

Children's Self-Report of Attention-Deficit Hyperactivity Disorder

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The authors' purpose was to develop a children's self-report scale to aid in the assessment of Attention-Deficit Hyperactivity Disorder (ADHD). Twenty-two ADHD boys classified through blind diagnoses by a developmental pediatrician and 25 normal boys between the ages of six and 12 years served as subjects. The self-report scores correctly classified 80% of the sample.

Attention-Deficit Hyperactivity Disorder (ADHD) is a common behavior problem, especially among boys. In young children, the most prominent sign of ADHD is overactivity, while among adolescents the most prominent features are inattention, fidgeting and restlessness.¹ Often, behavior checklists or rating scales collected from parents, teachers or classroom observers are used to assess ADHD. These rating scales have different psychometric features, normative populations, and definitions of hyperactivity.²

Widely used ADHD rating scales include the Conners scale, Werry-Weiss-Peters Activity Rating Scale, Achenbach Child Behavior Checklist, Personality Inventory for Children and the Home and School Situations Questionnaires.³⁻⁷ In addition to parent/teacher rating scales, elaborate observational procedures such as the Mayes Hyperactivity Observation System and the Response Class Matrix have been developed.

Parent/teacher rating scales are a quick and inexpensive way of gathering behavioral data for making an assessment to diagnose ADHD. These rating scales can be biased, however. A better source of information about a person's subjective feelings might be the individual himself. Children's self-reports of depression and self-esteem increase the accuracy of iden-

tifying these disabilities.¹⁰⁻¹¹ By analogy, self-reports of ADHD should increase the accuracy of its identification as well. No study has examined whether children's self-reports can reliably discriminate between ADHD and normal children. Our purpose was to develop a preliminary children's self-report scale to facilitate the diagnosis of ADHD.¹²

Method

Subjects: The experimental group contained 22 boys diagnosed ADHD and the control group contained 25 normal boys between the ages of 6 and 12 years. All children earned IQ scores above 70 on the Slosson Intelligence Test (SIT). Boys with neurological problems, severe conduct problems, depression or psychosis were excluded from the study. The ADHD sample was diagnosed by one developmental pediatrician with no knowledge of the boys' self-report scores. His diagnoses were based on a mean score > 1.5 on the Hyperactivity Index of the Revised Conners Teacher Rating Scale (TRS), a psychosocial history, and clinical observations. Normal boys from a local elementary school who had no reported history of ADHD or behavioral problems and who scored below 1.5 on the Hyperactivity Index of the TRS served as control subjects. Parents of all participants signed consent forms prior to the study.

Measures: Revised Conners Teacher Rating Scale (TRS): this 28 item scale yields an overall Hyperactivity Index and three factorially derived dimensions to include Conduct Problems, Hyperactivity, and Inattention-Passivity. Previous research has demon-

strated test-retest reliability, criterion validity, and discriminant validity.^{3,17-18}

Revised Parent Symptom Questionnaire (PSQ): this 48-item questionnaire yields an overall Hyperactivity Index and five factorially derived dimensions including Conduct Problems, Learning Problems, Psychosomatic disorders, Impulsive-Hyperactive behavior, and Anxiety. The PSQ has been shown to have good discriminant validity.¹

Slosson Intelligence Test (SIT): the SIT is an orally administered test specifically designed for use by teachers, principals, counselors, etc, to evaluate children's and adults' mental ability. It has acceptable reliability and criterion validity.^{19,20}

ADHD Self-Report Scale (ASRS): items were selected to measure the DSM-III-R criteria for ADHD. They were arranged in true-false format and read to the boys to assure that they could perform the task (see Fig 1). Items were selected from the Conners Teacher Rating Scale, the Parent Symptom Questionnaire, the Child Behavior Checklist, and the Hirschfield Impulsivity Scale.¹³⁻¹⁵ A single score for the ADHD Self-Report Scale (ASRS) was obtained by summing "true" responses. The ASRS items were read to each boy and their responses were scored by an assistant.

Procedure: Suspected ADHD subjects were administered the SIT and the ASRS by a research assistant. Next, each boy was seen individually by the same Developmental Pediatrics Clinic at Madigan Army Medical Center. He conducted a developmental, neurological, and pediatric intake assessment, collected the TRS from the school and made his diagnosis without knowledge of the boy's IQ and ASRS scores. Control subjects were given the SIT

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The authors acknowledge the invaluable assistance of Carolyn Price who served as research assistant throughout this project. Additionally, sincere appreciation is expressed to the staff and teachers of Heartwood Elementary School for giving us access to their facilities and students.

Figure 1. Children's ADHD Self-Report Scale (ASRS).

1. I like to keep moving around	T	F
2. I am restless and am always on the go	T	F
3. I like to get out of my seat often at school	T	F
4. I fidget a lot with my hands or feet	T	F
5. I squirm often in my seat	T	F
6. It's hard for me to remain in my seat when the teacher wants me to	T	F
7. Noises often bother me when I'm trying to do my schoolwork	T	F
8. I have a difficult time finishing things I start	T	F
9. It is hard for me to remember things I'm told to do	T	F
10. I often don't finish what I'm doing	T	F
11. It is hard for me to pay attention for long	T	F
12. I daydream or get lost in my thoughts often	T	F
13. I get into trouble for not listening	T	F
14. Sometimes I am able to get things done and other times I am not	T	F
15. I often have to finish assignments at recess or after school	T	F
16. I often blurt out answers to questions before they have been completed	T	F
17. It is difficult for me to wait my turn in games	T	F
18. I often interrupt other children's games	T	F
19. I talk out too much in school	T	F
20. I often do things without thinking	T	F
21. I like to wrestle and horse around	T	F
22. When things get quiet, I like to stir up a little fuss	T	F
23. It's fun to push people off the edge into the swimming pool	T	F
24. I like throwing stones at targets	T	F
25. I make a lot of careless mistakes	T	F
TOTAL SCORE: _____		

and the ASRS by a research assistant. Teachers of the control subjects completed the TRS for each boy.

Results

Twenty-two ADHD boys (mean IQ = 97.32) and 25 normal boys (mean IQ = 102.7) served as subjects in the

study. The group IQs were not significantly different. Using a cutoff ASRS score of 11, we classified ADHD and normal boys into four categories to form a 2 x 2 contingency table (Table I). Results of a Chi Square analysis were significant at P < .0001. The ASRS scale correctly classified

91% of the ADHD boys and 72% of the normal boys. A Mann-Whitney U-Test showed that the ASRS reliably discriminated between the ADHD and Normal groups of boys (Table II). Means and standard deviations for the ADHD and Normal groups are presented in Table III.

Table I. 2 x 2 contingency table of study subjects.

	ADHD SRS Score 0 - 10	ADHD SRS Score 11 - 20
ADHD Boys	2	20
Normal Boys	18	7
$\chi^2 = 16.46$ $P < .001$		

Table II. Mann-Whitney U-Test between ASRS and Group.

Group	Rank Sum	Sample Size	U Statistic	Average Rank
ADHD	755.5	22	502.5*	34.3
Control	372.5	25	47.5	14.9
Total	1128.0	47		

*p < .00001

Table III. Means and Standard Deviations of ADHD and Control Groups' Scores on the ASRS.

Group	Mean	Sample Size	S.D.
ADHD	15.77	22	4.151
Control	7.68	25	4.028

Discussion

We found that boys could accurately report their own ADHD symptoms and that the self-report scores correctly classified 80% of our sample. This result has important implications for clinical practice: It suggests that boys can accurately report their own ADHD symptoms. Although the ASRS is not diagnostic by itself, it can clearly be useful in the assessment of ADHD. Currently, parent and teacher rating scales are used but there is a need for an accurate self-report instrument that will complement the teacher and parent questionnaires traditionally used to assess children's psychological functioning. Self-report inventories can add significant independent information that may be of value in assessing childhood disorders.

In addition to making the diagnosis of ADHD more accurate, self-report measures can help the child feel more a part of the process and might help the resistant child; in particular, become more involved in his own treatment program.

This study has several methodological limitations. First, only boys were used (although, since the vast majority of ADHD cases are male, this may not be a serious problem). Second, the self-report inventory was not cross-validated. Third, the sample was small. Fourth, the self-report inventory generated some false negative and false positive diagnoses. Two boys who were diagnosed ADHD by the pediatrician were classified as normal on the basis of low ASRS scores. Perhaps they were denying their symptoms or the ADHD diagnosis was incorrect in these two cases. A more troublesome bias, however, is that the ASRS scale generated seven false positive ADHD diagnoses among the normal boys. If none of the "normal" boys were in fact ADHD, this is a false positive rate of 15%.

Analysis of these false positive "normal" boys' answers showed that certain questions pulled for positive responses among the control group. For example, items 1, 7, 14, 21 and 25 (Fig 1) were answered "true" by

close to 90% of the false positive "normal" boys. Cutoff scores other than 11 were used, but the accuracy of classification did not improve. More work is needed to clarify this problem with the ASRS.¹⁶ In future research, a combination of ADHD diagnosis for all the subjects and an item analysis to eliminate questions that do not differentiate ADHD and normal boys should solve this problem. Finally, conduct-disordered boys may have been included in the sample. This last limitation is common to all measures of ADHD, however.

In conclusion, this study shows that a children's self-report scale for ADHD can work and that boys between the ages of six and 12 years are able to understand the ideas involved in rating their own symptoms of ADHD.

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