items alone, and .86 for the hyperactivity/impulsivity items alone. Cronbach's alpha was .89 for the ARS. Coefficient alpha for the four ADSA subscales ranged from .70 to .82. Patients with ADHD generally attained higher scores on the various self-report measures than did patients who did not have ADHD (Table 1). Patients with current DD or MDE did not differ from patients without current DD or MDE on any of the self-report measures (Table 2). When only non-ADHD patients with or without current DD or MDE were

compared, only one significant difference emerged. Non-ADHD patients with current DD or MDE reported significantly more inattentive symptoms than did those without current DD or MDE (Table 3).

Figure 1 shows the results of the validity analysis for various cutoff points for the Symptom Inventory for ADHD. When the DSM-IV criterion of six or more symptoms is met, sensitivity is reasonably good with only 21.6% of individuals with ADHD endorsing fewer than six symptoms. However, specificity is low at this cutoff, as nearly half (46.5%) of individuals who do not have ADHD endorse six or more of either the inattentiveness symptoms, hyperactive/impulsive symptoms, or both. Although the false-positive rate improves with a cutoff of seven or more symptoms (32.6%), sensitivity drops and 37.8% of individuals with ADHD do not meet the more stringent criteria.

Figure 1 also shows the results of the validity analysis when presence of MDE or DD is the criterion. As can be seen from the figure, there is

Table 2. Means and Standard Deviations on Self-Report Measures of Adult ADHD Among Patients With and Without Current Dysthymia or Major Depressive Episode

Variable	Current Dysthymia or MDE (N = 34)		No Current Dysthymia or MDE (N = 48)		
	Mean	SD	Mean	SD	t Test
ADSA Attention-Focus/Concentration	50.1	7.0	47.8	7.1	1.39
ADSA Behavior-Disorganized Activity	83.1	8.6	79.7	9.8	1.52
ADSA Consistency/Long-Term	41.7	5.5	40.3	4.7	1.21
ADSA Negative/Social	20.2	4.1	20.0	4.5	0.25
No. of DSM-IV inattention symptoms	6.0	2.4	5.2	2.5	1.41
No. of DSM-IV hyperactivity symptoms	4.0	2.6	3.9	2.8	0.10
ARS	40.1	12.0	40.4	12.1	0.11

NOTE. For ADSA scales, n = 30 for current dysthymia or MDE; n = 44 for no current dysthymia or MDE.

**Table 3. Means and Standard Deviations on Self-Report Measures of Adult ADHD Among Non-ADHD Patients
With and Without Current Dysthymia or Major Depressive Episode**

Variable	Current Dysthymia or MDE (N = 23)		No Current Dysthymia or MDE (N = 21)		t Test
	Mean	SD	Mean	SD	
ADSA Attention-Focus/Concentration	47.7	7.0	43.9	7.3	1.64
ADSA Behavior-Disorganized Activity	81.1	9.1	75.1	11.2	1.81
ADSA Consistency/Long-Term	40.5	5.6	38.9	5.2	0.89
ADSA Negative/Social	20.5	3.8	18.9	4.0	1.23
No. of DSM-IV inattention symptoms	5.7	2.3	3.9	3.0	2.21*
No. of DSM-IV hyperactivity symptoms	3.3	2.4	2.5	2.5	1.13
ARS	39.4	11.9	35.4	14.0	1.02

NOTE. For ADSA scales, n = 19 for current dysthymia or MDE; n = 18 for no current dysthymia or MDE.
*$P < .05$.

considerable similarity in scale performance regardless of whether the criterion measure is diagnosis of ADHD or diagnosis of current MDE or DD. A total of 64.7% of individuals with current MDE or DD obtain a score of 6 or greater on this instrument. Since 28.9% of individuals with ADHD also had current MDE or DD, this analysis was repeated using only non-ADHD patients. Slightly over half (56.5%) of patients with current MDE or DD who do not have ADHD obtained a score of 6 or above on the Symptom Inventory for ADHD.

The ARS also exhibited limited specificity for ADHD relative to sensitivity (Fig 2). At the cutoff of 31 recommended by the ARS's authors, 67.4% of individuals who do not have ADHD obtain a score suggesting that they do. Sensitivity is quite acceptable at this cutoff, however, with 91.9% of

individuals with ADHD scoring at or above this cutoff. At a cutoff score of 41 or above, specificity improves, with only 41.9% of individuals who do not have ADHD scoring at or above this cutoff point. However, at this cutoff, only 59.5% of individuals with ADHD are correctly identified.

Figure 2 also displays sensitivity and specificity curves for the ARS when presence of current MDE or DD is the criterion variable. The curves are similar to those obtained using ADHD as the criterion. A total of 76.4% of individuals with current MDE or DD obtained a score of 31 or above. Using the more stringent cutoff of 41, 55.9% of individuals with MDE or DD make this cutoff. When only non-ADHD patients are included in this analysis, 73.9% of individuals with current MDE or DD obtain a score of 31 or higher on the ARS, and 52.2% obtain a score of 41 or higher.
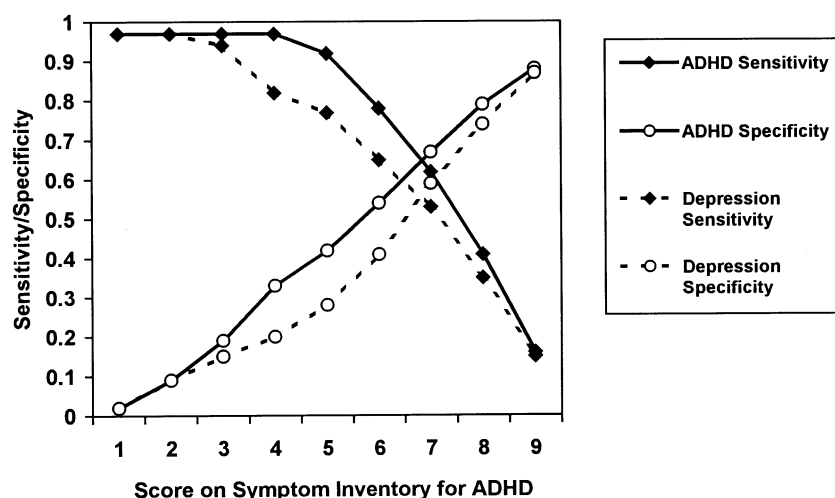
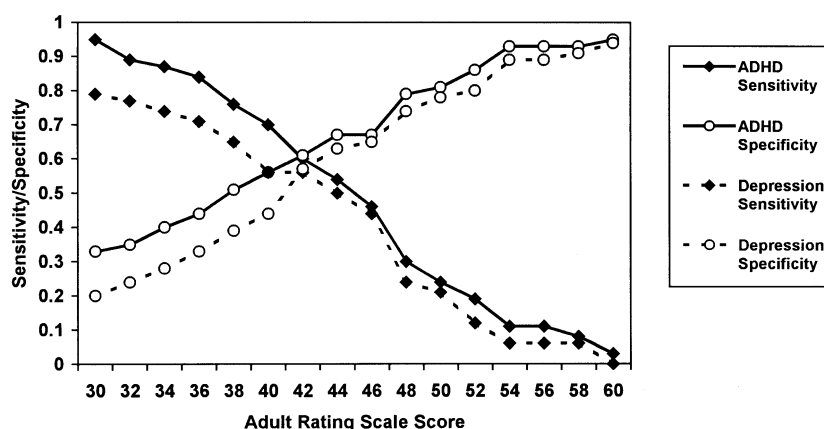Fig 1. Sensitivity and specificity of the Symptom Inventory for ADHD and for current MDE or DD.

Fig 2. Sensitivity and specificity of the ARS for ADHD and for current MDE or DD.

The discriminant function analysis of the four ADSA subscales resulted in a correct overall classification rate (ADHD *v* non-ADHD) of 70.7%. Among patients with ADHD, 78.9% were correctly classified, and 21.1% were false negatives. Among patients who did not have ADHD based on the structured interview, 63.6% were correctly classified, but 36.4% were false positives. Using the cutoff score corresponding to a T score of 70 in the scale authors' original sample, the sensitivity of the total ADSA is .81, and the specificity is .46 (54.1% of individuals who do not have ADHD are identified as obtaining a positive test result). A total of 76.7% of individuals with current MDE or DD obtain a T score of 70 or greater on the total ADSA. Eliminating those individuals with an ADHD diagnosis, 68.4% of individuals with current MDE or DD obtain a T score of 70 or greater on the total ADSA.

DISCUSSION

The relatively recent recognition of ADHD as a true syndrome in adults has left researchers and clinicians eager for valid and reliable screening measures and tools to aid in the diagnosis of this population. A number of such measures have been published both commercially and in the research literature. Our own clinical experience has taught us that many adults have been told that they have ADHD based largely (and sometimes solely) on their responses to self-report indices of symptoms. Our current evaluation of these types of measures demonstrates that they are certainly sensitive to true cases of ADHD, but have relatively poor specificity (yield a large number of false positives).

Individuals with a current MDE or DD are particularly likely to obtain high scores on these self-report instruments.

DSM-IV requires that six or more symptoms of inattentiveness or hyperactivity/impulsivity must be present for a diagnosis of ADHD. Our data suggest that nearly half of individuals presenting to an adult ADHD specialty clinic for evaluation who do not have ADHD will report the presence of such symptoms. This may be due to symptom reporting biases among adults seeking an evaluation for suspected ADHD. An alternative explanation is that symptoms characteristic of ADHD are common among individuals with psychiatric disturbance, regardless of specific diagnosis. If the latter explanation holds true, then report of current symptoms may be of little value in screening or diagnosing ADHD in adults.

An important difference between the current study and others is the type of population under consideration. We have examined the ability of these instruments to distinguish those with ADHD from individuals who have sought evaluation for this condition but upon detailed examination have some other psychiatric condition which accounts for their presenting complaints. In contrast, others have examined the ability of these questionnaires to detect differences between individuals with ADHD from normal controls.[21,22] The ability of these instruments to differentiate individuals with some form of psychiatric illness from healthy individuals is to be expected. However, our data suggest that individuals with some form of psychiatric illness can be expected to endorse a signifi-

cant number of symptoms of inattentiveness, hyperactivity, and impulsivity.

For certain types of screening measures and conditions, a high false positive rate is of minimal concern (e.g., if the false positive can be easily identified through follow-up tests, if treatment based on the presumption of a true positive is unlikely to produce adverse effects). For example, screening measures for drug and alcohol abuse may erroneously identify people with past histories of abuse as actively abusing. Their true status can be readily determined, and a discussion of past abuse is unlikely to produce iatrogenic effects. However, the implications of false positives in ADHD screening and diagnosis are potentially serious. Accurate identification of other psychiatric conditions that share many of the same symptoms of inattention and impulsivity may be delayed or impeded. The potentially damaging effects of stimulant use in individuals who have bipolar disorder or major depressive disorder should also be considered. More effective treatment of these conditions is available in the form of selective serotonin reuptake inhibitors, and mood-stabilizing medications. While stimulants may produce temporary relief from depressive symptoms, a large body of evidence has shown that these are largely ineffective in the long-term treatment of depression.

One limitation of the present report is the relatively small sample size. Only 38 of the 82 patients had ADHD, and a substantial number of these (28.9%) carried a concurrent diagnosis of DD or current MDE. A more clear-cut analysis would include a larger number of adult ADHD patients for whom ADHD is the only axis I diagnosis. However, this would require recruitment of a very large sample, given the high rates of comorbidity between ADHD and other axis I conditions.[6,12,38]

The present results show that clinicians should abandon the practice of assigning a diagnosis of ADHD based on self-report measures of current symptoms. The data make clear that self-report measures are very poor indicators of an ADHD diagnosis and are likely to produce an unacceptably high number of misdiagnoses. Caution should also be exercised in using these tools as screening instruments; that is, as measures to determine whether ADHD "might be" present. Even as a screening tool, the results could lead to a large number of people with other types of psychiatric conditions spending considerable time and energy seeking to confirm their "diagnosis."

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