

Validity of Pilot Adult ADHD Self-Report Scale (ASRS) to Rate Adult ADHD Symptoms

LENARD A. ADLER, MD

Departments of Psychiatry and Neurology, NYU School of Medicine, New York, NY, USA

THOMAS SPENCER, MD

Pediatric Psychopharmacology Unit, Massachusetts General Hospital, Boston, MA, USA
Harvard Medical School, Boston, MA, USA

STEPHEN V. FARAONE, PhD

Departments of Psychiatry and of Neuroscience & Physiology, SUNY Upstate Medical University, Syracuse, NY, USA

RONALD C. KESSLER, PhD, and MARY J. HOWES, PhD

Harvard Medical School, Boston, MA, USA

JOSEPH BIEDERMAN, MD

Pediatric Psychopharmacology Unit, Massachusetts General Hospital, Boston, MA, USA
Harvard Medical School, Boston, MA, USA

KRISTINA SECNIK, PhD

Eli Lilly and Company, Indianapolis, IN, USA

Background. The goal of this study was to validate the pilot Adult ADHD Self-Report Scale (pilot ASRS) versus standard clinician ratings on the ADHD Rating Scale (ADHD RS).

Method. Sixty adult ADHD patients took the self-administered ADHD RS and then raters administered the standard ADHD RS. Internal consistency of symptom scores was assessed by Cronbach's alpha. Agreement of raters was established by intra-class correlation coefficients (ICCs) between scales.

Results. Internal consistency was high for both patient and rater-administered versions (Cronbach's alpha 0.88, 0.89, respectively). The ICC between scales for total scores was also high (0.84); ICCs for subset symptom scores were also high (both 0.83). There was acceptable agreement for individual items (% agreement: 43%–72%) and significant kappa coefficients for all items ($p < 0.001$).

Conclusions. The pilot Adult ADHD Self-Report Scale symptom checklist is a reliable and valid scale for evaluating ADHD for adults and shows a high internal consistency and high concurrent validity with the rater-administered ADHD RS.

Keywords Attention Deficit Hyperactivity Disorder, Diagnosis and Classification, Research Design and Methods, Adult Development, Epidemiology

INTRODUCTION

Presented in part at the annual meeting of the New Clinical Drug Evaluation Unit, Boca Raton, Florida, May 27-30, 2003.

Address correspondence to Lenard A. Adler, MD, Combined Departments of Psychiatry and Neurology Adult ADHD Program, New York University School of Medicine, 530 First Avenue, Suite 5A, New York, NY 10016.
E-mail: lenard.adler@med.nyu.edu

Attention-Deficit/Hyperactivity Disorder (ADHD) is a common and impairing neuropsychiatric disorder. ADHD affects about 4% of the adults in the United States, meaning that roughly 8 million adults in the US have the disorder (1–4).

ADHD causes significant employment, marital, social, and educational impairments. The disorder is also vastly under-diagnosed and under-recognized in adults, which underscores the critical need for valid screening tools.

ADHD symptoms are commonly classified by the clinician-administered ADHD Rating Scale (ADHD RS). The ADHD RS is an 18-item scale (based on DSM-IV criteria) that rates symptoms on a Likert scale ranging from 0–3 based on severity (never or rarely/none, sometimes/mild, often/moderate, and very often/severe). Rater administration of the ADHD RS has been well standardized (5–7).

Although this scale has been widely used in ADHD research, it requires administration by a trained clinician experienced in the evaluation of adult ADHD (8). Since many adults with ADHD are seen in the primary care setting by clinicians without this expertise, an easy-to-use self-administered questionnaire could be useful in the assessment of adult ADHD symptoms. However, because the ability of patients to self-administer the ADHD RS has not been investigated, its validity for that purpose is unknown. To address this issue, we sought to evaluate the concurrent validity of a clinician-administered ADHD RS with a frequency based, patient-administered version of the scale, the pilot Adult ADHD Self-Report Scale symptom checklist (pilot ASRS).

METHODS

Subjects were 60 outpatients (New York University: 35, Massachusetts General Hospital: 25) seen in adult ADHD programs at 2 major academic centers specializing in adult ADHD. They were either new patients referred for evaluation of ADHD or patients already receiving treatment. All patients signed written informed consent prior to participation.

The pilot ASRS, which was derived from the DSM-IV criteria for ADHD, is an 18-item instrument similar to the standard ADHD RS, with differences in language and scoring the frequency of symptoms (0–4) (“never,” “rarely,” “sometimes,” “often,” “very often”). The ASRS matches item for item domains of DSM-IV ADHD symptoms. The language of the items is described in Table 1. The conduct of this trial was approved at each site by their respective Institutional Review Boards.

All patients were diagnosed with childhood onset adult ADHD by semi-structured clinical interview (childhood symptoms: ADHD module of Kiddie Schedule for Affective Disorders and Schizophrenia [K-SADS]) (9). Patients took the self-administered pilot ASRS and then raters administered the standard clinician adult ADHD RS (5),

Table 1 Inter-rater Reliability of Symptom Ratings by Patients and Investigators

Pilot ASRS Symptom	% Agreement	Kappa	Z-Score	P-Value
1. How often do you make careless mistakes when you have to work on a boring or difficult project?	60	0.397	4.67	<0.0001
2. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?	68	0.566	7.39	<0.0001
3. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?	47	0.220	2.72	0.0032
4. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?	68	0.490	5.44	<0.0001
5. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?	62	0.461	5.87	<0.0001
6. How often do you feel restless or fidgety?	55	0.371	4.87	<0.0001
7. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	43	0.228	3.10	0.001
8. How often do you have difficulty unwinding and relaxing when you have time to yourself?	45	0.251	3.48	0.0003
9. How often do you have difficulty getting things in order when you have to do a task that requires organization?	60	0.457	6.10	<0.0001
10. How often do you feel overly active and compelled to do things, like you were driven by a motor?	55	0.387	5.20	<0.0001
11. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	67	0.544	7.13	<0.0001
12. How often do you find yourself talking too much when you are in social situations?	55	0.376	4.83	<0.0001
13. How often do you misplace or have difficulty finding things at home or at work?	67	0.549	7.27	<0.0001
14. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?	52	0.257	3.12	0.0009
15. How often are you distracted by activity or noise around you?	48	0.299	4.14	<0.0001
16. How often do you have difficulty waiting your turn in situations when turn taking is required?	53	0.319	3.91	<0.0001
17. How often do you have problems remembering appointments or obligations?	72	0.590	7.09	<0.0001
18. How often do you interrupt others when they are busy?	61	0.427	5.11	<0.0001

each evaluating symptoms in the last week. Raters were physicians who had undergone extensive training and standardization in assessing adult ADHD with the ADHD RS.

The internal consistency of symptom scores on each scale was assessed by Cronbach's alpha. Agreement of raters (pilot ASRS versus clinician ADHD RS) was established by the intra-class correlation coefficient (ICC). The ICC is designed to evaluate the consistency between 2 or more measures believed to measure the same trait. Although typically used to assess the inter-rater or test-retest reliability of measurement, it is also useful for evaluating the consistency of different measures administered by different raters. In order to allow comparisons between scales for ICC computations such that both measures would have similar 0–3 ranges, ASRS "0" (none) and "1" (rarely) were combined into a single category; this is similar to the scoring arrangement for frequency based "0–3" versions of the ADHD RS (0—"none", 1—"sometimes", 2—"often" and 3—"every often" (5). We used the Kappa coefficient of agreement to evaluate the reliability of individual symptoms. We used logistic regression to test for site differences in age, gender, patient- or investigator-rated total ADHD symptoms, patient- or investigator-rated inattentive symptoms, or patient-rated hyperactive-impulsive symptoms.

RESULTS

The mean age of subjects was 37.5 ± 10.3 SD years. Sixty-eight percent were male, 85% had been diagnosed previously with adult ADHD, and 77% were currently on medication, which included stimulant and nonstimulant medications for treatment of ADHD and associated comorbidities. The subjects' ADHD symptoms ranged in severity from mild to severe (range of total ADHD RS scores: 7 to 46). There were no significant site differences in age, gender, patient- or investigator-rated total ADHD symptoms, patient- or investigator-rated inattentive symptoms, or patient-rated hyperactive-impulsive symptoms (all p 's > 0.05). Investigator-rated hyperactive-impulsive symptoms were somewhat higher at one site (12.2) versus the other site (7.9). Internal consistency was high for both patient- and rater-administered versions, with Cronbach's alpha coefficients of 0.88 and 0.89, respectively. To determine if any one item unduly influenced the alpha coefficients, we recomputed them for the 18 total scores created by deleting one item (range: 0.88 – 0.89).

The ICC between the total ADHD RS and pilot ASRS scores was high (0.84); ICCs for hyperactive-impulsive and inattentive symptom scores were also high (both 0.83) and substantial agreement was found for individual items (% agreement: 43%–72%) and significant kappa coefficients for all items ($p < .001$) (see Table 1).

COMMENT AND CONCLUSIONS

This self-administered adult ADHD symptom assessment, the pilot ASRS symptom checklist, showed high internal consistency and high concurrent validity with the standard rater-administered ADHD RS. The internal consistency of the scale is similar to that seen in a validation of the Brown ADD Scale, another adult ADHD symptom assessment scale (10). The potential advantages of the ASRS include the ease of patient administration and adult specific, context based language. Thus, primary care physicians should find the pilot ASRS useful in the assessment of adult ADHD symptoms.

The pilot version of the ASRS symptom checklist used in this study is the same as the current version of the ASRS (ASRS v1.1 symptom checklist), except the absence of introductory language and the order of symptoms matches the ADHD RS (inattentive and hyperactive-impulsive symptoms presented in alternating order) (11). In the current version of the ASRS, the symptom descriptions and scoring are identical, but symptoms are grouped according to inattentive and hyperactive-impulsive subsets. The current version of the Adult ADHD Self-Report Scale symptom checklist is copyrighted by the World Health Organization and is available at <http://www.med.nyu.edu/psych/assets/adhdscreen18.pdf> at no cost. Planned future efforts for this include an examination of threshold levels for significant frequency of symptoms, validation of the scale as a measure of treatment response, and assessment of the ASRS v1.1 versus other commonly employed scales of clinician administered assessments of adult ADHD symptoms, including the Brown ADD Scale and the Conners Adult ADHD Scales (CAARS).

ACKNOWLEDGMENTS

Supported in part by an educational grant from Eli Lilly and Company.

The WMH-CIDI Advisory Group for adult ADHD includes Lenard Adler (New York University Medical School), Russell Barkley (SUNY Upstate Medical University), Joseph Biederman (Massachusetts General Hospital and Harvard Medical School), Keith Conners (Duke University Medical School), Stephen Faraone (Massachusetts General Hospital and Harvard Medical School), Laurence Greenhill (New York State Psychiatric Institute), Molly Howes (Harvard Medical School), Ronald Kessler (Harvard Medical School), Thomas Spencer (Massachusetts General Hospital), and T. Bedirhan Ustun (World Health Organization). The authors thank the other members of the advisory group for helpful comments on this paper.

REFERENCES

1. Faraone SV, Sergeant J, Gillberg C, Biederman J: The worldwide prevalence of ADHD: Is it an American condition? *World Psychiatry* 2003; 2:104–113

2. Weiss G, Hechtman LT: *Hyperactive Children Grown Up: ADHD in Children, Adolescents, and Adults. (2nd ed.)* New York: Guilford Press; 1993
3. Wender PH: Attention-deficit hyperactivity disorder in adults. *Psychiatric Clinics of North America* 2000; 21:761–774
4. Murphy K, Barkley RA: Attention-Deficit/Hyperactivity Disorder in adults: Comorbidities and adaptive impairments. *Comprehensive Psychiatry* 1996; 37:393–401
5. DuPaul GJ, Power TJ, Anastopoulos AD, Reid R: *ADHD Rating Scale-IV: Checklists, Norms, and Clinical Interpretation*. New York: Guilford Press; 1998
6. Spencer T, Biederman J, Wilens T, Faraone S, Prince J, Gerard K, Doyle R, Parekh A, Kagan J, Bearman SK: Efficacy of a mixed amphetamine salts compound in adults with attention-deficit/hyperactivity disorder. *Arch Gen Psychiatry* 2001; 58:775–782
7. Spencer T, Wilens T, Biederman J, Faraone SV, Ablon JS, Lapey K: A double-blind, crossover comparison of methylphenidate and placebo in adults with childhood-onset attention-deficit hyperactivity disorder. *Arch Gen Psychiatry* 1995; 52:434–443
8. Adler LA, Spencer T, Faraone SV, Reimherr FW, Kelsey DK, Michelson D, Biederman J: Training raters to assess adult ADHD: Reliability of ratings. *J of Atten Disord* 2005; 8:121–126
9. Orvaschel H, Puig-Antich J: *Schedule for Affective Disorders and Schizophrenia for School-Age Children: Epidemiologic Version 5 (K-SADS-E-5)*. Fort Lauderdale, FL: Nova Southeastern University; 1995
10. Weiss M, Hechtman L, Weiss G: *ADHD in Adulthood: A Guide to Current Theory, Diagnosis, and Treatment*. Baltimore: The Johns Hopkins Press; 1999
11. Adler LA, Spencer T, Faraone SV, Kessler R, Howes M, Biederman J, Secnik K: Validity of Patient ASRS to Rate Adult ADHD Symptoms. Poster presentation to the 50th Annual Meeting of the American Academy of Child and Adolescent Psychiatry, Miami, Florida, October 14–19, 2003