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Utility of the CAARS Validity Scales in Identifying Feigned ADHD, Random Responding, and Genuine ADHD in a College Sample

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UTILITY OF THE CAARS VALIDITY SCALES IN IDENTIFYING FEIGNED ADHD, RANDOM RESPONDING, AND GENUINE ADHD IN A COLLEGE SAMPLE

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
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at the University of Kentucky

By

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ABSTRACT OF THESIS

UTILITY OF THE CAARS VALIDITY SCALES IN IDENTIFYING FEIGNED ADHD, RANDOM RESPONDING, AND GENUINE ADHD IN A COLLEGE SAMPLE

Due to increased concern about malingered self-report of symptoms of attention-deficit/hyperactivity disorder (ADHD) in college students, there is a need for instruments that can detect feigning. The present study provided further validation data for a recently developed validity scale for the Conners' Adult ADHD Rating Scale (CAARS), the CAARS Infrequency Index (CII). The sample consisted of 139 undergraduate students; 21 individuals with diagnoses of ADHD, 29 individuals responding honestly, 54 individuals responding randomly (full or half), and 35 individuals assigned to malinger. The CII demonstrated modest sensitivity to malingering (.31-.46) and excellent specificity to ADHD (.91-.95). Sequential application of validity scales had correct classification rates of honest (93.1%), ADHD (81.0%), malingering (57.1%), half random (42.3%), and full random (92.9%).

KEYWORDS: Attention-Deficit Hyperactivity Disorder, Malingering, Self-Report

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Chapter 1: Introduction

Attention-Deficit/Hyperactivity Disorder

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by persistent symptoms of inattention and/or hyperactivity/impulsivity that are abnormal relative to one's age or developmental level (APA, 2013). For adults, a predominantly inattentive presentation is diagnosed when five or more symptoms are present such as inability to stay on task, difficulties sustaining attention, seeming not to listen when spoken to, and losing materials. A predominantly hyperactive/impulsive presentation is diagnosed when five or more of these symptoms are present such as fidgeting, excessive talking, and difficulty waiting one's turn. The combined type is diagnosed when five or more symptoms from both the inattentive and hyperactive/impulsive categories are present (APA, 2013). According to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5), symptoms must persist for at least 6 months at a level that interferes and is impairing to one's functioning or development. Symptoms must have been present prior to age 12 and these symptoms must occur in more than one setting (e.g. school, work, home) (APA, 2013).

A series of longitudinal studies in the 1980s and 1990s demonstrated that ADHD is not a disorder that is confined to childhood, but rather is often a chronic condition (Klein & Mannuzza, 1991; Weiss & Hechtman, 1993). Evidence has emerged that up to 50-65% of children with ADHD continue to have symptoms well into their adult years (Murphy & Barkley, 1996). This increase in awareness that symptoms of ADHD can persist into adulthood has led to a substantial number of adults presenting for ADHD evaluations (Quinn, 2003). The estimated prevalence of adult ADHD ranges from 2.5%

(APA, 2013) to 4.4% (Kessler et al., 2006) in the general adult population, and 2% to 8% in college students (DuPaul, Weyandt, O'Dell, & Varejao, 2009).

Impairments Associated with Adult ADHD.

Adult ADHD is thought to cause significant impairments in social, economic, occupational and academic functioning (Musso & Gouvier, 2012). For example, adults diagnosed with ADHD are more likely to have marital and relationship problems, fewer friendships, and lower socioeconomic status. In addition, such individuals often experience lower occupational and academic achievement (Advokat, 2010; Spencer, Biederman, & Mick, 2007). In college students, a diagnosis of ADHD is often associated with difficulty in adjusting to college life, poorer study habits, and lower grade point averages relative to their peers (Norwalk, Norvilitis, & MacLean, 2009).

Challenges in Adult ADHD Evaluations

Unfortunately, the accurate diagnosis of adult ADHD is challenging for a number of reasons. First, DSM-5 criteria require symptom onset before the age of 12 (APA, 2013). However, it is difficult for some adults to retrospectively recall the time course and nature of their symptoms, and whether they were in fact impairing relative to their peers. Second, adults seldom invite informants (e.g. parents or siblings) who have knowledge of their childhood history to an evaluation. Third, lack of appropriate documentation of early impairments (e.g. report cards or teacher evaluations) to corroborate self-report also makes this task challenging (Quinn, 2003). Fourth, several researchers have suggested that the DSM diagnostic criteria for ADHD are better suited for children, and do not adequately capture how the disorder presents in adults (Green & Rabiner, 2012; Kessler et al., 2006; McGough & Barkley, 2004; Murphy & Barkely,

1996; Weiss & Hechtmann, 1993). For example, DSM-IV diagnostic criteria for adults with ADHD were derived from field trials studying only children (McGough & Barkley, 2004). In addition, several criteria may not be developmentally appropriate for adults, as clinical studies have shown that symptoms of adult ADHD are more heterogeneous and subtle than in children (Kessler et. al, 2006; Weiss & Hechtman, 2008). This has led some researchers to suggest a reduction in the severity threshold for adults (Kessler et al., 2006; Murphy & Barkley, 1996). For example, a study by Murphy and Barkley (1996) found that only those adults reporting symptoms greater than the 99th percentile met criteria for ADHD. Thus, college students may experience significantly greater ADHD symptomatology than their peers, yet not meet the required number of symptoms as established by the DSM diagnostic criteria (Murphy & Barkley, 1996). Findings such as these suggested that previous diagnostic criteria may have been too restrictive and non-representative of the clinical manifestations of ADHD in adults, and thus may have failed to capture a significant number of adults with the disorder (McGough & Barkley, 2004). While the DSM-5 has addressed some of these issues (e.g., including developmentally appropriate examples for adults and the reduction of the diagnostic threshold from six to five symptoms for individuals 17 and older; APA, 2013), these revisions have not yet been reflected in the assessment instruments commonly administered in the clinical evaluation of adult ADHD.

Malingering

Finally, and most important for present purposes, malingering has increasingly been recognized as another difficulty in the clinical evaluation of adult ADHD (Harrison, 2006). Malingering is defined as " the intentional production of false or grossly

exaggerated physical or psychological symptoms motivated by external incentives" (APA, 2013, p. 726). It has been suggested that ADHD in particular may be susceptible to malingering because of its complex etiology (Millichap, 2008; Thome et al., 2012), lack of distinct symptoms, vague diagnostic criteria, and the frequent reliance on self-report (Fuermaier et al., 2012; Mueller et al., 2012). While the base rates of malingering are hard to obtain, due in part to the fact that feigners rarely confess, it is presumed that the prevalence of malingering the condition rises in the context of litigation or compensation seeking (Zasler & Martelli, 2003). Base rates of malingering ADHD in a college setting have been estimated to range from 10-20% when external incentives are present (Musso & Gouvier, 2012). Even higher rates of feigned ADHD have been reported, with one study finding up to 48% of those presenting for an ADHD evaluation as feigning (Sullivan, May & Galbally, 2007).

Incentives for Malingering in College.

In a college setting, there are many potential benefits of obtaining a diagnosis of ADHD. Under the Americans with Disabilities Act (1990), the Individuals with Disabilities Education Act (1975), and Section 504 of the Rehabilitation Act (1973), schools are mandated to provide educational accommodation to individuals with disabilities (Advokat, 2010; McGough & Barkley, 2004). Such academic accommodations may include extra time on tests, note takers, access to instructor notes, and a quiet testing environment (Sullivan et al., 2007). Clearly these incentives provide reasons to believe young adults might be motivated to feign the disorder in the demanding and competitive environment that college creates.

Another factor potentially precipitating the feigning of ADHD by college students

is an increased awareness that stimulant medications commonly prescribed to patients with ADHD increase attention, aid in staying awake, and alleviate distress even in normal, healthy adults (Rabiner et al., 2009; Sansone & Sansone, 2011; Rabiner, 2013). These effects are desirable to many college students who believe that these medications can improve anyone's academic performance (Advokat, 2010). Evidence has shown that such stimulants increase blood flow to the frontal and parietal lobes, improving attention and alertness (Mehta et al., 2000). This growing awareness of the effects of psychostimulants on academic functioning has led to an increase in individuals feigning ADHD in clinical evaluations to obtain access to these medications for academic or recreational purposes (Green & Rabiner, 2012; Lensing et al., 2013; Rabiner, 2013). It should be noted, however, that although these drugs may improve an individual's ability to focus and pay attention, they do not amend all academic deficits associated with the disorder (Advokat, 2010).

Perhaps even more troubling is the increased usage of stimulants for recreational purposes, with one study reporting the prevalence rates of the nonmedical use of stimulant drugs in college students ranging from 13-34% (Sansone & Sansone, 2011). Further, these substances are sometimes inhaled or injected, serving as an inexpensive, prescription alternative to cocaine, or used in conjunction with other drugs and alcohol, to further intensify the effects (Harrison, 2006). According to Urban and Gao (2014), the illicit use of prescription stimulants such as methylphenidate (MPH) and psychostimulants for cognitive enhancement may come with a neuronal cost. There is evidence that low doses of MPH can lead to excessive levels of dopamine and norepinephrine in the prefrontal cortex, resulting in adverse effects on the plasticity and

functioning in this brain region (Tucha et al., 2014). This can be particularly concerning for college students, as during this age, the prefrontal cortex is not yet fully developed (Urban & Gao, 2014). Even further, excess stimulation in the nervous system due to stimulant abuse can lead to other serious health risks including seizures, movement disorders, ischemia and respiratory failure (Ciccarone, 2011). While more research regarding the effects of psychostimulants on the healthy adult brain is needed, preventing the misuse of these medications is clearly warranted.

Malingering on Self-Report Measures.

Another challenge is that ADHD is frequently diagnosed with the combination of a clinical interview and self-report symptom inventories. Unfortunately, the face validity of ADHD symptoms makes these measures vulnerable to faking (Suhr, Buelow, & Riddle, 2011), and few ADHD rating scales have validity indices to detect feigning (Bracken & Boatwright, 2005; Suhr et al., 2011). Further, it is easier to fake when endorsing items on questionnaires as opposed to producing symptoms spontaneously (Frueh, Hamner, Cahill, Gold, & Hamlin, 2000). Finally, information about ADHD symptoms is readily accessible (e.g. via the internet), and individuals wanting to feign the disorder can easily find the sources needed to do so successfully, particularly on self-report measures.

Several simulation studies have demonstrated that self-report measures of ADHD are vulnerable to feigning. One of the first studies to examine simulated ADHD on self-report questionnaires in college students was conducted by Quinn (2003). She compared the performance of students diagnosed with ADHD, ADHD simulators and a control group on the ADHD Behavior Checklist. Quinn (2003) found that college students were

able to successfully feign symptoms on the ADHD Behavior Checklist, with no statistically significant differences found between the genuine ADHD participants and simulators. A similar study by Fisher and Watkins (2008) found that of the college students with no diagnostic history of ADHD asked to simulate the disorder, 93% of those who completed the College ADHD Response Evaluation (CARE) and 77% of those who completed the ADHD Behavior Checklist successfully malingered ADHD after only briefly studying the diagnostic criteria.

Jachimowicz and Geiselman (2004) examined the performance of 80 ADHD simulators on the Wender Utah Rating Scale (WURS), Conners' Adult ADHD Rating Scale (CAARS), Brown Adult ADHD Scale (BAAS), and the Attention Rating Scale (ARS). The authors found that all four rating scales were easily faked by college students asked to simulate ADHD, with 65% on the WURS, 75% on the ARS, 90% on the CAARS, and 95% of students successfully feigning on the BAAS (Jachimowicz & Geiselman, 2004). In 2010, Sollman, Ranseen, and Berry compared college students assigned to an ADHD simulator group, a control group, and a clinical ADHD group. The ADHD simulator group was given five minutes to read data describing adult ADHD before completing self-report questionnaires and cognitive measures. All participants completed the following self-report questionnaires: the Attention Rating Scale: Current and Childhood Symptoms Checklists, and the Conners' Adult ADHD Rating Scale, Self-Report, Long Form (CAARS-S:L). Analyses indicated no significant differences between ADHD simulators and the clinical ADHD group on the CAARS-S:L or the ARS Current and Childhood scales. The authors also found that the Inconsistency Index (a random responding scale) on the CAARS-S:L did not differentiate simulated ADHD

from clinical ADHD (Sollman et al., 2010).

Harrison, Edwards, and Parker (2007) compared the performance on the CAARS of college students with no known impairments and students asked to simulate ADHD to archival data collected from 72 diagnosed cases of ADHD. The ADHD simulators were given diagnostic criteria from the DSM-IV-TR. The authors found that the ADHD simulator group successfully feigned symptoms on the CAARS and obtained significantly higher scores on most subscales compared to the ADHD and control groups (Harrison et al., 2007). However, most of the elevated scores from the simulators fell within a credible range, so their scores would still suggest the presence of ADHD (Harrison et al., 2007).

Jasinski et al., (2011) asked college students to complete the CAARS-S:L under one of four conditions: college controls (no diagnoses, respond honestly), clinical controls (ADHD, respond honestly), ADHD exaggerators (ADHD but exaggerate symptoms), or ADHD simulators (no diagnosis, fake ADHD). ADHD simulators and exaggerators were given scenarios and information from the internet. The authors found that the ADHD simulators, ADHD exaggerators, and the clinical ADHD group all obtained significantly higher scores than the control group on the CAARS-S:L Inattentive, Hyperactive/Impulsive, and Total indices. Additionally, the ADHD simulators, ADHD exaggerators, and the clinical ADHD groups did not differ significantly (Jasinski et al., 2011). Thus, several investigations have shown that self-report ADHD questionnaires cannot adequately distinguish between malingered and true ADHD, and therefore should not be the sole measure of assessment when determining a diagnosis (Fisher & Watkins, 2008; Harrison, 2006; Quinn, 2003).

Conners' Adult ADHD Rating Scales

One of the most widely used self-report inventories for the assessment of adult ADHD is the CAARS (Conners et al., 1999). The CAARS includes 66 items grouped on scales measuring inattentive, hyperactive and impulsive symptoms. The CAARS also has an Inconsistency Index, which consists of several pairs of items with similar content. As the purpose of the Inconsistency Index is to detect random or careless responding, it does not identify exaggeration or fabrication of symptoms for secondary gain (Suhr et al., 2011). Further, the accuracy of the Inconsistency Index to detect random responding has not been evaluated in a published study. Some studies have shown that individuals who are feigning are more likely to choose items infrequently endorsed by those who have the disorder (Harp et al., 2011). Thus, malingerers are unlikely to differentiate very infrequent symptoms from their more common counterparts (Rogers, 2003). However, the standard CAARS lacks an index that includes infrequently endorsed items.

The multiple validity scales in the Minnesota Multiphasic Personality Inventory-2-RF (MMPI-2-RF) may serve as a model for how the validity scales in the CAARS could potentially function. The recommended stepwise approach for determining the validity of an MMPI-2-RF profile involves first looking at the number of omitted items, next determining the respondent's consistency in answering the test questions, and finally assessing the degree to which the respondent may be underreporting or overreporting symptoms. A recent study by Mason et al. (2013) evaluated the accuracy of the MMPI-2-RF validity scales in detecting and differentiating honest responding, genuine posttraumatic stress disorder (PTSD), feigned PTSD, and random responding. The authors compared MMPI-2-RF results of college students with various instruction sets to

archival data of veterans diagnosed with PTSD. Results indicated that both the full random and half random groups obtained significantly higher scores relative to the other groups on the Variable Response Inconsistency Index-Revised (VRIN-r), an index sensitive to generic random responding. However the VRIN-r achieved only moderate sensitivity (44%) in detecting partially random responding, thus indicating that this index is less sensitive to partially random responding. Significantly higher scores on the overreporting scales were found in the full random and fake PTSD groups, followed by the half random groups. These findings demonstrate that both random responding and feigning elevate fake bad scales (Mason et al., 2013); thus, validity scales that can distinguish random responding from faking are needed. Further, these results demonstrate the utility of the MMPI-2-RF validity scales operating as a group in distinguishing random responding and faking bad from honest responding. A similar stepwise approach, as described above, could be used with the validity indices in the CAARS, provided both a random responding and infrequency index were available.

CAARS Infrequency Index.

Recognizing the need for an index composed of items infrequently endorsed by ADHD patients on the CAARS, Suhr et al. (2011) developed the CAARS Infrequency Index (CII). During the development stage, the authors examined CAARS responses from 71 individuals who had received a diagnosis of ADHD (ADHD group), 147 individuals who denied having ever been diagnosed with ADHD, but were currently diagnosed with/receiving treatment for a psychological condition and or/ scored in the moderately severe range on a self-report depression scale (Psychological Control group), and 955 individuals who reported no prior diagnosis of ADHD and minimal to no

symptoms of depression on the CAARS. The authors identified 12 items that were endorsed as occurring "pretty much, often" to "very much, very frequently" by less than 10% of the total sample. The authors then summed the scores of these 12 items (each scored 0-3 points), creating a scale ranging from 0-36. They found that a scores of 20 or less occurred in 90.1% of the ADHD group, 94.6% of the psychological group and 99.5% of the normal control group (Suhr et al., 2011). Thus, a cutoff score of 21 occurred infrequently in all three groups and produced greater than 90% specificity. The authors then validated the CII in college students undergoing evaluation for ADHD whom were divided into four groups: those who failed a test of feigning, Word Memory Test (WMT) (n = 29), individuals diagnosed with ADHD (n = 19), individuals with a psychological condition (n = 43), and a control group (n = 33). Preliminary findings indicated excellent specificity (> 90%) and sensitivity values ranging from 30-80% for the CII in detecting feigned ADHD, however further research on this index is needed (Suhr et al., 2011).

Purpose of the Present Study

As reviewed above, it is clear that there is a need to detect feigning in the assessment of adult ADHD. While the CII shows promise for the detection of overreporting on the CAARS, further validation is necessary before clinical application. The present study attempted to replicate the results found by Suhr et al. (2011), and tested the utility of the CII, a feigning scale built on rare responses, and the Inconsistency Index a random responding scale. This study utilized a simulation design, examining differences between individuals diagnosed with ADHD, individuals asked to respond honestly (honest), individuals asked to respond randomly (full or half) and individuals asked to feign ADHD (ADHD simulators) on the CAARS. Additionally, the sensitivity

and specificity of the CII to feigning were evaluated. The ability of the CAARS validity scales for discriminating random responding from faking bad was evaluated with the inclusion of random responding conditions.

The hypotheses of this study included the following: 1) the MAL (normal individuals responding under malingering instructions) group would self-report significantly more ADHD related symptoms on the CAARS clinical scales than the ADHD (individuals with ADHD responding under standard instructions), HON (normal individuals responding under standard instructions), FR (normal individuals responding completely randomly) and HR (normal individuals responding partially randomly) groups; 2) the MAL group would be within normal limits on the Inconsistency Index; 3) the MAL group would obtain a significantly higher raw score on the CII than the ADHD, HON, FR and HR groups; 4) the FR and HR groups would have moderate to high elevations on the CAARS clinical scales; 5) the FR and HR groups would highly elevate the Inconsistency Index relative to the other groups, followed by the MAL group; 6) the FR and HR groups would have moderate elevations on the CII.

Chapter 2: Methods

Participants

The present study included 139 undergraduate students at the University of Kentucky: 21 participants with ADHD diagnoses and 118 nonclinical participants. Twenty-nine of the non-clinical participants were randomly assigned to an honest condition (HON) and served as a manipulation check for the assessment protocol. Undergraduates were recruited using the University of Kentucky undergraduate psychology subject pool through a mass administered screening questionnaire. An

ADHD screening form was included in the mass screening questionnaire to identify and recruit ADHD and non-ADHD individuals (see Appendix A). Additionally, a flyer (see Appendix B) was posted in Kastle Hall (the Department of Psychology building), the Jesse G. Harris Psychological Services Center, and the University of Kentucky Office of Disabilities to recruit additional participants with ADHD. Subject pool participants received one research credit as compensation for participating in the study. Participants who were randomly assigned to the feigning group received one research credit and an additional $25 as an incentive for successful feigning. Individuals in the ADHD group who responded to the posted fliers also received one research credit, or if clinical participants did not need research credit, they were compensated with $25 upon completion of the test battery.

The clinical subsample (ADHD) included 21 individuals with a verifiable diagnosis of ADHD. No medical records were obtained; rather, the diagnosis of ADHD was verified via phone screening and individuals had to have received the diagnosis prior to age 12. Additionally, the phone screening was used to establish that the diagnoses were received from a mental health professional and not based solely on self-reported symptoms and/or a brief consultation. Participants were excluded if they reported any comorbid conditions that might interfere with attention/concentration, such as diagnosed or suspected psychiatric disorders, neurological disorders, intellectual disabilities, or a history of significant brain injury.

The nonclinical participants were also recruited from the subject pool and randomly assigned to one of four groups; 29 nonclinical participants were randomly assigned to an honest condition (HON), 35 to a feigning group (MAL), 28 to a

completely random group (FR), and 26 to a partially random group (HR). Individuals with a history of ADHD, neurological disorders, or psychiatric disorders were excluded from these nonclinical groups. In addition, individuals were excluded from the study if they were younger than 18 or older than 30. Informed consent was obtained directly from the participant. Demographic characteristics of the sample (e.g. age, gender, race) approximated that of the larger undergraduate population at the University of Kentucky.

Measures

Pre-test measures. The following pre-test materials were utilized in this study: an ADHD screening measure, a brief phone interview, informed consent forms, and a demographics questionnaire. As noted earlier, the screening measure (see Appendix A) was included in the Psychology subject pool mass screening questionnaire to recruit participants. It asked students to indicate whether they had been diagnosed with ADHD and/or additional psychiatric or neurological disorders. The form also asked additional information related to ADHD (diagnostic age, medications, accommodations, familial diagnoses etc.). The phone interview (see Appendix C) was used to determine whether individuals wished to participate in the study, whether they met inclusion and exclusion criteria, and which group assignment was most appropriate given the individual's medical history (i.e., ADHD vs. the nonclinical groups). The informed consent form provided participants with information about the study, including risks and benefits of the study, and required the signature of the participant before beginning the study procedures. The demographics questionnaire (see Appendix E) asked the participants to provide personal information (i.e. age, race, gender etc.) and to indicate any psychiatric diagnoses and

treatment. All pre-test measures were administered under standard instructions before specific group instructions were given (see Appendices F, G, H, I and J).

Test Battery. The test battery was administered under standard instruction for the ADHD and HON groups and the remaining groups were given altered instructions specific to their group. Thus, the MAL group was under instruction to malinger and the random responding groups (HR and FR) were instructed to respond randomly as described in the Procedure.

Conners' Adult ADHD Rating Scale, Self-Report, Long Form (CAARS; Conners, Erhardt, & Sparrow, 1999). The CAARS is a 66-item self-report inventory of common symptoms of ADHD. Items on the long form of the CAARS are grouped on four factor-derived scales (Inattention/Memory Problems, Hyperactivity/Restlessness, Impulsivity/Emotional Lability, and Problems with Self-Concept), three DSM-IV scales (Inattentive, Hyperactive-Impulsive, and Total ADHD Symptoms), and an ADHD index containing items that best discriminate between ADHD and nonclinical individuals. The CAARS has demonstrated strong one-month test-retest reliabilities ($r = 0.80$-0.91; Conners et al., 1999) and acceptable internal consistency ($\alpha = 0.64$-0.89 for 18-29 year olds). As previously mentioned, although the CAARS contains a validity scale, the Inconsistency Index, it is a random responding scale, thus it does not identify exaggeration or feigning of ADHD.

Post-test measures. As noted earlier, all post-test measures were administered under standard instruction to all participants. Post-test measures, also under standard instruction, included debriefing forms for all groups elaborating on the nature of the study and the necessary deception regarding the monetary incentive for the feigning group (see

Appendices O, P, and Q). A post-test questionnaire was administered and asked the participants to reiterate their instructions and indicate on a 5-point Likert scale how well they understood their instructions, to what degree they were able to follow them, and the amount of effort they put forth during testing (see Appendix M). A score of 1 ("Not at All") indicated poor understanding, ability to follow instructions, and effort, whereas a score of 5 ("Very") indicated excellent understanding, ability and effort. An additional post-test questionnaire (see Appendix N) was administered to all groups to identify how many questions they were unable to pay attention to (none to all), resulting in random responding. Participants also estimated the exact number of questions they responded to randomly and the length of time taken to complete the test (Berry et al., 1992). Results were used to exclude subjects with random responding during supposedly valid responding. Permission forms for data usage and contact for future research were also employed (see Appendices R and S). Payment receipts were utilized for individuals in the MAL group and for individuals in the clinical group who received monetary compensation instead of research credits for their participation (see Appendices T and U).

Procedure

The participants were primarily recruited from the psychology subject pool/mass screening session, based on their responses to the questionnaire noted earlier. Potential participants were then contacted by telephone by the principal investigator. Phone interviews were conducted to determine whether or not an individual met the inclusion criteria for the study. Individuals who met the inclusion criteria for the groups were asked to participate in the study, and individuals who did not meet criteria were thanked

for their time. All participants received a reminder email and phone call approximately 24 hours before their scheduled testing time.

Subject pool participants received one research credit for their participation in the study. Participants in the MAL group were compensated with $25 in addition to the one research credit upon completion of the test battery. The monetary incentive was initially presented to participants as a conditional reward for successfully faking ADHD on the questionnaire; however, all participants in the MAL group received this compensation. Participants recruited for the ADHD group were also compensated with one research credit. As noted earlier, if clinical participants were not in need of research credits, they were compensated with $25.

The study utilized a simulation design and participants were tested in small groups. At the time of assessment, the researcher greeted the participants, obtained informed consent, and gave a short demographic questionnaire. Participants were then given a brief description of the study before being presented with instructions specific to their group. Both the ADHD and HON groups were instructed to complete the CAARS under standard instructions, responding honestly to all questions. The HON group served as a manipulation check for the assessment protocol.

Participants assigned to the MAL group were first given a scenario (see Appendix H) describing a situation where it would be to their benefit to successfully fake ADHD and receive a diagnosis based on their test results. They were then presented with a packet of information on common symptoms of ADHD, easily accessible via the Internet (see Appendix K). The packet included a description of the disorder and its symptoms as well as example screening questions. Participants were allowed to study the packet as

long as they wished. After the participants indicated that they felt adequately comfortable and familiar with the information and any questions were answered, the researcher administered an instruction check questionnaire that asked participants to reiterate their instructions, write down a few characteristics of ADHD, and describe their strategies for faking ADHD (see Appendix L). The participants were then reminded to complete the test battery as if they were operating under the given scenario.

Participants in the half random responding group (HR) first received standard instructions to begin the CAARS, responding to all questions and answering honestly. Participants were then instructed to stop when they completed question 33 and asked to raise their hands. At this point, the test questions were removed, the random responding questionnaire for the first half of the test was administered, and the following typed instructions were given to the participant: "Occasionally people taking psychological tests will become bored or annoyed at some point and decide to fill out the answer sheet without reading the questions. Usually, they attempt to hide the fact that they did this. We are interested in whether this approach can be detected. Please respond to the remaining questions without creating an obvious pattern on the answer sheet. When you have finished, please raise your hand" (adapted from Berry et al., 1992) (see Appendix I). Participants in the full random responding group (FR) were given only the CAARS answer sheet and the same set of instructions given to the half random responding group, altered to apply to the entire test (see Appendix J).

Following the completion of the CAARS, participants in the feigning group received the post-test questionnaire asking them to describe the instructions for completing the CAARS, to rate their success at following these instructions, and to list

strategies used in answering questions in accordance with the instructions. Those who could not accurately reiterate their instructions or who indicated that they did not put forth effort to exaggerate symptoms were not included in the data set. Participants in this group were also asked to rate the desirability of the possible payment and whether this payment offered incentive to fake ADHD. All participants completed the random responding questionnaire. As noted previously, this was used to exclude those who gave random responses in a supposedly valid section. Finally, after the completion of all questionnaires, participants were debriefed in a small group setting. All participants were compensated as indicated above for their time, asked to refrain from discussing the study with other individuals, and were thanked for their participation.

Power Analysis

A meta-analysis by Rogers, Sewell, Martin, and Vitacco (2003) found a large effect size (d = 1.90) when comparing simulators to genuine patients on the F-p, a validity scale in the MMPI-2 that consists of items rarely endorsed by psychiatric inpatients as well as normals. A-priori power analyses indicated that a total of 45 subjects in a 5-group design provides approximately 95% power to detect a large effect (alpha= 0.05). The present study consisted of 139 subjects, well above the necessary sample size.

Chapter 3: Results

Sample Description

Demographic data.

A total of 168 participants from the University of Kentucky subject pool entered the study. Data from 29 participants were excluded from the analyses for various

reasons, detailed next. A total of 15 participants were excluded due to endorsing inadequate effort on the post-test questionnaire, and 10 participants were dropped for indicating that they responded randomly during supposedly valid responding. Two individuals were not included, because they endorsed reasons for exclusion on the demographics questionnaire which were not given during the telephone screening: a current diagnosis of anxiety, and a current diagnosis of depression and anxiety, respectively. One individual was excluded due to omitting 12 questions on the CAARS, as the CAARS manual recommends not interpreting protocols with $\geq$ 5 omissions on the long form. One additional individual was excluded for not responding randomly as instructed according to responses to the post-test questionnaire.

Overall, 5 participants from the HON group, 12 participants from the MAL group, 7 participants from the HR group, and 5 participants from the FR group were excluded from the analyses, resulting in the following sample sizes: HON $n = 29$, ADHD $n = 21$, MAL $n = 35$, HR $n = 26$, and FR $n = 28$. This left a final sample of 139 individuals with data considered valid for the analysis, including 21 participants diagnosed with ADHD, and 118 participants with no history of ADHD. Table 1 provides the sample's demographic makeup by group. The overall sample was 54.7% male with a mean age of 18.93 years old ($SD = 1.16$) and a mean education of 13.65 ($SD = 0.86$) years completed. The racial/ethnic makeup of the sample was 69.1% Caucasian, 17.3% African American, 5.0% Asian/Pacific Islander, 4.3% Hispanic Latino, and 4.3% other ethnic identities. Additionally, 87.8% of participants were right handed and 2.9% had repeated a grade. The groups did not differ significantly on these demographic variables.

Diagnostic data.

Participants in the ADHD group reported receiving their diagnoses at a mean age of 9.30 years (*SD* = 3.56). The plurality of participants (23.8%) in the ADHD group were diagnosed with a Predominantly Hyperactive/Impulsive presentation, 14.3% were diagnosed with the Predominantly Inattentive presentation, 14.3% were diagnosed with the Combined presentation, and 47.6% did not specify a subtype. Approximately 14.3% of participants with ADHD could not recall the type of professional who gave them their diagnoses. Of the remaining participants with ADHD, 57.1 % reported that they received their diagnosis from a family physician, 23.8% reported that they received their diagnosis from a psychiatrist, and 4.8% reported that they received their diagnosis from a psychologist. Of the participants with ADHD, 28.6% were prescribed an amphetamine drug (23.8% Adderall and 4.8% Vyvanse), 23.8% were prescribed the stimulant Concerta, 4.8% were prescribed the non-stimulant Strattera, 4.8% were being treated with a combination of the above medications, 4.8% of participants reported being treated with medications other than those listed above, and 33.3% were not currently medicated. Nearly half (47.6%) of participants in the ADHD group reported receiving accommodations from the university.

Group Differences on the CAARS:S-L

CAARS: S-L Clinical Scales.

Table 2 presents data on the CAARS: S-L clinical scales. Significant overall effects at $p < .001$ were found for all of the CAARS: S-L clinical scales. The overall pattern was for higher scores for the MAL group followed by the ADHD, FR, HR and HON groups for all CAARS: S-L clinical scales except Impulsivity/Emotional Lability,

Problems with Self-Concept, and the ADHD Index. Table 3 presents findings from follow-up Tukey's HSD contrasts ($p < .05$) performed on all CAARS clinical scales. Statistically significant differences were found between the MAL and HON groups on all clinical scales, suggesting that the feigning manipulation worked. There were no significant differences between the MAL and ADHD groups on any clinical scales, consistent with past research. These findings suggest that the individuals assigned to malinger were able to successfully "fake" ADHD on a self-report measure, endorsing self-report of ADHD symptoms statistically comparable to clinical participants responding honestly. Additionally, the ADHD and FR groups did not differ significantly on any of the eight clinical scales. These results show that those instructed to respond completely randomly can produce similar clinical scale scores relative to genuine ADHD participants. On the Inattention/Memory Problems scale and the ADHD Index, the ADHD, MAL and FR groups were not significantly different from each other and had significantly higher scores relative to the other groups. The random responding groups (HR and FR) only moderately elevated the clinical scales. Overall, the HON group endorsed significantly fewer symptoms than all other groups on five of the eight clinical scales.

CAARS: S-L Inconsistency Index.

Table 4 presents results from the CAARS: S-L validity scales by group. Significant group differences at $p < .001$ were found for both of the validity scales. Individual group comparisons on the INC using Tukey's HSD contrasts are presented in Table 5. The FR group had significantly higher scores on the INC, followed by the HR, MAL, ADHD, and HON groups. Thus as expected, the full random responding condition

was significantly higher than the other groups on this index. There were no statistically significant differences between the MAL and ADHD groups on this index. The HR, MAL, and ADHD groups did not differ significantly on this scale, but had significantly higher scores than the HON group. The HON and ADHD groups produced comparable performances on this index.

Table 5 also provides Cohen's *d* effect sizes for pairwise group contrasts on the validity scales. Effect sizes were large ($|d| \geq 0.80$) when comparing the HON group vs. the MAL, HR, and FR groups, and small for the HON vs. ADHD comparison. Large effects were also found for comparisons of the FR group vs. ADHD, MAL and HR groups. A medium effect size was found when comparing the ADHD and HR groups. Small effect sizes were found for comparisons of the HON vs. ADHD, ADHD vs. MAL, and MAL vs. HR groups.

CAARS: S-L Infrequency Index.

Table 5 displays results from Tukey's HSD group contrasts on the CAARS Infrequency Index (CII). The MAL group differed significantly from the ADHD group, suggesting that those instructed to malinger have difficulty recognizing items rarely endorsed by individuals with ADHD. The FR and MAL groups did not differ significantly and had significantly higher scores on this index than all other groups. This finding demonstrates that both random responding and feigning tend to elevate fake bad scales. The ADHD and HR groups did not differ significantly, but produced significantly higher scores than the HON group. The HON group endorsed significantly fewer symptoms than all remaining groups on this index.

As seen in Table 5, Cohen's *d* effect sizes revealed large effects when comparing

the HON group with all other groups. Large effect sizes were also found for comparisons of the ADHD vs. MAL, ADHD vs. FR groups, MAL vs. HR, and HR vs. FR groups. Small effects were found for ADHD vs. HR and MAL vs. FR comparisons.

Classification Accuracy of the Validity Scales

CAARS: S-L Inconsistency Index.

Test operating characteristics for each validity scale were evaluated by determining sensitivity and specificity at a given cutting score. Table 6 presents operating characteristics for the Inconsistency Index (INC) for contrasts of the combined random responding groups (FR + HR) vs. ADHD participants. The CAARS manual recommends using a cut score of ≥ 8 on the INC to identify random responding. Using this recommended cut score on the INC demonstrated moderate sensitivity (SN = .63) to random responding and high specificity to clinical participants under honest instructions (SP = .86). In the malingering literature, specificity values of $\geq .90$ are considered adequate. When the cut score was raised to ≥ 9, sensitivity to random responding was lowered (SN = .44), however specificity increased slightly (SP = .91). When comparing the random responding groups vs. the ADHD and HON groups combined (see Table 7), the recommended cut score (≥ 8) produced moderate sensitivity (SN = .63) to random responding and 90% specificity. Once again, a more lenient cut score of ≥ 9 increased specificity (SP = .96)

CAARS: S-L Infrequency Index.

Suhr and colleagues (2011) published a recommended cut score for the CAARS Infrequency Index (≥ 21). Table 8 provides sensitivity, specificity and hit rate values at

both the recommended cut score and the cut score that achieved acceptable specificity (defined as ≥ .90). For contrasts of MAL vs. ADHD, the recommended cut score demonstrated excellent specificity (SP = .95), yet only 34% sensitivity to malingering instruction. Using a lowered cut score of ≥ 18 showed slightly improved sensitivity (SN = .46), while still maintaining high specificity (SP = .91). When comparing the MAL vs. the ADHD, HR, and FR groups combined (see Table 9), the recommended cut score demonstrated modest sensitivity (SN = .34) to malingering and still maintained adequate specificity (SP = .89) to ADHD, HR, and FR responding. Raising the cut score to ≥ 22, produced excellent specificity (SP = .92) and modest sensitivity (SN = .31).

Finally, to evaluate the accuracy of the CAARS validity scales when used in a stepwise manner at the recommended cut scores, an algorithm (see Figure 1) was employed to classify individuals as randomly responding, overreporting, or producing valid profiles. Table 10 shows the rates and classification for each group using the algorithm. Following the stepwise procedure, the validity scales demonstrated good accuracy at identifying both honest (93.1%) and completely random protocols (92.9%), and were moderately good at classifying ADHD protocols (81.0%). The validity scales did not perform well at detecting half random protocols (42.3%). Of note, sequential application of the validity scales flagged more malingerers as invalid as opposed to when using the CII alone, identifying 57.1% of fake bad protocols versus 34.3%.

Table 3.1: Demographic Characteristics of Participants Included in Final Analyses

		Group Descriptives					Omnibus Test	
		HON $n = 29$	ADHD $n = 21$	MAL $n = 35$	HR $n = 26$	FR $n = 28$	F or χ^2 $N = 139$	p
Male	%	44.80	42.90	74.3	50	53.6	7.99	0.09
Age	*M*	18.86	18.90	19.00	19.08	18.79	0.27	0.90
	SD	0.83	0.94	1.59	1.19	0.95		
Education	*M*	13.62	13.52	13.77	13.65	13.64	0.29	0.89
Yr.	*SD*	0.73	0.75	1.09	0.89	0.78		
Repeat Grade	%	3.4	9.50	2.90	0	0	4.95	0.29
Right-handed	%	96.6	90.50	85.70	73.1	92.9	8.27	0.82
Ethnicity							20.48	0.20
White	%	65.50	85.70	54.30	76.90	71.40		
Black	%	17.20	4.80	25.70	23.10	10.70		
Hispanic	%	3.40	9.50	2.90	0.00	7.10		
Asian	%	10.30	0.00	5.70	0.00	7.10		
Other	%	3.40	0.00	11.4	0.00	3.60		

Note. HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random; *M* = Mean; *SD* = Standard Deviation.

Table 3.2: CAARS-S:L: Clinical Scales Mean Group Values

	Group Descriptives					Omnibus Test (N =139)	
	HON n = 29	ADHD n = 21	MAL n = 35	HR n = 26	FR n = 28		
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	F	p
Inatt./Mem. T	46.06 (9.30)	61.05 (10.90)	63.34 (8.32)	52.92 (6.81)	58.96 (6.87)	20.02	.000
Hyp./Rest. T	45.90 (9.42)	56.90 (10.52)	60.94 (8.56)	48.96 (7.75)	53.46 (6.43)	15.01	.000
Imp./Emo. T	42.59 (7.81)	54.90(11.91)	61.43 (11.17)	50.58 (6.51)	59.11 (7.65)	19.82	.000
Self-Concept T	44.10 (7.10)	52.90 (9.52)	55.49 (10.69)	51.38 (7.65)	55.29 (6.66)	8.78	.000
DSM Inatt. T	49.97 (10.12)	70.90 (11.66)	75.06 (10.66)	59.31 (10.55)	65.71 (10.85)	25.28	.000
DSM Hyp/Imp. T	45.24 (10.94)	60.19(13.10)	68.60 (11.57)	52.46 (10.15)	60.18 (9.61)	19.76	.000
Total ADHD Sxs T	47.31 (11.94)	68.90 (13.14)	76.20 (11.26)	57.69 (11.80)	65.93 (10.06)	27.78	.000
ADHD Index T	45.03 (9.60)	57.52 (9.42)	62.43 (10.96)	51.35 (7.10)	58.93 (7.15)	17.27	.000

Note. These values reflect the performance of participants under experimental manipulation. CAARS- S:L = Conners' Adult ADHD Rating Scale- Self Report:Long Form ; HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random; M = Mean; SD = Standard Deviation; T= T-score; Inatt./Mem Raw = Inattention/Memory scale; Hyp./Rest. Raw = Hyperactivity/Restlessness scale; Imp./Emo Raw = Impulsivity/Emotional Lability scale; Self-Concept = Problems with Self-Concept scale; DSM Inatt. = DSM-IV Inattentive Symptoms scale; DSM Hyp/Imo.= DSM-IV Hyperactive/Impulsive Symptoms scale; Total ADHD Sxs= DSM-IV Total ADHD Symptoms scale.

Table 3.3: P Values for Pairwise Group Contrasts on CAARS-S:L Clinical Scales

	Individual Group Comparisons									
	HON v. ADHD	HON v. MAL	HON v. HR	HON v. FR	ADHD v. MAL	ADHD v. HR	ADHD v. FR	MAL v. HR	MAL v. FR	HR v. FR
Inatt./Mem. T	.000	.000	.036	.000	.861	.008	.873	.000	.200	.069
Hyp./Rest. T	.000	.000	.820	.019	.494	.008	.506	.000	.005	.291
Imp./Emo. T	.000	.000	.015	.000	.083	.492	.549	.000	.830	.009
Self-Concept T	.004	.000	.017	.000	.809	.974	.870	.347	1.00	.451
DSM Inatt. T	.000	.000	.017	.000	.617	.002	.440	.000	.006	.143
DSM Hyp/Imp. T	.000	.000	.117	.000	.052	.127	1.00	.000	.026	.084
Total ADHD Sxs T	.000	.000	.011	.000	.153	.009	.898	.000	.005	.063
ADHD Index T	.000	.000	.095	.000	.295	.129	.986	.000	.533	.020

Note. These values reflect the performance of participants under experimental manipulation. CAARS- S:L = Conners' Adult ADHD Rating Scale- Self Report:Long Form ; HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random; *M* = Mean; *SD* = Standard Deviation; T= T-score; Inatt./Mem Raw = Inattention/Memory scale; Hyp./Rest. Raw = Hyperactivity/Restlessness scale; Imp./Emo Raw = Impulsivity/Emotional Lability scale; Self-Concept = Problems with Self-Concept scale; DSM Inatt. = DSM-IV Inattentive Symptoms scale; DSM Hyp/Imo.= DSM-IV Hyperactive/Impulsive Symptoms scale; Total ADHD Sxs= DSM-IV Total ADHD Symptoms scale.

Table 3.4: CAARS-S:L: Validity Scales Mean Values by Group

	Group Descriptives					Omnibus Test (N = 139)	
	HON n = 29	ADHD n = 21	MAL n = 35	HR n = 26	FR n = 28		
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	F	p
INC Raw	4.55 (1.55)	5.43 (2.13)	6.43 (2.40)	6.96 (2.03)	9.61 (2.59)	21.41	.000
CII Raw	4.34 (4.42)	11.14 (5.86)	17.20 (7.32)	12.04 (3.38)	17.29 (4.97)	28.30	.000

Note. These values reflect the performance of participants under experimental manipulation. CAARS- S:L = Conners' Adult ADHD Rating Scale- Self Report: Long Form ; HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random; M = Mean; SD = Standard Deviation; INC Raw = Inconsistency Index raw score; CII Raw = CAARS Infrequency Index raw score.

Table 3.5: Pairwise Group Contrasts on Validity Scales

	Individual Group Comparisons									
	HON v. ADHD	HON v. MAL	HON v. HR	HON v. FR	ADHD v. MAL	ADHD v. HR	ADHD v. FR	MAL v. HR	MAL v. FR	HR v. FR
	p *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*	*p* *d*
INC Raw	.628 0.49	.007 0.91	.001 1.35	.000 2.39	.462 0.44	.123 0.74	.000 1.75	.880 0.23	.000 1.28	.000 1.14
CII Raw	.000 1.35	.000 2.09	.000 1.96	.000 2.77	.001 0.90	.981 0.19	.001 1.15	.003 0.86	1.00 0.01	.005 1.24

Note. These values reflect the performance of participants under experimental manipulation. CAARS- S:L = Conners' Adult ADHD Rating Scale- Self Report: Long Form ; HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random; *M* = Mean; *SD* = Standard Deviation; INC Raw = Inconsistency Index raw score; CII Raw = CAARS Infrequency Index raw score.

Table 3.6: Operating Characteristics for CAARS Inconsistency Index

FR + HR v. ADHD			
Scale	SN	SP	HR
INC ≥ 8 *	.630	.857	.69
INC ≥ 9	.444	.905	.73

Note. FR = Full Random; HR = Half Random; ADHD = ADHD; HON = Honest; INC = Inconsistency Index; SN = Sensitivity; SP = Specificity; HR = Hit rate.

* = cut score derived from the CAARS manual.

Table 3.7: Operating Characteristics for CAARS Inconsistency Index

FR + HR v. ADHD + HON			
Scale	SN	SP	HR
INC ≥ 8 *	.630	.900	.76
INC ≥ 9	.444	.960	.69

Note. FR = Full Random; HR = Half Random; ADHD = ADHD; HON = Honest; INC = Inconsistency Index; SN = Sensitivity; SP = Specificity; HR = Hit rate.

* = cut score derived from the CAARS manual.

Table 3.8: Operating Characteristics for CAARS Infrequency Index

	MAL v. ADHD		
Scale	SN	SP	HR
CII $\geq$ 21 *	.343	.952	.57
CII $\geq$ 18	.457	.905	.63

Note. MAL = Malingering; ADHD = ADHD; HR = Half Random; FR = Full Random; CII = CAARS Infrequency Index SN = Sensitivity; SP = Specificity; HR = Hit rate.

* = cut score derived from Suhr et al., (2011).

Table 3.9: Operating Characteristics for CAARS Infrequency Index

	MAL v. ADHD + HR + FR		
Scale	SN	SP	HR
CII $\geq$ 21 *	.343	.893	.69
CII $\geq$ 22	.314	.920	.73

Note. MAL = Malingering; ADHD = ADHD; HR = Half Random; FR = Full Random; CII = CAARS Infrequency Index; SN = Sensitivity; SP = Specificity; HR = Hit rate.

* = cut score derived from Suhr et al., (2011).

Table 3.10: Group Classification Using an Algorithm for the CAARS Validity Scales Using Recommended Cut Scores

Group	Classification				
	Random	Fake Bad	Valid	% Correct	
				Valid	Invalid (Random or Fake)
HON	2	0	27	93.1	6.9
ADHD	3	1	17	81.0	19.1
MAL	11	9	15	42.9	57.1
HR	11	0	15	57.7	42.3
FR	23	3	2	7.1	92.9

Note. HON = Honest; ADHD = ADHD; MAL = Malingering; HR = Half Random; FR = Full Random.

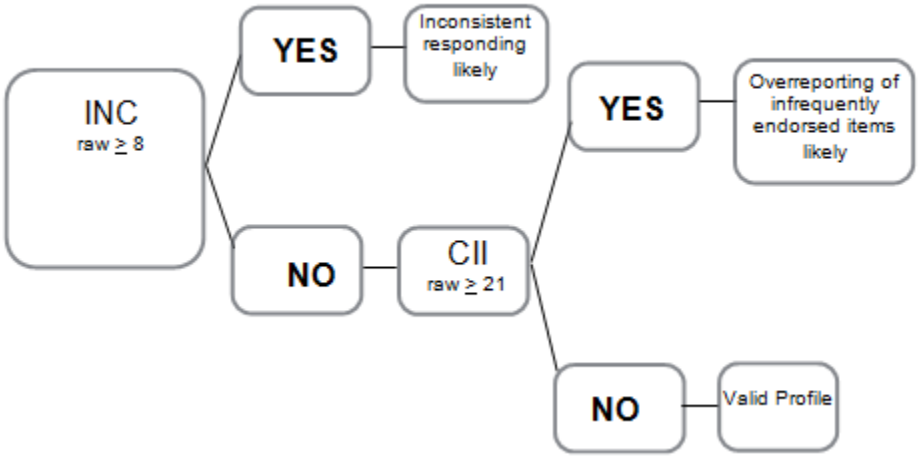

Figure 1. Algorithm for determining classification of CAARS protocols. Classification of individuals as randomly responding, faking bad, or producing a valid profile based on validity scales. INC= Inconsistency Index; CII = CAARS Infrequency Index.

Chapter 4: Discussion

Overview of Findings

Due to the increased concern of malingering of ADHD symptoms on college campuses, there remains a need for assessment instruments that can detect feigning of adult ADHD, particularly on self-report measures. One tool to detect feigning on the CAARS is the CAARS Infrequency Index (CII), a scale recently developed by Suhr et al., (2011) which is composed of items rarely endorsed by ADHD patients. The present study sought to validate the findings of Suhr et al., (2011), which indicated excellent specificity (> 90%) with sensitivity to extreme scores on the CAARS clinical scales ranging from 30-80%. Further, this study attempted to add to the existing literature by evaluating the ability of the CAARS validity scales to distinguish between random responding and feigning, and by examining the classification accuracy of the validity scales when applied in a stepwise manner.

As expected, the CAARS clinical scales were able to differentiate clinical participants from nonclinical honest participants, with clinical participants endorsing significantly more ADHD symptomatology. However, contrary to the hypotheses, the CAARS clinical scales could not differentiate the MAL group from the ADHD group on any of the CAARS indices, and scores from the MAL group fell within the credible range. In addition, the FR group's scores were comparable to ADHD participants on all clinical scales, demonstrating that completely random protocols can produce similar profiles to clinical participants. The random responding groups only moderately elevated the clinical scales.

In line with the hypothesis, the FR group had significantly higher elevations on the Inconsistency Index (INC) than all other groups. Additionally, differences are evident when considering the effect sizes when comparing the FR group to all other groups (d = 1.14-2.39). Thus, as expected the Inconsistency Index performed well in its ability to detect completely random protocols. However, in contradiction to hypotheses, both the MAL and ADHD groups moderately elevated the INC, and these groups did not differ significantly from the HR group on this index. Therefore, this scale did not perform as well at distinguishing partially random responding. Additionally, there were no statistically significant differences between the MAL and ADHD groups, suggesting that participants feigning ADHD may have attempted to respond consistently. Overall, the INC demonstrated modest sensitivity to FR and HR responding combined (.44-.63) with high specificity to both ADHD (.86-.91) and ADHD and HON groups combined (.90-.96).

Statistically significant differences were founded between the MAL and ADHD groups on the CII, suggesting that those instructed to malinger have difficulty recognizing items rarely endorsed by individuals with ADHD. The present study also found that the MAL and FR groups did not differ significantly on the CII, contrary to what was originally predicted, and a small effect size (d= .01) further demonstrated the similarity between these groups on this index. This finding is consistent with previous research that has demonstrated that both random responding and feigning tend to elevate fake bad scales. Lastly, it was predicted that the FR and HR groups would moderately elevate the CII. Though this was true for the FR group, the HR group only modestly elevated the CII and produced scores statistically proportional to the ADHD group.

Further, a slight elevation was found in the ADHD group on the CII, however as demonstrated above, the CII is highly specific to ADHD. Overall, current results regarding the ability of the CII to detect feigned ADHD are consistent with past work, with the CII demonstrating modest sensitivity to malingering (.31-.46) with high specificity to ADHD (.91-.95) and ADHD, HR, and FR groups combined (.89-.92).

More novelly, this study utilized the recommended cut scores of the CAARS validity scales to evaluate the performance of the INC and CII working together to discriminate honest responding, genuine ADHD, feigned ADHD, and random responding. In general, results were supportive of these validity scales used in a stepwise manner to classify honest responding, full random responding, and genuine ADHD. Unfortunately, currently available indices do not appear to be adequately sensitive to detecting random responding in the latter half of the test, with the present study identifying only 42.3% of partially random responders. However, one notable finding from the present study was that the INC and CII flagged more malingerers as invalid when applied sequentially (57%), as opposed to when the CII operated alone (31-46%). Thus, utilizing the validity scales in a stepwise manner was not only generally successful at discriminating response sets, but also demonstrated additional accuracy in detecting feigning.

Limitations

While this study provides an important contribution to the current body of literature, limitations must be acknowledged. First, all simulation studies come at the expense of external validity, however this type of design generally displays strong internal validity. The present study made efforts to further strengthen internal validity by

administering instruction checks to ensure that the participants understood their roles, and by giving post-test questionnaires to gauge effort and perceived success. Efforts to increase external validity were also employed through the use of monetary incentives and a realistic scenario. However, despite these attempts to bolster external validity, it is still possible that these results do not fully generalize to the real world malingering of ADHD. A second limitation is that the researcher could only establish the credibility of the ADHD participants' diagnoses to a limited extent, as medical records were not available for review. However, all ADHD participants were recruited through a mass screening questionnaire administered to an undergraduate psychology subject pool, and the researchers have no reason to believe these individuals would lie about their diagnosis on the mass screening, as there is no incentive to do so. Further, ADHD participants were invited to participate in the study only if their diagnoses were made based on methods other than self-report alone and made prior to age 12. Finally, small sample sizes, particularly in the ADHD group, are a concern.

Conclusions

Although the present study demonstrated modest sensitivity in the detection of feigning, the fact that between 43-69% of malingerers went undetected warrants more research. Self-report alone should not be used for the diagnosis as this and several other studies have shown that feigners can endorse ADHD symptomatology at similar levels to genuine clinical participants. The present study has added to the literature by evaluating the accuracy of the INC to detect random responding, and by providing further validation of the CII in the detection of feigned ADHD on the CAARS. Further, this study has demonstrated the added utility of the CAARS validity scales working together to

distinguish between various response sets. Finally, if using the algorithm clinically, clinicians should have strong specificity and at least modest sensitivity in the detection of feigning on the CAARS.

Appendix A: Mass Screening Form

What is your: STUDENT ID # _____

AGE: _____

GENDER: _____

Year in school:_____

Do you have a diagnosis of Attention Deficit/Hyperactivity Disorder (ADHD) or Attention Deficit Disorder (ADD)?

YES or **NO**

If YES, how old were you when you were diagnosed with ADHD or ADD? ___

Are you currently prescribed stimulant medication (Adderall, Ritalin, Concerta, Straterra, etc.) for ADHD?

YES or **NO**

Have you ever been prescribed stimulant medication (Adderall, Ritalin, Concerta, Straterra, etc.) for ADHD?

YES or **NO**

Are you currently receiving academic accommodations (extra test time, financial aid, electronic aids) as a result of having ADHD?

YES or **NO**

In school as a child, did you ever receive any special services (tutoring, special classes, extra time on tests) as a result of having ADHD?

YES or **NO**

Do you have a close friend or family member with ADHD?

YES or **NO**

How many people do you know who have used stimulant medications without a prescription (not including yourself)?

Circle your answer: **None** **1 – 2** **3 – 4** **5 or more**

How many people do you know who have faked or exaggerated problems to get a prescription for stimulant medication (not including yourself)?

Circle your answer: **None** **1 – 2** **3 – 4** **5 or more**

Have you ever been evaluated and/or treated for a learning problem (not including ADD/ADHD) such as **dyslexia**, a **reading disorder**, or a problem with **written language**, for example?

YES or **NO**

Have you ever been diagnosed with a learning problem such as those mentioned above?

YES or **NO**

If YES, what diagnosed learning problem do you have?

Have you ever received special help or accommodations within the school system because of a diagnosed learning problem with reading and/or writing?

YES or **NO**

Have you ever been evaluated and/or treated for anxiety?

YES or **NO**

Do you have a diagnosed anxiety disorder?

YES or **NO**

If YES, what diagnosed anxiety disorder do you have?

Are you currently being treated for anxiety?

YES or **NO**

If YES, what medications are you taking for anxiety?

Are you currently being treated for depression?

YES or **NO**

If YES, what mediations are you taking for depression?

Do you have a history of:

Brain injury? **YES** or **NO**

Hallucinations or delusions? **YES** or **NO**

Depression? **YES** or **NO**

Have you been diagnosed with any other psychological or psychiatric disorder?

YES or **NO**

IF YES, what diagnoses have you received?

Appendix B: Recruitment Flyer

Attention UK Undergraduates!!!

Do you have Attention Deficit Disorder? (ADD or ADHD)

If so, you can get paid $25 to participate in a research study being conducted at the University of Kentucky.

We would like to see how effective a questionnaire is at diagnosing ADHD in college students.

please call or text for more information:

Brittany

(804) 317-6770

Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770	Paid Research Study (804) 317-6770

Appendix C: General Phone Screening Form

General Phone Screening Form

SAY: ***My name is __ and I'm calling from the Department of Psychology. I'm contacting you because you completed the psychology online screening and indicated interest in a research study for psychology research credits.*** *I have a 1-credit study. Do you still need research credits at this time?* (if Yes): *Great! I'd like to tell you more about the study, but first I will be asking some voluntary screening questions regarding mental health and medical history to determine if you are eligible. Do you have time to answer these questions? (Y/N) If yes…As a voluntary participant, I would like to briefly review your rights. All the information you provide is strictly confidential and is accessible only to research team members and individuals who may audit our work for integrity purposes. There are no foreseen risks or benefits to participating in this study. As a voluntary participant, you can choose to revoke your consent at any point. Finally, if you have any questions or concerns I can provide contact information for the Office of Research Integrity at UK (859-257-9428 and/or 866-400-9428). Do you have any questions before we begin?*

(if non-subject pool student) **SAY:** ***My name is __ and I'm calling from the Department of Psychology. I'm contacting you because you expressed interest in participating in Brittany Walls' paid research study on ADHD.*** *Is this a good time for you?* (if Yes): *Great! I'd like to tell you more about the study, but first I will be asking some voluntary screening questions regarding mental health and medical history to determine if you are eligible. Do you have time to answer these questions? (Y/N) If yes…As a voluntary participant, I would like to briefly review your rights. All the information you provide is strictly confidential and is accessible only to research team members and individuals who may audit our work for integrity purposes. There are no foreseen risks or benefits to participating in this study. As a voluntary participant, you can choose to revoke your consent at any point. Finally, if you have any questions or concerns I can provide contact information for the Office of Research Integrity at UK (859-257-9428 and/or 866-400-9428). Do you have any questions before we begin?*

1. How old are you?_____
If younger than 18 or older than 25, stop and thank them for their time.

2. What year are you? F So Jr Sr Other: (_____ th semester)

3. What is your first language: _____

4. This is a study about ADHD and other psychological disorders. We have openings for people with *and* without ADHD. Have you been ever diagnosed with ADHD?
Yes No

If yes to #5, inquire about specific diagnoses:

_____

6. Do you currently have a diagnosis of a learning disability (includes DSM-IV learning disorders; E.G. Writing Disorder [dysgraphia], Reading Disorder [dyslexia])?

Yes No

If yes to #6, inquire about specific diagnoses: -

_____

7. Have you been diagnosed with any other psychological or psychiatric disorders (includes Bipolar Disorder, Schizophrenia, Personality Disorders, etc.)?

Yes No

If yes to #7, inquire about specific diagnoses:

_____

8. Have you been diagnosed with a neurological disorder (includes things like Epilepsy, Tourrettes, Central Processing Disorder; If unsure, call or google)?

Yes No

If yes to #8, inquire about specific diagnoses:

_____

If yes to 6, 7, or 8, EXCLUDE

9. Have you ever had a head injury (including minor concussions)? Yes No

If yes, ask the following questions:

-Have you had a head injury more severe than a concussion? Yes No
If yes, Exclude
If they are unsure, ask the following question:

- Did you lose consciousness? Yes No
- **If yes:** For how long?_____

- Were you hospitalized? Yes No
- **If yes:** For how long?_____

- Did you have any tests run? Yes No
- **If yes:** Which and what did they find?_____

Exclude for LOC >30 min., positive brain imaging findings (indicating complicated mTBI), or extensive hospitalization.

-How many past concussions have you had? _____

-When was your most recent concussion? _____

Exclude for more than 2 previous concussions or concussion within the last 6 months.

If no to all of the above...

SAY: *Thank you very much for answering these questions. Now let me tell you more about the study. This study involves you taking a questionnaire that is used to diagnose ADHD. We are interested in whether this questionnaire can discriminate between people with ADHD and people without it. It is a pencil/paper questionnaire. If you participate, it will take about 1 hour of your time and you will be compensated 1 research credit.*

Are you still interested in participating? Yes No

If Yes: Collect contact information If No: STOP. *Thank you for your time.*

10. First name: _____ Phone: _____

11. Gender: M F

12. Date/time scheduled: _____

13. Group assignment: _____

14. Examiners: _____

Appendix D: ADHD Phone Screening Form

ADHD Phone Screening Form

After switching from General phone screening:

With your permission, I would like to collect information about the process you went through to get your diagnosis of ADHD, current medications, and other psychiatric or neurological disorders. ***In addition, one requirement of the study is that you not take your stimulant medication for 12 hours before your participation, so that we can know how people with ADHD do without treatment. Would you be interested in participating?***

Yes No

If Yes: *I also need to further disclose to you the potential risks regarding the cessation of stimulant medication. Such risks may include loss of concentration, difficulty with school work, fatigue, etc. Commonly prescribed stimulant medications for the treatment of ADHD include Adderall, Ritalin, Concerta, etc. Common non-stimulant medications include Strattera, Wellbutrin, Zyban, etc.*

If you choose to participate, you should not double the next dose of your medication to make up for the missed one.

If you have a history of chronic abuse of stimulant medications you should not participate in this study due to increased health risks.

Would you still be interested in participating?

If Yes: Continue with screener If No: STOP. *Thank you for your time.*

I'd like to ask you more about the process you went through to get your diagnosis of ADHD.

1. When were you diagnosed (age/grade/year?)_____
If 12 or older at the time of diagnosis, tell them that we are only collecting data from individuals who received their diagnoses before the age of 12. Thank them for their time.

2. What subtype of ADHD is your diagnosis (Inattentive, Hyperactive, Combined, Other Specified?_____

3. What sort of health care professional gave you this diagnosis? _____
Be sure to figure out whether it was a psychologist, psychiatrist, or just family physician.

4. Did you take any tests to get your diagnosis? Yes No

(If yes): What sorts of tests

__ pencil / paper that asked about your symptoms
__ pencil / paper not asking specifically about symptoms
__ Computerized
__ Tests of other cognitive abilities, thinking, or learning

5. Did your parent or guardian fill out any questionnaires? Yes No

6. Do you remember how long this evaluation took? (# Appts, # Hours)

_____

7. Was there someone who came into your school classroom to observe you? Yes No

-Diagnosis must be based on a *minimum* of self-report and parent-report measures *or* self-report and clinical interview. Self-report only or less is not acceptable.
-If you are unsure about the credibility of their diagnosis, finish the interview and tell them you will call them back for scheduling purposes. Contact me about this.

8. Do you have access to a diagnostic report or evaluation? Yes No

9. Are you taking medication for this right now? Yes No

What kind (If yes): _____

How long have you been taking it:_____

10. About how often do you skip a dose, either accidentally or on purpose? _____

Make sure you check about whether they take it on the weekends (many people don't and don't consider this skipping).

11. Are you receiving accommodations in any of your courses or through the university? Yes No

If so, what types of help are you getting? _____

Common accommodations include extra test time (ask how much extra [50%; 100%], teacher's notes and ppts, testing in a private room, priority registration, preferred seating for tests).

12. Have you been diagnosed with anxiety disorder? Yes No

If yes, exclude.
If no, proceed to next question.

13. Have you been diagnosed with a learning disability? Yes No

If yes, exclude.
If no, proceed to next question

14. Have you been diagnosed with any other psychological, psychiatric, or neurological

disorders, or had a head injury?

Yes No

If yes, which: _____

-If yes to #14, get information about specific diagnoses. If their only additional diagnosis is depression, get additional information about type of depression diagnosis and current treatment. They can still participate. Also, if they have a history of brain injury, do not exclude for less than 3 past concussions. (see General Phone Screening for more info)
-If other disorders than those indicated above, tell them we are not collecting data from individuals with those specific diagnoses. Thank them for their time.

If no to all of the above...

SAY: *Thank you for answering these questions. Now let me tell you more about the study. This is a study about the ability of a questionnaire to properly diagnose people who do or do not have ADHD. The study takes about 50 minutes and you will be compensated with ($25 or 1 research credit and $25). This study involves you taking a questionnaire that is used to diagnose ADHD. You may have taken the questionnaire before. It is a pencil/paper questionnaire. The study is conducted at Kastle Hall (ask if they know where it is and tell them if they don't). Would you be interested in participating?*

If Yes: Collect contact information If No: STOP. *Thank you for your time.*

Go ahead and schedule if you can.

15. First name_____ Phone_____

16. Gender: M F

17. Date/Time Scheduled: _____

18. Group Assignment: _____

19. Examiners: _____

Appendix E: Demographics Questionnaire

Demographics Questionnaire

INSTRUCTIONS: ***Please respond to the following as best you can. You do not need to share your responses with the examiner. Your responses will NOT be associated with your name. Please put this in the envelope and seal it when done.***

Gender: M F

Age: _____

Handedness: R L

Ethnic background:

African American Hispanic/Latino Native American
Asian/Pacific Islander Caucasian Other _____

Education: Freshman Sophomore Junior Senior Other_____

Please check which apply to you. If you respond "Yes," please answer the Additional questions below:

1. Color Blindness N Y
2. Repeated a Grade N Y
3. Knocked Unconscious N Y
   (respond for most severe occurrence)
   Length of Time: Unconscious_____ Hospitalized_____
   Age of occurrence: _____ Do you remember this happening?_____
4. Attention Deficit Disorder N Y
   Type: _____ Age diagnosed:_____
   What medication do you take for this?_____
   Have you taken medication for this in the past 12 hours? Y / N
5. Learning Disability N Y
   Type: _____ Age diagnosed:_____
6. Current Mood, Anxiety, or Thought Disorder N Y
   (list separately)
   Type: _____ Age diagnosed:____ Are you currently being treated? Y/ N
   Type: _____ Age diagnosed:____ Are you currently being treated? Y/ N
   Type: _____ Age diagnosed:____ Are you currently being treated? Y/ N
7. Neurological or Neuro-degenerative Disorder N Y
   (list separately)
   Type: _____ Age diagnosed:____ Are you currently being treated? Y/ N
   Type: _____ Age diagnosed:____ Are you currently being treated? Y/ N

Thank you! Please seal this in the envelope provided.

Appendix F: Instructions for ADHD Group

Instructions for ADHD Group

Today you will complete a questionnaire much like a clinician would use to test someone for Attention Deficit/Hyperactivity Disorder (ADHD). You should try your hardest on this questionnaire and give your very best effort throughout the testing session.

Are you comfortable with these instructions? Do you still wish to participate in the study?

You will now be introduced to the person who will complete testing with you. The examiner does not know what instructions you have been given, so please do not give it away!

If you have any questions, please take the time to ask them right now.

Appendix G: Instructions for Honest Group

Instructions for Honest Group

Today you will complete a questionnaire much like a clinician would use to test someone for Attention Deficit/Hyperactivity Disorder (ADHD). You should try your hardest on this questionnaire and give your very best effort throughout the testing session.

Are you comfortable with these instructions? Do you still wish to participate in the study?

You will now be introduced to the person who will complete testing with you. The examiner does not know what instructions you have been given, so please do not give it away!

If you have any questions, please take the time to ask them right now.

Answer the CAARS questions honestly. Be sure to answer every question. Raise your hand when you have finished.

Appendix H: Instructions for Malingering Group

Instructions for Malingering Group

Congratulations! You have been selected for a chance to win $25 cash!

Today you will complete a questionnaire much like a clinician would use to test you for attention deficit/hyperactive disorder (ADHD). Normally, you would be asked to try your best on this questionnaire. That is *not* what we want you to do today. Instead, we want you to complete the questionnaire exactly how you think someone with ADHD would perform. That is, you should try to take the questionnaire in such a way that you look like you have ADHD. The questionnaire has scales designed to detect people who are faking, so *be careful not to be too obvious*. If you can take the questionnaire in such a way that you are classified as having ADHD without the examiner knowing you are faking, you will receive $25 cash at the end of testing. It will help if you imagine the following scenario:

You have a friend on campus who has just been diagnosed with ADHD. She is prescribed a stimulant drug (like Ritalin or Adderall) that makes her concentrate better and stay awake more easily. Studying becomes much easier for her and takes less time. Meanwhile, her grades have improved. On top of that, the University gives her extra time to complete exams and other assignments because she has ADHD. Because schoolwork is easier, she is able to socialize more often. She tells you that all she had to do was take a few tests to receive her diagnosis. You feel you could really use some extra time on exams and assignments, and it would be great to have some medication to help you study faster, so you decide you will try to get a diagnosis, too. You search the Internet for information on ADHD, and you make an appointment for testing.

The next few pages contain the information you might find in an internet search for ADHD.

[*After preparation*] Are you comfortable with these instructions? Do you still wish to participate in the study? You will now be introduced to the person who will complete testing with you. Please take the following questionnaire as if you are trying to convince someone that you have ADHD. You should respond to the test items in a way that makes it clear that you have ADHD. The examiner who tests you will not know what instructions you have been given, so please do not give it away!

Remember, if you are successful at deceiving the questionnaire without being detected by the examiner as faking, you will win $25! If you have any questions, please take the time to ask them right now.

Appendix I: Instructions for Half Random Group

Instructions for Half Random Group Part 1

Today you will complete a questionnaire much like a clinician would use to test someone for Attention Deficit/Hyperactivity Disorder (ADHD). You should try your hardest on this questionnaire and give your very best effort throughout the testing session.

Are you comfortable with these instructions? Do you still wish to participate in the study?

You will now be introduced to the person who will complete testing with you. The examiner does not know what instructions you have been given, so please do not give it away!

If you have any questions, please take the time to ask them right now.

Answer the CAARS questions honestly. Be sure to answer every question. STOP when you reach question 33 and raise your hand. This question has been highlighted on the answer sheet to remind you when to stop.

Instructions for Half Random Group Part 2

Occasionally people taking psychological tests will become bored or annoyed at some point and decide to fill out the answer sheet without reading the questions. Usually, they attempt to hide the fact that they did this. We are interested in whether this approach can be detected. Please respond to the remaining questions without creating an obvious pattern on the answer sheet. When you have finished, please raise your hand.

Appendix J: Instructions for Full Random Group

Instructions for Full Random Group

Today you will complete a questionnaire much like a clinician would use to test you for attention deficit/hyperactive disorder (ADHD). Normally, you would be asked to try your best on this questionnaire. That is *not* what we want you to do today.

Occasionally people taking psychological tests will become bored or annoyed at some point and decide to fill out the answer sheet without reading the questions. Usually, they attempt to hide the fact that they did this. We are interested in whether this approach can be detected. Please respond to the questions without creating an obvious pattern on the answer sheet. When you have finished, please raise your hand.

Appendix K: Internet Information Packet on ADHD

Internet Information on ADHD

The next several pages will provide you with information about ADHD that you can easily access via the Internet. You will need to read the following information carefully. Feel free to underline or write notes on these pages. At the end of the Internet information, you will be asked to jot down a few symptoms or characteristics of people with ADHD to help you make sure the tests classify you as having ADHD.

Website 1

Address	http://www.daytrana.com/?SOURCE=GOOG&KEYWORD=p

WHAT ARE THE SYMPTOMS OF ADHD?

- The most common behaviors exhibited by those who have ADHD are inattention, hyperactivity, and impulsivity. People with ADHD often have difficulty focusing, are easily distracted, have trouble staying still, and frequently are unable to control their impulsive behavior.
- Because everyone shows signs of these behaviors at times, the DSM-IV-TR specifies that the behaviors must appear early in life (before age 7) and continue for at least six months.
- In children, these behaviors must be more frequent or severe than in other children the same age. In addition, the behaviors must interfere with at least two areas of a person's life, such as paying attention in school, completing homework, or making friends.
- ADHD in adults looks much as it does in children, except that much less hyperactivity is present. Still, inattention and impulsivity can have a major effect on functioning at work and in social relationships. People often have difficulty focusing, are easily distracted, have trouble staying still, and frequently are unable to control their impulsive behavior.

Website 2

Address	http://www.adultADHD.com/2_2_recognizing/2_2_recognizing.jsp

Recognizing Adult ADHD

Fidgeting, interrupting conversations, losing things, forgetting the reason for a trip to the grocery store – everyone acts this way once in a while. But a long and persistent history of restless, impulsive, or inattentive behavior may be a sign of Adult ADHD. This is especially true if these behaviors have existed since childhood and result in problems at work, home, and/or in social situations.

If you think you may have Adult ADHD, here are several questions you may want to ask yourself. These are some of the questions that can help doctors and healthcare professionals screen for Adult ADHD.

Ask yourself these questions and think about how long you have experienced these symptoms and how often they occur. If these symptoms are interfering with your success at home, at work or with friends, you may want to talk with your doctor or healthcare professional about a clinical evaluation.

- Do you have difficulty concentrating or focusing your attention on one thing?
- Do you often start multiple projects at the same time, but rarely finish them?
- Do you have trouble with organization?
- Do you procrastinate on projects that take a lot of attention to detail?
- Do you have problems remembering appointments or obligations?
- Do you have trouble staying seated during meetings or other activities?
- Are you restless or fidgety?
- Do you often lose or misplace things?

On the next two pages are diagnostic screening tests you find. Please read through the questions. You do not need to complete the tests.

Website 3

Address	http://www.adultADHD.com/2_2_recognizing/2_2_recognizing.jsp

Screener Test

Many adults have been living with Adult Attention-Deficit Disorder (Adult ADHD) and don't recognize it. Why? Because its symptoms are often mistaken for a stressful life. If you've felt this type of frustration most of your life, you may have Adult ADHD; a condition your doctor can help diagnose and treat.

Adult Self-Report Scale (ASRS – V1.1) Screener

from WHO Composite International Diagnostic Interview

© World Health Organization

	Never	Rarely	Sometimes	Often	Very Often
How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	◘	◘	◘	◘	◘
How often do you have difficulty getting things in order when you have to do a task that requires organization?	◘	◘	◘	◘	◘
How often do you have problems remembering appointments or obligations?	◘	◘	◘	◘	◘
When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	◘	◘	◘	◘	◘
How often do you fidget or squirm with your hands or your feet when you have to sit down for a long time?	◘	◘	◘	◘	◘
How often do you feel overly active and compelled to do things, like you were driven by a motor?	◘	◘	◘	◘	◘

Website 4

Address	http://psychcentral.com/ADHDquiz.htm

Adult ADD/ADHD Test

Jasper/Goldberg Adult ADHD Screening Quiz
by Larry Jasper & Ivan Goldberg

Instructions: The 24 items below refer to how you have behaved and felt DURING MOST OF YOUR ADULT LIFE. If you have usually been one way and recently have changed, your responses should reflect HOW YOU HAVE USUALLY BEEN. For each item, indicate the extent to which it is true by checking the appropriate box next to the item.

1. At home, work, or school, I find my mind wandering from tasks that are uninteresting or difficult.
2. I find it difficult to read written material unless it is very interesting or very easy.
3. Especially in groups, I find it hard to stay focused on what is being said in conversations.
4. I have a quick temper... a short fuse.
5. I am irritable, and get upset by minor annoyances.
6. I say things without thinking, and later regret having said them.
7. I make quick decisions without thinking enough about their possible bad results.
8. My relationships with people are made difficult by my tendency to talk first and think later.
9. My moods have highs and lows.
10. I have trouble planning in what order to do a series of tasks or activities.
11. I easily become upset.
12. I seem to be thin skinned and many things upset me.
13. I almost always am on the go.
14. I am more comfortable when moving than when sitting still.
15. In conversations, I start to answer questions before the questions have been fully asked.
16. I usually work on more than one project at a time, and fail to finish many of them.
17. There is a lot of "static" or "chatter" in my head.
18. Even when sitting quietly, I am usually moving my hands or feet.
19. In group activities it is hard for me to wait my turn.
20. My mind gets so cluttered that it is hard for it to function.
21. My thoughts bounce around as if my mind is a pinball machine.
22. My brain feels as if it is a television set with all the channels going at once.
23. I am unable to stop daydreaming.
24. I am distressed by the disorganized way my brain works.

When you are done reviewing these materials, please use the paper to jot down symptoms that will help you remember how to fake on the tests you will be given. Tell the examiner when you are done.

Appendix L: Instruction Check for Malingering Group

Instruction Check

Please write below the instructions you have been given. The researcher will also ask you to verbally describe the role you have been asked to fulfill.

Please list below several characteristics of individuals with Attention Deficit Hyperactivity Disorder:

1.

2.

3.

Please list a few strategies you will use to convince the tests that *you have* Attention Deficit Hyperactivity Disorder:

1.

2.

3.

If you have any questions at all, please take the time to ask them now!

Appendix M: Post-Test Questionnaire

Post-test Questionnaire

Please write the instructions (role) you were given at the very beginning of this study:

How well did you understand these instructions given at the very beginning?

1	2	3	4	5
Not at All		Somewhat Understood		Perfectly Well

How hard did you try to follow the instructions or role given at the very beginning?

1	2	3	4	5
Not at All		Somewhat Hard		Your Hardest

How difficult was it for you to adhere to the instructions and play the role throughout the session?

1	2	3	4	5
Not at All		Somewhat Difficult		Very Difficult

How successful do you think you were at following those instructions or playing the role?

1	2	3	4	5
Not at All		Somewhat Successful		Extremely Successful

How motivating was the incentive offered for successfully playing the role?

1	2	3	4	5
Not at All		Somewhat Motivating		Extremely Motivating

What strategies did you use to make sure you followed your instructions?

1.

2.

3.

Appendix N: Random Responding Questionnaire

Random Responding Questionnaire

1. Please circle one statement that corresponds to the proportion of test questions which you were unable to pay attention to and answered randomly:
   a. None of the questions
   b. A few of the questions
   c. Several of the questions
   d. Many of the questions
   e. Most of the questions
   f. Almost every question
   g. All of the questions

2. Please indicate the approximate number of questions answered randomly: _____

3. I took _____ minutes to complete the test.

Appendix O: Debriefing Form for Honest Groups

Explanation of Study: Debriefing Form for Honest Groups

Thank you for participating in our study! As we told you in the beginning, the purpose of this study is to determine how effectively a questionnaire discriminates between individuals with and without ADHD. Such information is important to accurately diagnosing students who deserve accommodations and need treatment for the disorder.

In this study, some students were instructed to fake having ADHD, and they will be compared to groups of students who were asked to respond honestly, to respond randomly, or have been previously diagnosed with ADHD. Thus, the independent variable is whether a person was instructed to fake, randomly respond, or answer honestly. The dependent variable is how well the groups will perform on the questionnaire. We hypothesize that the questionnaire will be able to detect who is faking and distinguish them from true responders and random responders. The questionnaire used in this study is often used to detect the presence of ADHD, and now we want to see how well they are able to differentiate feigned ADHD from true ADHD and random responding.

We ask that you do not discuss this with anyone. If others know how the study is run, then we will not get the effort and motivation from participants necessary for us to determine if this questionnaire really works! This is an important study that can bring the University of Kentucky much recognition if it is run properly, so please do not discuss what you did with anyone!

Thank you again for your participation! It would not be possible to continue psychological research without your goodwill and cooperation. We hope that you enjoyed this experiment. If you would like to learn more about faking of disorders, please feel free to contact the primary investigator or consult the references below. We expect to have the results analyzed by next summer, so feel free to contact the primary investigator if you are interested in the findings.

Brittany Walls
111-C Kastle Hall
(804) 317-6770

References:

Harrison, A. G., Edwards, M. J., & Parker, K. C. H. (2007). Identifiying students faking ADHD: Preliminary findings and strategies for detection. *Archives of Clinical Neuropsychology, 22,* 577-588.

Sollman, M. J., Ranseen, J. D., & Berry, D. T. R. (2010). Detection of feigned ADHD in college students. *Psychological Assessment, 22* (2), 325-335.

Sullivan, B. K., May, K., & Galbally, L. (2007). Symptom exaggeration by college students in attention-deficit hyperactivity disorder and learning disorder assessments. *Applied Neuropsychology, 14,* 189-207.

Appendix P: Debriefing Form for Malingering Group

Explanation of the Study: Debriefing Form for Faking Group

Thank you for participating in our study! As we told you in the beginning, the purpose of this study is to determine how effectively a questionnaire discriminates between individuals with and without ADHD. Such information is important to accurately diagnosing students who deserve accommodations and need treatment for the disorder.

In this study, some students were instructed to fake having ADHD, and they will be compared to groups of students who were asked to respond honestly, to respond randomly, or have been previously diagnosed with ADHD. Thus, the independent variable is whether a person was instructed to fake, randomly respond, or answer honestly. The dependent variable is how well the groups will perform on the questionnaire. We hypothesize that the questionnaire will be able to detect who is faking and distinguish them from true responders and random responders. The questionnaire used in this study is often used to detect the presence of ADHD, and now we want to see how well they are able to differentiate feigned ADHD from true ADHD and random responding.

In order to motivate you to fulfill your role as well as you could, we offered that you would receive a "bonus incentive" of $25 if you followed instructions and were successful in your role. In reality, everyone who received this role is given this incentive, regardless of how well they were able to fake ADHD. We said it would only be earned if you were successful to make sure you were motivated and tried your hardest to follow your instructions.

We ask that you do not discuss this with anyone. If others know how the study is run, then we will not get the effort and motivation from participants necessary for us to determine if this questionnaire really works! This is an important study that can bring the University of Kentucky much recognition if it is run properly, so please do not discuss what you did with anyone!

Thank you again for your participation! It would not be possible to continue psychological research without your goodwill and cooperation. We hope that you enjoyed this experiment. If you would like to learn more about faking of disorders, please feel free to contact the primary investigator or consult the references below. We expect to have the results analyzed by next summer, so feel free to contact the primary investigator if you are interested in the findings.

Brittany Walls
111-C Kastle Hall
(804) 317-6770

References:

Harrison, A. G., Edwards, M. J., & Parker, K. C. H. (2007). Identifiying students faking ADHD: Preliminary findings and strategies for detection. *Archives of Clinical Neuropsychology, 22,* 577-588.

Sollman, M. J., Ranseen, J. D., & Berry, D. T. R. (2010). Detection of feigned ADHD in college students. *Psychological Assessment, 22* (2), 325-335.

Sullivan, B. K., May, K., & Galbally, L. (2007). Symptom exaggeration by college students in attention-deficit hyperactivity disorder and learning disorder assessments. *Applied Neuropsychology, 14,* 189-207.

Appendix Q: Debriefing Form for Random Groups

Explanation of the Study: Debriefing Form for Random Groups

Thank you for participating in our study! As we told you in the beginning, the purpose of this study is to determine how effectively a questionnaire discriminates between individuals with and without ADHD. Such information is important to accurately diagnosing students who deserve accommodations and need treatment for the disorder.

In this study, some students were instructed to fake having ADHD, and they will be compared to groups of students who were asked to respond honestly, to respond randomly, or have been previously diagnosed with ADHD. Thus, the independent variable is whether a person was instructed to fake, randomly respond, or answer honestly. The dependent variable is how well the groups will perform on the questionnaire. We hypothesize that the questionnaire will be able to detect who is faking and distinguish them from true responders and random responders. The questionnaire used in this study is often used to detect the presence of ADHD, and now we want to see how well they are able to differentiate feigned ADHD from true ADHD and random responding.

We ask that you do not discuss this with anyone. If others know how the study is run, then we will not get the effort and motivation from participants necessary for us to determine if this questionnaire really works! This is an important study that can bring the University of Kentucky much recognition if it is run properly, so please do not discuss what you did with anyone!

Thank you again for your participation! It would not be possible to continue psychological research without your goodwill and cooperation. We hope that you enjoyed this experiment. If you would like to learn more about faking of disorders, please feel free to contact the primary investigator or consult the references below. We expect to have the results analyzed by next summer, so feel free to contact the primary investigator if you are interested in the findings.

Brittany Walls
111-C Kastle Hall
(804) 317-6770

References:

Harrison, A. G., Edwards, M. J., & Parker, K. C. H. (2007). Identifiying students faking ADHD: Preliminary findings and strategies for detection. *Archives of Clinical Neuropsychology, 22,* 577-588.

Sollman, M. J., Ranseen, J. D., & Berry, D. T. R. (2010). Detection of feigned ADHD in college students. *Psychological Assessment, 22* (2), 325-335.

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Appendix R: Permission for Use of Data Form

Permission for Use of Data

Because we misled you about the bonus being contingent on successfully feigning, we want to give you the opportunity to allow or prevent our use of your data. Please complete the form according to your wish.

If you do not wish to have your data included, please tell the examiner now.

I MAINTAIN CONSENT / WITHDRAW CONSENT to have my data used in this study.

(circle one)

_____

Print Name Date

_____

Sign Name

_____

Witness Date

Appendix S: Permission to Contact for Future Research

Permission to Contact for Future Research

Would you be interested in participating in future studies about Attention Deficit-Hyperactivity Disorder?

_____Yes _____ No

Would you like to be contacted for future research opportunities in this research area?

_____Yes _____ No

If so, please list:

Name:_____

Phone #:_____

Email:_____

Appendix T: Payment Receipt for Malingering Participants

Receipt for Payment

I acknowledge that I have received $25 payment for my participation in the study "Utility of the CAARS Validity Scales in Identifying Feigned ADHD, Random Responding and Genuine ADHD in a College Sample."

Name (Printed): _____
Signature: _____
SS#: _____
Date: _____
Witness: _____

Appendix U: Payment Receipt for Clinical Participants Not in Need of Research Credits

Receipt for Payment

I acknowledge that I have received $25 payment for my participation in the study "Utility of the CAARS Validity Scales in Identifying Feigned ADHD, Random Responding and Genuine ADHD in a College Sample."

Name (Printed): _____
Signature: _____
SS#: _____
Date: _____
Witness: _____

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Vita

EDUCATION

Anticipated May 2020	Ph.D. in Clinical Psychology University of Kentucky; Lexington, KY
Anticipated July 2016	M.S. in Clinical Psychology University of Kentucky; Lexington, KY Master's Thesis: *Utility of the CAARS Validity Scales in Identifying Feigned ADHD, Random Responding, and Genuine ADHD in a College Sample* Chair: David Berry, Ph.D.
May 2012	B.A. in Psychology Minor in Cultural Anthropology Duke University; Durham, NC

CLINICAL EXPERIENCE

University of Kentucky Medical Center, Department of Neurology (July 2015-July 2016)
Jesse G. Harris, Jr. Psychological Services Center (August 2015-present)
Duke University Medical Center, Department of Neurology (June 2012-July 2014)
Central Regional Hospital (January 2012-May 2012)

PRESENTATIONS

ORAL

Walls, B.D. (2015). Clinical case presentation of "T": Patient with a bilateral anterior communicating artery stroke. Presented at the Bluegrass Area Neuropsychology Group (BANG) meeting, November.

POSTERS

Koehl, L.M., Combs, H.L, **Walls, B.D.**, Berry, D.T.R., & Han, D.Y. (2016, February).Validating Neurocognitve Measures in an Adolescent Sports Concussion Sample: ImPACT Computerized Testing versus Traditional Neuropsychological Measures. Poster presented at the 12th Annual Meeting of the International Neuropsychological Society, Boston, Massachusetts.

Attix, D.K., Ruppert, P. D., Zarzour, R., **Walls, B.D.**, & Bytomski, J. (2014, June). History of prior concussion in college athletes: Differential implications for normative data across measures. Poster presented at the 12th Annual Meeting of the American Academy of Clinical Neuropsychology, New York, New York.

Ruppert, P. D., Bytomski, J., Zarzour, R., **Walls, B.D.**, & Attix, D.K. (2014, June). Regression-based normative standards for tracking cognitive recovery from concussion in college athletes. Poster presented at the 12th Annual Meeting of the American Academy of Clinical Neuropsychology, New York, New York.

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

Combs, H.L., Folley, B.S., Berry, D.T.R., Segerstrom, S.C., Han, D.Y., Anderson-Mooney, A.J., **Walls, B.D.**, & van Horne, C. (2015). Cognition and Depression Following Deep Brain Stimulation of the Subthalamic Nucleus and Globus Pallidus Pars Internus in Parkinson's Disease: A Meta-Analysis. *Neuropsychology Review, 25*(4), 439-454.

BOOK CHAPTERS

Berry, D.T.R., **Walls, B.D.**, Bouquet, C.M. & Wallace, E. (in press). Malingered neurocognitive deficits in Mild Traumatic Brain Injury. In. D.Y Han (Ed.) Acquired brain injury: clinical essentials for neurotrauma and rehabilitation professionals. New York: Springer Publishing Company.

Combs, H.L., Dunham, K.J., **Walls, B.D.**, & Anderson-Mooney, A.J. (in press). Post-ABI Movement Disorders. In. D.Y Han (Ed.) Acquired brain injury: clinical essentials for neurotrauma and rehabilitation professionals. New York: Springer Publishing Company.

TEACHING EXPERIENCE

University of Kentucky; Lexington, KY

PSY 215, *Experimental Research Methods* (Spring 2016)
PSY 100, *Introduction to Psychology* (Fall 2015)
PSY 100, *Introduction to Psychology* (Summer 2015)
PSY 100, *Introduction to Psychology* (Spring 2015)
PSY 100, *Introduction to Psychology* (Fall 2014)

FELLOWSHIPS, SCHOLARSHIPS AND AWARDS

University of Kentucky Lyman T. Johnson Fellow (August 2014-present)
Southern Regional Educational Board (SREB) Doctoral Scholar (August 2014-present)

PROFESSIONAL SOCIETIES

Association of Neuropsychology Students in Training
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