TITLE PAGE

Title: The Adult ADHD Self-Report Scale: Utility and Reliability in College Students with Attention Deficit Hyperactivity Disorder

Sarah Gray, Applied Psychology and Human Development, University of Toronto, Canada
Steven Woltering, Applied Psychology and Human Development, University of Toronto, Canada
Karizma Mawjee, Applied Psychology and Human Development, University of Toronto, Canada
* Rosemary Tannock, Applied Psychology and Human Development, University of Toronto, Canada

* Corresponding Author
Dr. Rosemary Tannock
Applied Psychology & Human Development
The Ontario Institute for Studies in Education/University of Toronto
252 Bloor Street West
Toronto, ONTARIO, CANADA M5S 1V6
Tel: 416-978-0924
Email: rosemary.tannock@utoronto.ca

Abstract

Background. Attention Deficit Hyperactivity Disorder is a debilitating condition that often persists into adulthood. The past number of decades an increased number of adults with ADHD have gained entrance into the post-secondary education section and register with college or university Disability Service Offices. There is a need to explore utility of affordable materials to gain confidence in validating the original diagnoses and potentially detect feigning.

Methods. 135 college students (mean age = 24, 42% males) with ADHD were recruited from post-secondary institutions. The freely available Adult ADHD Self-Report Scale (ASRS) self-report was utilized to assess current ADHD symptomatology. The ASRS was compared to an interview (over the phone) and other-report version (filled out by a significant other) that were directly derived from the original Self-report.

Results. Results showed moderate levels of congruency between ASRS-Self and Other Report (correlation = .47). Furthermore, a robust relationship was shown between the ASRS-Self and the interview version (correlation = .66).

Discussion. Current findings suggest the telephone-interview version of the ASRS may be an easy-to-use, reliable, and cost-effective supplement in gaining more confidence in determining ADHD in post-secondary education students. More research is required specifically testing its merits to detect feigning or support in diagnosis.

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder that persists into adolescence and adulthood in about two-thirds of individuals (e.g., Ebejeber et al., 2012; Faraone, Biederman, & Mick, 2010), with an estimated prevalence in adults ranging from 1% to 6% (e.g., Ebejer et al., 2012; Fayyad et al., 2007; Polanczyk et al., 2007; Kessler et al., 2006; Simon et al., 2009). In adulthood, ADHD is associated with substantial impairments in cognitive, academic, occupational, social, and economic functioning (e.g., Biederman et al., 2008; de Graaf et al., 2008; Faraone et al., 2000; Kessler et al., 2005). These impairments pose unique challenges to a subgroup of 'emerging adults' with ADHD (e.g., 18-25 years): namely, those in post-secondary educational settings. Attendance at college or university typically brings new challenges, including an abrupt decrease in external structure and support previously provided by parents, teachers, and others, combined with increased availability of immediate rewards and increased demands for behavioral self-regulation—an area in which individuals with ADHD are already vulnerable (Fleming & McMahon, 2012).

The past couple of decades have witnessed an increasing number of young adults with ADHD who gain entrance into the post-secondary education sector and register with college or university Disability Service Offices (DSOs) to request accommodations. For instance, the percentage of students with ADHD amongst students registering with DSOs rose from 18% in 1992 to 60% in 1998 (Nadeau, 1995). In the absence of epidemiological studies, the prevalence of ADHD in the post-secondary population is unknown, but estimates based primarily on self-reported diagnosis of ADHD or its symptoms range from 2% to 8%, depending on the criteria used (DuPaul, et al., 2009). However, there is growing concern that some students might feign or exaggerate symptoms of ADHD for personal gain, such as receiving academic accommodations, a waiver on student loan repayments, or to gain access to government-funded programs and services (Diller, 2010). Another reason that might motivate some students to feign ADHD symptoms is to gain access stimulant medication for recreational use (Gomes et al., 2008; Rabiner et al., 2009; Weyandt et al., 2013). Thus, university and college Disability Service Offices (DSOs) are concerned that not all students seeking registration for ADHD actually have ADHD and are seeking ways to detect ADHD 'malingerers' (Harrison & Rosenblum, 2010).

One critical issue for DSO staff is to be able to confirm that the student currently meets the DSM-IV or DSM-5 criteria for ADHD symptomatology, and that the symptoms are not being feigned or exaggerated. Other issues include the need for documented evidence that: a) the symptoms and impairment are of a long-standing nature (e.g..,

manifest in childhood); b) the symptoms are not better attributable to other psychiatric disorders or to severe stress or abuse; and c) the ways in which the symptoms or the diagnosis would impair the student's functioning in the PSE environment. The present study addresses the robustness of student's self-reports of current ADHD symptoms.

Most studies of 'feigned ADHD' in college students have sought to confirm that students' self-reports of ADHD symptoms are not exaggerated or feigned (for review, see Musso & Gouvier, 2013). To do so, most have tested the utility of standardized self-report ADHD questionnaires in terms of identifying false positives, using simulation approaches in which students with formally diagnosed ADHD are compared with students who were coached to feign ADHD symptoms, as well as with typical college peers. Others have examined students' performance on neuropsychological tests, or on symptom validity tests that were originally designed to detect feigned cognitive symptoms (Bigler, 2012). Although studies suggest that the base rates of feigned ADHD in psychological evaluations is substantial (e.g., 8% - 30%, depending on method used and definition of malingering), none of the current measures used in assessments for ADHD have adequate sensitivity to detect feigned ADHD (Musso & Gouvier (2013). This literature concludes that college students' self-reported symptoms are unreliable and insufficient to confirm current symptomatology.

By contrast to conclusions in the literature on feigned ADHD in college students, the broader literature on diagnosis of ADHD in adults yields strong evidence that adults are reliable reporters of current ADHD symptoms (Murphy & Schachar, 2000) and that adults' self-ratings and informant ratings are highly correlated (e.g., Downey et al., 1997). However, findings are equivocal in terms of whether self-ratings or informant ratings are generally higher (e.g.,Katz, Petscher, & Welles, 2009; Kooij et al., 2008; Zucker et al., 2002). Accordingly, it has been suggested that multimodal assessment, including informant self-report, should be used to gather more information about symptoms and impairments (Alexander & Liljequist, 2013). Moreover, clinical guidelines recommend that collateral report should be obtained and incorporated into the diagnostic formulation of ADHD (American Psychiatric Association, 2013; Canadian ADHD Guidelines, 2011; NICE Guidelines for ADHD. 2008).

Our overall aim in the present study, was to investigate the robustness of students' self-report of ADHD symptoms. To do so, we investigated the congruence between self-report and a collateral report by a significant other (e.g., parent, sibling, spouse etc), as well as the test-retest reliability of self-reported ADHD symptoms in college and university students presenting to DSOs. We selected the World Health Organization (WHO) Adult ADHD Self-Report Scale (ASRS) and its 6-item screener scale for several reasons: 1) both the full scale and the screener are standardized and well-validated tools for assessment of current ADHD symptoms in individuals aged 18 years and older

(Kessler et al., 2005; Kessler, 2007) ; 2) these scales can be administered by telephone, as well as in paper-based or computer-based format; 3) the questionnaires are available in many languages and thus useful for culturally diverse college and university populations; and 4) they are available in the public domain and so would provide a cost-effective approach for confirming current symptoms of ADHD in college and university students, if found to yield reliable reports. Moreover, the ASRS scales have not been investigated previously in studies of college and university students with ADHD (see Chart/Table X).

MATERIALS AND METHODS

Subjects

A total of 135 students with ADHD (age=24, sd=3.6; 57 males, 42%; 21% also registered with a learning disability) were recruited from University Disability Services via email lists and flyers. Inclusion criteria were; 1) current enrolment in a post-secondary program, 2) a previous diagnosis of ADHD, 3) registration with respective university or college Student Disability Services, which requires documented evidence of a previously confirmed diagnosis of ADHD (typically, but not invariably in elementary school), and 4) aged 19-35. Exclusion criteria were; 1) uncorrected sensory impairment, 2) major neurological dysfunction and psychosis, and 3) current use of sedating or mood altering medication.

Of this sample, 79 participants (59%) reported receiving medication for ADHD (age=23.7, sd= 3.5; amongst whom 41% were male and 14% were also registered with DSO as having specific learning disabilities [LD]) and 56 participants (41%) did not (age=23.8, sd=3.7; of whom 45% were male and 31% were registered with comorbid LD). As can be seen from the summary data in Table 1, students who were or were not receiving medication did not differ in age (p = .78), estimated IQ (p = .28), or current levels of psychological distress (p = .08), as determined by independent sample t-tests. Nor did the two groups differ in terms of sex distribution, Chi-square (1) = .23, p = .63, or in their reported scores on the psychopathy subscales (all p's > .06). However, participants reported to be on medication were less likely to be registered with DSO as having comorbid LD, Chi-square(1) = 4.90, p = .03.

<u>Procedure</u>

The data presented herein, were derived from a larger-scale study investigating the behavioral and neural changes in college students with ADHD with a working memory training program (CIHR Grant #482246; Clinical Trials Registry #245899).

The study was approved by the Research Ethics Boards of the participating universities and colleges (protocol reference #23977). All participants provided informed written consent before starting the study. Participants were told explicitly that withdrawal from the study, failure to complete any components of the study protocol, and task performance would remain confidential and would not affect their DSO services or academic accommodations.

To confirm the robustness of student's self-report of current symptoms of ADHD, we used several procedures. First, we administered the six questions of the ASRS Screener V1.1 orally by telephone (as part of the study intake procedure) and the student was asked to provide real-life examples for each of the six items, to ensure he/she understood the question and that the reported behavior was a reasonable example of an ADHD symptom. The interviewer prompted the student if needed for more details, clarification, or additional examples.

The interviewer recorded the student's self-ratings on an ASRS form, along with the behavioral examples of symptoms provided by the student, but did not use this information to override the self-ratings. Second, when each student came to the research lab for the first study assessment (T1), he or she was asked to complete both the 6-item Part-A (identical to the screener items) and the 12-item Part-B of the paper version of the ASRS (ASRS-v1.1), and to nominate and give us permission to contact a significant other who knew the student well enough to complete the ASRS (e.g., sibling, parent, or close friend). Third, the significant others completed a modified version of the 18-item 'ASRS-V1.1 for Others' using a secure, online software program (www.surveymonkey.com).

At the baseline assessment (T1), participants also completed other questionnaires, including the Kessler 10 Plus (K10+, index of current levels of psychological distress), and the Symptom Assessment-45 (SA-45, psychopathology index). After questionnaires were completed, neuropsychological and performance tests were administered, including the Wechsler Abbreviated Scale of Intelligence (WASI) as an estimate of intelligence. Several other measures were also administered but not reported in this study.

For the first visit, participants were reimbursed for travel/parking costs ($25 CAD), with the knowledge that they would receive more substantial reimbursement ($150 CAD) for a second visit to be scheduled 2 to 3 weeks after the 5-week working memory training

program. Each visit required about 5 hrs to complete the full assessment, including the neural assessments, required for the larger-scale study.

Table 1: Summary descriptives for sample, as a function of medication treatment

Table 1

	Total (n=135)	Non-Medicated (n=56)	Medicated (n=79)
Age	23.7 (3.6)	23.8 (3.7)	23.7 (3.5)
WASI	111.6 (13.1)	110.1 (15.47	112.6 (11.1)
K-10	37.0 (5.7)	36.0 (5.4)	37.8 (5.9)
SA45			
Anxiety	9.6 (3.5)	10.0 (3.8)	9.4 (3.3)
Depression	10.3 (4.3)	11.0 (5.0)	9.7 (3.6)
Obsessive Compulsive	14.9 (5.0)	15.1 (4.8)	14.8 (5.1)
Somatization	8.0 (3.7)	8.3 (4.1)	7.9 (3.4)
Phobia	6.7 (2.9)	6.5 (2.5)	6.9 (3.2)
Hostility	7.1 (3.5)	7.5 (4.0)	6.8 (3.1)
Interpersonal Sensitivity	10.3 (4.3)	9.9 (4.0)	10.6 (4.5)
Paranoia	8.6 (3.8)	9.2 (4.5)	8.1 (3.1)
Psychoticism	6.2 (2.1)	6.4 (2.2)	6.0 (2.0)
Global Severity Index	81.1 (24.9)	83.2 (25.8)	79.7 (24.3)

Materials & protocols

Adult ADHD Self-Report Scale-V1.1 Screener (ASRS-V1.1): The 6-item ASRS-V1.1 was designed as a tool to help screen for ADHD in adults (aged 18 years and older). The 6 questions are consistent with the DSM-IV criteria and address the manifestation of ADHD in adults. The paper version requires 1 to 2 minutes to complete. Respondents are required to use a 5-item likkert scale to indicate the frequency of occurrence of symptoms (0=never; 1=rarely; 2 =sometimes; 3=often; 5=very often). According to convention, if the respondent has 4 or more responses marked in the dark-shaded boxes of the copyrighted paper-version of the Screener (or in Part-A of the ASRS Symptom Checklist), then the current symptom profile of the individual is considered to be highly consistent with ADHD diagnosis in adults (Adler et al…; Kessler et al…). Using this scoring convention, previous studies (e.g., Hines, King, Curry, 2012) report high sensitivity (1.0) and moderate positive predictive power (0.52), suggesting that the ASRS would rarely miss ADHD in an adult who has ADHD. Moreover, the ASRS Screener has moderate specificity (.71) and high negative predictive power (1.0), indicating that this tool is quite successful in not identifying someone with ADHD when they do not have the disorder (Hines et al., 2012)

The data reported herein were derived from a telephone-based interview in which the interviewer (a trained psychology graduate student) administered the 6 questions orally, with probes to elicit real-life examples of how the symptom typically manifests and its frequency. The 6-item interview-based ASRS-V1.1 Screener was always conducted before students or their significant-other completed the 18-item version of the ASRS-V1.1.

Adult ADHD Self-Report Scale-V1.1 Symptoms Checklist (ASRS-V1.1): The 18-item ASRS v1.1 was designed to evaluate current manifestation of ADHD symptoms in people aged 18 years or older. This scale is based on the World Health Organization Composite International Diagnostic Interview [copyright symbol] 2001, and the questions are consistent with DSM-IV criteria, but reworded to better reflect symptom manifestation in adults. This tool, which takes about 5 minutes to complete, has high internal consistency and concurrent validity (Adler, Spencer, Faraone, Kessler, Howes, et al. 2006). Part-A contains the same 6 items as in the Screener: Part-B contains 12 additional questions based on DSM-IV criteria. The copyrighted questionnaires are formatted with darkly shaded boxes in Part-A and Part-B: endorsements in the darkly shaded boxes signify more severe symptoms. For the purpose of this and the larger-scale study, we removed the darkly shaded boxes in the ASRS-V1.1 to minimize any possibility that the darkly shaded boxes may motivate symptom exaggeration.

ASRS-V1.1 for Other: We modified the wording of the 18-item ASRS-V1.1 Symptoms Checklist to render it appropriate for completion by a students' significant other (i.e., parent, adult sibling, close relative or friend, or intimate partner). Also, all response boxes were white, meaning that there were no darkly shaded boxes. The tool was then uploaded onto a secure website (surveymonkey.com) for online completion by the significant other.

Symptom Assessment-45 (SA-45): The SA-45 was used as a brief assessment of a wide range of psychiatric symptoms (Maruish, 1999). This measure is based on the well-validated longer version (SCL–90–R).

Wechsler's Abbreviated Scale of Intelligence - Second Edition (WASI-II): The Vocabulary and Matrix Reasoning Subtests were used to estimate general intellectual ability (Wechsler, 1999).

Kessler 10 Plus (K10+): The K10 is a self–report questionnaire which was used to get a global measure of nonspecific psychosocial distress based on questions about the level of nervousness, agitation, psychological fatigue and depression in the past 30-days (Kessler et al., 2002). A higher score indicates more distress.

Analyses

IBM SPSS Statistics version 21 was used to conduct the statistical analyses. For the analyses comparing group differences in scores, mixed model Repeated measures ANOVAs were ran with Medication status as a between-subjects factor and Congruency as a within-subjects factor (e.g, congruency between Reporter or Modality). Relationships between variables were examined using pearson correlations. Effects of sex were also investigated, separately, in all analyses, as a between subjects factor. Partial eta-squared values (n2) were computed to ascertain effect size (ES). According to Vacha-Haase and Thompson (2004), ES based on n2 = .01 corresponds to a small effect, n2 = .10 corresponds to a medium effect, and n2 = .25 represents a large effect.

RESULTS

ASRS Scores: basic descriptives

Most of the students completed both the interview- and the paper-versions of the ASRS (one case had missing data for the ASRS paper-version and another for the ASRS-interview). By contrast, only 44% (n=59) of the students' nominated significant-other completed the on-line version of ASRS. For the medication group, the response rate for significant-others was 59% (n=39) and it was 41% (n=20) for the non-medicated group. Thus, the analysis across reporter type will be conducted on this smaller subset of participants who have a collateral report. This subgroup did not differ from the rest in age (p = .66), estimates of IQ (p = .43), current levels of psychological distress (p = .12), or any reported scores on the psychopathology subscales (all p's > .17), as determined by independent sample t-tests. Chi-square test also showed no group difference in sex distributions (p > .28).

Sex differences were found for the standard 18-item ASRS, as determined by independent samples t-tests, which suggested more impairment for females, t(132) = 3.38, p = .001. The remaining ASRS variables showed no significant differences for sex (all p's > .10) as well as medication status (all p's > .39). Table 2 shows the means and standard deviations for the ASRS variables broken down for sex and medication status.

Table 2: Means and standard deviations for each of the ASRS versions for the entire sample reported by medication status and sex. *Matched ASRS Self-Report subgroup.

Table 2

|	Total	Non-medicated	Medicated	Males	Females
ASRS-Self (n=134)	49.1 (9.2)	48.4 (10.0)	49.7 (8.7)	46.1 (8.6)	51.4 (9.1)
ASRS-Self Part-A (n=134)	17.6 (3.0)	17.4 (3.2)	17.8 (2.8)	17.1 (3.2)	18.0 (2.7)
ASRS-Interview (n=134)	17.5 (2.5)	17.3 (2.5)	17.6 (2.5)	17.5 (2.7)	17.5 (2.3)
ASRS-Other (n=59)	45.8 (10.9)	45.3 (11.6)	46.1 (10.7)	45.0 (10.8)	46.6 (11.1)
ASRS-Self* (n=59)	50.24 (9.8)	49.7 (9.2)	50.5 (10.2)	48.6 (7.3)	51.7 (11.5)

Congruency across Reporter

The repeated measures ANOVA showed a significant effect of Reporter, $F(1, 57)= 8.92$, $p = .004$, ES = .14, showing that the students' self-reported total score was significantly higher than that reported by their significant-other. However, as evident from the summary scores presented in Table-2, the mean scores on the 18-item ASRS Symptoms Checklist reported by both students and their significant-other far exceeded the threshold score of 29, indicating their scores were well above the 90th percentile (based on the distribution of scores in the general population. Medication status was not significant as a factor ($p = .74$). Similar analyses with Sex as a between-subject factor did not yield significant differences either ($p > .30$).

Most respondents had at least four responses marked in the darkly shaded area of the ASRS Other (98%) or Part-A of the ASRS Symptoms Checklist (98%). These findings suggest that for the majority of students, their current symptom profile, as reported by themselves or their significant-other, was consistent with an ADHD diagnosis in adults.

The correlation between significant-other and self-report ASRS was significant, $r(59) = .47$, $p < .001$ (see figure 1). These data suggest that the reports of current symptoms by students and their significant others are moderately congruent. Moreover, as can be seen in the scatter plot (Figure 1), the majority of the paired scores by students and significant-others were above the 90th percentile (i.e., raw score on both axes were 29 and higher). Only 7% (n=4) fell in the shaded area, which indicates the ASRS-Other scores that fall below the 90th percentile. Specifically, 97% of the ASRS-Other scores and 100% of the ASRS-Self-Report scores were at or above the 90th percentile.

Figure 1: Scatter plot showing paired ASRS scores for students and their SIgnificant-Others. The red shaded area indicates instances in which participants self-report above the the 90th percentile (score 29) while significant others report it lower.
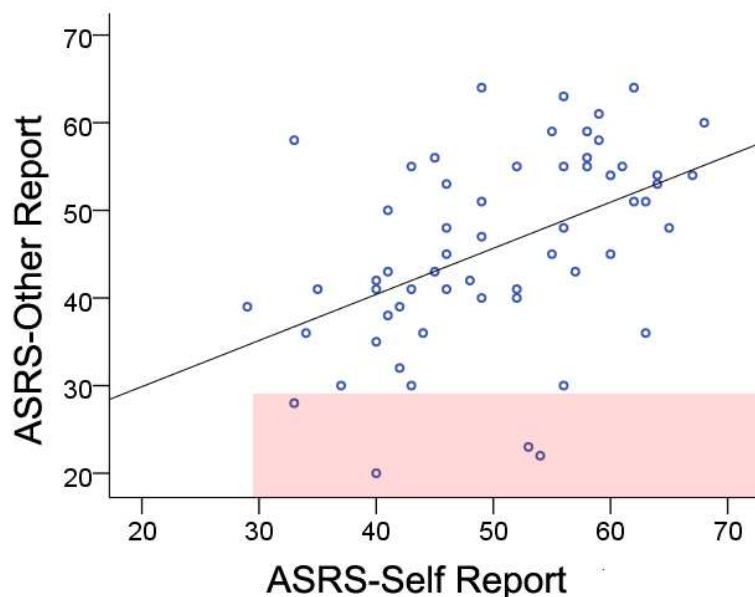

Congruency across ASRS Modality

The repeated measures ANOVA showed no significant effect of Modality, $F(1, 129)= .26$, $p = .61$, ES = .002, suggesting that there is no difference between the paper- and interview-versions of the ASRS Screener. Medication status was not significant as a factor ($p = .34$). Similar analyses with Sex as a between subject factor did not find significant differences either ($p > .32$).

Most respondents had at least four responses marked in the darkly shaded area of the ASRS 6-item Interview (100 %) or Part-A of the ASRS Symptoms Checklist (98%), suggesting consistency between their current symptom profile, as reported through interview and pen-and-paper, and their ADHD diagnosis.

The correlation between scores of self-reported symptoms across the ASRS-Interview version and Part-A of the ASRS paper version was significant, $r (131) = .66$, $p < .001$ (see figure 2), suggesting that the students' self-report of current symptoms was reasonably robust.

Figure 2: Scatter plot showing the relation between the 6-item interview screener and 6-item paper ASRS version.
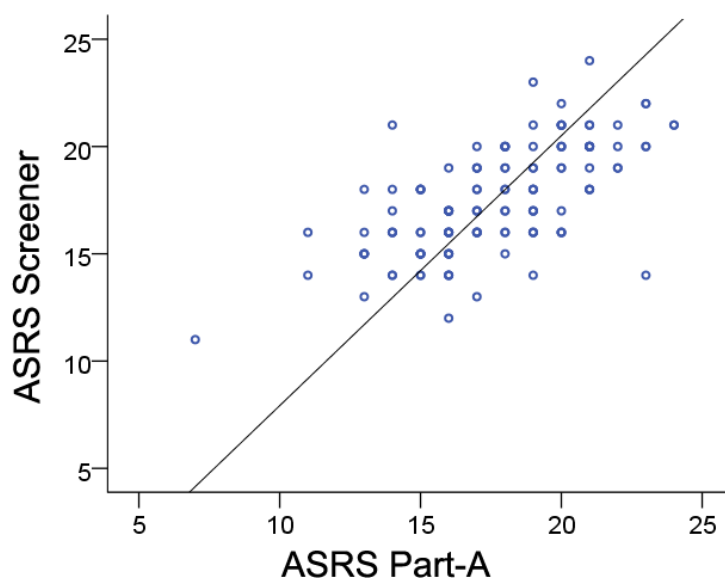
DISCUSSION

To our knowledge, this is the first study to investigate the utility of obtaining a collateral report and of a brief telephone-based interview to elicit college and university students' descriptions of their ADHD symptoms in real life, as well the first to investigate the test-retest reliability of students' self-reported current ADHD symptomatology.

The study yielded two major sets of findings: 1) Students' self-ratings of current ADHD symptoms were significantly, albeit modestly, related to ratings by their significant-other, but their self-reported scores were significantly higher than scores reported by the significant-other; and 2) Students' initial telephone-based ratings of symptom frequency were strongly related to their self-reported ratings on a paper-version of the questionnaire completed one to two weeks later; the majority of students met threshold criterion on the initial interview-based ASRS as well as on their second self-rating (on Part-A) one to two weeks later.

On the ASRS respondents report the frequency of occurrence of each of the symptoms (never, rarely, sometimes, often, very often): symptom frequency is often associated with symptom severity, thus scores on the ASRS-V1.1 Symptom Checklist may also infer the severity of ADHD. Our findings are consistent with some previous research ,

but we acknowledge that the extant evidence remains equivocal in terms of whether self-ratings or informant ratings are generally higher (e.g.,Katz, Petscher, & Welles, 2009; Kooij et al., 2008; Zucker et al., 2002). On the one hand, in the context of this study, the significantly higher total score for current symptoms reported by students compared to their significant-other scores might suggest that students were exaggerating their symptoms in terms of frequency of occurrence or severity. On the other hand, closer inspection of the total scores across these two groups of informants, indicates that both sets of scores far exceeded a score corresponding to the 90th percentile, suggesting that scores from both reporters were consistently high and that students' self-report of current symptoms may well be valid and not exaggerated. This interpretation is supported by the concomitant evidence that for the majority of students, scores met the 'threshold' criterion on the ASRS (at least 4 of 6 possible responses in the darkly shaded boxes), according to both their own self-report and that of their significant-other. Our decision to delete the standard darkly shaded boxes from the ASRS would minimize any response bias elicited by that visual clue signifying higher rate of occurrence or severity. Moreover, in the context of a university student feigning ADHD symptoms, one would expect that the relationship between informant and self ratings would reflect polarization; lower informant ratings and higher self ratings. Our data showed only four individuals who did not have a linear positive relationship between self and informant ratings

However, the correlation between self-report and other-report was only modest (r = .47), indicating only modest congruence between informants in this sample of college and university students. It is possible that the magnitude of the correlation was impacted by the smaller sample size: this analysis was based on only a subset of 59 participants with both self- and other-report. The low response rate by significant other might be attributable to the fact that ratings requested as part of a study rather than to validate symptoms for registration with DSO, so motivation may be lower. Future research is warranted on the feasibility of obtaining a collateral report for students in post-secondary education.

To the best of our knowledge this is the first study to administer the ASRS-V1.1 Screener by telephone interview with probes for examples of how each symptoms manifests in the student's daily life (which we named ASRS-TIPS). Systematic and detailed analyses of the students' examples are in progress and will be reported elsewhere, but informal inspection of the behavioral examples indicated that the majority were excellent and valid examples of the specific symptoms. These data not only suggests that the students understood the question, but also afforded greater confidence in the robustness of their self-rating of the presence and frequency of occurrence of their current symptoms. Comparison of the students' self-ratings of the frequency of occurrence of the set of six ADHD symptoms during interview and on the

paper-version of the ASRS revealed excellent stability and reliability of reporting across a one to two week interval, despite the differences in modality used to obtain the information (telephone interview without any visual support versus paper-version with written questions). This finding adds to the small body of literature indicating that adults can accurately self-report symptoms of ADHD, and increases confidence that the symptoms were not exaggerated or feigned. Administration of the ASRS 6-item Screener by telephone with probes for symptoms may mitigate worries of feigning and increase confidence that symptom ratings are reflecting real life examples for the students. Moreover, the test re-test reliability of the ASRS was strong this college sample, suggesting that this tool may be useful for monitoring symptoms and severity across the semester.

Clinical and research Implications.
  The ASRS is available in the public domain and provides a brief and cost-efficient tool that is readily administered by telephone, computer, or in paper format, to both the student and collateral informant.   It is available in several languages and recommended for clinical use across Canada (e.g., CADDRA). The addition of probes for examples of each of the 6 ASRS Screener items in a telephone-interview version may afford the clinician greater confidence in the robustness of the student's self report of current ADHD symptoms.

Limitations
It is essential to keep in mind the limitations of this study, while considering the findings. First, this sample of college and university students with ADHD may be biased: they were already registered with DSOs and were highly motivated to seek and undergo intervention, despite the heavy time commitment and effort required to complete the WM training. Thus, the findings may not be generalizable to the population of students with ADHD in the post-secondary education sector. Second, we were unable to confirm whether the participants actually met the DSM-IV criteria for ADHD, but the fact that they were all registered with the college and university DSOs suggests that their documentation of an ADHD diagnosis and impairments was adequate. Third, we were unable to confirm who the significant-others were in many cases (i.e., parent, sibling, partner etc) or that the students and their significant-others completed the 18-item ASRS-V1.1 questionnaire independently. However, that the students and their significant-others completed the questionnaire in different modalities (paper-version versus on-line electronic version) and at different time points (in the research lab versus on-line one to two weeks later), would have made it difficult for them to confer. Fourth, our comparisons of reported (self versus significant-other) and modality (6-item screener items using interview or paper version) may confounded by other factors, such as time or practice. Finally, it is possible that financial incentive may have increased the

student's motivation to exaggerate symptom severity to be included in the study. However, the incentive was not great ($25) given the length of baseline assessment plus preceding intake telephone call (about 5 hours in total).

CONCLUSIONS

The 6-item ASRS Screener and 18-item ASRS Symptom Checklist are feasible and cost efficient approaches to use in the assessment and monitoring of ADHD symptoms in the college population.The use of probes to elicit examples of each symptom as manifest in daily life along with self-ratings, in combination with the inclusion of a collateral report, may afford increased confidence of accurate symptom reporting and provide corroborating evidence for symptom severity. This multimodal, multi-informant approach lead us to conclude that the probability of exaggerating or feigning ADHD symptoms was low in this sample of college and university students

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