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**ADHD RATING SCALES' SUSCEPTIBILITY TO FAKING IN A  
COLLEGE STUDENT SAMPLE**

A Thesis in

School Psychology

by

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## ABSTRACT

Longitudinal research has demonstrated that symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) may continue to cause impairment into adulthood. Due to the nature of the diagnostic criteria for ADHD, clinicians must often rely on self-report data to make a diagnosis of the disorder in adults. However, self-report data is subject to intentional distortion, an issue which becomes a major concern when assessing for the disorder in the college population because students may perceive that there are benefits to having a documented diagnosis, such as helpful academic accommodations and prescriptions for medications. The purpose of the present study was to examine the ability of college students to fake a DSM-based diagnosis of ADHD on two different self-report measures, the ADHD Behavior Checklist (Murphy & Barkley, 1995) and the College ADHD Response Evaluation (CARE; Glutting, Sheslow, & Adams, 2002). Results indicated that college students without a history of ADHD diagnosis were significantly more likely than chance to be successful at faking the symptoms of ADHD on both rating scales. Approximately 93%, 69%, and 77% of participants met ADHD criteria based on the CARE factor-based items, the CARE DSM-IV symptom counts, and the ADHD Behavior Checklist items, respectively. Neither scale was more successful than the other at preventing false positives. Comparisons to other research and implications for practice are discussed.

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## CHAPTER 1 - LITERATURE REVIEW

### Introduction

In the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000), Attention Deficit/Hyperactivity Disorder (ADHD) is classified as one of the disorders usually first diagnosed in infancy, childhood, or adolescence. The disorder, in varying forms, has been recognized in children for over a century (Barkley, 2003; Wender, Wolf, & Wasserstein, 2001). Only in the last few decades, however, has the disorder been thought to continue into adulthood. This change in thinking was the result of several longitudinal studies that followed children who had been diagnosed with ADHD into adulthood (Heiligenstein, Conyers, Berns, & Smith, 1998; Wender et al.; Young, 2000).

Although the identification and treatment of ADHD is important, the increased awareness of the disorder in adulthood poses difficulties for those who must accurately diagnose it in adults. As Young (2000) cautioned, even though there has been a growing recognition of the disorder in adults, similar progress has not been made in the area of adult ADHD assessment. Also adding to the problem is the fact that the number of students seeking accommodations for ADHD in college has increased in recent years (Glutting, Sheslow, & Adams, 2002). This is a factor because these students may be different from the general population in important ways, including ability level, academic success, and compensatory skill. Consequently, even less is known about the clinical presentation and assessment of ADHD in this population (Glutting, Monaghan, Adams, & Sheslow, 2002).



Although the diagnosis of ADHD in childhood and the resulting plan for treatment and accommodation is often based on a complete assessment battery, including a review of developmental, medical, and educational history, observations, parent interviews, and rating scales from parents and teachers, this is not typically the case when documenting symptoms in adults (DeQuiros & Kinsbourne, 2001). Generally, an adult will come to the physician's or psychologist's office unaccompanied. School records may no longer be available. The adult may not have an accessible parent or spouse who can report observations. This leaves the clinician dependent upon the client's self-reports when documenting symptoms and impairment. Consequently, self-report measures carry a great deal of weight in making the diagnostic decision (DeQuiros & Kinsbourne).

While self-report measures are easy to use and allow clinicians to objectively determine the severity of ADHD symptoms in comparison to the rater's peers, they are subject to intentional distortion on the part of the rater (McFarland & Ryan, 2000). This issue becomes a major concern when assessing for the disorder in the college population because students may perceive that there are benefits to having a documented diagnosis. For example, students with ADHD may receive accommodations such as extra time on tests, alternative exam formats, and a personal tutor (U. S. Department of Education, 2000). Given the emphasis put on self-report in the diagnosis of adult ADHD as well as these potential benefits to obtaining a diagnosis, knowledge of the relative ease with which one can fake his or her answers on self-report scales for ADHD is important. The present study will address the relative susceptibility to faking of two ADHD self-report measures that can be used with the college student population. The following sections provide a background for the topic, including information about the disorder, disability

law and incentives for a diagnosis, and the assessment of ADHD. This chapter will conclude with research that has led to the present study and a statement of the hypotheses.

### Attention-Deficit/Hyperactivity Disorder (ADHD)

#### *Diagnostic Criteria*

The label and definition for ADHD have changed with each new edition of the DSM. In the DSM-II (American Psychiatric Association, 1968), this disorder was most closely approximated by the category labeled hyperkinetic reaction of childhood. High levels of motor activity served as the primary feature of the disability (Wender et al., 2001). In the DSM-III (American Psychiatric Association, 1980), additional symptoms of inattention and impulsivity were acknowledged. The disorder became known as Attention Deficit Disorder (ADD), and could be distinguished as ADD with or without hyperactivity. At the time, very little research had been conducted on ADD without hyperactivity, and researchers soon expressed concern over the lack of emphasis on symptoms of hyperactivity (Barkley, 2003). In the revised third edition (DSM-III-R; American Psychiatric Association, 1987), symptoms of hyperactivity, impulsivity, and inattention were combined into one list, and the disorder was re-named Attention-Deficit/Hyperactivity Disorder. The subtype formerly referred to as ADD without hyperactivity became known as Undifferentiated Attention-Deficit Disorder and included a disclaimer indicating that there was an insufficient amount of evidence that could be used to create diagnostic criteria at the time (Barkley).

Current criteria for ADHD can be found in the fourth edition of the DSM. According to the DSM-IV-TR (American Psychiatric Association, 2000), in order to be

diagnosed with ADHD a person must display six or more symptoms of inattention and/or six or more symptoms of hyperactivity-impulsivity. Some symptoms that cause impairment must have been present before the person was seven years old and impairment from the symptoms must be present in multiple settings. The person must experience significant impairment in social, academic, or occupational functioning, and the symptoms must not occur only during the course of another disorder, such as schizophrenia, pervasive developmental disorder, or psychotic disorder. Finally, the symptoms cannot be better accounted for by another disorder. Currently, ADHD may be coded as combined type, inattentive type, or hyperactive-impulsive type depending on which symptoms are present. As Barkley (2003) noted, the fourth edition of the DSM marked the first time that ADHD could be diagnosed when either symptoms of inattention or symptoms of hyperactivity-impulsivity occurred independently of one another.

#### *ADHD in Childhood*

The prevalence of ADHD in childhood is estimated at about 3 to 7% and it is more frequently diagnosed in males; however, this percentage varies based on the method of diagnosis and the population that is sampled (American Psychiatric Association, 2000). Some estimates of childhood prevalence have been as low as 1% and others as high as 20% (Lesesne, Abramowitz, Perou, & Brann, 2000). Prevalence rates have also been found to vary based on the criteria used. For example, Lahey et al. (1994) examined how the change in criteria would affect the percentage of identified cases within a sample of 380 clinic-referred 4- to 17-year-old children and adolescents. Using criteria from the DSM-III, DSM-III-R, and the DSM-IV, they found that a switch from the DSM-III to

DSM-III-R criteria resulted in a net increase of 7.1% in identified cases. Changes from the DSM-III to the DSM-IV criteria resulted in a net increase of 23.2% in identified cases, and changes from DSM-III-R to DSM-IV criteria resulted in a net increase of 15% in identified cases within their sample.

Lahey et al.'s (1994) sample was used to field-test the diagnostic criteria listed in the DSM-IV (American Psychiatric Association, 1994). Parents, teachers, and children were interviewed using the Diagnostic Interview Schedule for Children (Shaffer, Fisher, Piacentini, Schwab-Stone, & Wicks, 1992) and parents, teachers, and the interviewers completed measures of psychological, educational, and social functioning. Based on these field trials, support for the two dimensions of ADHD (hyperactivity-impulsivity and inattention) was reported. For example, the number of symptoms of hyperactivity-impulsivity, but not the number of inattention symptoms, was related to an overall measure of psychological impairment. The number of symptoms of inattention, but not the number of hyperactive-impulsive symptoms, was related to teacher- and parent-rated academic impairment. Ratings of overall impairment were significantly higher for the children classified as having ADHD combined type as compared to those without ADHD or with the predominately inattentive type (Lahey, et al.).

Research using factor analysis has also supported the two dimensions of ADHD delineated in the DSM-IV. For example, Wolraich et al. (2003) conducted confirmatory factor analyses on teacher ratings of the 18 DSM-IV ADHD symptoms for 19,542 elementary school-aged children from Spain, Germany, and urban and suburban areas of the United States. Two factors that were representative of the two dimensions of DSM-IV

ADHD (inattention and hyperactivity/impulsivity) consistently emerged across different geographic locations, age, and sex.

*ADHD in Adolescence and Adulthood*

There is a long history of research on the presence of ADHD in children, but research on the presentation of the disorder in late adolescence and adulthood has been collected more recently because, for most of the disorder's history, ADHD was not diagnosed in adults (Wender et al., 2001). Longitudinal studies which followed children with ADHD through adolescence and into adulthood have generally resulted in varying percentages of the samples exhibiting a continuation of symptoms. For example, in one study, 43% of males who had been previously diagnosed as having a DSM-III or DSM-III-R diagnosis of ADHD with hyperactivity continued to meet the criteria 8 to 12 years later. At follow-up, the participants' ages ranged from 16 to 21 years (Mannuzza, Klein, Bonagura, Malloy, Giampino, & Addalli, 1991). Weiss, Hechtman, Milroy, and Perlman (1985) found that 66% of their sample continued to have at least one impairing symptom of ADHD at the time of a 15-year follow-up, when the participants ranged in age from 21 to 33 years. Even higher percentages were reported in several other longitudinal studies. For example, Barkley, Fischer, Edelbrock, and Smallish (1990) followed a sample of 4- to 12-year-old children who were considered to meet criteria for DSM-III-R ADHD. They found that 72% of the children met criteria eight years after being initially diagnosed. Biederman et al. (1996) reported a similarly high percentage of continued cases after following their participants for four years. The results of these longitudinal studies vary somewhat, which may be a result of several factors including the use of different types of samples (clinic-referred vs. screening samples), measurement at

different ages, and the employment of different diagnostic criteria across studies (Barkley, 2003). However, they all provide evidence that for some individuals, ADHD does not remit simply because they have entered adolescence or adulthood.

Research on the disorder in late adolescence and adulthood has revealed that the presence of the disorder is related to important psychological, educational, and social outcomes. One of the most consistent findings is that comorbid conditions are frequently present. In general, researchers have reported significantly higher levels of comorbid externalizing behavior disorders (e.g., conduct disorder, oppositional defiant disorder, antisocial personality disorder) in adults with ADHD as compared to control groups (Barkley et al., 1990; Biederman et al., 1996; Biederman et al., 1993; Mannuzza et al., 1991; Murphy & Barkley, 1996a). Less consistent results have been reported regarding whether adults with ADHD experience significantly more comorbid internalizing disorders. In one study, adults with ADHD experienced similar numbers of comorbid anxiety and affective disorders compared to adults who self-referred to a clinic for problems other than symptoms related to ADHD (Murphy & Barkley). Biederman et al. (1993) reported that in their sample, adults with ADHD had significantly higher rates of anxiety disorders than a control sample of adults without ADHD. However, other researchers have not found significant differences between ADHD groups and control groups on the basis of comorbid affective and anxiety disorders (Biederman et al., 1996; Mannuzza et al.; Weiss et al., 1985).

Somewhat inconsistent research results have also been reported regarding the use of alcohol and other drugs in conjunction with having a diagnosis of ADHD in adulthood. While some researchers reported significantly higher levels of comorbid alcohol use in

their ADHD groups as compared to their control groups (e.g., Biederman et al., 1993; Murphy & Barkley, 1996a), others did not find significant differences (e.g., Manuzza et al., 1991; Weiss et al., 1985). Similarly, while some found differences between ADHD groups and control groups in the use of other illegal drugs (e.g., Biederman et al., 1993; Mannuzza et al.), others did not (e.g., Murphy & Barkley, 1996a). Barkley et al. (1990) may have provided some information regarding the inconsistency of these results by splitting their sample of children with ADHD (hyperactive) into those with and without conduct disorder. Results indicated that those with only ADHD were no more likely to use marijuana or cigarettes than the control group. However, the mixed ADHD/conduct disorder group used these drugs at two to five times the rate of the ADHD only group and the control group.

A history of academic problems has also been reported for adolescents and adults with continuing symptoms of ADHD. Barkley et al. (1990) reported that for their sample, those with ADHD were more likely to have been placed in special education classes for learning disabilities and behavior disorders, to have repeated a grade, and to have been suspended than those in the control group. Similarly, Biederman et al. (1993) reported higher levels of a history of repeated grades, tutoring, placement in special education classes, and reading disability. Furthermore, when Biederman et al. examined the school performance variables for the participants who had ADHD without any comorbid disorder, the group with ADHD still demonstrated more evidence of school problems than the groups of adults without ADHD and without other disorders. In their 15-year prospective follow-up study, Weiss et al. (1985) reported that only about 5% of their ADHD group had completed college, whereas 41% of the control group had earned a

university degree. Similarly, 31% of the ADHD group never finished high school, but only 9% of the control group had failed to complete high school.

### *ADHD in College Students*

Results that indicate adolescents and adults with ADHD have histories of poor school performance support Glutting, Monaghan, et al.'s (2002) contention that college students with ADHD may be different from other adults with ADHD. Students who enter college are not likely to have had such poor histories of school performance, and therefore the results of the previously described longitudinal studies may not be representative of the characteristics of college students with ADHD (Glutting, Sheslow, et al., 2002). Consequently, our knowledge of the characteristics of college students with ADHD is limited in comparison to the characteristics of people in the general population who have been diagnosed with ADHD.

Researchers have reported that between 4 and 7% of U.S. college students self-report enough DSM-IV symptoms of ADHD to meet criteria for a subtype of the disorder (DuPaul et al., 2001; Heiligenstein et al., 1998; Weyandt, Linterman, & Rice, 1995). However, these estimates do not come from nationally representative samples. Glutting, Sheslow, et al. (2002) noted that because no studies have prospectively investigated post-secondary students who have ADHD, the prevalence statistics available are only rough estimates.

Several researchers have contributed preliminary information about the characteristics of college students with ADHD. Heiligenstein, Guenther, Levy, Savino, and Fulweiler (1999) completed a retrospective record review of students who had been seen by a college counseling service. They classified some charts into an ADHD group,



which included those students with a DSM-IV diagnosis of ADHD. The ADHD group did not include students who were taking psychotropic medications, or who had a comorbid diagnosis. The researchers also obtained a control group comprised of students who were seeking career counseling. All students had taken a measure of potential problems, including depression, anxiety, academics, interpersonal relationships, physical health, substance abuse, and lethality. Results indicated that the ADHD group had lower mean grade point averages, were more likely to be on academic probation, and reported significantly greater levels of academic problems than the control group. However, the two groups did not differ on any of the remaining problems (i.e., depression, anxiety, etc.).

Turnock, Rosen, and Kaminski (1998) further added to the literature on college students with ADHD by trying to determine how college students with high numbers of ADHD symptoms may be different from their low-symptom peers. They hypothesized that perhaps those with higher levels of symptoms use more academic coping strategies, such as goal-setting and time-management. However, they found that their high-symptom sample used significantly fewer of these strategies than the low-symptom peers. The college students with higher levels of ADHD symptoms achieved significantly lower grades, and dropped out of classes more often than their peers who reported few ADHD symptoms. For the high-symptom group, the only variable that was a significant predictor of grade point average was measured intelligence. Furthermore, use of coping strategies did not differ between the academically successful and unsuccessful high-symptom participants.

Taken together, these studies suggest that the academic problems associated with ADHD in childhood and adolescence continue to be present to some degree during college. Interestingly, Heiligenstein et al. (1999) found that, although a history of ADHD symptoms in childhood was necessary for inclusion in their ADHD group, most of the students in this group had not had a history of academic problems in childhood. Instead, academic problems began during their college education. They suggested that perhaps the change in level of academic and familial support, as well as the increased difficulty of college work may have resulted in the decline in academic performance. Turnock et al.'s (1998) study suggests that intellectual ability, rather than effective coping strategies, contributes to higher levels of academic success in college students with ADHD. Turnock et al. hypothesized that perhaps higher-ability students are able to compensate for their ADHD symptoms during their elementary and high school educations, but have difficulty effectively meeting the requirements of a more demanding college education because, due to the nature of the disorder, they do not recognize the need or know how to implement effective coping strategies.

Due to the increased awareness that ADHD symptoms continue into adolescence and adulthood and the presence of academic impairments in college students with symptoms of ADHD, increasing numbers of college students have been requesting accommodations for ADHD at the college level (Glutting, Sheslow, et al., 2002; Gordon & Murphy, 2000). This creates a need for accurate diagnosis of ADHD and assessment of its adaptive impairments in college students. However, given our limited knowledge of the presentation of this disorder in the college population, accurate diagnosis and appropriate service delivery is difficult (DuPaul et al., 2001). The next sections will

describe the laws that have contributed to a need for empirically valid assessment methods for ADHD in college students, and the problems facing those who must evaluate and provide services to post-secondary students with ADHD.

### Federal Disability Law

#### *Federal Regulations*

Along with the previously noted factors, the increase in the number of post-secondary students seeking accommodations for learning disabilities and ADHD has commonly been attributed to the passage of two laws (e.g., Glutting, Sheslow, et al., 2002; Gordon, Lewandowski, Murphy, & Dempsey, 2002) which prohibit discrimination on the basis of a disability and apply to the majority of school districts and post-secondary schools in the United States (U. S. Department of Education, 2002). These laws include Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112), which applies to federally-funded organizations, and the Americans with Disabilities Act of 1990 (ADA; P.L. 101-336), which applies to both publicly and privately-funded organizations. Section 504 and ADA extend the protections afforded by the Civil Rights Act of 1964 to those people who have a disability (Gordon & Keiser, 2000). The ADA defines “disabled” as follows:

- (a) a physical or mental impairment that substantially limits one or more of the major life activities of such individual, (b) a record of such an impairment, or (c) being regarded as having such an impairment (ADA of 1990, 42 U.S.C. § 12101(2)).

“Major life activities” have been further defined as including taking care of oneself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and

working (Nondiscrimination on the Basis of Disability in State and Local Government Services, Final Rule, 1991). ADA and Section 504 are considered to apply to post-secondary students with learning disabilities and ADHD primarily because learning and working are considered major life activities (Gordon & Keiser).

The intent of ADA and Section 504 is different from that of the special education laws that apply to children with disabilities through their secondary school years (Gordon & Keiser, 2000). Beginning with the Education for All Handicapped Children Act of 1975 (P.L. 94-142), through to the current version of the law (Individuals with Disabilities Education Improvement Act of 2004, P.L. 108-446), the intent has been to provide children who have disabilities with instruction tailored to meet their needs. This specially designed instruction is meant to help children succeed in school. If the children do not make academic progress, then changes are to be made to the services provided. Unlike these laws, the goal of ADA and Section 504 is to ensure that individuals with disabilities are not denied access to employment, education, or other services solely because they have a disability. The focus is not on whether the person achieves success when provided with accommodations; rather, it is on providing equal opportunity for success (Gordon & Keiser). Due to differences in the intent of the laws and differences in how disabilities are defined, some individuals who receive services for a disability in elementary and secondary school no longer qualify as students with disabilities once they enter a post-secondary institution. Even if they continue to qualify for services, they may not be entitled to the same degree or types of accommodations.

Consequently, in order to determine whether students who have previously had a diagnosis of ADHD qualify for services under ADA and/or Section 504, an updated,

thorough evaluation will likely be required. The history of ADHD symptoms and record of accommodations will serve as valuable information for those who must determine these students' eligibility and need for accommodations in college (Gordon & Murphy, 2000). Sometimes, however, students who have never had a diagnosis of ADHD seek accommodations for the disorder after they have started college. Other students may first seek accommodations for the disorder after they have completed graduate or professional school and find that they have difficulties passing their licensure exams (Ranseen & Parks, 2005). Given the findings of Heiligenstein et al. (1999) and Turnock et al. (1998), it is not unexpected for some students to first seek help for ADHD after secondary schooling, but an initial ADHD diagnosis for students who are engaged in post-secondary education or beyond is somewhat controversial due to how ADA has been interpreted (Gordon & Murphy). Federal regulations and court cases have refined the definition of a disability to mean a substantial limitation in one or more of the major life activities, as compared to the average person in the general population (Gordon & Keiser, 2000; Ranseen & Parks). Because the average person does not complete college, it is difficult to demonstrate that a person who has successfully completed high school without accommodations is disabled compared to the average person. This is especially difficult when the person has successfully completed college and entered graduate school before requesting accommodations (Latham & Latham, n.d.).

In court cases related to ADA, some judges have determined that students who are first seeking accommodations for learning disabilities or ADHD after high school are not eligible under the ADA because of the average person standard. Other judges, however, have acknowledged that students who have been more successful than the average person

may still qualify for accommodations if they are compared to the average person with similar levels of training, skill, and ability (Gregg & Scott, 2000). Latham and Latham (n.d.) noted that the emerging legal standard for determining disability can be described as follows:

the impairment's impact on one or more major life activities must be measured by comparing the individual's performance, or the conditions, manner, or duration of that individual's performance, of a major life activity with that of the average member of the population. Generally, the comparison must be made while considering the positive and negative effects of remedial measures such as coping strategies, and medications (p. 89).

However, a survey of clinicians who make recommendations for testing accommodations indicated that, in practice, there is disagreement regarding the appropriate reference group to use in making a disability determination under the ADA. For example, 36% of respondents rated "To be considered as having a disability under the ADA, an individual has to show impairment when compared to other students in a similar college or professional program" as true, and 43% of respondents rated "Under the ADA, clinicians should determine impairment by comparing a patient's test scores with norms for students at similar educational levels" as true (Gordon et al., 2002, p. 361).

The decisions regarding who is eligible for accommodations in post-secondary institutions are therefore complicated not only by the different standards for eligibility between elementary/secondary schools and post-secondary schools, but also by whether to compare college students to the average person in the general population or the average person with similar levels of ability (Gregg & Scott, 2000). Unfortunately, a third

complication is also present. The accommodations and treatments provided to students under the ADA and Section 504 could be beneficial to any student, even those without disabilities. Consequently, college students may perceive that there are powerful incentives for obtaining a diagnosis. This makes accurate diagnosis and decisions about accommodations even more difficult.

### *Incentives for a Diagnosis*

Data from a Postsecondary Education Quick Information System (PEQIS) survey that was conducted in 1998 indicated that approximately 72% of the United States' two- and four-year postsecondary schools enrolled students with disabilities in the 1996-1997 or 1997-1998 school years. About 98% of these schools reported that they provided at least one type of accommodation to these students. Types of accommodations and percentages of the institutions providing those accommodations are as follows: alternate exam formats or additional time (88%), tutors (77%), readers/classroom note-takers/scribes (69%), registration assistance/priority registration (62%), adaptive equipment and technology (58%), textbooks on tape (55%), sign language interpreters/translators (45%), and course substitutions or waivers (42%; U.S. Department of Education, 2000). This list enumerates some of the accommodations available to students with disabilities. Not all of them are appropriate for a student with ADHD. Some accommodations that may be appropriate for those with ADHD include tape recorders for lectures, note-takers, hard copies of notes, extended time on tests, separate testing rooms, and oral rather than written exams (LaRosse, 2005). While some of these accommodations are helpful for students with disabilities, they can also be of assistance

to students without disabilities (Elliott, Kratochwill, & McKevitt, 2001; McKevitt & Elliott, 2003; Schulte, Elliott, & Kratochwill, 2001).

Along with the academic accommodations students with ADHD may receive, there is also the possibility of obtaining prescription medications including methylphenidate (e.g., Ritalin) and amphetamines (e.g., Adderall and Dexedrine). Studies of drug use indicate that there is a strong upward trend in the use of medications to treat ADHD. For example, one company that manages pharmacy benefits noted the “exceptionally high” (Medco Health Solutions, 2005, p. 9) trend rate for ADHD drugs of 30.5% between 2003 and 2004. During this same time period, the trend in young adults ages 20 to 34 increased 40%, with an increased utilization rate of 23.1% (Medco Health Solutions). Access to these drugs may be desirable to some individuals. In a study of 10,904 randomly selected college students from 119 four-year colleges in 39 U.S. states, 6.9% of college students reported life-time, non-medical use of prescription stimulants, 4.1% reported non-medical use in the past year, and 2.1% reported non-medical use in the past month. Past year prevalence rates for individual schools ranged from 0% to 25% (McCabe, Knight, Teter, & Wechsler, 2005).

The United States Drug Enforcement Administration (DEA) reported that from January 1990 to May 1995, methylphenidate was ranked in the top 10 most frequently reported controlled drugs stolen. The DEA has received many reports of stimulant medication theft from schools and homes where it is stored. Additionally, numerous states have reported scams in which a parent or other adult will take a child to multiple physicians to obtain medication for ADHD, and then use the drug themselves. Furthermore, the DEA has received reports of adolescents giving and selling



methylphenidate to friends and classmates, and anecdotal reports from students and faculty on college campuses indicating that methylphenidate is often used as a party drug and study aid (Woodworth, 2000). Consequently, there may be an incentive not only to obtain the drug for personal use, but also to sell it.

Given these powerful incentives, clear documentation guidelines and psychometrically sound assessment methods are needed to ensure that valid diagnoses are made and resources are allocated to those who need them in order to have the same opportunity to succeed as those students without disabilities. However, there are no universally accepted national guidelines for the documentation of ADHD at the college level. Consequently, the standards for making diagnostic decisions and recommendations for accommodations vary widely (Gordon et al., 2002).

Gordon et al. (2002) acknowledged that, due to the increase in postsecondary students identified with learning disabilities or ADHD who are seeking accommodations, there is a growing market for psycho-educational evaluations that address disability diagnoses and accommodation recommendations for college students. In reviewing student documentation to various testing organizations, Gordon et al. noted that they had observed a wide variety of approaches to the clinical assessment of ADHD. Even by searching verification guidelines published by the offices of disability services at different institutions, one can observe how inconsistently the diagnoses of ADHD may be made. Some schools do not require that any particular assessment techniques be used in making the diagnosis (e.g., Boise State University, 2004; Boston University, n.d.; North Carolina State University, n.d.) whereas other institutions provide detailed requirements

including diagnostic interviews, aptitude tests, achievement tests, objective measures of attention, self-reports, and observer reports (e.g., Pennsylvania State University, 2005).

Gregg and Scott (2000) acknowledged that before national standards for the documentation of ADHD at the post-secondary level can be developed, research to support the standards is needed. As mentioned previously, several issues make the assessment of ADHD in this population difficult. The next sections will describe these difficulties as well as what is currently known about ADHD assessment in adults.

## Assessment of ADHD

### *Child Assessment Practices*

Several groups have published best practices or practice parameters for the assessment of ADHD in children and adolescents (e.g., American Academy of Pediatrics, 2000; Dulcan & Work Group on Quality Issues, 1997). These guidelines recommend that assessment of ADHD include data from multiple sources across multiple settings using multiple methods. More specifically, they indicate that data should be collected from parents and school professionals, school records should be reviewed, and a medical evaluation should be conducted. Those assessing for ADHD should also consider differential diagnoses, and assess for coexisting disorders (American Academy of Pediatrics; Dulcan et al.). Dulcan et al. further indicated that interviews, structured rating scales, structured behavioral observations, and psychoeducational testing may be appropriate methods of gathering information.

Surveys of the assessment practices of those who evaluate for the presence of ADHD indicate that many practitioners are following these guidelines when they work with children and adolescents. For example, in a survey of the assessment practices of

school psychologists, 82.3% of respondents included parent input and 95.6% of respondents included teacher input in all of their evaluations for ADHD. Rating scales, interviews, and observations were the most frequently used assessment techniques. These methods were each used by 80% or more of the respondents. About half of the respondents routinely assessed for comorbid disorders (Demaray, Schaefer, & DeLong, 2003). Another survey provided information on the child assessment practices of practitioners who were attending a conference on child assessment. The participants included psychologists, psychiatric social workers, counselors, psychiatric nurses, and other professionals. Most of these professionals reported using family and child interviews, as well as reviews of treatment records when they were assessing for the presence of a behavior disorder. About 40% and 37% reported use of parent and teacher behavior rating scales, respectively. About 41% conducted naturalistic observations, and a similar percentage reviewed recent report cards (Palmiter, 2004).

Besides psychiatrists and psychologists, pediatricians are also frequently involved in the assessment of ADHD. Salmon and Kemp (2002) examined the differences between the ADHD assessment practices of child and adolescent psychiatrists and pediatricians in the United Kingdom. All of the practitioners surveyed used clinical interviews with parents and observed the child while in the assessment room. About 83% of psychiatrists and 92% of pediatricians corresponded with schools. Parent and teacher checklists were used by all of the psychiatrists and about 87% of the pediatricians. Assessment practices used more frequently by pediatricians than psychiatrists included psychometric tests by a psychologist, speech and language assessments, neurological evaluations, cardiovascular system examinations, assessments for congenital disorders, fragile X tests, hearing and

vision screenings, CT/MRI scans, and measures of head circumference. The psychiatrists were more likely than the pediatricians to do a mental status examination (Salmon & Kemp).

### *Adult Assessment*

#### *Guidelines*

Recommendations for the assessment of adult ADHD often take the form of guidelines for documenting the disorder. For example, the Consortium on ADHD Documentation (2000) presented documentation guidelines that can be used by post-secondary institutions, testing services, and licensure boards when making decisions regarding who is eligible for accommodations. These guidelines indicate that diagnoses should only be made by qualified professionals, evaluation data should be collected within the past three years, and evidence of impairment during childhood should be reported (based on prior transcripts, report cards, teacher comments, school records, third-party interviews, etc.). Additionally, evidence of current impairment in two or more settings should be presented. A diagnostic interview should provide information about the following: a history of symptoms, a developmental history, family history of ADHD, medical history, psychosocial history, academic history, prior psychoeducational testing results, employment history, current functional limitations, and history of treatment. The Consortium also recommended that alternative diagnoses or explanations for symptoms be considered and relevant testing be completed (in the form of psychoeducational assessments, checklists, and surveys). Finally, the evaluator should clearly address whether DSM-IV criteria for ADHD are met, and provide a rationale for any recommended accommodations. The guidelines also specify that self-reports alone are

insufficient for making the diagnosis (Consortium on ADHD Documentation). While these guidelines seem appropriate and are similar to the guidelines provided for childhood assessment, several problems that are characteristic of adult ADHD assessment may make adhering to these guidelines difficult.

#### *Problems with Adult ADHD Assessment*

Because the criteria for ADHD require that symptoms be present before the age of seven years, clinicians need to retrospectively establish that clients had symptoms during their childhoods. In order to do this, clinicians must rely on self-reported perceptions of difficulties, recollections of the clients' parents, and/or evidence of ADHD symptoms documented in past records (Murphy & Schachar, 2000; Richards, Rosen, & Ramirez, 1999; Wender et al., 2001). Further complicating the evaluation, as compared to children, adults are likely to have fewer sources of information available to aid in determining whether a diagnosis of ADHD is appropriate. Although current, systematic forms of documentation are usually available for child clients in the form of grades, test results, and classroom behavior descriptions; this type of data is typically not available for adults. Furthermore, multiple informants are generally able to provide reports of children's behaviors in home and school settings, but adults are often unaccompanied when they go to a clinician's office for evaluation. Consequently, clinicians must sometimes rely solely on self-reports (De Quiros & Kinsbourne, 2001; Murphy & Schachar, 2000; Roy-Byrne et al., 1997). Due to these characteristics of ADHD assessment in adulthood, the validity of retrospective reports, the agreement between other- and self-reports, and the validity of uncorroborated self-reports become important concerns for those who need to make valid diagnoses.

*Retrospective reports.* Brewin, Andrews, and Gotlib (1993) summarized the criticisms against retrospective reports of childhood experiences into three categories. First, childhood memories are considered to be unreliable because they are essentially an individual's reconstructions of events rather than simple copies of what happened. Secondly, memories may be distorted by varying forms of psychopathology. Finally, memories may be retrieved through selective recall, with memories that are consistent with an individual's current mood state being recalled more readily. After reviewing the literature that addressed childhood memories, Brewin et al. concluded, however, that although childhood memories are subject to normal limitations, research has demonstrated their reliability across varying clinical disorders and mood states. Consequently, the memories of those who have a psychological disorder should not be assumed to be any less reliable than the memories of other individuals. But most of the research reviewed included participants who had a mood or anxiety disorder. Furthermore, Brewin et al. noted that the memories most likely to be accurately recalled are those that are unique, consequential, and unexpected. It is unlikely that childhood experiences of inattentive and hyperactive behaviors can be characterized in this manner.

Henry, Moffitt, Caspi, Langley, and Silva (1994) studied the accuracy of different types of memories, including those for childhood hyperactivity, using longitudinal methods. The participants in their study had been assessed since birth with a variety of psychological, medical, and sociological measures. At age 18, the participants were asked to provide retrospective reports of their childhoods. These memories were then compared with measures of similar constructs that had been collected during their childhoods. The authors examined the correspondence of recall and contemporaneous data on the

following variables: residence changes, height, weight, injuries, reading, attachment to parents, family conflict, mother's depression, internalizing symptoms, hyperactivity, and delinquency (defined as appearance in court and number of arrests).

The authors found that the participants' recollections correlated significantly with prospective data for residence changes, height, weight, injuries, reading skill, and the measures of delinquency. Absolute levels of agreement, however, were low (i.e., estimates of level, frequency, or dates of specific events). The authors also found that the correspondence for the measures of internalizing symptoms, hyperactivity, and mother's depression was poor. For example, the mean correlation between recollections of hyperactivity and the prospective measures (which included self-report, teacher report, and parent report) for the entire sample was .06. Although the retrospective self-ratings did not correlate with the prospective measures, when the participants had provided self-ratings at age 11, their self-reports were as correlated with the adult reports as the parent and teacher reports were correlated with each other. Henry et al. (1994) suggested that at age 18, retrospective reports may not be valid indicators of childhood behavior problems.

Like Henry et al. (1994), Barkley, Fischer, Smallish, and Fletcher (2002) were able to use longitudinal methods to examine the validity of self-recollections of ADHD symptoms in childhood. Barkley et al. reported that everyone in their sample of 19- to 25-year-olds would have met DSM-III-R criteria for ADHD in childhood. Although these participants reported more childhood symptoms of ADHD than a group of matched controls, only 47% of them reported enough childhood symptoms to retrospectively establish ADHD in childhood. Barkley et al., however, found moderate correlations between retrospective self-ratings of childhood symptoms and the scores of parent rating

scales completed when the participants were children. Barkley et al. noted that while these correlations were larger than those reported by Henry et al., self-recollections only shared 20% of variance with the scores of parent rating scales completed when the participants were children.

To overcome the questionable validity of self-reported childhood ADHD symptoms, parents may be asked to provide retrospective reports. Researchers have explored how retrospective parent ratings compare to the retrospective reports of college students. Renk, Roberts, Klein, Rojas-Vilches, and Sieger (2005) found that although retrospective ratings of internalizing and externalizing behavior problems completed by college students and their parents were significantly correlated, mean ratings of college students for both types of behavior problems were significantly higher than the mean ratings of both fathers and mothers. Additionally, both parent and student retrospective behavior ratings were significantly related to other variables measured in the study. For example, the college students' ratings of childhood internalizing and externalizing behaviors were higher when they were currently experiencing more psychological symptoms. Additionally, mothers' ratings of childhood internalizing, but not externalizing symptoms were higher when they self-reported greater levels of psychological symptoms. Because this study was not longitudinal, however, the relative accuracy of the college student and parent ratings is unclear.

The moderate degree of correspondence between parent and college students' retrospective ratings suggests that it may be beneficial to obtain retrospective reports from both. However, the literature suggests that adults may be inaccurate reporters of externalizing symptoms during their childhoods (Henry et al., 1994), and that intervening



variables may affect retrospective parent and self-reports of internalizing and externalizing behavior problems (Renk et al., 2005). Although the moderate correlations between parent and self-recollections of childhood behavior problems would imply some evidence of validity, because this data was not collected in a longitudinal manner, the accuracy of these ratings are uncertain (Renk et al.).

*Other versus self-reports.* The use of multiple informants is also recommended when clinicians are assessing for the presence of current ADHD symptoms in adulthood (e.g., Consortium on ADHD Documentation, 2000; Wasserstein, 2005; Weiss & Murray, 2003). Research has demonstrated that the presence of corroborated self-reports is more likely to lead to a diagnosis than self-reports alone. For example, in a study of clients who self-referred for an ADHD evaluation, evaluations which included information from someone other than the client more often resulted in a diagnosis of ADHD than evaluations which only included self-reports (Roy-Byrne et al., 1997).

To examine the correspondence between self-reports and observer reports, Achenbach, Krukowski, Dumenci, and Ivanova (2005) conducted a meta-analysis of studies that had reported correlations between self-reports and those of other informants for different types of psychopathology. They found that correlations between ratings were higher for externalizing problems (i.e., aggression, sociopathy, and antisocial behavior) than for other types of problems. However, follow-up analyses indicated that the mean correlation between ratings for externalizing behaviors was .44, which was not meaningfully different from the mean correlation for internalizing problems (.43). Only ratings for substance abuse had a higher mean correlation (.68). Achenbach et al.

concluded that using multiple informants' ratings may yield different information about the functioning of the referred individual.

Achenbach et al. (2005) did not include measures of ADHD symptoms in their meta-analysis; however, other researchers have specifically examined the correspondence of ADHD symptom ratings. Using spouses as informants, Murphy and Schachar (2000) found that self-ratings and spousal ratings of inattentive, hyperactive-impulsive, and total symptoms of ADHD were correlated and of a similar magnitude for their sample of 25- to 65-year-olds. They indicated that this provided evidence of validity for the self-ratings. However, the sample consisted of volunteers, none of whom had been referred due to problems related to ADHD so it is unclear how these results would generalize to a sample of individuals who do experience problems related to ADHD symptoms.

Research that has examined the correspondence between current self-ratings of ADHD symptoms and the ratings of parents has indicated that parents tend to report higher levels of current symptoms than their adolescent/adult children report. For example, in a sample of 11- to 17-year-olds, parents reported significantly more symptoms of ADHD than their adolescent children reported. An analysis of the diagnostic agreement between parents and the adolescents for ADHD yielded a kappa coefficient of .30 (Hope, Adams, Reynolds, Powers, Perez, & Kelley, 1999). Like the parent and self-rating correspondence for adolescents, Barkley et al. (2002) reported a poor level of agreement between parent ratings of current ADHD symptoms in their adult children and the adults' self-reports ( $\kappa = .07$ ). Also similar to the results reported by Hope et al., the parents in Barkley et al.'s study reported significantly greater levels of ADHD symptoms than the adults self-reported.

To examine the relative validity of the self- and parent-ratings, Barkley et al. (2002) used regression analyses to examine the relative predictive power of parent and self-ratings for eight dependent variables (i.e., education, high school GPA, high school class rank, employer rated ADHD, employer rated work performance, number of jobs fired from, number of friends, and number of arrests). Self-ratings were only predictive of employer ratings of job performance and employer ratings of ADHD symptoms. Parent ratings, however, were predictive of all eight dependent variables after age and self-reported symptoms were controlled.

Given these results, parent ratings may be helpful if they are obtainable. However, as noted previously, informants other than the individual may not always be available. Even if a person can find someone to rate their current symptoms of ADHD, a parent or other relative who can rate their past symptoms of ADHD may not be accessible. For example, in Roy-Byrne et al.'s (1997) study of 143 self-referred adults, only 5 participants were able to involve a parent. Consequently, self-report often becomes the component of the adult ADHD assessment that carries the most weight (DeQuiros & Kinsbourne, 2001). Because self-report has such an important place in the diagnosis of adult ADHD, it is essential that the self-report measures used have evidence for the reliability and validity of the scores they yield.

#### ADHD Rating Scales

Some of the benefits of using rating scales to assess the level of ADHD symptoms include that they are norm referenced, have reported evidence for reliability and validity, and are practical to use (Power & Ikeda, 1996). Several scales for the assessment of ADHD in adults have been developed. The Wender Utah Rating Scale (WURS; Ward,

Wender, & Reimherr, 1993) was specifically designed to retrospectively measure self-reported symptoms of ADHD experienced in childhood. This measure includes 25 items, and has been shown to discriminate between those with ADHD and those with depression and normal controls. Sixty-one items that were considered to describe children with ADHD were initially included in the measure. These items addressed problems with activity level, inattention, impulsivity, and loss of control. Twenty-five of these items were found to discriminate individuals with ADHD from normal controls, and so they were included in the final scale (Gallagher & Blader, 2001). Gallagher and Blader noted that the WURS only measures past symptoms and because it primarily focuses on hyperactivity and impulsivity, the scale is not effective in identifying individuals whose symptoms in childhood were primarily of the inattentive type.

Other rating scales created for adults address these problems by measuring the three current subtypes of ADHD and by allowing for both retrospective and current symptom assessment. Some of these scales consist only of a list of the DSM-IV ADHD symptoms that have been slightly reworded to better suit adult raters. Generally, these checklists are completed two times. First, the rater can complete the checklist retrospectively, and then the rater can complete it with respect to current symptoms. The ADHD Behavior Checklist (Murphy & Barkley, 1995) follows this format. It was constructed by taking the 18 DSM-IV symptoms for ADHD and making slight changes in the wording to make them appropriate for adults (e.g., “Often has difficulty sustaining attention in tasks or play activities” was changed to “difficulty sustaining my attention in tasks or fun activities”). The items alternate inattention symptoms with hyperactivity/impulsivity symptoms. Respondents are to rate the 18 items on a scale of 0

to 3, which corresponds to *Rarely or Never*, *Sometimes*, *Often*, or *Very Often*, respectively. If an item is rated as *Often* or *Very Often*, it is considered an endorsement of that symptom and is counted toward the diagnosis. The scales of the ADHD Behavior Checklist include Inattention, Hyper-Impulsive, and the Total Score.

The authors of ADHD Behavior Checklist called attention to problems with using the DSM-IV criteria to assess ADHD in adulthood. Most notably, the field trials for the DSM-IV criteria did not include participants who were older than 17 years. Additionally, the symptom thresholds set for a diagnosis were, in part, based on the reports of parents and teachers. Given that adult diagnoses may be primarily based on self-reports, a different threshold may be more appropriate for establishing an adult diagnosis (Murphy & Barkley, 1996b). Furthermore, Murphy and Barkley (1996b), and other researchers (e.g., Barkley, 2003; Wender et al., 2001) have suggested that these criteria do not fit the developmental presentation of ADHD in adulthood. It is even acknowledged in the DSM-IV-TR that symptoms of hyperactivity may appear as restlessness, fidgetiness, and as trouble with engaging in sedentary activities in adults (American Psychiatric Association, 2000).

Citing these concerns, Murphy and Barkley (1996b) collected normative data for the ADHD Behavior Checklist with a sample of 720 adults between the ages of 17 and 84 years who volunteered to take the survey after being recruited from one of two Department of Motor Vehicles sites in Massachusetts. They reported data for three subsamples (17 to 29 years, 30 to 49 years, and 50+ years) and concluded that the current number of symptoms needed to meet DSM-IV criteria for ADHD is too high when applied to adults because it results in a group of individuals who were at or above the 99<sup>th</sup>

percentile of their sample. They suggested cut-off scores in the 17- to 29-year-old range of four current symptoms for inattentive type ADHD, and five current symptoms for hyperactive-impulsive type ADHD. They suggested even lower thresholds for adults in the two older sub-samples. No significant differences between males and females were found for the number of current symptoms reported. However, for retrospective childhood symptoms (symptoms recalled between ages of 5 and 12 years), males and younger participants tended to endorse greater numbers of symptoms than females and older participants. Higher endorsement of both current and retrospective childhood symptoms was negatively correlated with obtained education and socio-economic status. Murphy and Barkley (1996b) did not report data for the reliability of scores from the ADHD Behavior Checklist.

Heiligenstein et al. (1998) used a very similar scale (a modified version of the ADHD Rating Scale; DuPaul, 1991) to collect normative data in a sample of 448 college students. They also concluded that the current symptom threshold for a diagnosis of ADHD in college students was too high. They suggested cut-offs of four current inattentive type symptoms and four current hyperactive-impulsive type symptoms to establish college students as sufficiently different from others in their peer group. No differences in symptom endorsement were found between participants of different sexes. Again, no reliability data were reported.

Other rating scales have been developed to assess a broader range of current symptoms related to ADHD in adults. Examples include the Brown Attention-Deficit Disorder Scales (BADDS; Brown, 1996) and the Conners Adult ADHD Rating Scale (CAARS; Conners, Erhardt, Epstein, Parker, Sitarenios, & Sparrow, 1999). These rating

scales include self-report forms as well as forms for other informants. The adult form of the BADDSS has been able to discriminate between adults diagnosed with ADHD by structured diagnostic interviews and normal controls; the CAARS has evidence of test-retest reliability, discriminant validity, and convergent validity (Gallagher & Blader, 2001).

All of these measures, however, were normed on samples of adults from the general population. As noted previously, college students may be different from other adults. Recognizing this problem, Glutting, Sheslow, et al. (2002) created the College ADHD Response Evaluation (CARE). The CARE is the only ADHD rating scale created specifically for college student assessment. The CARE assessment system includes both a Parent Response Inventory (PRI) and a Self Response Inventory (SRI) that were co-normed. The authors reported that the CARE items came from reviews of the child and adult ADHD literature and their own clinical experience. Respondents' scores can be interpreted in comparison to either the general population (using the DSM-IV scales) or to a sample of college students (using the scales based on factor analyses). The CARE's 18 DSM-IV items were taken directly from the DSM-IV and are embedded in the overall measure.

The CARE was standardized with a normative sample of 1,080 college students and their parents. Glutting, Sheslow, et al. (2002) reported internal-consistency reliability coefficients for their DSM-IV scales and for their factor-based scales. Test-retest reliabilities were also reported. In a series of exploratory factor analyses based on both individual items and item parcels or miniscales, Glutting, Sheslow, et al. found that three factors (Inattentiveness, Hyperactivity, Impulsivity) best represented the overall SRI.

This three-factor structure was also found in another study where the SRI standardization sample data was randomly split into halves and submitted to either exploratory factor analysis ( $n = 540$ ) or confirmatory factor analysis ( $n = 539$ ) (Glutting, Youngstrom, & Watkins, 2005). In both studies, factor analyses of the PRI resulted in two factors (Inattentiveness, Hyperactivity/Impulsivity) being consistently retained and interpreted. These two factors closely represented the DSM-IV's theoretical structure of ADHD (Glutting, Sheslow, et al.; Glutting et al., 2005).

Results were not so clear, however, when the DSM-IV scales were submitted to factor analysis. For these factor analyses Glutting, Sheslow, et al. (2002) forced the two-factor structure of the DSM-IV's theoretical model of ADHD on the data. In the item-level analysis, 14 of the 18 items loaded as they should have, however, 2 items had complex loadings, another item did not have a salient loading (i.e.,  $\geq .25$ ) on either factor, and 1 item loaded on the wrong factor. When the items were grouped into miniscales, which were based on the DSM-IV model, two of the factor retention criteria pointed to the presence of a single factor. Additionally, Glutting et al. (2005) found that three of the self-reported DSM-IV items had problematic loadings in their analysis. Glutting, Sheslow, et al. suggested that the DSM-IV criteria may not be sensitive to the experience of ADHD in college students and concluded that the factor-based scales were both more reliable and based on clearer factor solutions, and therefore would be more appropriate to interpret.

The CARE's authors also presented data in support of external validity. Using Receiver Operating characteristic (ROC) curves, they found that all of the scores from the SRI were able to differentiate college students with ADHD from those who did not have



the disorder. The effect sizes (Area Under the Curve or AUC) were large and indicated that the CARE SRI has a high level of diagnostic accuracy. The authors collected divergent validity evidence by demonstrating that the CARE SRI was better able to discriminate students with and without ADHD than students with and without learning disabilities. Finally, the authors collected convergent validity evidence by demonstrating that the scores of the CARE are related to the scores on another measure of ADHD for adults, the BADDs (Brown, 1996). The two instruments were measuring similar, but not identical constructs as evidenced by the pattern and level of correlations among the subscales (Glutting, Sheslow, et al., 2002).

This review of rating scales available for the assessment of ADHD in college students and other adults would suggest that clinicians have the tools needed to document the presence of current ADHD symptoms. However, as Jachimowicz and Geiselman (2004) pointed out, these measures have failed to take into account that some people may try to fabricate symptoms of ADHD in order to obtain the accommodations available to people with disabilities. Although measures for retrospective reports of childhood symptoms and informant measures are also available, clinicians must keep in mind the limitations of informant ratings and retrospective ratings that were discussed, and also be aware of the possibility that these measures may be subject to falsification as well.

### Malingering

#### *Definition*

When a person deliberately produces false or exaggerated psychological symptoms to obtain external benefits such as avoiding work, gaining financial compensation, and/or obtaining drugs, they may be malingering. The DSM-IV

description of malingering suggests that the condition should be considered if there is any combination of the following factors present: a medicolegal context for a disorder, a large difference between a person's claimed stress due to a disorder and objective findings, a lack of cooperation during evaluation and treatment, and the presence of antisocial personality disorder (American Psychiatric Association, 2000). After conducting a review of 1,040 studies on malingering, however, Gerson (2002) argued that the DSM-IV definition of malingering is limited, especially with respect to the suggestions that it be considered only in medicolegal contexts and when the client is suspected of having antisocial personality disorder. Also noting the problems with the DSM-IV's focus on forensic contexts and clients with antisocial personality disorder, Berry, Baer, Rinaldo, and Wetter (2002) wrote that:

Failure to consider and rule out the possibility of malingering of psychological and psychiatric disorder potentially carries high costs for insurers, disability systems, and ultimately society at large. Thus, *we suggest that the possibility of malingering should be carefully considered in any assessment for which findings of psychopathology carry important external positive contingencies for the patient* (p. 275).

Assessments for ADHD in college students would seem to meet these criteria, given the powerful incentives noted previously (i.e., access to medications, academic accommodations). Furthermore, given the emphasis placed on self-report in adult ADHD evaluation, it would seem especially important to consider that the person being evaluated may not be entirely truthful in reporting their symptoms or degree of impairment. This is an issue for empirical investigation.

*Assessment of Malingering*

Individuals who plan to falsify their reports of psychological symptoms are likely to prepare to avoid detection, and information to assist them in this endeavor is readily available (Rogers, 1997b; Ruiz, Drake, Glass, Marcotte, & van Gorp, 2002). Rogers (1997a) noted that many commonly used psychometric measures are face valid, and therefore susceptible to intentional distortion on the part of the rater. Additionally, he noted that even more “sophisticated” measures are subject to deception (p. 382).

Researchers have begun investigating how the properties of self-report instruments may make them more or less susceptible to faking. These studies have demonstrated that properties of the rating scale, such as the transparency of items and item arrangement, may affect a scale’s ability to be falsified. For example, McFarland, Ryan, and Ellis (2002) studied how item placement affected the ability of participants to fake answers on a personality measure. For all scales of their personality measure, across both grouped and random item formats, scores in a simulated faking condition were higher (i.e., the scores indicated a greater presence of desirable personality traits) than scores in an honest condition. However, the researchers found that the effects of a grouped versus random item arrangement depended on the construct being measured. Additionally, the researchers demonstrated that the factors were not invariant across two test formats (i.e., grouped and random), indicating that the two formats did not measure the constructs in the same manner across the faking and honest conditions. Rather, a grouped item format resulted in a better fit of the data to the factor model in the faking condition and a random item placement resulted in a better fit of the data to the factor model in the honest condition. They concluded that test format and faking behavior

appeared to interact. Furthermore, both McFarland et al. and McFarland and Ryan (2000) noted that in each of their studies, two constructs (i.e., neuroticism and conscientiousness) were more susceptible to faking than other personality constructs. Based on this finding, they suggested that perhaps item transparency, or the ease with which a person can identify the correct/desirable answer, might also affect the susceptibility to faking of self-reports. McFarland et al. added that perhaps item transparency interacts with test format to affect a scale's susceptibility to falsification.

McFarland and Ryan (2000) and McFarland et al. (2002) focused on the use of personality measures in employee selection contexts. Less is known about how the properties of behavior rating scales used to diagnose clinical disorders, such as those used in identifying ADHD, affect the ease with which a person can falsify the results. Quinn (2003) conducted the first published study that specifically looked at whether attempts to malingering could be detected with diagnostic tests for adult ADHD, including the ADHD Behavior Checklist (Murphy & Barkley, 1995) which consists of a list of DSM-IV criteria. Using three groups of undergraduate students, including students with ADHD ( $n = 16$ ), a control group ( $n = 19$ ), and a group of simulated malingerers who had been told the symptoms of ADHD ( $n = 23$ ), Quinn found that the ADHD Behavior Checklist was unable to distinguish between students with ADHD and the malingerers. Both of these groups scored significantly higher than the control group, which was asked to complete the scale honestly. Quinn (2003) attempted to create an impairment index to identify those who were malingering by setting a cut score of greater than six inattention symptoms or greater than six hyperactivity symptoms, but correct identification rates were very low (specificity = .43, sensitivity = .69, positive predictive power = .46,

negative predictive power = .67). Thirteen of the 23 simulated malingerers and 11 of the 16 students with a current diagnosis of ADHD were identified as malingering based on this impairment index.

While Quinn (2003) provided some preliminary evidence that a behavior rating scale for ADHD could be successfully falsified, Jachimowicz and Geiselman (2004) went a step further by comparing the relative susceptibility to faking of four different behavior rating scales for ADHD. Participants were 80 undergraduates who had never had a diagnosis of ADHD and who were enrolled in an introductory psychology course. The sample was split into four groups of 20 participants. Each group completed one of four different adult ADHD measures, including the ADHD Rating Scale IV (ARS; DuPaul, Power, Anastopoulos, & Reid, 1998), the Wender Utah Rating Scale (WURS; Ward et al., 1993), the Brown Attention Deficit-Disorder Scales (BADDSS; Brown, 1996) and the Conners Adult ADHD Rating Scale: Self-Report of Symptoms (CAARS; Conners, et al., 1999). The authors hypothesized that the CAARS and the BADDSS would be better at preventing false diagnoses than the other two measures because they were more recent and were developed specifically for adults.

The groups were given a list of DSM-IV-TR (American Psychiatric Association, 2000) diagnostic criteria to study for five minutes. They were then asked to complete one of the four measures while pretending to have ADHD. The authors specified a cut score based on a particular index from each measure to signify whether a person would be identified for a diagnosis of ADHD. The authors found that 75% of the students who took the ARS, 95% of the students taking the BADDSS, 90% of the students taking the CAARS, and 65% of the students taking the WURS were able to meet or exceed these

cut scores. Using Chi-square tests, they concluded that the WURS was significantly better at preventing falsified diagnoses than the BADDs and the CAARS, and that the ARS was significantly better at preventing falsified diagnoses than the BADDs. No other significant differences between the measures were found.

Jachimowicz and Geiselman's (2004) work provides interesting preliminary data regarding the relative susceptibility to faking of self-report measures for adult ADHD. However, several limitations of their study preclude an acceptance of their conclusions that adult ADHD rating scales are significantly easy to fake and that some self-report scales are better than others at preventing false diagnoses. Most obvious is that their sample included only 20 students per scale. This relatively small sample size may have limited the ability to detect effects. Furthermore, the generalizability of their results is questionable, due not only to the sample size, but also to the fact that the participants were all students in one introductory psychology course. More information is needed to determine whether their results generalize to a larger and more diverse sample of college students who would be more representative of the population of students who seek diagnoses and accommodations at the college level. Jachimowicz and Geiselman's findings are also limited given that none of the instruments they used were specifically designed for college students. Perhaps a scale designed specifically for this population would be differentially affected by intentional distortion. Finally, some of the instruments studied may not have corresponded well with the ADHD diagnostic criteria. For example, the BADDs was described as measuring impairments in the five clusters of executive functioning of the frontal lobe (i.e., activation, attention, effort, affect, and memory). Given this last limitation, it is still unclear whether students can successfully obtain

DSM-based diagnoses of ADHD by falsifying their responses on self-report measures, and whether some ADHD rating scales may be better than others at preventing false diagnoses.

### The Present Study

The purpose of the present study is to examine the ability of college students to feign the DSM-IV symptom criteria on two different self-report measures: The ADHD Behavior Checklist (Murphy & Barkley, 1995), and the CARE (Glutting, Sheslow, et al., 2002). Given the results obtained by Quinn (2003) for the ADHD Behavior Checklist, the results obtained by Jachimowicz and Geiselman (2004) for other measures of ADHD, and that the authors of the CARE have acknowledged that their scale is susceptible to faking, it is expected that the proportion of students who meet diagnostic criteria in each group will be significantly greater than chance. Therefore, three research hypotheses of this study are that the proportion of participants who successfully meet criteria for ADHD based on items from the ADHD Behavior Checklist, the CARE DSM-IV scales, and the CARE factor-based scales will be significantly greater than .50.

A second area of inquiry for the present study is whether the CARE is more effective at preventing attempts to feign ADHD than the ADHD Behavior Checklist. The factor-based items from the CARE are not included in the DSM-IV criteria, so they may not be as transparent as the DSM-IV items. Therefore, the proportion of students who are able to successfully obtain *T* scores greater than the recommended cut-off of 70 on the norm-referenced factor-based scales (Glutting, Sheslow, et al., 2002) without simply endorsing all of the items may be lower than the proportion of students who are able to successfully endorse the number of ADHD Behavior Checklist items needed for a DSM-

IV diagnosis. However, previous research indicates that the majority of students, and in some cases almost all students, may be able to falsely meet diagnostic criteria on a variety of ADHD measures. Although the item transparency and arrangement of items on the ADHD Behavior Checklist may suggest that the measure would be easier to falsify than the CARE, this may not be the case. Consequently, the present study will also examine the following research questions: are the CARE's factor based scales and/or DSM-IV scales less susceptible to faking than the scales of the ADHD Behavior Checklist?



## CHAPTER 2 - METHOD

### Participants

The obtained sample for this study included data from 189 undergraduate students enrolled in one of two different classes at The Pennsylvania State University. Participants were 37 males (20%) and 152 females (80%) who ranged in age from 18 to 35 years (mean age = 19.56 years,  $SD = 1.97$ ). Self-reported class standing was as follows: Freshman (35%), Sophomore (46%), Junior (14%), Senior (4%), Other (1%). Class majors were varied, but the most frequently occurring major was education (including early childhood, elementary, secondary, and other areas of education), which was reported by approximately 58% of the sample. The next most frequently occurring majors included communication sciences and disorders (9.5%), kinesiology (6.9%), and crime, law, and justice (6.3%). About 50% of the participants reported that their cumulative grade point average (GPA) was 3.5 or above (on a 4-point scale), 38% reported a GPA of 3.0 to 3.4, and the remaining 12% reported a GPA of 2.5 to 2.9. None of the participants self-reported a GPA lower than 2.5. The ethnic makeup of the sample was self-reported as follows: Asian American/Pacific Islander (1%), Black/African American (4%), Hispanic/Latino (1%), Native American (1%), White/Caucasian (92%), Other (1%).

### Materials

#### *Instructions*

Scripted instructions were included in the research packets so that participants could read along as the session leaders explained the tasks. This allowed participants to refer to the instructions while they were studying the criteria for ADHD. These written instructions included an initial description of what research participation entailed, a

scenario meant to facilitate role-playing a person who was trying to obtain a false diagnosis of ADHD, a more detailed description of the required task, a warning not to simply endorse all rating scale items with the highest rating, and a description of an incentive for successfully faking symptoms. These instructions are further described in the Procedure section, and the script has been included in Appendix A.

### *Demographic Questionnaire*

Students were asked to report their age, sex, class standing, major, cumulative GPA, and ethnicity on a demographic questionnaire. Participants also provided ratings characterizing their level of self-reported knowledge of ADHD and its symptoms. Additionally, the following screening questions were included: (a) have you ever sought professional help for problems with attention and/or hyperactivity? (b) have you ever been formally diagnosed with Attention Deficit Disorder (ADD) or Attention-Deficit/Hyperactivity Disorder (ADHD)? If no, have you ever felt like you might have ADD/ADHD, but were never formally diagnosed? and has a friend, parent, teacher, or other acquaintance told you that you probably had the disorder? (c) have any of your immediate family members been diagnosed with ADHD/ADD? (d) have you ever sought professional help for learning problems? and finally (e) have you ever been formally diagnosed with a Learning Disability (LD)? The demographic questionnaire is included in Appendix B.

### *ADHD Criteria*

The ADHD documentation guidelines published by offices for disability services at colleges and universities typically indicate that students must meet DSM-IV (American Psychiatric Association, 1994) criteria for ADHD. For example, on the Pennsylvania

State University Office for Disability Services (2004) verification form for ADHD, “A DSM IV Diagnosis with a corresponding diagnostic code” (pp. 1, 3) is listed as one of the categories of information required. Consequently, those who are trying to obtain services would be exposed to the acronym “DSM IV.” To obtain a list of the DSM-IV ADHD criteria that would be available to the public, the researcher used the search engine Google to search the term “DSM IV ADHD.” The first link that resulted from the search was a source from the Centers for Disease Control and Prevention (CDC, 2004) that provided the DSM-IV criteria for ADHD. A paper copy of this website was placed within the research packet and served as the list of ADHD criteria that the participants were given the opportunity to study. The list of criteria has been included in Appendix C.

#### *ADHD Scales*

##### *ADHD Behavior Checklist*

The ADHD Behavior Checklist (Murphy & Barkley, 1995) was chosen because it is simply a list of diagnostic criteria for ADHD. It was constructed by taking the 18 DSM-IV symptoms for ADHD and making slight changes in the wording to make them appropriate for adults (e.g., “Often has difficulty sustaining attention in tasks or play activities” was changed to “Difficulty sustaining my attention in tasks or fun activities”). The items alternate inattention symptoms with hyperactivity/impulsivity symptoms. Respondents are to rate the 18 items on a scale of 0 to 3, which corresponds to *Rarely or Never*, *Sometimes*, *Often*, and *Very Often*, respectively. If an item is rated as *Often* or *Very Often*, it is considered an endorsement of that symptom. The scales of the ADHD Behavior Checklist include Inattention, Hyper-Impulsive, and the Total Score. As originally designed, the ADHD Behavior Checklist is administered two times to

respondents. First, the respondents rate the items based on their experiences with the symptoms between the ages of 6 and 12. Then, the respondents rate the items based on their experiences over the past six months. For the present study, students were only asked to rate the items based on their experiences over the past six months, so as to facilitate comparison with the sample taking the CARE.

Murphy and Barkley (1996b) collected normative data for the ADHD Behavior Checklist with a sample of 720 adults between the ages of 17 and 84 years who volunteered to take the survey after being recruited from one of two Department of Motor Vehicles sites in Massachusetts. The authors reported data for three sub-samples (17 to 29 years, 30 to 49 years, and 50+ years). They concluded that the current number of symptoms needed to meet DSM-IV criteria for ADHD is too high when applied to adults. The authors suggested cut-off scores in the 17 to 29 year old range of four symptoms for Inattention and five symptoms for the Hyperactive-Impulsive scale. Even lower thresholds for adults in the two older sub-samples were recommended. No significant differences between males and females were found for the number of current symptoms reported. In support of the validity of the checklist's scores, endorsement of both current and retrospective childhood symptoms was negatively correlated with obtained education and socio-economic status. No other evidence for the validity of scores was reported. The authors also did not report data for the reliability of scores from the ADHD Behavior Checklist; however, using a similar measure, Smith and Johnson (1998) reported coefficient alphas for the Inattentive and Hyperactive-Impulsive scales between .74 and .78 for a sample of college students. Smith and Johnson also conducted exploratory and confirmatory factor analyses and found that the two dimensions of ADHD specified in

the DSM-IV were appropriate for a college student sample. However, the researchers removed 3 of the 18 items from their analyses because 1 item did not load saliently on any factor, and the other 2 items seemed to be defining an “anxiety-based construct” (p. 169) in preliminary analyses.

#### *College ADHD Response Evaluation*

The CARE (Glutting, Sheslow, et al., 2002) was chosen because it is a measure that was designed for and normed with college students. The CARE assessment system includes both a Parent Response Inventory (PRI) and a Self Response Inventory (SRI) which were co-normed. For the present study, only the self-report scale was used. The authors reported that the CARE’s items came from reviews of the child and adult ADHD literature and their own clinical experience. Over 20 professionals were also interviewed and asked to contribute items. Respondents’ scores can be interpreted in comparison to either the general population (for the DSM-IV scales) or to a sample of college students (for the DSM-IV scales and the scales based on factor analysis). The CARE’s 18 DSM-IV items were taken directly from the DSM-IV and are embedded in the overall measure, which consists of 59 items. Respondents rate all items on a 3-point scale by indicating whether they *Agree*, *Disagree*, or are *Undecided* that each item applies to their day-to-day lives. Students are instructed to base their ratings on how typical each description is of their behavior over the last several months. For the DSM-IV scales, items marked *Agree* count toward a diagnosis of ADHD. For the factor scales, answers correspond to a point value between 0 and 2. Each factor-based scale’s item total can then be transformed into a *T* score and a percentile. The DSM-IV scales include an Inattention Scale and a

Hyperactivity Scale and the factor based scales include an Inattention Scale, a Hyperactivity Scale, and an Impulsivity Scale.

The CARE was standardized with a normative sample of 1,080 college students and their parents. The sample was weighted to match U.S. national averages of students attending public and private universities on the variables of race/ethnicity, gender, and ability level. Students came from 38 U.S. states. Only freshmen were included in the normative group. About 5.5% ( $n = 58$ ) of the standardization sample had a previous diagnosis of ADHD.

Glutting, Sheslow, et al. (2002) reported internal-consistency reliability coefficients for their SRI DSM-IV scales of .63 for the Inattention scale and .65 for the Hyperactivity scale. These were lower than the reliabilities for the factor-based scales which ranged from .77 to .90. Test-retest reliabilities were calculated for a sub-sample of 51 participants who took the SRI twice with a 30 to 60 day delay between administrations. The test-retest reliabilities ranged from .77 for the Impulsivity scale to .91 for the Combined Score.

In a series of exploratory factor analyses based on both individual items and item parcels or miniscales, Glutting, Sheslow, et al. (2002) found that three factors (Inattentiveness, Hyperactivity, Impulsivity) best represented the overall SRI (based on scores from the entire standardization sample). The authors used oblique rotation and therefore were able to determine that correlations between the three factors ranged from .44 to .49. Similar results were obtained in confirmatory factor analyses. The three factors were invariant across gender. This three-factor structure was also found in another study where the SRI standardization sample data was randomly split into halves and submitted

to either exploratory factor analysis ( $n = 540$ ) or confirmatory factor analysis ( $n = 539$ ) (Glutting et al., 2005).

Results were not so clear, however, when the DSM-IV scales were submitted to factor analysis. For these factor analyses, Glutting, Sheslow, et al. (2002) forced the two-factor structure of the DSM-IV's theoretical model of ADHD on the data. In the item-level analysis, 14 of the 18 items loaded as they should have; however, 2 items had complex loadings, another item did not have a salient loading (i.e.,  $\geq .25$ ) on either factor, and 1 item loaded on the wrong factor. When the items were grouped into miniscales, which were based on the DSM-IV model, two of their factor retention criteria pointed to the presence of a single factor. Additionally, Glutting et al. (2005) found that three of the self-reported DSM-IV items had problematic loadings in their analysis. They suggested that the DSM-IV criteria may not be sensitive to the experience of ADHD in college students. Glutting, Sheslow, et al. concluded that the factor-based scales were both more reliable and based on clearer factor solutions, and therefore would be more appropriate to interpret. Both DSM-IV symptom counts and the factor-based scales were analyzed in this study.

The CARE's authors also presented data in support of external validity. Using Receiver Operating characteristic (ROC) curves, they found that all of the scores from the SRI were able to differentiate college students with ADHD from those who did not have the disorder. The effect sizes (Area Under the Curve or AUC) were large and indicated that the SRI has a high level of diagnostic accuracy. The authors also collected divergent validity evidence by demonstrating that the CARE SRI was better able to discriminate students with and without ADHD than students with and without learning disabilities.

Finally, the authors collected convergent validity evidence by demonstrating that the scores of the CARE were related to the scores on another measure of ADHD for adults, the Brown Attention-Deficit Disorder Scales (Brown, 1996). The two instruments were measuring similar, but not identical constructs as evidenced by the pattern and level of correlations among the sub-scales (Glutting, Sheslow, et al., 2002).

### Procedure

Undergraduate students were recruited from multiple sections of two different classes at The Pennsylvania State University. The classes enrolled students from multiple majors and class standings. The students in these large classes were informed of the opportunity to earn extra credit for participation in a study on the assessment of ADHD during their class time. An alternative extra credit assignment was also available. Students who chose to participate attended one of nine data collection sessions held outside of class time. The students were notified of the times and locations for the data collection sessions during recruitment. Several sessions were held in order to accommodate different schedules.

As the students entered a data collection session, they were given one of two research packets in an alternating order. Each of the two packets included a cover page, written directions (which were read aloud by research assistants), a demographic questionnaire, a list of ADHD diagnostic criteria, and either the ADHD Behavior Checklist or the CARE. Students were also given an informed consent form which was separate from the research packet. All research procedures and materials were reviewed and approved by the Institutional Review Board (IRB) of The Pennsylvania State



University. The consent form has been reproduced in Appendix D. A copy of the IRB approval letter has been included in Appendix E.

Each research session was conducted by two of five school psychology graduate students who were trained on the data collection procedure by the researcher. The session leaders attended a training session at which the researcher gave them all of the needed materials and thoroughly explained the expected procedures. Session leaders were given a session leader protocol (See Appendix F), which served as a checklist of expected behaviors during research sessions. The checklist was created to ensure uniformity of procedures and treatment fidelity across research sessions and session leaders. During the training session, the research script was reviewed and session leaders were given the opportunity to ask questions. The researcher observed each session leader at least once while she was conducting a research session. During these observations, the researcher and each session leader completed a session leader protocol. The researcher's completed session leader protocols for each session leader indicated that each leader followed the procedures as outlined. The session leaders' protocols also indicated that they had followed the procedures as directed. All boxes were either checked as completed, or marked as not applicable when a particular situation did not arise (e.g., when participants did not ask questions that needed to be answered). Consequently, the protocols completed by both the researcher and the session leaders indicated that the sessions were conducted with treatment fidelity.

After the participants arrived at a session, they were told that the purpose of the study was to examine the susceptibility to faking of different ADHD rating scales. Next, they were told that participation would involve answering a few questions about

themselves, looking at diagnostic criteria, and then completing a rating scale while pretending that they met the criteria. To begin, the session leaders read the informed consent form and an overview of the procedure. Next, session leaders asked the students to complete the demographic questionnaire. After the demographic questionnaires were completed, the session leaders read a slightly modified version of the scenario used by Quinn (2003). This scenario asked participants to imagine that they were having trouble in school. The remainder of the scenario described a college student who hears about ADHD on television and then speaks to a friend about the disorder and potential benefits to having the disorder. The college student in the scenario decides to try to obtain a diagnosis of ADHD in order to obtain accommodations in school. This scenario is included within the scripted instructions in Appendix A.

After the participants heard the scenario, they were given further instructions on how to answer the rating scales. Research has indicated that people who are able to successfully feign a mental disorder tend to endorse significantly fewer legitimate symptoms than those who are able to be identified as malingering (Edens, Guy, Otto, Buffington, Tomicic, & Poythress, 2001). Consequently, students were warned that one way a professional might detect faking is to look at over-endorsement of symptoms. Therefore, in order to be convincing, they should not simply give every question the highest rating.

Before the students were instructed to turn to the diagnostic criteria page in their research packets, they were offered an incentive for successfully faking ADHD. The cover page of each research packet included a ticket with random numbers written in two sections of the ticket. At the conclusion of the research session, the session leaders

checked for survey completion and gave one part of the ticket to the students. Students were told that the tickets on the surveys that were successfully faked would be entered into a drawing for two \$25.00 cash awards. The participant's portion of the ticket included the address of a website that reported the two drawn ticket numbers after surveys were scored. The website indicated that the winning students could claim their awards by giving their ticket to the school psychology program's staff assistant, who did not know why they won the award. The students were reminded that the researcher would not be able to link particular students to their ticket numbers, so responses were completely anonymous.

A monetary award was chosen in order to increase the incentive for successful faking. As described previously, there are strong incentives for someone who desires a false diagnosis of ADHD (e.g., academic accommodations, medication). Consequently, it was determined that an incentive should be included in the present study. However, it should be noted that research on using incentives in malingering research is limited. Rogers (1997b) reviewed the state of this literature. He noted that results of studies that have compared incentive groups to no incentive groups have been mixed. Additionally, it is not currently known how monetary rewards compare to another type of reward or how the probability of obtaining the incentive (e.g., everyone gets a small reward versus several participants getting a larger reward) affects the participants' motivation.

Previous studies of malingering and ADHD assessment (e.g., Jachimowicz & Geiselman, 2004; Quinn, 2003) have not used an incentive for successful faking. The present study attempts to improve upon previous research by adding an incentive to increase generalizability. However, the small monetary incentives used in this study are

clearly not equivalent to the incentives available outside of the research context. Rogers (1997b) identified that this type of problem was inherent in malingering research. He indicated that “data from research participants may have limited generalizability simply because these individuals trivialized their involvement as a necessary chore (e.g., extra credit for routine participation)” (p. 400). He suggested that one way to manage this problem may be to increase the relevance of the project for the participants by explaining the magnitude of the problem. Based on this recommendation, part of the scripted instructions included a statement of why the knowledge gained from this study will be relevant to college students.

After the directions were given, the session leader(s) asked students to turn to the page in their packets that had the diagnostic criteria for ADHD. The research assistants read the criteria aloud to ensure that all students in the session were informed of the criteria, including those who may have chosen not to read the criteria. Students were then given approximately five minutes to continue to study the criteria independently. Next, they were asked to separate the criteria page from the packet and turn it in to the session leaders so that it was not available during survey completion. Students were reminded to independently complete the surveys as if they had experienced these symptoms of ADHD. After they finished, they turned in their packets and received half of the ticket from the front pages of their research packets.

Students in the study were allowed to study the criteria for ADHD because these criteria are readily available to the public. A simple internet search yields the exact DSM-IV criteria. Given the availability of these symptoms, it is likely that a college student who is motivated to obtain a diagnosis will research the disorder. As Rogers (1997a)

pointed out, many studies on malingering fail to prepare their research participants to be successful at faking. He noted that this limits the generalizability of these studies to individuals who do not prepare for faking.

After the data collection sessions were completed, the demographic items that screened for attention and learning problems were examined. If a student answered in the affirmative to the screening questions that focused on seeking treatment for and/or having a diagnosis of attention problems, his or her survey was not used in subsequent data analyses. In addition to the results of statistical tests for the subsample of participants without a history of seeking treatment or diagnosis of ADHD, results of statistical tests are also reported for the subsample of participants that did not answer in the affirmative to any of the screening questions.

#### Data Analyses

Descriptive statistics for each group's data were calculated, including the mean scores and standard deviations for each scale. As a measure of internal consistency reliability, the coefficient alpha for each scale was also computed. Additionally, the correlations between each scale within each group were calculated. It is important to note, however, that this data is not useful as an indicator of the scales' psychometric properties for general use because the students did not answer the items truthfully.

Each scale was then examined to determine whether or not the student met criteria for successful faking. For the ADHD Behavior Checklist, if a student rated six or more symptoms on the Inattention scale and/or six or more symptoms on the Hyper-Impulsive scale as *Often* or *Very Often*, he or she was considered positive for successful faking. Similarly, if a participant who completed the CARE rated six or more DSM-IV

Inattention items and/or six or more DSM-IV Hyperactivity symptoms as *Agree*, he or she was considered positive for successful faking. When analyzing the CARE's factor scales, students who obtained a cut score of 70 or greater on one or more of the factor scales was considered positive for successful faking. Students who simply endorsed all DSM-IV symptom items as *Agree*, *Often*, or *Very Often* were not considered positive for successful faking. The number of participants in each sample who were positive and negative for successful faking is reported. The scale(s) for which students qualified as positive are also reported.

For those students with missing data, surveys were still scored according to the above criteria. However, if all of their completed items were answered as *Agree*, *Often*, or *Very Often*, then their survey was not considered a positive diagnosis even if enough items were completed to be considered a positive for successful faking. It was determined that surveys with some missing data should still be included in the analyses due to the nature of the task. Those students who do not complete all of the items may not be sure how to answer them in order to be successful at faking. This should be reflected in the proportions of each sample that are not successful at faking the characteristics of ADHD.

To test whether the proportion of students in each sample who met criteria for ADHD was significantly greater than chance, chi-square goodness-of-fit tests were conducted. The chi-square goodness-of-fit test is a nonparametric statistical test which assumes that all data come from a random sample of independent observations, that data is in discrete categories in the form of observed frequencies, and that the expected frequency of an event (frequency of being positive for successful faking) can be specified (Daniel, 1990; Pett, 1997). The data used in the chi-square goodness-of-fit tests met these

three assumptions. An additional consideration is the size of the expected frequencies. Pett noted that in the case of a dichotomous variable, the expected frequencies in each cell of the chi-square test should be at least 5. The data also met this recommendation. Using the G\*Power computer program (Faul & Erdfelder, 1992), it was determined that each chi-square test would be able to detect a moderate effect size of 0.30 at an alpha level of .05 with power of .80 by using the obtained sample sizes of 87 (ADHD Behavior Checklist) and 88 (CARE; cases with a reported history of seeking help for or having a diagnosis of ADHD were removed from the sample for analyses).

To test the association between the particular rating scale and the frequency of ADHD diagnosis, 2 (CARE, ADHD Behavior Checklist) x 2 (Positive, Negative for successful faking) chi-square tests for independent samples were conducted. The test was conducted two times, first using the CARE factor-based scales and then using the CARE DSM-IV symptom counts as the basis for determining whether participants were considered positive or negative for successful faking. To account for the use of multiple tests, chi-squares using the Bonferroni correction ( $.05/2 = .025$ ) were computed. For the chi-square test for independent samples, the frequency of cases that falls within each of the four cells of the table are compared to each of the frequencies that would be expected if there was no relationship between the survey completed and being positive for successful faking of symptoms. When conducting this chi-square test, it is necessary to have data in the form of frequencies. Variables also must be in mutually exclusive categories. Observations must be independent of one another, and in a 2 x 2 design, if the two variables are dichotomous, then expected frequencies for all four cells should be at least five (Pett, 1997). Using the G\*Power computer program (Faul & Erdfelder, 1992), it

was determined that these 2 x 2 chi-square tests would be able to detect a small to moderate effect size of about 0.25 at an alpha level of .025 with power of .86 if the obtained sample of 175 participants was used (cases with a reported history of seeking help for or having a diagnosis of ADHD were removed from the sample for analyses).



## CHAPTER 3 – RESULTS

### Screening Questions

In order to obtain a sample of students without a history of ADHD diagnosis or treatment, and to learn more about the sample's knowledge and experience with the disorder, data from the screening questions were reviewed. The majority of the 189 participants (78%) indicated that they had some knowledge of the symptoms of ADHD. Less than 1% of the participants had never heard of ADHD, 8% had heard of ADHD, but didn't know specific information about the disorder. Another 10% self-reported that they had a thorough understanding of the characteristics of ADHD, and 5% described their knowledge of ADHD as "Other."

When the 189 participants were asked whether they had ever sought professional help for problems with attention and/or hyperactivity, 13 participants (7%) answered that they had. Of these 13 participants, 9 had a self-reported history of ADHD diagnosis and 4 had sought professional help for symptoms, but did not obtain a diagnosis. Finally, one additional participant indicated a diagnosis of ADHD, but no history of seeking treatment. Consequently, 10 participants (5%) indicated a past history of ADHD diagnosis. Of the 179 participants who had never had a formal diagnosis of ADHD, 37 (21%) reported that they have felt as if they may have had the disorder, but were never formally diagnosed and 31 of the 179 participants (17%) had previously been told by a friend, parent, teacher or other acquaintance that they probably had the disorder. Taken together, 47 participants (26%) out of the 179 who had no formal diagnosis of ADHD had sought help for ADHD, had thought they might have the disorder, or had been told by another person that they probably had ADHD. Of all 189 participants, 30 (16%) had

an immediate family member who had been diagnosed with ADHD. The screening questions for learning disabilities indicated that 9 of the 189 participants (5%) had previously sought professional help for learning disabilities. Three participants (1.5%) had been formally diagnosed with a learning disability.

Removing the data from the 14 participants (4 males, 10 females) who had previously sought professional help for, and/or who had received a diagnosis of ADHD resulted in a sample of 175 participants. All of the remaining analyses are conducted using the data from these 175 students. Approximately 81% of the 175 participants were female and 19% were male. Self-reported class standing was as follows: Freshman (35%), Sophomore (48%), Junior (12%), Senior (3%), and Other (1%). Over half of the participants were education majors (58%). The majority of participants reported their ethnicity as White/Caucasian (92%), with 5% reporting their ethnicity as Black/African American, 2% reporting "Other, 1% reporting Asian American/Pacific Islander, and less than 1% self-reporting their ethnicity as Hispanic/Latino. About 53% reported that their GPA was 3.5 or higher, 37% reported a GPA of 3.0 to 3.4, and 10% self-reported a GPA of 2.5 to 2.9. Finally, about 81% of the screened sample reported that they knew a little about the symptoms of ADHD, 9% had heard of ADHD, but didn't know anything about the disorder, 8% self-reported a thorough understanding of ADHD, 2% described their knowledge as "Other," and less than 1% had never heard of the disorder.

The chi-square analyses were also repeated using data from the 128 participants who reported no experience of attention, hyperactivity, or learning problems. These 128 students reported that they had never sought help for or acquired a diagnosis of an attention or learning disorder, that they had never felt as if they had ADHD, and that they

had never been told by someone they knew that they probably had the disorder. The subsample was comprised of 23 males (18%) and 105 females (82%). Self-reported class standing was as follows: Freshman (39%), Sophomore (48%), Junior (9%), Senior (3%), and Other (<1%). Again, over half of the participants were education majors (60%). The majority of participants reported their ethnicity as White/Caucasian (93%), with 4% reporting their ethnicity as Black/African American, 2% reporting “Other,” and less than 1% self-reporting their ethnicity as Hispanic/Latino. About 57% reported that their GPA was 3.5 or higher, 35% reported a GPA of 3.0 to 3.4, and 8% self-reported a GPA of 2.5 to 2.9. Finally, about 85% of the screened sample reported that they knew a little about the symptoms of ADHD, 9% had heard of ADHD, but didn’t know anything about the disorder, 4% self-reported a thorough understanding of ADHD, and about 2% described their knowledge of ADHD as “Other.”

#### Descriptive Statistics

Of the 175 participants who were negative for a self-reported history of ADHD treatment and/or diagnosis, 88 completed the CARE and 87 completed the ADHD Behavior Checklist. Sufficient data was available to use all 175 completed surveys in the chi-square analyses; however, listwise deletion of cases with missing item data was used to obtain the sample for computing descriptive statistics. Approximately .002% of the CARE items and 1.09% of the ADHD Behavior Checklist items were not completed. Removing cases with missing data resulted in 81 sets of responses to the CARE and 80 sets of responses to the ADHD Behavior Checklist. Descriptive statistics for these scales are located in Tables 1 through 4.

Table 1

*CARE Scale Characteristics*

Scale	Mean	SD	Coefficient Alpha
Factor Scales <sup>a</sup>			
Inattention	88.74	11.59	0.75
Hyperactivity	73.46	17.79	0.87
Impulsivity	78.60	12.52	0.69
Total	88.21	11.69	0.87
DSM-IV Items <sup>b</sup>			
Inattentive	5.70	2.14	0.63
Hyperactive/Impulsive	5.72	2.17	0.67
Combined	11.42	3.75	0.75

Note.  $N = 81$

<sup>a</sup>  $T$  scores.

<sup>b</sup> Symptom counts.

Table 2

*ADHD Behavior Checklist Scale Characteristics*

Scale <sup>a</sup>	Mean	SD	Coefficient Alpha
Inattentive	5.84	2.38	0.81
Hyperactive/Impulsive	5.14	2.57	0.82
Combined	10.97	2.78	0.65

Note.  $N = 80$ .

<sup>a</sup> Symptom counts.

Table 3

*CARE Scale Intercorrelations*

Scale	Factor-based Inattention (I)	Factor-based Hyperactivity (II)	Factor-based Impulsivity (III)	DSM-IV Inattentive (IV)	DSM-IV Hyper/Impulsive (V)
(I)	1.00				
(II)	0.40	1.00			
(III)	0.51	0.46	1.00		
(IV)	0.63	0.63	0.43	1.00	
(V)	0.42	0.79	0.67	0.51	1.00

Table 4

*ADHD Behavior Checklist Scale Intercorrelations*

Scale	DSM-IV Inattention (I)	DSM-IV Hyper/Impulsive (II)
I	1.00	
II	-0.37	1.00

*Means and Standard Deviations*

On the ADHD Behavior Checklist, the mean scores for Murphy and Barkley's (1996b) 17-to 29-year old subgroup were 1.3 ( $SD = 1.8$ ) symptoms for the Inattentive scale and 2.1 ( $SD = 2.0$ ) symptoms for the Hyperactive-Impulsive scale. It should be noted that their sample was comprised of individuals in the general population, not specifically college students. Quinn (2003) found that the average symptom count in her control group of honestly responding college students was .7 ( $SD = 1.2$ ) symptoms of

inattention, and .8 ( $SD = 1.1$ ) symptoms of hyperactivity/impulsivity. Quinn's sample of students with ADHD reported an average of 4.9 ( $SD = 2.4$ ) symptoms of inattention and 4.8 ( $SD = 2.2$ ) symptoms of hyperactivity/impulsivity. Her group of students who purposely faked their answers self-reported, on average, 6.4 ( $SD = 2.6$ ) symptoms of inattention and 5.4 ( $SD = 2.5$ ) symptoms of hyperactivity/impulsivity. As would be expected, the mean diagnostic symptom counts obtained from the present sample were higher than those reported for the samples that responded honestly in the Murphy and Barkley (1996b) and Quinn studies. The mean number of inattention symptoms reported on the ADHD Behavior Checklist in the present study was 5.8 ( $SD = 2.4$ ) and the mean number of hyperactive/impulsive symptoms was 5.1 ( $SD = 2.6$ ). On the CARE, the mean number of diagnostic inattention symptoms was 5.7 ( $SD = 2.1$ ) and the mean number of diagnostic hyperactive/impulsive symptoms was 5.7 ( $SD = 2.2$ ). Data from the CARE standardization sample (Glutting, Sheslow, et al. 2002) yielded a mean Total score of 53.4 ( $SD = 11.3$ ), a mean Inattention score of 53.1 ( $SD = 11.4$ ), a mean Hyperactivity score of 52.2 ( $SD = 9.9$ ), and a mean Impulsivity score of 53.8 ( $SD = 12.1$ ). On average, the mean scores obtained in the present study were almost 30 points higher than the mean scores obtained from the standardization sample. Higher scores were expected because the students were asked to fake their responses.

#### *Scale Reliability*

Ideal data against which to compare the coefficient alphas obtained from the ADHD Behavior Checklist has not been published. However, Smith and Johnson (1998) reported coefficient alphas for a very similar scale, which ranged from .74 to .78 for the Inattentive and Hyperactive-Impulsive sub-scales. For the present sample that completed

the ADHD Behavior Checklist, the coefficient alpha for the Inattentive scale was .81, and the coefficient alpha for the Hyperactive-Impulsive scale was .83.

For the factor-based scale scores obtained from the CARE standardization sample, coefficient alpha reliabilities ranged from .77 for the Impulsivity scale, to .90 for the Total scale. Reliability estimates obtained in the present sample of scores were similar, with some estimates being lower than their counterparts from the CARE standardization sample. Coefficient alphas ranged from .69 for the Impulsivity scale to .87, for both the Hyperactivity scale and the Total scale. For the CARE DSM-IV symptom counts, the reliability estimates obtained in the present study were .63 for Inattentive and .67 for Hyperactive-Impulsive. The CARE authors reported that for their DSM-IV scales, the coefficient alpha of the Inattentive scale was .63 and the coefficient alpha for the Hyperactive-Impulsive scale was .65.

#### *Scale Intercorrelations*

Finally, the scale intercorrelations were considered. For the ADHD Behavior Checklist, scale intercorrelations for a sample of honest responders have not been published. In the present analysis, it was determined that the Inattentive and Hyperactive-Impulsive scales were negatively correlated ( $r = -.37$ ). Similarly, scale intercorrelations for the DSM-IV scales of the CARE have not been published. In the present analysis, the DSM-IV Inattentive and DSM-IV Hyperactive-Impulsive scales were positively correlated ( $r = .51$ ). It is unclear why two similar sets of scales would have correlations in opposite directions. Perhaps the students who completed the ADHD Behavior Checklist were more likely than those who completed the CARE to attempt to meet criteria for

Inattentive type or Hyperactive type ADHD as opposed to rating items across both sets of symptom criteria similarly.

The CARE's authors reported that the intercorrelations between the factor-based Inattention, Hyperactivity, and Impulsivity scales range from .44 (Inattention and Impulsivity) to .49 (Inattention and Hyperactivity). The intercorrelations of the factor-based scales obtained in the present study are similar, with correlations ranging from a low of .40 (Hyperactivity and Inattention) to a high of .51 (Impulsivity and Inattention).

#### Success at Faking

Of the 88 participants without a history of ADHD who completed the CARE, 82 participants (93%) were determined to have met the pre-determined criteria for successful faking, based on one or more of the four factor-based scores (i.e., Inattention, Hyperactivity, Impulsivity, Total). Table 5 summarizes the scale patterns that resulted in successful faking for these 82 participants. Of the same 88 participants, 61 (69%) were determined to be successful at faking based on answers to the DSM-IV items. Table 6 summarizes the scale patterns that resulted in positive designations for these 61 students. Of the 87 students who completed the ADHD Behavior Checklist, 67 students (77%) were considered positive for successful faking after the rating scales were scored. Table 7 summarizes the scale patterns that resulted in successful faking for these 67 students.



Table 5

*Factor-based Scale Patterns that Resulted in Successful Faking Designation for  
Participants who Completed the CARE*

Scale(s) Designated Positive	<i>N</i> (%) Successful	Scale(s) Designated Positive	<i>N</i> (%) Successful
Inattention Only	4 (5%)	Hyperactivity & Total Score	1 (1.2%)
Hyperactivity Only	1 (1.2%)	Impulsivity & Total Score	1 (1.2%)
Impulsivity Only	1 (1.2%)	Inatt., Hyper., & Impulsivity	0 (0%)
Total Score Only	0 (0%)	Hyper., Impul., & Total	1 (1.2%)
Inattention & Hyperactivity	0 (0%)	Inatt., Hyper, & Total	7 (8.5%)
Inattention & Impulsivity	0 (0%)	Inatt., Impul., & Total	23 (28%)
Inattention & Total Score	8 (9.8%)	Inatt., Hyper., Impul., & Total	35 (42.7%)
Hyperactivity & Impulsivity	0 (0%)		

Table 6

*DSM-IV Scale Patterns that Resulted in Successful Faking Designation for Participants who Completed the CARE*

Scale(s)	<i>N</i> (%) Successful
Inattentive Only	20 (33%)
Hyper-Impulsive Only	13 (21%)
Combined Type	28 (46%)

Table 7

*Scale Patterns that Resulted in Successful Faking Designation for Participants who Completed the ADHD Behavior Checklist*

Scale(s)	<i>N</i> (%) Successful
Inattentive Only	31 (46%)
Hyper-Impulsive Only	16 (24%)
Combined Type	20 (30%)

### Chi-Square Analyses

To test whether the proportion of students in each sample who met criteria for ADHD was significantly greater than chance, chi-square goodness-of-fit tests were conducted. Results indicated that the participants who had no self-reported history of seeking professional help for or of having a diagnosis of ADHD were significantly more likely to be successful at faking responses on an ADHD rating scale than would be expected by chance. This conclusion was observed for responses on the CARE factor-

based scales, the CARE DSM-IV items, and the ADHD Behavior Checklist scales.

Results of the chi-square goodness-of-fit tests are summarized in Table 8.

Table 8

*Results of  $\chi^2$  Goodness-of-Fit tests for the CARE and ADHD Behavior Checklist*

Scale	<i>N</i> Positive	<i>N</i> Negative	$\chi^2$ (1)	<i>p</i>
CARE Factor-based ( <i>N</i> = 88)				
Expected	44	44		
Observed	82	6	65.64	<.01
CARE DSM-IV ( <i>N</i> = 88)				
Expected	44	44		
Observed	61	27	13.14	<.01
ADHD Behavior Checklist ( <i>N</i> = 87)				
Expected	43.5	43.5		
Observed	67	20	25.39	<.01

*Note.* Expected values based upon null hypothesis that the numbers of students obtaining a positive and negative designation will be equal to those expected by chance alone.

To test the association between the particular rating scale and the frequency of ADHD diagnosis, 2 (CARE, ADHD Behavior Checklist) x 2 (Positive, Negative for successful faking) chi-square tests for independent samples were conducted. The test was conducted two times, first using the CARE factor-based scales and then using the CARE DSM-IV symptom counts as the basis for determining whether participants were considered positive or negative for successful faking. Results indicated that there was no significant difference in success rate for faking when comparing the responses on the ADHD Behavior Checklist and the responses on the CARE DSM-IV scales. However, a

significant difference was found for responses on the CARE factor-based scales when compared to responses on the ADHD Behavior Checklist. Participants whose responses on the CARE factor-based scales served as the basis for determining success at faking were significantly more likely to be designated as successful than the participants whose scores on the ADHD Behavior Checklist were examined. Results of these two chi-square tests are summarized in Table 9.

Table 9

*Results of  $\chi^2$  Tests for Independent Samples Conducted to Examine the Relative Susceptibility of the CARE Factor-based and CARE DSM-IV Symptom Counts in Comparison to Scales from the ADHD Behavior Checklist*

Scale	<i>N</i> Positive	<i>N</i> Negative	$\chi^2$ (1)	<i>p</i>	phi
CARE Factor-based	82	6			
ADHD Behavior Checklist	67	20	9.04	< .01	0.23
CARE DSM-IV	61	27			
ADHD Behavior Checklist	67	20	1.32	.25	0.09

#### Results for Screened Sample

The chi-square analyses were repeated for the 128 participants who reported that they had never sought help for or had acquired a diagnosis of an attention or learning disorder, that they had never felt as if they had ADHD, and that they had never been told by someone they knew that they probably had the disorder. The analyses were repeated to ensure that results were not substantially different when more restrictive screening

criteria were used. As can be noted from Tables 10 and 11, results remained similar to those obtained for the sample that only excluded participants with a history of seeking treatment for or a diagnosis of ADHD. The participants continued to be significantly more likely to be successful at faking responses on an ADHD rating scale than would be expected by chance alone. This conclusion was observed for responses on the CARE factor-based scales, the CARE DSM-IV symptom counts, and the ADHD Behavior Checklist scales. Additionally, there continued to be no significant difference in the likelihood of being successful at faking between respondents whose CARE DSM-IV scores and respondents whose ADHD Behavior Checklist scores were compared. However, the data suggest that the CARE factor-based scale responses were significantly more likely to be considered successful for faking than responses on the ADHD Behavior Checklist.

Table 10

*Results of  $\chi^2$  Goodness-of-Fit tests for the CARE and ADHD Behavior Checklist, Restrictive Screening Sample*

Scale	<i>N</i> Positive	<i>N</i> Negative	$\chi^2$ (1)	<i>p</i>
CARE Factor-based ( <i>N</i> = 67)				
Expected	33.5	33.5		
Observed	63	4	51.96	<.01
CARE DSM-IV ( <i>N</i> = 67)				
Expected	33.5	33.5		
Observed	48	19	12.55	<.01
ADHD Behavior Checklist ( <i>N</i> = 61)				
Expected	30.5	30.5		
Observed	46	15	15.75	<.01

*Note.* Expected values based upon null hypothesis that the numbers of students obtaining a positive and negative designation will be equal to those expected by chance alone.

Table 11

*Results of  $\chi^2$  Tests for Independent Samples Conducted to Examine the Relative Susceptibility of the CARE Factor-based and CARE DSM-IV Symptom Counts in Comparison to Scales from the ADHD Behavior Checklist, Restrictive Screening Sample*

Scale	N Positive	N Negative	$\chi^2(1)$	<i>p</i>	phi
CARE Factor-based	63	4			
ADHD Behavior Checklist	46	15	8.76	<.01	0.26
CARE DSM-IV	48	19			
ADHD Behavior Checklist	46	15	0.23	.63	0.04

## CHAPTER 4 – DISCUSSION

### Rating Scales' Susceptibility to Faking

The results of the preceding analyses indicate that both the ADHD Behavior Checklist and the CARE are susceptible to attempts by college students to feign the symptoms of ADHD. Large proportions of students without histories of attention or hyperactivity problems were able to meet the pre-specified criteria for testing positive for ADHD on three different measures after reading and studying ADHD diagnostic criteria for five minutes. Approximately 77% of students who completed the ADHD Behavior Checklist and 93% of students who completed the CARE were successful at attempting to fake the appropriate number and pattern of ADHD symptoms to test positive. Despite having screened the sample for histories of seeking treatment for and/or having a diagnosis of ADHD, more participants were able to fake their answers than would have been expected by chance.

Furthermore, the degree of item transparency and the organization of items on the CARE did not make the measure less susceptible to attempts at faking ADHD symptoms. Chi-square tests of independence indicated that the CARE DSM items and the scales of the ADHD Behavior Checklist were similarly easy to fake. About 77% of participants who completed the ADHD Behavior Checklist were successful at faking, whereas 69% of participants who completed the CARE were successful at faking when their DSM-IV items were considered. Additional chi-square analyses indicated, however, that there was a significant difference in susceptibility to faking when the CARE factor-based scales and the ADHD Behavior Checklist scales were compared. Based on percentages of positive diagnoses, it appears that the CARE factor-based scales are more susceptible to faking



attempts than the scales of the ADHD Behavior Checklist. About 93% of participants who completed the CARE factor-based scales obtained a test positive designation, in comparison to the 77% of ADHD Behavior Checklist respondents who were considered test positive.

Data from the standardization sample of the CARE (Glutting, Sheslow, et al. 2002), provides some insight as to why a greater percentage of students may have been able to fake their answers on the CARE factor-based scales. In the standardization sample, a cut score of 6 or more symptoms of inattention and/or hyperactivity led to positive ADHD identification for 2.1% of the 1,080 students. However, a cut score of 70 or greater on one or more factor-based scales positively identified 18% of the standardization sample, indicating that even in a normative sample comprised of honest responders, it is almost nine times more likely that a student will obtain a positive designation for ADHD when the factor-based scores are considered. In addition to this consideration, the comparative ease with which a person could obtain high scores on the CARE factor scales should be noted as well. Whereas meeting DSM-IV criteria requires knowledge of the particular diagnostic symptoms and pattern of those symptoms, obtaining high factor scores simply requires one to be able to distinguish which symptoms appear to be measuring inattention and/or hyperactivity, and provide high ratings on those items.

#### Comparison and Contribution to Existing Literature

The results of the present study both support and expand upon the published literature. For example, the percentages of participants who were successful at faking in the present study (ranging from 69% to 93%) were similar to those reported by

Jachimowicz and Geiselman (2004), who found successful faking rates that ranged from 65% to 95% on four different ADHD rating scales when using samples of 20 students. It expanded upon previously published studies by including a larger sample of students from varying majors and class standings than what has been used to study ADHD rating scales' susceptibility to faking in the past. Furthermore, it demonstrated that even a measure designed specifically for the assessment of ADHD in college students is susceptible to faking in this population – both when scores on factor-based scales and when DSM-IV diagnostic criteria are used as the basis for determining whether a participant is successful at faking. Making an additional contribution to the literature, the present study included results for samples based on two sets of screening criteria. First, analyses were conducted using only participants who did not have a self-reported history of seeking professional assistance for problems with attention or hyperactivity and/or who did not have a history of ADHD diagnosis. The second set of analyses included a more restrictive sample of only those participants who reported that they had never sought help for or had acquired a diagnosis of an attention or learning disorder, that they had never felt as if they had ADHD, and that they had never been told by someone they knew that they probably had the disorder. The results of the repeated analyses remained consistent with the results of the initial analyses.

The high percentage of individuals who are able to falsely meet diagnostic criteria based on a rating scale is not unique to ADHD. Researchers have found similarly high or even higher rates of successful faking of psychiatric disorder symptoms on rating scales for other conditions. For example, Lees-Haley and Dunn (1994) reported that 96.9% of their sample of introductory psychology students were able to meet diagnostic criteria for

major depression on a symptom checklist, even though they were not provided with any specific information about the disorder. Similarly, 96.9% of their sample was able to meet criteria for generalized anxiety disorder, 86% were able to meet criteria for posttraumatic stress disorder, and 63.3% were able to select at least 5 of 10 criteria for mild brain injury. The authors noted that for all of these disorders, self-report information is needed to make a diagnosis. However, symptom checklists can be of such a leading nature that even individuals who have common knowledge of psychiatric disorders can pick out the symptoms needed to obtain a diagnosis. Consequently, it appears that susceptibility to faking is a characteristic of many conditions that rely upon self-reported information to make a diagnosis, as opposed to solely being characteristic of ADHD.

#### Mediators of Success

It was expected that a high percentage of students would be able to falsely meet criteria for ADHD based on their responses to a rating scale. However, it is somewhat surprising that not all of the students were successful, given the seemingly easy nature of the task. One potential mediator could be motivation. If participants were not motivated by the monetary incentive or the appeal to help make disability guidelines more restrictive, then they may have chosen not to study the ADHD criteria and/or to carefully consider their answers to the rating scale. However, other research suggests that some individual characteristics and personality differences may also affect the validity of self-reports. For example, in a study of self-reported grade point averages (GPA), it was found that those with lower grades and lower ability levels were more likely to misrepresent their grades, even though there was no obvious incentive for doing so (Kuncel, Credé, & Thomas, 2005). The authors of the study also reviewed research that

suggested personality variables, such as a tendency to self-monitor in order to manage the impression others receive, may affect the validity of self-reported grades. Similarly, Book, Holden, Starzyk, Wasylkiw, and Edwards' (2006) research suggests personality differences could affect success at malingering. They found that introductory psychology students who scored higher on a measure of psychopathy were less likely to be detected as faking good on a measure of psychological disorders than those who had lower psychopathy scores. However, this relationship was not present for faking bad, which would be a situation similar to the one being studied in the present analysis. Overall, it is unclear which factors prevented some students from successfully faking diagnostic criteria of ADHD, but motivation and individual differences may have served as mediators.

#### Scale Characteristics

Descriptive statistics of each scale were calculated in order to compare the properties of the falsified scale responses to those of responses provided in other research. Means and standard deviations, internal consistency reliability estimates, and scale intercorrelations were obtained. As can be noted by comparing the present study's results to those of Quinn (2003), the obtained mean scores on the ADHD Behavior Checklist fall in a similar range as the mean scores obtained from both her ADHD group and from the group that was asked to fake their responses, adding further support to her conclusion that ADHD rating scales cannot discriminate students who are deliberately faking their responses from those with a valid diagnosis of ADHD.

On average, the mean CARE *T* scores obtained in the present study were almost 30 points higher than the mean scores obtained from the CARE's standardization sample.

Given the degree to which CARE scores were higher for the current sample, it was questioned whether or not an “impairment index” such as that tested by Quinn (2003) for the ADHD Behavior Checklist might have sufficient sensitivity and specificity to be of use in the detection of malingering. To adequately test such an index, the inclusion of a sample with ADHD would be needed. However, it is unlikely that such an index would have the clinical utility needed to discriminate between individuals with ADHD and those who are malingering. One reason is that some students who are true positives for ADHD would obtain very high *T* scores on the CARE. For example, 2.4% of the CARE’s standardization sample obtained *T* scores greater than or equal to 85 (Glutting, Sheslow, et al., 2002). Furthermore, “signs” for malingering of other disorders tend to have problems similar to those reported by Quinn. Other studies have found that for a variety of psychiatric and physical disorders, simulated malingerers or individuals involved in compensation-seeking activities will provide self-report ratings that suggest more intense, more frequent, and more persistent symptoms than controls (e.g., Lamb, Berry, Wetter, & Baer, 1994; Wetter, Baer, Berry, Robison, & Sumpter, 1993; Williams, Lees-Haley, & Djanogly, 1999), but this information will not necessarily provide assistance with the detection of malingering for several reasons. As Lamb et al. pointed out, some true cases will have very high scores on rating scales. Consequently, high scores alone will not help with detection of false positives. Furthermore, when individuals have been coached on information about the disorder they are trying to feign as well as on characteristics of the scales that may help a clinician detect faking good or faking bad (i.e., validity scales), their scores tend to become less susceptible to detection (Berry et al., 2002; Lamb et al.). Finally, because the base rate of malingering in various contexts is unknown, the positive

and negative predictive power of a “sign” for detection of malingering on a rating scale is also unknown (Faust, Hart, & Guilmette, 1988).

Overall, the characteristics of the scales obtained in the present study do not appear to be very different from those published for other samples. The exception is that the mean scores are higher than the mean scores obtained using samples of honest responders, as would be expected.

#### Implications for Adult ADHD Criteria and Assessment

As part of the screening questions used in the present study, participants were asked whether they had ever felt as if they had ADHD and if they had ever been told that they probably had the disorder by a family member or friend. As reported previously, 26% of the participants who had never been formally diagnosed with ADHD had sought help for ADHD, had thought they might have the disorder, or had been told by another person that they probably had ADHD. This suggests that about a quarter of the sample may have been valid referrals for an ADHD evaluation. This is not entirely unexpected given the nature of ADHD symptoms. The symptoms are not qualitatively different from experiences most people have. Rather, it is the severity and frequency of symptoms that someone with ADHD would experience that would characterize it as a disorder. The nature of this distinction may not be clear to the general population. However, it may also cause some concern regarding the validity of the disorder, as defined, in adults.

Currently, there is information in the literature that both supports the validity of ADHD as a disorder that can be experienced by adults, and calls into question the criteria used to define the disorder. Several longitudinal studies and studies of parents of children with ADHD (e.g., Barkley et al., 1990; Barkley, Fischer, Smallish, & Fletcher, 2006;

Biederman et al., 1996; Biederman et al., 2006; Mannuzza et al., 1991; McGough et al., 2005; Weiss et al., 1985) have demonstrated that ADHD symptoms can be impairing into adulthood and that the presence of the disorder is often comorbid with many other psychiatric conditions, such as depression, anxiety disorders, oppositional defiant disorder, and conduct disorder. However, there is also consistent concern noted with using diagnostic criteria that were validated with a sample of children and adolescents to diagnose the condition in adulthood. Several researchers have called for a reduction in the number of criteria needed to be diagnosed with the disorder, with most noting that four symptoms are sufficient to identify a subgroup that is substantially different from the norm (e.g., Kooij et al., 2005; McGough & Barkley, 2004; Murphy & Barkley, 1996b; Riccio, Wolfe, Davis, Romine, George, & Lee, 2005). Others have noted that a refinement of the criteria is needed because the current DSM-IV symptoms are insensitive to the characteristics of adult lifestyles (Faraone, Biederman, & Mick, 2005; McGough & Barkley, 2004; Riccio et al., 2005).

To conclude the discussion of the validity of ADHD in adults, it appears that there are behavioral correlates that support the impairing nature of adulthood ADHD. However, there is also consensus in the literature that the criteria for adult ADHD are in need of refinement. Taken together, the information summarized seems to add further support for the need for in-depth assessment that goes beyond the use of a self-report scale and considers the impact symptoms have on a person's ability to work and learn.

#### Limitations and Future Research

The participants in this study differ from those who may try to malingering in several important ways. Most notably, the participants were only offered a small incentive, and

were given only five minutes to study the diagnostic criteria for ADHD. Individuals who choose to attempt to obtain a diagnosis on the basis of false self-reports are likely to have strong motivation for doing so, such as a perceived need to obtain accommodations or a desire to obtain medications. Additionally, such individuals would be free to spend as much of their time as they wanted researching the disorder in order to give a convincing presentation. Although not including a sample more representative of persons who would feign ADHD symptoms represents a limitation, it should be noted that the obtained results are likely an underestimate, rather than an overestimate, of the percentage of college students who, with sufficient time and motivation, could falsely obtain a diagnosis of ADHD based on self-reports on a rating scale.

A related limitation is that it is unclear how carefully the participants tried to feign the symptoms of ADHD as they were completing the rating scales. Anecdotally, it was noted that many of the participants finished their rating scales quickly, and did not use all of the available 15 minutes to consider their answers. A motivated malingerer is most likely willing to spend more time carefully considering his or her answers. However, even without careful consideration, the majority of the samples were able to successfully fake criteria so, again, it is likely that this limitation led to an underestimate of the percentage of college students who would be able to obtain a false diagnosis of ADHD if they were motivated to do so.

One final limitation related to the sample is that it was less representative of a general college population than was expected. However, the obtained sample was larger and more diverse than samples that have been used in similar studies (i.e., Jachimowicz & Geiselman, 2004; Quinn, 2003). Over half of the sample had an education-related



major, with the remaining majors being varied. The sample did represent various class standings. Self-reported grade point averages were all 2.5 or above on a 4-point scale. The sample also included many more females than males. Although the obtained sample reflected the gender make-up of the classes from which students were recruited, it did not reflect the gender balance of the general college student population. A more equitable gender distribution may have allowed for additional data regarding whether males and females are similarly successful at faking, and whether males and females have different success rates at faking the various ADHD subtypes.

An additional limitation of the study included not having a comparison group of students with documented ADHD. Including a comparison group with the disorder would have allowed for the calculation of statistics related to clinical utility, and for the testing of an “impairment index” for the CARE, much like Quinn (2003) did in her analyses. Repeating the analyses while including a group of students with ADHD who responded honestly may be an appropriate area for future research. However, careful criteria for selecting participants for the ADHD group would be needed in order to ensure a group whose diagnoses were made in a reliable and valid manner.

The study is also limited in that it used a simulation design. As Berry et al. (2002) have noted, there is a need for studies on malingering that use “known-groups” (p. 272) designs that compare identified malingerers with individuals who are responding honestly. However, finding individuals who are willing to admit to trying to falsely obtain a diagnosis would be very difficult. Furthermore, those who have been caught malingering, or who would be willing to admit to trying it are most likely different from unidentified malingers in important ways (Berry et al.).

It is also important to note that using a warning to not endorse all items to avoid detection may have affected the results. The decision to use a warning was based on malingering research (e.g., Edens et al., 2001; Rogers, 1997b). The warning was meant to serve as a way of encouraging participants to use a strategy to be successful at the task that did not involve simply endorsing every item. However, if no warning were included, more of the participants may have endorsed every diagnostic symptom item – which may increase the likelihood of being detected as malingering in a clinical situation.

Finally, the study is limited in that it only examined the susceptibility to faking of ADHD rating scales. Although the results of the study, in conjunction with previously published results, provide strong support that rating scales alone are insufficient for making reliable and valid diagnoses of ADHD in college students; it does not provide information that could be used to support detailed guidelines for ADHD documentation. It remains unclear which assessment methods, in which combinations, lead to a valid group of college students whose ADHD symptoms are predictive of dysfunction without accommodation and treatment. Future research should examine the susceptibility to faking of different types of assessments. For example, studies could examine whether students would be successful at faking, and indistinguishable from true cases of ADHD, if a diagnostic interview were involved in conjunction with a rating scale. This type of research would provide additional information for those who write documentation guidelines for determination of disabilities in post-secondary institutions.

### Conclusion

The participants who were successful at faking the diagnostic criteria for ADHD had a small incentive and very brief amounts of time to study criteria. The obtained

results suggest that a college student with very strong motivation to obtain accommodations and time to carefully study the symptoms of the disorder, using internet and library resources, would have little trouble being successful at meeting criteria for and obtaining a diagnosis of ADHD if the diagnosis were primarily based upon self-report data from rating scales. This provides sufficient data to conclude that diagnoses should not be based solely on rating scale data, and consequently, that documentation guidelines at post-secondary institutions should consistently include the requirement of multiple sources and/or methods of symptom assessment. Some universities already have a requirement for thorough documentation; however, others simply require that a licensed professional provide a diagnosis and explain the type and degree of functional impairment that requires accommodation. Data from the present study indicates that these less restrictive documentation requirements are insufficient. However, what level of requirements would result in the greatest proportion of valid disability classifications remains a question for future research because it is unclear how adding diagnostic interviews, additional standardized measures, and/or informant reports may impact upon the ability of a student to falsely obtain a diagnosis of ADHD. As discussed previously, problems with reliability and validity can also be characteristic of these methods. Furthermore, their susceptibility to faking symptoms of ADHD is unknown.

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## APPENDIX A – RESEARCH SESSION DIRECTIONS

- [Read **Informed Consent** form, Answer participant questions]

### **Preliminary Information**

- As a participant in this study, you will first be asked to truthfully answer 12 questions about yourself.
- Next, you will be asked to listen to a brief scenario that describes a person who does not have the disorder known as attention-deficit/hyperactivity disorder, also referred to as ADD or ADHD, but who wants to get a diagnosis because he or she feels that there may be a benefit to having the diagnosis.
- After you hear the scenario, you will be asked to spend about five minutes studying the criteria used to diagnose ADHD, which are included in your research packet.
- Finally, you will be asked to complete an ADHD rating scale. When you are completing the scale, you will be asked to try to answer the items as if you were the person in the scenario. In other words, you should pretend that you want to appear as if you have ADHD on the rating scale. Studying the ADHD criteria may help you in this task.

### **Demographic Questionnaire**

- Please turn to the page in your packet marked “Demographic Questionnaire.” During the next few minutes, please answer these 12 questions honestly. These questions will be used to describe the group of people who participated in this study. They will *not* be used to identify individuals. Neither your name nor any

identifying numbers, like your student I.D., are included on the research packet, so your answers will be completely anonymous.

### **Role-Play Scenario**

- Now we will read a role-play scenario. You will be asked to complete the ADHD rating scale in your packet while you are playing the role of a person in this situation:

Imagine yourself having trouble in school. Things aren't working out as you had planned but your advisor's only advice is to work harder. You want to get some help. You hear about adult ADHD on a television show. When talking to a friend about it, your friend tells you that you could get special accommodations from the university, like untimed tests and rescheduling of exams if two are given on the same day. Your friend adds that the stimulant medications that are generally prescribed have minimal side effects and that you can take the medicine only when you need it, just for school. You decide to read a book on ADHD. You find out that some ADHD adults even collect social security benefits. You conclude that you have enough of the symptoms. You convince yourself that you have ADHD. You go to the doctor and you really want to get help. In order to get these benefits, you need to convincingly act like a person who has ADHD.

- Your doctor may use a rating scale like the one in your packet. Your task is to complete this rating scale as if you are a person with ADHD. To prepare for this task, you will be given a list of the symptoms that are used to diagnose ADHD. You will have five minutes to review these symptoms so that you are prepared to complete the rating scale as if you are a person who has the symptoms of ADHD.

### Further Instructions and Information

- Before we go over the symptoms, however, it is important to note that one way a doctor or other professional might attempt to detect faking is to see whether a person simply answers all of the items with a high rating. That is, the person claims to have *all* of the symptoms. Because you want to appear convincing and do not want anyone to know you are faking, you should not simply answer every item with the highest rating.
- Finally, because we are studying whether people can be successful at faking when they have an incentive, we have included an incentive for you in this study. On the front page of your packet is a two-section ticket with a random number written on each section. The researcher will be scoring the rating scales in each packet to see whether each person was successful at faking the criteria for ADHD. For those rating scales that were successfully faked, the researcher will enter one portion of the ticket into a drawing for two \$25.00 awards. One ticket will be drawn for those of you participating in the fall semester, and another ticket will be drawn for those of you participating in the spring semester. You can tear off and keep one portion of your ticket so that you can claim the award if your number is drawn. On your portion of the ticket you will see an address for a website. After the drawing is completed, the drawn ticket number will be reported on that website. Instructions for where to receive the award will also be found on the website.

### **Studying the ADHD Criteria**

- Please turn to the page of your packet labeled “ADHD Criteria.” Before you complete the ADHD rating scale, we will read the criteria for diagnosing ADHD and then give you five minutes to study them and to think about a strategy for completing the rating scale. We will be collecting the pages with the criteria when the five minutes are over, so they will not be available while you are completing the rating scale. [Read Criteria Page]. Now you will have five minutes to continue to study the criteria independently. Please do not speak to the people sitting around you during this time. [After five minutes, ask students to remove the criteria from their packets and collect these pages].

### **Completing the Questionnaire and Rating Scales**

- Now that you have studied the ADHD criteria, you may complete the ADHD rating scale. Please do *not* answer the questions honestly. Answer them as if you were the person in the scenario who was trying to appear as if he or she had ADHD and did not want to be identified as faking. In other words, answer the rating scale questions as if you meet the criteria that you just studied, but do not answer the questions in a way that makes you look like you have *every* symptom on the rating scale.
- You may be thinking that this sounds like a very easy task, and it might be. That is part of what we are studying - how easy is it to fake symptoms on a rating scale?
- If it is really easy to fake symptoms on a rating scale, it would be important to let universities know so they can set good standards for which students get

accommodations for ADHD. Of course, it is *very* important that students with ADHD get the help they need to be able to succeed as well as other students. However, accommodations such as extra time for tests, class notes, separate testing rooms, and medication may be helpful for a lot of students, so it is also important that the students who get those accommodations are the students who really need them. Your participation today will help us know if the rating scales you are about to complete are too easy to fake. If they are, we can make recommendations to universities about their requirements for determining who is eligible to receive help for ADHD. Because this research topic is relevant to all college students, we ask that you do your best on this task.

- You will have 15 minutes to complete the rating scale. *After* the 15 minutes are over, we will start collecting the research packets. If you are not finished at the end of the 15 minutes, you may continue working, but we will be collecting packets for the students who have finished.
- When we collect your packet, we will give you half of the ticket on your front page. You may also write your name on an index card and put it into the envelope for your class and section number. These names will be given to your professors so that they know who to assign extra credit to. These names are not linked to your research packet, so your responses cannot be linked to you.
- Any questions? [Answer questions about the task requirements, but do not provide strategies for faking].

- Thank you in advance for your participation in this study. We appreciate your time and the careful completion of the survey items. You may now begin. Please do not speak to the people sitting around you during this time.
- [Give the participants 15 minutes to work on the rating scales. Please do not collect packets during this time].
- At this time we will start collecting your packets. You may come to the front of the room to turn in your packet, receive your ticket, and sign-up for extra credit.



## APPENDIX B – DEMOGRAPHIC QUESTIONNAIRE

The following are questions that will be used to describe the research sample. They will not be used to identify individual participants. Please answer these questions **honestly**.

1) Age: \_\_\_\_\_ (Please write your current age in the space provided).

2) Sex (Check one):  Male  Female

3) Class Standing (Check one):  Freshman  Sophomore

Junior  Senior

Other. Please explain:

4) Major: \_\_\_\_\_ (Please write your major/program of study in the space provided).

5) Cumulative Grade Point Average – GPA (Please check the box that corresponds to your cumulative GPA as of your last grade report):

3.5 or higher  3.0 to 3.4

2.5 to 2.9  2.0 to 2.4

1.9 or lower  This is my first semester so I have not yet received a grade report.

6) Ethnicity (Please check the box that best describes your ethnicity):

Asian American/Pacific Islander  Black/African American

Hispanic/Latino  Native American

White/Caucasian  Other: \_\_\_\_\_

7) How would you characterize your knowledge of Attention Deficit Disorder (ADD) or Attention-Deficit/Hyperactivity Disorder (ADHD)?

I've never heard of it

I've heard of it, but don't know anything about the disorder

I know a little about the symptoms of the disorder

I have a thorough understanding of the characteristics of the disorder

Other. Please explain. \_\_\_\_\_

8) Have you ever sought professional help for problems with attention and/or hyperactivity?

Yes  No

9) Have you ever been formally diagnosed with Attention Deficit Disorder (ADD) or Attention-Deficit/Hyperactivity Disorder (ADHD)?

- Yes       No

**If NO**

a) Have you ever felt like you might have ADD/ADHD, but were never formally diagnosed?

- Yes       No

b) Has a friend, parent, teacher, or other acquaintance told you that you probably had the disorder?

- Yes       No

10) Have any of your immediate family members been diagnosed with ADHD/ADD?

- Yes       No

11) Have you ever sought professional help for learning problems?

- Yes       No

12) Have you ever been formally diagnosed with a Learning Disability (LD)?

- Yes       No

## APPENDIX C – ADHD CRITERIA

The year 2000 Diagnostic & Statistical Manual for Mental Disorders (DSM-IV-TR) provides criteria for diagnosing ADHD. The criteria are presented here in modified form in order to make them more accessible to the general public. They are listed here for information purposes and should be used only by trained health care providers to diagnose or treat ADHD.

### DSM-IV Criteria for ADHD

#### I. Either A or B:

- B. Six or more of the following symptoms of inattention have been present for at least 6 months to a point that is disruptive and inappropriate for developmental level:

#### Inattention

10. Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities.
11. Often has trouble keeping attention on tasks or play activities.
12. Often does not seem to listen when spoken to directly.
13. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).
14. Often has trouble organizing activities.
15. Often avoids, dislikes, or doesn't want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework).
16. Often loses things needed for tasks and activities (e.g. toys, school assignments, pencils, books, or tools).
17. Is often easily distracted.
18. Is often forgetful in daily activities.

- C. Six or more of the following symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for developmental level:

#### Hyperactivity

7. Often fidgets with hands or feet or squirms in seat.
8. Often gets up from seat when remaining in seat is expected.
9. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless).
10. Often has trouble playing or enjoying leisure activities quietly.
11. Is often "on the go" or often acts as if "driven by a motor".
12. Often talks excessively.

#### Impulsivity

4. Often blurts out answers before questions have been finished.
5. Often has trouble waiting one's turn.
6. Often interrupts or intrudes on others (e.g., butts into conversations or games).

- VI. Some symptoms that cause impairment were present before age 7 years.
- VII. Some impairment from the symptoms is present in two or more settings (e.g. at school/work and at home).

- VIII. There must be clear evidence of significant impairment in social, school, or work functioning.
- IX. The symptoms do not happen only during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder. The symptoms are not better accounted for by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Based on these criteria, three types of ADHD are identified:

- 4. ADHD, Combined Type: if both criteria 1A and 1B are met for the past 6 months
- 5. ADHD, Predominantly Inattentive Type: if criterion 1A is met but criterion 1B is not met for the past six months
- 6. ADHD, Predominantly Hyperactive-Impulsive Type: if Criterion 1B is met but Criterion 1A is not met for the past six months.

American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2000.

Source: Centers for Disease Control and Prevention. (2004). *Attention-*

*deficit/hyperactivity disorder – symptoms of ADHD*. Retrieved July 13, 2005 from

<http://www.cdc.gov/ncbddd/adhd/symptom.htm>

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## APPENDIX D – INFORMED CONSENT FORM

ORP USE ONLY: IRB# 21862 Doc. #1 The Pennsylvania State University Office for Research Protections Approval Date: 11/7/05 – J. Mathieu Expiration Date: 10/23/06 – J. Mathieu Social Science Institutional Review Board
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**Implied Informed Consent Form for Social Science Research**  
The Pennsylvania State University

**Title of Project:** ADHD Rating Scales' Susceptibility to Faking in a College Student Sample

**Principal Investigator:** April Bryington Fisher, M.S.  
226 CEDAR Building  
University Park, PA 16802  
Phone: 814-861-1451  
E-mail: aab177@psu.edu

**Advisor:** Marley W. Watkins, Ph.D., ABPP  
102 CEDAR Building  
University Park, PA 16802  
Phone: 814-863-2419  
E-mail: mww10@psu.edu

1. **Purpose of the Study:** The purpose of this study is to see if college students are able to fake their answers on rating scales that test for Attention-Deficit/Hyperactivity Disorder (ADD or ADHD).
2. **Procedures to be followed:** First, you will answer some questions about yourself, like your age, year in school, and grade point average. Next, you will be asked to listen to a short story that describes a person who wants a false diagnosis of ADHD. You will then be given a list of the symptoms of ADHD. Finally, you will complete an ADHD rating scale while you are pretending that you are the person who wants to falsely get the diagnosis of ADHD. To do this, you will use what you have learned from reading the symptoms of ADHD.
3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. You will be asked to falsely answer questions on a rating scale, which may cause you some discomfort.
4. **Benefits:** You will learn about the symptoms of ADHD during this study. Another possible benefit to you includes the experience of participating in a research project, which may be of help to you when you need to write a research proposal or do your own research for classes you take at Penn State.

The benefits to society include information that may be useful in promoting good documentation guidelines for students who seek services for ADHD in college. This would help make sure that resources are used for the students who really need them.

5. **Duration/Time:** The research session will last about 40 minutes.
6. **Statement of Confidentiality:** The survey does not ask for any information that would identify who the responses belong to. Your responses are recorded without identifiers. The Office for Research Protections and the Social Science Institutional Review Board may review records related to this project. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because your name is in no way linked to your responses.
7. **Right to Ask Questions:** You can ask questions about this research. Contact April Fisher at (814) 861-1451 or aab177@psu.edu with questions. If you have questions about your rights as a research participant, contact The Pennsylvania State University's Office for Research Protections at (814) 865-1775.
8. **Compensation:** You will receive two extra credit points in the class from which you were recruited for participating in this study. An alternative extra credit assignment is available. This extra credit assignment requires you to read a brief article on accommodations for disabilities in college and write a one-page reaction to it. The article is available at the research sessions and from the principal investigator.

Additionally, the front page of your packet will have two tickets with random numbers written on them. After you have finished the packet, you can take one part of this ticket. For those rating scales that are successfully faked, the other part of the ticket will be entered into a drawing for two \$25.00 awards (one for students who participate in the fall semester and one for students who participate in the spring semester).

9. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

**You must be 18 years of age or older to take part in this research study.**

**Completion and return of the survey implies that you have read the information in this form and consent to take part in the research.**

**Please keep this form for your records or future reference.**

## APPENDIX E – INSTITUTIONAL REVIEW BOARD APPROVAL

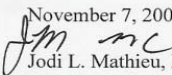
PENNSTATE



Vice President for Research  
Office for Research Protections

The Pennsylvania State University  
212 Kern Graduate Building  
University Park, PA 16802-3301

(814) 865-1775  
Fax: (814) 863-8699  
www.research.psu.edu/orp/

Date: November 7, 2005  
 From:  Jodi L. Mathieu, IRB Administrator  
 To: April B. Fisher  
 Subject: Results of Review of Proposal - Expedited (**IRB #21862**)  
**Approval Expiration Date: October 23, 2006**  
 "ADHD Rating Scales' Susceptibility to Faking in a College Student Sample"

The Social Science Institutional Review Board (IRB) has reviewed and approved your proposal for use of human participants in your research. By accepting this decision, you agree to obtain prior approval from the IRB for any changes to your study. Unanticipated participant events that are encountered during the conduct of this research must be reported in a timely fashion.

**Enclosed is/are the dated, IRB-approved informed consent(s) to be used when recruiting participants for this research.** Participants must receive a copy of the approved informed consent form to keep for their records.

**If signed consent is obtained, the principal investigator is expected to maintain the original signed consent forms along with the IRB research records for this research at least three (3) years after termination of IRB approval. For projects that involve protected health information (PHI) and are regulated by HIPAA, records are to be maintained for six (6) years. The principal investigator must determine and adhere to additional requirements established by the FDA and any outside sponsors.**

**If this study will extend beyond the above noted approval expiration date, the principal investigator must submit a completed Continuing Progress Report to the Office for Research Protections (ORP) to request renewed approval for this research.**

On behalf of the IRB and the University, thank you for your efforts to conduct your research in compliance with the federal regulations that have been established for the protection of human participants.

JLM/mbc  
 Enclosure  
 cc: Marley W. Watkins

**Please Note:** The ORP encourages you to subscribe to the ORP listserv for protocol and research-related information. Send a blank email to: [L-ORP-Research-L-subscribe-request@lists.psu.edu](mailto:L-ORP-Research-L-subscribe-request@lists.psu.edu)

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## APPENDIX F – SESSION LEADER PROTOCOL

Activity/Procedure	Check if Accurately Completed				
Session Date:					
<b>Session Leader #1</b>					
Dressed in a professional manner (i.e., dress pants, skirts, blouses, dress shirts, etc.)					
Uses voice inflection to convey enthusiasm					
Smiles at participants when they are entering the session					
Smiles while passing out/collecting papers					
<b>Session Leader #2</b>					
Dressed in a professional manner (i.e., dress pants, skirts, blouses, dress shirts, etc.)					
Uses voice inflection to convey enthusiasm					
Smiles at participants when they are entering the session					
Smiles while passing out/collecting papers					
<b>Session in General</b>					
Passes out research packets as students enter room					
Reads informed consent form verbatim					
Answers the participants' questions					
Reads "Preliminary Information" section verbatim					
Reads "Demographic Questionnaire" section verbatim					
Pauses for the participants to turn to the Demo. Quest. in their packets					
Gives students time to complete the Demo. Quest.					
Reads "Role-Play Scenario" verbatim					
Reads "Further Instructions and Information" verbatim					
Reads "Studying the ADHD Criteria" verbatim					
Pauses to allow participants to turn to the criteria page					
Reads the criteria page verbatim as directed in the script					
Gives participants five minutes to study the criteria					
Asks participants to remove the criteria from the packet					
Collects criteria page from all participants					
Reads "Completing the Rating Scales" section verbatim					
Does not provide strategies for faking					
Gives participants 15 minutes to complete the scales					
Does not let participants leave prior to end of 15 minutes					



Reads last direction at end of 15 minutes					
Allows students who need more time to continue					
Has participants come to the front of the room to have packets checked					
Collects packets					
Quickly checks packet for completion					
Tears off portion of ticket and gives to participant					
Answers any questions about extra credit sign-in					
Does not allow students to take research materials out of the testing room (exception – informed consent form)					
Gives handout on ADHD to students who express concerns about having symptoms					
Gives alternative assignment to students if they request it					

Comments:

**APRIL BRYINGTON FISHER  
VITA**

**EDUCATION**

*The Pennsylvania State University, University Park, PA*  
Ph.D., School Psychology, December 2006

*The Pennsylvania State University, University Park, PA*  
M.S., School Psychology, December 2003

*The University of Pittsburgh, Bradford, PA*  
B.S., Psychology, April 2001

**EMPLOYMENT**

*The Mifflin County School District, Lewistown, PA*  
School Psychologist, July 2006 to Present

**PRE-DOCTORAL INTERNSHIP**

*The Mifflin County School District, Lewistown, PA*  
School Psychologist Intern, July 2005 to June 2006

**PUBLICATIONS**

Fisher, A. B., Schaefer, B. A., Watkins, M. W., Worrell, F. C., & Hall, T. E. (2006). The factor structure of the Fear Survey Schedule for Children–II in Trinidadian children and adolescents. *Journal of Anxiety Disorders, 20*, 740-759.

Bryington, A. A., Palmer, D. J., & Watkins, M. W. (2002). The estimation of interobserver agreement in behavioral assessment. *Behavior Analyst Today, 3*, 323-328.

Bryington, A. A., Palmer, D. J., & Watkins, M. W. (2004). The estimation of interobserver agreement in behavioral assessment. *Journal of Early and Intensive Behavioral Intervention, 1*, 115-120. [Reprinted from *Behavior Analyst Today*]