Archives of Clinical Neuropsychology 22 (2007) 577–588

Archives of CLINICAL NEUROPSYCHOLOGY

Identifying students faking ADHD: Preliminary findings and strategies for detection

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Accepted 25 March 2007

Abstract

When conducting psychological evaluations, clinicians typically assume that the subject being evaluated is putting forth maximal effort and is not exaggerating or magnifying symptom complaints. While the field of neuropsychology has identified that factors, such as effort and motivation, can significantly interfere with correct interpretation of self-reported symptoms and test scores, evaluation methods for other psychological conditions, such as attention deficit hyperactivity disorder (ADHD) have not addressed effort and motivation as potential factors influencing accurate diagnosis. In analyzing the performance of students simulating ADHD, and comparing it to performance of both non-ADHD and genuine ADHD students, this study clearly demonstrated that the symptoms of ADHD are easily fabricated, and that simulators would be indistinguishable from those with true ADHD. In addition, students motivated to feign ADHD could easily perform poorly on tests of reading and processing speed, thus allowing them access to academic accommodations. Implications of these findings are discussed.

Keywords: Effort testing; Symptom validity; Symptom exaggeration; ADHD; Adults

1. Introduction

ADHD is a developmental disorder estimated to affect between 2 and 4% of the college student population (DuPaul et al., 2001). In the last few years, there has been a dramatic increase in the number of adults and post-secondary students coming to specialists complaining of symptoms of ADHD and wondering if they have this disorder (American Council on Education, 1995; Hagar & Goldstein, 2001; Nichols, Harrison, McCloskey, & Weintraub, 2002; Roy-Byrne et al., 1997). Many of these adults have no prior diagnosis of ADHD, and may not be able to provide information about childhood behavior to corroborate lifetime impairment. In such situations, a clinician not only has to differentiate between the symptoms of ADHD and those of other disorders when making a differential diagnosis, but must also be aware of the possibility that the person may be exaggerating or feigning these symptoms (Conners, Erhardt, & Sparrow, 1998).

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0887-6177/$ – see front matter
doi:10.1016/j.acn.2007.03.008

1.1. Difficulty diagnosing ADHD in adults

It is difficult to accurately diagnose ADHD in adults (Braun et al., 2004). Unlike diagnoses that can be confirmed with lab work or radiological evidence, ADHD is a clinical diagnosis (American Academy of Child and Adolescent Psychiatry, 1997; Gualtieri & Johnson, 2005; McGough, Barkley, & Russell, 2004) made both on the basis of self-reported symptoms and by establishing that the adult met the diagnostic criteria for ADHD in childhood, as set out in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV; American Psychiatric Association, 1994). This is problematic, as adults are frequently poor historians, and are typically not good at retrospectively determining if their childhood behaviors were consistent with the DSM-IV criteria (Murphy, Gordon, & Barkley, 2000). Furthermore, obtaining information about their own childhood behaviors, confirmed by a reliable source, is often impossible for an adult (Roy-Byrne et al., 1997). Self-report of childhood symptoms with no external corroboration is problematic, as adults typically have no objective means of determining whether their childhood behaviors were extreme or impairing relative to their peers.

Despite these difficulties, experts instruct psychologists (e.g., McGough et al., 2004) and psychiatrists (e.g., American Academy of Child and Adolescent Psychiatry, 1997) to diagnose ADHD based on clinical interview and self-report data alone. While neuropsychological testing has consistently demonstrated that adults with ADHD perform more poorly than do clinical controls on measures of executive functioning, processing speed, memory, and/or sustained attention (e.g., Barkley & Grodzinksy, 1994; Hervey, Epstein, & Curry, 2004; Schoechlin & Engel, 2005; Woods, Lovejoy, & Ball, 2002), no consistent pattern of impairment on specific tests has been identified, nor has any one battery of neuropsychological tests been developed with adequate diagnostic sensitivity and specificity (Barkley & Grodzinksy, 1994; Gualtieri & Johnson, 2005). Indeed, meta-analytic reviews consistently confirm the presence of impairments in some types of cognitive processes in adults with ADHD, but none that are consistently domain-specific (Boonstra, Oosterlaan, Sergeant, & Buitelaar, 2005; Schoechlin & Engel, 2005). Furthermore, the few existing studies that have examined the neuropsychological performance of college students with ADHD have failed to find differences relative to non-ADHD controls on many of these tests (Weyandt & DuPaul, 2006).

While neuropsychological testing is not yet able to reliably diagnose ADHD, it is frequently used as an adjunct to the diagnostic process, especially to quantify the impact of the disorder on cognitive functioning[1]. Indeed, documentation standards adopted by many American post-secondary institutions agree that, "assessment is important in determining the current impact of the disorder on the individual's ability to function in academically related settings." (ADHD Consortium, 1998, p. 226). In addition, these guidelines state that, "all data must logically reflect a substantial limitation to learning for which the individual is requesting the accommodation" (ADHD Consortium, 1998, p. 226). To access test accommodations, high-stakes testing agencies, such as Educational Testing Service also require proof that the individual diagnosed with ADHD has significant functional limitations that substantially impair academic performance, and suggest general types of psychoeducational and neuropsychological test scores that would aid in providing this type of evidence (Educational Testing Service, 1999).

Not all post-secondary institutions, however, insist on receiving corroborative neuropsychological test data in order to provide academic accommodations. For instance, a recent survey of post-secondary disability service providers in Canada (Harrison & Wolforth, 2006), found that 66% of these institutions would provide academic accommodations to students diagnosed with ADHD by a family physician in the absence of any neuropsychological test data. These service providers were under the impression that their institution was legally required to provide any accommodations recommended if a physician diagnoses ADHD, even in the absence of objective proof that the accommodations were warranted on the basis of cognitive impairments. Given that both physicians (e.g., Braun et al., 2004) and psychologists (e.g., Colegrove, Homayounjam, Williams, & Hanken, 2001) have objected to widespread diagnostic practices that fail to include a comprehensive psychoeducational or neuropsychological assessment when assessing adults for ADHD, it seems certain that there are students who access both academic accommodations and also prescription medications without undergoing formal psychometric testing.

[1] Interested readers may wish to consult Culbertson and Krull (1996), who provide a useful outline of suggested neuropsychological tests to administer when evaluating adults suspected of having ADHD.

1.2. Assessment of motivation and effort

Currently, no tests exist to help psychologists determine the level of motivation or effort being put forth by students being evaluated for ADHD, nor is there a way to determine whether students are exaggerating their degree of impairment. This is problematic, as recent research suggests that about 50% of the variance in scores on a neuropsychological test battery is explained by effort and co-operation (Green, Rohling, Lees-Haley, & Allen, 2001), and that malingering patients who fail symptom validity tests demonstrate far greater cognitive impairment on common neuropsychological tests than do patients who have suffered severe traumatic brain injury.

Methods to evaluate symptom exaggeration or level of effort and motivation have recently become an important part of any neuropsychological test battery, since psychologists have little ability to identify dishonest clients unless tests of effort and motivation are included in their assessment battery (Faust, Hart, Guilmette, & Arkes, 1988; Trueblood & Binder, 1997). In this context, symptom exaggeration refers to a continuum of behaviors ranging from subconscious exaggeration of actual symptoms to outright fabrication of symptoms, as in malingering. The definition of malingering (American Psychiatric Association, 1994) also includes the possibility that a malingerer may have genuine symptoms, but may nevertheless be exaggerating them for some reason. In malingering, however, the motivation for such behavior is secondary gain, whereas symptom exaggeration may occur for a number of reasons. Although exact estimates of prevalence are impossible to obtain (as most malingerers do not confess to their behavior), Binder (1992) estimates that 25% of all individuals who could benefit economically from a particular diagnosis may be malingering on neuropsychological tests. Mittenberg, Patton, Canyock, and Condit (2002) surveyed members of the American Board of Clinical Neuropsychologists, and report that malingering or symptom exaggeration is estimated to occur in about 39% of mild head injury cases, 30% of disability assessments, and 29% of personal injury cases. It would therefore not be surprising to discover that at least some of the adults seeking a diagnosis of ADHD might be exaggerating or magnifying their level of impairment for reasons of secondary gain.

There are a number of potential reasons why people would consciously or unconsciously choose to feign or exaggerate the symptoms of ADHD. Harrison (2006) discusses concerns that students might be motivated to feign ADHD to obtain access to disability status. This, in turn, would provide them with academic concessions or supports, including extra time on high stakes tests. Persons with disabilities may also be eligible for tax benefits, be granted access to government-funded programs and services, or have their student loan repayments waived if they are diagnosed with a permanent disability.

Students may also be motivated to exaggerate or feign symptoms in an effort to obtain stimulant medication, either as a study aid (Barrett, Darredeau, Bordy, & Pihl, 2005), or for recreational purposes as an inexpensive, prescription-based alternative to cocaine (Babcock & Byrne, 2000; McCabe, Knight, Teter, & Wechsler, 2005; Teter, McCabe, Boyd, & Guthrie, 2003). When snorted or injected intravenously, Ritalin produces effects similar to cocaine, and is quite addictive (Swanson & Volkow, 2003).

It is also true that the symptoms of ADHD are somewhat ubiquitous (Goldstein, 2006; Harrison, 2004), especially the inattentive symptoms (Harrison, 2004). Given that it is much easier to exaggerate existing symptoms than to feign new symptoms (Rogers, 1997), one could therefore understand how simple it might be for an adult to consciously or unconsciously over-endorse symptoms on a self-report checklist in order to obtain some type of secondary gain.

Not only is there potential motive to exaggerate, but there is also opportunity. Self-report inventories are notoriously vulnerable to exaggeration or feigning of symptoms (cf. Dalton, Tom, Rosenblum, Garte, & Aubuchon, 1989; Lyons, Caddell, Pittman, Rawls, & Perrin, 1994). Recent studies demonstrate how simple it is to fake symptoms of ADHD, especially when filling out self-report checklists (e.g., Jachimowicz & Geiselman, 2004; Quinn, 2003). Because ADHD symptom checklists do not include scales to identify symptom malingering or exaggeration, it is easy for adults to review the DSM-IV criteria for ADHD and then give answers that adequately satisfy the diagnostic criteria. Both McCann and Roy-Byrne (2004) and Harrison (2004) showed that symptom checklists for ADHD lack specificity and are prone to over-identifying both students at the post-secondary level (Harrison) and adults in the general population (McCann and Roy-Byrne) as having ADHD when they do not.

1.3. Rationale for the present study

There are many reasons why students might be consciously or unconsciously motivated to obtain a diagnosis of ADHD in a post-secondary setting. Furthermore, it might be easy for them to exaggerate or feign symptoms when the primary method of data collection is self-report, even when the clinician uses what are otherwise well-constructed symptom checklists. The question, however, is how can clinicians identify such malingerers and ensure that they are not inaccurately diagnosed as having ADHD, while also minimizing the risk of missing true cases of ADHD. No symptom validity scales exist to assist clinicians in identifying unusual patterns of self-reported symptoms in persons with ADHD (Harrison, 2006), nor have any patterns of test performance been identified that might aid in discriminating exaggerated from honest reporting in such assessments.

The current study attempts to expand upon the work of Quinn (2003) and Jachimowicz and Geiselman (2004), by investigating the pattern of symptom exaggeration demonstrated by students who are attempting to malinger ADHD, and comparing their performance to bona fide ADHD students, as well as to students with no known impairments. In doing so, we sought to improve the validity of ADHD assessments, specifically by evaluating whether any other reporting or performance pattern anomalies can be identified that help discriminate true ADHD students both from those who are malingering and also from those with no known attention disorder. Our hypotheses were that there would be identifiable differences between true ADHD students and those asked to malinger on a self-report checklist, and that on tests of processing and reading speed there would be notable deficits in the performance of the malingering group relative to both normal and ADHD students. We assumed that those with no known attention disorder and those asked to fake would be easily distinguished, and that the latter group would exaggerate their cognitive symptoms, especially if they believed they could access academic accommodations because of their poor performance.

2. Method

2.1. Participants

Seventy university undergraduate students (25 men, 45 women) enrolled in an introductory psychology course were recruited for the present study, and were offered course credit in exchange for their participation. Their ages ranged from 17 to 22 years, with a mean age of 18.70 (S.D. = 1.11). Information pertaining to ethnicity was not collected, but demographic information about undergraduate students at this university clearly indicate that only 9.1% of the student population self-identify as visible minorities, and of those, less than a quarter were educated in a language other than English (C. Coupland, personal communication, February13, 2007). Participants were randomly assigned to one of two groups—Honest Normals and Faking, with an equal number of participants in each group. These two groups comprise the non-ADHD participants, and mean age did not differ significantly between the groups.

Results obtained from the non-ADHD participants were compared with archival data collected from 72 diagnosed cases of ADHD (33 men and 39 women), all of whom had completed both the Conners' Adult ADHD Rating Scale (Conners et al., 1998) and the Woodcock Johnson Psychoeducational Battery-III (Woodcock, McGrew, & Mather, 2001) as part of an overall evaluation. The mean age of this archival sample was 22.90 years (S.D. = 7.01). All were college or university-level students who either required updated documentation of a previously diagnosed ADHD, or had been referred for an evaluation of their reported symptoms. They had been assessed by clinical psychologists at a university-based assessment centre between 2003 and 2006, and had consented to have their data used for research purposes. Diagnosis of ADHD was made using the clinical criteria outlined in DSM-IV, including objective evidence that the symptoms were present and caused substantial impairment in childhood. While neuropsychological and psychoeducational test data were not used in making the diagnosis, they were used to quantify the extent to which the disorder currently impaired the individual in academic or other life functions.

The ADHD students in the archival group met not only the DSM-IV diagnostic criteria for this disorder, but had also met the criteria outlined by Bush et al. (2005) regarding symptom validity assessment in the absence of a formal test. That is, these students provided evidence to corroborate lifetime impairment, had self-reported deficits in keeping with observed and documented behavioral problems, and had provided evidence from reliable collateral informants to confirm that their self-reported impairments were both present and severe.

2.2. Materials

All non-ADHD participants completed the North American Adult Reading Test (NAART; Uttl, 2002) in order to estimate their overall intelligence, whereas the ADHD subjects completed the Wechsler Adult Intelligence Test-III (Wechsler, 1997). All participants completed the Conners' Adult ADHD Rating Scale (CAARS)—self-report version (Conners et al., 1998). Responses to this 66-item scale yield scores on eight different indices, with some items contributing to more than one scale. This scale provides scores on four factor-derived subscales: three scales that correspond to the DSM-IV symptoms of hyperactivity/impulsivity, inattention, and total DSM symptoms, and an overall ADHD index that is said to measure the "overall level of ADHD symptoms" (Conners et al., 1998, p. 23). The test manual states that "this index is the best screen for identifying those '*at risk*' for ADHD" (Conners et al., 1998, p. 23). This index is reported to have 71% sensitivity and 75% specificity (Conners et al., 1998, p. 70). The manual does not stipulate a specific cut-off score that may be taken to indicate ADHD, but recommends that any score over a *T* value of 65 might be considered to indicate an area of clinically significant problems, and suggests that *T*-scores over 70 or 75 be used as a cut-off for inferring clinically significant problems. In addition, the manual suggests that individuals obtaining *T*-scores on the ADHD index of over 70 are likely to meet the diagnostic criteria for ADHD.

All participants also completed the Reading Fluency subtest and the two Processing Speed subtests from the Woodcock Johnson Psychoeducational Battery-III (WJPB-III; Woodcock et al., 2001). The Reading Fluency test is a time-limited, norm-based measure of reading speed and accuracy. The processing speed index is comprised of two timed measures, visual matching and decision speed. These WJPB-III subtests were chosen because academic accommodations, such as extra time, are frequently recommended for students with ADHD on the basis of poor performance on timed tests of reading and/or processing speed. It is also true that speed of information processing deficits have been noted in people with ADHD (Lacene, 2004), and it would therefore be important to measure the extent to which such tests are vulnerable to deliberate manipulation.

2.3. Procedure

Informed consent was obtained, and non-ADHD participants were asked to take part in a study to examine how individuals respond to instruction sets on tests designed to evaluate attention. They then completed a brief questionnaire, reporting whether or not they had ever been diagnosed with or ever suspected or having ADHD, whether their was any family history of ADHD or attention difficulties, and they were also asked about past learning problems at school. Participants then completed the NAART.

Next, participants were randomly assigned to either the Honest Normals or the Faking group. They then received a set of instructions and were told that these instructions pertained to the remainder of the tasks they would be completing. Participants in the Honest Normal group received instructions informing them that the tests they were about to complete are used to diagnose ADHD, and to put forth their best effort on these tasks. The Faking group was instructed to pretend they had ADHD in order to gain access to academic accommodations and other "perks", but to perform in a believable manner so as not to be caught exaggerating. The remainder of the instructions provided to the Faking group outlined the diagnostic criteria for ADHD as described in DSM-IV (American Psychiatric Association, 1994).

After taking as much time as they needed to review the instructions, participants completed the tasks in the following order: CAARS; WJPB-Reading Fluency; WJPB-Visual Matching; WJPB-Decision Speed. Participants were debriefed following completion of these measures, and participants in the Faking group were asked to report what strategies they used to fake ADHD.

3. Results

Estimates of overall intelligence as derived from the NAART were 105.76 for the Honest Normal group (S.D. = 6.62) and 106.90 for the Faking group (S.D. = 6.50). The mean IQ of the archival group, all but one of whom had completed the WAIS-III (Wechsler, 1997), was 106.68 for the ADHD Inattentive group (S.D. = 11.96) and 105.57 for the ADHD Hyperactive group (S.D. = 16.91). These four means were not significantly different from each other ($F(3, 137) = 0.12$, $p = 0.95$).

Responses to the brief questionnaire concerning history of ADHD indicated that none of the participants in either the Honest Normal or Faking group had ever been diagnosed with ADHD. Of the Honest Normals, none had ever been suspected of having ADHD, but two (5.7%) participants in this group reported relatives with ADHD. A large minority (13; 37.1%) indicated that they sometimes had trouble paying attention, and two (5.7%) reported learning problems in school. Three of the Honest Normal participants indicated that they did not enjoy reading for pleasure. Upon further examination of the data, two of the Honest Normal participants who indicated that they had trouble paying attention (but had never been suspected of having ADHD) were also found to have scores more than two standard deviations above the mean on one or more of the CAARS subscales. Assuming that answers on such scales are distributed normally, one would expect slightly more than 5% of the sample to have a z-score greater 2.0 or less than −2.0 (i.e., 1–2 cases out of 35). As a check, however, these two cases were omitted and all analyses were re-run. Because the omission of these cases did not significantly alter the results of any analyses, the cases were retained in all the results presented below.

Four (11.4%) participants in the Faking group reported that they had been suspected of having ADHD, and one (2.8%) experienced learning problems in school. Trouble paying attention was reported by seven (20%) of the group, and nine (25.7%) indicated that they had relatives with ADHD. Finally, five (14.2%) indicated that they did not enjoy reading for pleasure. These participants were not excluded from the analyses, with the belief that persons who already have some understanding of attention problems might in fact be better able to dissimulate.

Given the relevant clinical differences between ADHD with and without hyperactivity, the two groups were separated in the initial analyses. A one-way MANOVA was used to compare the four groups. Significant alpha was set at 1% rather than 5% due to the number of independent tests being run. The main effect was significant (Wilk's lambda = 0.24, $F(36, 375) = 6.53$, $p < 0.001$). Specific contrasts were performed for the following effects: ADHD with hyperactivity versus ADHD without hyperactivity, combined ADHD groups versus Honest Normals, and combined ADHD groups versus Faking group. The two ADHD groups were not significantly different from each other using a $p < 0.01$ criterion (Wilk's lambda = 0.84, $F(12, 127) = 1.95$, $p < 0.05$). The Honest Normal group was significantly different from the combined ADHD group (Wilk's lambda = 0.57, $F(12, 127) = 7.91$, $p < 0.001$). The Faking group was significantly different from the combined ADHD group (Wilk's lambda = 0.54, $F(12, 127) = 9.18$, $p < 0.001$). Since the ADHD group means are situated between the Faking and Normal groups on all scales but one, we inferred that the Faking and Normal groups were significantly different from each other because they were each significantly different from the ADHD group.

Table 1 shows means and standard deviations for each of the groups on a scale-by-scale basis, as well as the univariate results of these contrasts for the three comparisons. The comparison between the two ADHD groups showed no significant result. Almost all univariate comparisons for the contrasts between the combined ADHD groups and each of the two normal groups were significant at the $p < 0.01$ level. The magnitudes of these effect sizes were typically in the medium ($r = 0.30$) to large ($r = 0.50$) range. As is evident from Fig. 1, scores from the CAARS and the Woodcock–Johnson provide useful discrimination among the three groups, with the Faking group presenting a more pathological picture than either of the ADHD groups. The single score that did not discriminate ADHD from Honest Normal was the Decision Speed scale. This scale was also one of the most powerful discriminators between the ADHD

Table 1
Descriptive statistics and univariate ANOVA results for three contrasts

Source	ADHD (both) ($n = 72$)		ADHD H ($n = 38$)		ADHD no H ($n = 34$)		Honest Normals ($n = 35$)		Faking group ($n = 35$)	
	M	S.D.	*M*	S.D.	*M*	S.D.	*M*	S.D.	*M*	S.D.
CAARS subscale *T*-scores										
Inattention/memory problems[a]	63.89	11.25	61.71	11.44	66.32	10.68	52.06	8.07	68.14	8.54
Hyperactivity/restlessness[b]	57.35	11.63	57.71	12.39	56.94	10.90	43.51	8.56	65.40	6.32
Impulsivity/emotional lability[b]	55.49	12.20	57.63	12.38	53.09	11.71	46.86	8.47	63.43	8.86
Problems with self-concept[a]	53.54	11.24	53.37	11.70	53.74	10.87	46.57	7.37	50.80	9.12
DSM-IV inattentive symptoms[b]	71.46	12.27	69.32	11.90	73.85	12.41	55.37	10.17	79.20	9.59
DSM-IV hyperactive/impulsive symptoms[b]	59.18	14.09	60.55	15.05	57.65	12.97	45.80	9.41	74.83	9.77
DSM-IV ADHD symptoms total[c]	68.35	13.83	67.58	13.67	69.21	14.15	51.43	10.22	81.14	8.46
ADHD index[b]	60.03	10.36	60.71	10.96	59.26	9.76	50.71	7.24	68.11	8.20
WJPB-III scaled scores										
Reading Fluency[b]	94.58	13.74	96.39	14.99	92.56	12.09	112.86	11.98	84.06	22.32
Visual Matching[b]	92.10	14.76	94.68	17.47	89.21	10.48	104.77	14.43	76.06	24.37
Decision Speed[d]	95.67	16.50	96.08	19.95	95.21	11.80	98.60	11.54	74.11	22.22
Processing Speed[b]	93.14	14.95	95.11	18.49	90.94	9.41	102.60	11.85	70.26	26.46

Note: ADHD H, ADHD with hyperactivity; ADHD no H, ADHD without hyperactivity.
[a] ADHD (both) significantly different from Honest Normal group ($p < .01$).
[b] ADHD (both) significantly different from Honest Normal group ($p < .01$) and from Faking group ($p < .01$).
[c] ADHD (both) significantly different from Honest Normal group ($p < .001$) and from Faking group ($p < .01$).
[d] ADHD (both) significantly different from Faking Group ($p < .01$).

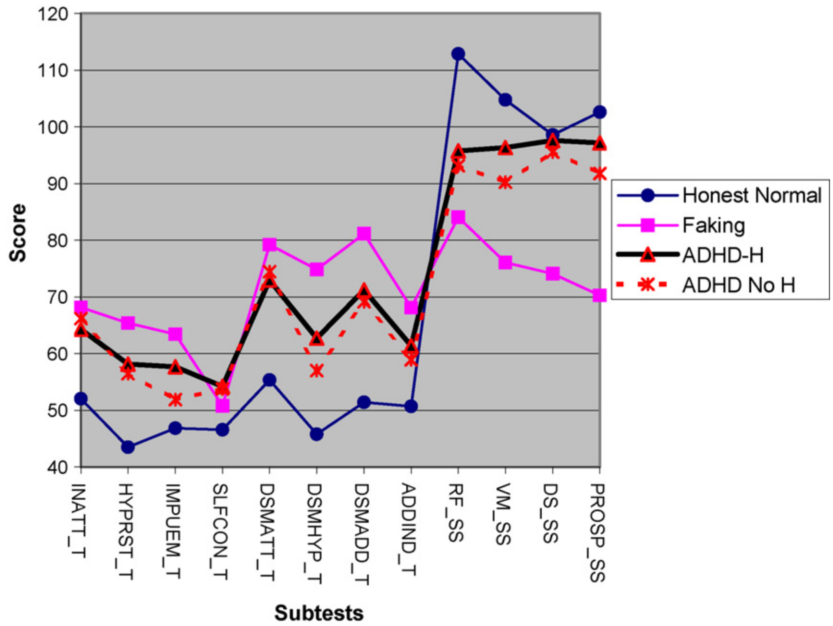

Fig. 1. Mean scores for all Woodcock–Johnson and CAARS subscales, by group (ADHD with hyperactivity, ADHD without hyperactivity, Honest Normal, and Faking). *Note*: INATT_T, CAARS inattention/memory *T*-score; HYPRST_T, CAARS hyperactivity/restlessness *T*-score; IMPUEM_T, CAARS impulsivity/emotional lability *T*-score; SLFCON_T, CAARS problems with self-concept *T*-score; DSMATT_T, CAARS DSM-IV inattentive symptoms *T*-score; DSMHYP_T, CAARS DSM-IV hyperactive/impulsive symptoms *T*-score; DSMADD_T, CAARS DSM-IV ADHD symptoms total *T*-score; ADDIND_T, CAARS ADHD index *T*-score; RF_SS, WJPB Reading Fluency scaled score; VM_SS, WJPB-Visual Matching scaled score; DS_SS, WJPB-Decision Speed scaled score; PROSPS_SS, WJPB-Processing Speed scaled score.

group and the Faking group, eclipsed only by the overall processing speed score (a composite that includes the decision speed score), and the DSM-Hyperactive scales from the CAARS.

Using the cut-off scores suggested in the CAARS manual, the Faking group was quite successful in feigning symptoms of ADHD. As shown in Table 2, there were more Faking participants able to achieve a score above the $T = 65$ or greater cut-off on all of the CAARS DSM-IV indices than ADHD students, while few of the Honest Normals had scores at this level. Raising the cut-off score to a *T*-score of 70 or greater reduced the numbers in all groups, but the trend for the Faking students to obtain higher scores than even those with an ADHD diagnosis continued. Of note was the fact that, at this level, almost none of the Honest Normals were misidentified as having ADHD.

The Faking group also consistently performed more poorly on the WJPB-III tests than either the Honest Normals or the students with ADHD. As seen in Table 2, when employing a fairly liberal scaled score cut-off of less than 85 (corresponding to performance below the 16th percentile), the Faking group had more subjects who would be identified as impaired in reading speed and speed of information processing than either the true ADHD participants or the Honest Normals. Reducing the cut-off score to include only those with scaled scores below 80 (corresponding to performance below the 9th percentile), almost none of the ADHD group or the Honest Normal group were identified, whereas almost half the Faking group continued to demonstrate performance scores that would be considered impaired. As shown in Table 2, Chi-square analyses revealed overall differences among the three groups for each of these comparisons.

While the Honest Normals and the true ADHD groups made almost no errors on WJPB-III tests, the Faking group consistently committed more commission errors on these tests, leading to lower scores on some tests (as the WJPB-III raw score for Reading Fluency is reduced for each error committed). Table 3 presents the mean number of errors on each of the WJPB subtests across the three groups. The range of errors in the Faking group is much wider compared to Honest Normals and ADHD participants.

We combined the two ADHD groups and performed a classical discriminant function analysis, using groups sizes to set prior probabilities. This allowed us to estimate the accuracy of classification that might be obtained among the three groups (ADHD combined, Honest Normals, and Faking), using CAARS and Woodcock–Johnson data to classify them. As expected, the three groups were significantly different (Wilk's lambda = 0.28, $F(24, 256) = 9.42$, $p < 0.001$).

Table 2
Percentage of participants identified using CAARS and WJPB-III cut scores, by group

Cut-off	Honest Normal (%)	Faking (%)	ADHD (both) (%)	χ^2 (2)
CAARS DSM-IV inattentive symptoms				
T-score of >65	20	94	75	55.76*
T-score of >70	6	86	51	47.67*
CAARS DSM-IV hyperactive-impulsive symptoms				
T-score of >65	6	83	33	45.00*
T score of >70	0	74	24	47.25*
CAARS DSM-IV ADHD symptoms total				
T-score of >65	11	94	61	53.57*
T-score of >70	6	86	44	45.37*
CAARS DSM-IV ADHD index				
T-score of >65	6	63	32	25.29*
T-score of >70	0	46	19	23.62*
WJPB-III Reading Fluency				
Scaled score of 85 or less	0	54	29	25.43*
Scaled score of 80 or less	0	46	10	28.57*
WJPB-III Processing Speed (combined score)				
Scaled score of 85 or less	6	71	26	41.25*
Scaled score of 80 or less	3	57	13	43.22*

Note: $n = 35$ for the Honest Normals, $n = 35$ for the Faking group and $n = 72$ for the ADHD group.
* $p < .001$.

Using jackknifed classification (the best possible classification that is likely to be replicable), there was 75% correct classification. The Honest Normal group had the highest correct value at 80%. The ADHD group received 78% correct classification, and Faking group had 66% correct classification. While 6 of the 35 Honest Normal subjects (17%) were classed as ADHD, 12 of the 35 Faking subjects (34%) were classed as ADHD, and 6 of 72 ADHD subjects (8%) were classed as Faking.

3.1. Strategy use

Participants in the Faking group used a variety of strategies to simulate ADHD. Strategies that were listed included: thinking of someone who has ADHD and trying to act like them (29% of the Faking group); attempting to select responses on the CAARS that best matched the DSM-IV criteria (11% of the group); acting bored (3%); fidgeting (40%); interrupting the researcher (11%); not attending to the researcher's verbal instructions, or disobeying those instructions (14%); beginning tasks before being told to go ahead (3%); "zoning out", letting the mind wander, or focusing on extraneous noises (26%); completing tasks slowly (31%); completing tasks quickly and carelessly (20%); deliberately choosing incorrect answers, especially for harder items (23%); skipping items (23%); re-reading questions (6%); un-focusing eyes to make items harder to read, or ignoring the sides of the page and focusing on the center (9%); letting focus wane towards the end of each task (3% of Faking group).

Table 3
Number of errors on WJPB subscales, by group

	Honest Normals			Faking			ADHD (both)		
	M	S.D.	Range	*M*	S.D.	Range	*M*	S.D.	Range
Reading Fluency	0.43	0.65	0–2	4.43	7.61	0–30	0.26	0.61	0–3
Visual Matching	0.23	0.55	0–2	4.91	10.43	0–51	0.16	0.50	0–3
Decision Speed	0.49	0.89	0–4	2.74	5.51	0–22	0.85	1.90	0–10

Note: $n = 35$ for the Honest Normals, $n = 35$ for the Faking group and $n = 72$ for the ADHD group.

4. Discussion

The purpose of the present study was to identify patterns of performance that could be useful in discriminating students suspected of symptom exaggeration from those with true ADHD. Our results suggest that exaggerated high scores obtained by simulators on the CAARS, when used in conjunction with exaggerated low scores on other standardized tests, such as the WJPB-III, may help to identify students who are feigning the symptoms of ADHD. On average, the fakers performed worse than subjects with ADHD, who in turn performed worse than normal subjects. The results clearly demonstrate that there were significant differences between simulators, normals, and those with genuine ADHD on most subscales of the CAARS, and also on the WJPB subtests. Despite the statistical differences, the diagnostic accuracy that can be achieved by using these scores was modest – about a 25% error rate was evident – but substantially better than random levels (which would be closer to a 67% error rate).

The fact that the CAARS incorrectly classified a number of Honest Normals as possibly having ADHD is not surprising given the findings of Harrison (2004), who demonstrated that the symptoms of ADHD, especially the inattentive symptoms, are ubiquitous and often reported by students in a university population. More worrisome, however, was the almost perfect ability of the Faking group to choose the items on the CAARS that correspond to the DSM-IV symptoms, and to report these at levels even higher than persons with diagnosed ADHD. Similar to the findings of Jachimowicz and Geiselman (2004), the Faking group in the present study was most successful at exaggerating on the hyperactive index of the CAARS as well as on the DSM symptom total index. This confirms that self-report indices with no embedded validity scale are extremely vulnerable to symptom exaggeration, and that high scores on such scales cannot be taken as confirmation of a disability.

In general, psychiatric disorders are easy to fake, because the symptoms are often subjective, and there is a lack of objective tests to validate the diagnoses (Mittenberg et al., 2002). For instance, research into the diagnosis of other psychiatric disorders such as post-traumatic stress disorder has consistently identified the ease with which self-report inventories can be manipulated (Dalton et al., 1989; Lyons et al., 1994), and has emphasized that validity scales must be included in such inventories to ensure that symptom fabrication or over-reporting is identified. While the CAARS contains an “inconsistency” index, its purpose is to identify random or careless responding. The index was not designed or intended to identify individuals who were consistently exaggerating or fabricating symptoms for purposes of secondary gain. Without validity indices, our research suggests that the CAARS data should be interpreted only when the clinician or researcher has assessed possibilities of secondary gain as motivating the reporting of symptoms, and when he or she is confident that the person responding has both childhood and current impairments consistent with their reported symptoms.

Results from this study provide qualified support for the development of an algorithm to detect malingering or symptom exaggeration in the assessment of ADHD, using self-reported CAARS scores and performance on tests of reading and processing speed. Based on our data, any algorithmic approach we could develop will produce about a combined 25% error rate in missing true cases (false negatives) or diagnosing false cases (false positives). While the cut-off criteria could be manipulated to favor more sensitivity or more specificity, the shifts would essentially “rob Peter to pay Paul”. Thus, clinicians must use the present results cautiously when examining effort, and could use abnormal scores to inform their overall opinion of a client’s level of motivation or effort.

Our data confirm that clinicians should use caution when diagnosing ADHD in adults, and should not base their diagnosis solely on the results of symptom checklist data. Results from both the present study and other recent research clearly show that these checklists have poor discriminant validity and are easy to fake. In addition, simply endorsing a sufficient number of symptoms only satisfies one of the DSM-IV criteria for diagnosis, and the number of symptoms reported has not been shown to correlate highly with real world impairment (Gordon et al., 2006). Clinicians should be suspicious of students or young adults presenting for a first-time diagnosis who rate themselves as being significantly symptomatic, yet have managed to achieve well in school and in other life activities. It was also concerning that students faking the symptoms of ADHD were frequently successful in producing scores on tests of reading and processing speed that fall within a range typically associated with impaired performance. Given that academic accommodations are frequently requested for students whose performance on such tests falls below average, it would appear that those motivated to feign ADHD may indeed be quite successful in obtaining accommodations. Clinicians should therefore be suspicious of individuals who score particularly high on CAARS-DSM indices (i.e., T-scores over 80), score particularly poorly on the WJPB subtests used in this study (i.e., obtain scaled scores below 80), and make many errors of commission (i.e., more than three errors on Reading Fluency or Visual Matching, or more than six errors on Decision Speed).

Several potential limitations of this investigation should be considered. The most important of these involves the motivation to avoid detection by the Faking group. Though participants were asked to fake with the knowledge that a psychologist would review the findings, this may not have approximated individuals who malinger and have a stake in avoiding detection. A study using greater incentives to fabricate symptoms might have produced different findings. Similarly, it is unclear to what extent university students without any training or firsthand experience of ADHD could produce symptoms comparable to those who have devoted time to researching the nature and symptom profiles of persons with ADHD. Given that Tan, Slick, Strauss, and Hultsch (2002) found that malingerers spent a great deal of time preparing for their role, including reading literature, surfing the internet, or getting ideas from television, it is certainly likely that true malingerers would research their role more completely than did the Faking group in the present study.

In a similar vein, all of the individuals in the archival ADHD sample may not have been as honest as was presumed. Indeed, it may be that the 8% of the ADHD cases classified as Faking by the discriminant function analysis represent the actual base rate of exaggeration in our sample. Given that no test exists, at present, to assist clinicians in determining if a student diagnosed as having ADHD exaggerated or magnified symptoms, these data must be treated with caution; future studies that use different populations are therefore warranted.

Specific topics to be pursued in future would be replication of our own findings, and the development of criteria that can be used to reduce the error rates below the values we found. For example, it would be useful to develop a validity scale to embed within a self-report inventory, composed of items that look similar to the symptoms of ADHD, and yet are not often endorsed by individuals with this disorder. If such a scale could be developed, clinicians would then have another indicator of possible dissimulation. Future research should also investigate the ability of coached exaggerators to perform poorly on tests of attention and executive functioning, as tests of this nature are often employed to quantify the impact that the ADHD is having on either cognitive or academic performance.

While our results are strong enough to identify a problem in the diagnosis of ADHD, they are not strong enough to solve that problem. With error rates as high as 1 in 4, using our discriminant functions in a clinical context to classify students as malingers would be unethical. It is hoped that the present study will serve as an impetus for further research in the area of examining better methods of identifying low effort or symptom exaggeration in the assessment of ADHD. Once validated, the present results will aid clinicians in the accurate evaluation of such disabilities.

Acknowledgements

This research was supported by the Ministry of Training, Colleges and Universities of Ontario. We thank Sheila Cornett for assistance with this project.

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