AN EXAMINATION OF DIFFERENCES ASSOCIATED WITH AGE OF DIAGNOSIS IN ADULTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD)

A Thesis
by
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FOREWORD

This thesis is written in accordance with the style of the *Publication Manual of the American Psychological Association (6th Edition)* as required by the Department of Psychology at Appalachian State University.

Acknowledgments

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An Examination of Differences Associated with Age of Diagnosis in Adults with Attention-Deficit/Hyperactivity Disorder (ADHD)

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Abstract

Attention-Deficit/Hyperactivity Disorder (ADHD) is characterized by inattentive, hyperactive, and impulsive behaviors that are impairing, developmentally inappropriate, and often unrelenting. Researchers and clinicians have mixed views regarding ADHD's age of onset criterion (i.e., that some hyperactive-impulsive or inattentive symptoms are present and associated with impairment before the age of seven years). A negative labeling effect can occur in those with a psychological disorder such as ADHD, which may be associated with different outcomes for those with early and late identification and diagnosis (e.g., in early versus late childhood). ADHD symptoms, symptoms of oft-comorbid conditions, academic achievement and adjustment, self-perception, and risky behavior of college students with pre-existing ADHD diagnoses were assessed in the current study through a series of questionnaires. Data were examined to assess the predictive power of several independent variables on such outcomes including (a) gender, (b) age of diagnosis (AOD), severity of (c) childhood inattentive (IA) and (d) hyperactive-impulsive (HI) symptoms, as well as (e) AOD x childhood IA, (f) AOD x childhood HI, and (g) AOD x gender interactions, using hierarchical multiple regression models. Separate regressions were run on each dependent variable: (a) depression, (b) anxiety, (c) stress, (d) oppositional defiant symptoms, (e) self-esteem, (f) academic achievement, (g) academic adjustment, (h) college alcohol problems, and (i) risky sexual behavior. Overall, results indicated that AOD for ADHD does not meaningfully, independently predict negative outcomes along these lines in college students; however, a few specific outcomes (e.g., sexual intercourse while under the influence, self-esteem) appeared to have some association with AOD that merits further consideration. Explanations for lack of significant findings, limitations and future directions are explored.

An Examination of Differences Associated with Age of Diagnosis in Adults with Attention-Deficit/Hyperactivity Disorder (ADHD)

Attention-Deficit/Hyperactivity Disorder (ADHD) is a psychological disorder typically first diagnosed in childhood or adolescence. It is characterized within the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) by inattentive, hyperactive, and impulsive behaviors that are persistent, impairing, and developmentally inappropriate (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000; Waschbusch, King, & Gregus, 2007). ADHD is highly prevalent in children, adolescents, and adults of many cultures (Karam et al., 2009). The overall worldwide-pooled prevalence rate of ADHD is 5.29% for children 18 years of age or younger (Polanczyk, Silva de Lima, Horta, Biederman, & Rohde, 2007). In the United States, recent estimates as of 2007 put the number of children meeting ADHD diagnostic criteria at approximately 5.4 million (9.5%; Centers for Disease Control and Prevention, CDC, 2011), rising above previous estimates of 3-7% of the school-age population (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000). In Britain and Russia, ADHD prevalence rates range from 3.7-8.9% (Polanczyk et al., 2007).

Depending on the specific symptoms experienced, an individual diagnosed with ADHD is usually classified in one of three types: predominantly inattentive (ADHD-IA; clinically significant inattention only), predominantly hyperactive-impulsive (ADHD-HI; clinically significant hyperactive-impulsive symptoms only), or combined (ADHD-C; clinically significant symptoms in both dimensions; 4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000; Applegate et al., 1997). Some recent research questions the validity of *DSM-IV-TR* (2000) ADHD symptoms for clients presenting later in life (e.g., Fedele, Hartung, Canu, & Wilkowski, 2010), and this is particularly true with regard to the

age of onset criterion (Barkley, Murphy, & Fischer, 2008). The current study expands the existent literature by examining whether age at diagnosis of ADHD predicts facets of personal adjustment in a sample of college students.

ADHD Diagnostic Criteria and Associated Problems

The diagnostic criteria for ADHD require an individual to have six or more (out of nine) IA or HI symptoms, or both, and that these have persisted for at least six months to a degree that is maladaptive and inconsistent with the individual's developmental level (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000). Common examples of IA symptoms include appearing not to listen when spoken to and not following through on directions or assignments. Similar examples for HI are heightened restlessness and difficulty waiting for one's turn.

Another diagnostic criterion is that at least some of the qualifying symptoms that cause impairment must have been present since before age seven years (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000). Additionally, some negative impact from the ADHD symptoms must be present in two or more settings, evidenced by functional (i.e., social, academic, or occupational) impairment. A final *DSM-IV-TR* diagnostic criterion for ADHD is that the symptoms do not occur exclusively during the course of another mental disorder.

ADHD is the most common childhood psychiatric disorder, and is more frequent in males, with varying studies suggesting a 2:1 to 9:1 male-to-female ratio, although the consensus figure is 3:1 (see review in Martel, 2009). As noted above, ADHD is often associated with impairments such as significant academic difficulties (e.g., failing grades, disciplinary referrals; DuPaul & Power, 2008), risky health habits (e.g., unprotected sex;

Flory, Molina, Pelham, Gnagy, & Smith, 2006), and social-behavioral problems (e.g., peer rejection; Gizzo, 2002). There are frequently problems in parent-child interactions as well (Barkley, 2006). Individuals diagnosed with ADHD also run a high risk for comorbidity, given that anxiety, mood, disruptive behavior, substance use, and tic disorders are often concurrently diagnosed with ADHD (Barkley, 2006).

History of the Age of Onset Criterion

In 1980, the *DSM-III* (3rd ed.; *DSM-III*; American Psychiatric Association, 1980) revolutionized the classification of psychological disorders by establishing a system based on evidence of diagnostic reliability, as opposed to the theoretical categorization that characterized earlier versions of the diagnostic manual (Kieling et al., 2010). It is in this version of the DSM that the maximum age of onset of seven years old for an ADHD diagnosis was introduced, the specificity of which was improved in the *DSM-IV* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) indicating that some impairing inattentive or hyperactive symptoms must be present by that age. However, it is ironic that the age of onset criterion was introduced on the basis of clinical experience, as opposed to empirical data indicative of a real difference between cases identified before and after age seven. While many researchers over the years have questioned the utility and validity of this criterion for an ADHD diagnosis (Barkley et al., 2008; Polanczyk et al., 2010), and despite little to any published empirical support, the before-age-seven criterion has endured. However, many researchers support adjusting this criterion to 12 years of age, suggesting this change would allow ADHD to remain a “childhood” disorder while reducing false-negative, age-related diagnostic decisions (Kieling et al., 2010). In fact, the current proposed ADHD criteria for

the upcoming edition of the *DSM* incorporate this later age threshold, reflecting the consensus opinion in the field (American Psychiatric Association, 2012).

Age of Onset Criterion: Support

The requirement that symptoms present by seven years of age for an ADHD diagnosis is, as suggested above, currently a topic of debate in the field. Supporters of this criterion largely cite the need to consistently identify ADHD as a childhood disorder, and as such clinically significant symptoms should be present at a young age. Otherwise, they suggest ADHD symptoms may have developed secondary to academic or relationship problems (Waschbusch et al., 2007). Some professionals (e.g., Levin, 1998) suggest keeping the ADHD criteria unchanged and developing different criteria for ADHD emerging in adulthood.

It is perhaps not fully acknowledged that several research studies have found results *supporting* the early age-of-onset criterion for an ADHD diagnosis. For instance, a study conducted by Karam and colleagues (2009) compared a group of adults who met the full criteria for ADHD and those who met all criteria except early childhood symptom presentation, and found that those with late-onset (i.e., between 7 and 12 years of age) had lower frequencies of disciplinary problems and fewer problems in general life activities. Another difference between the groups was those with late-onset had less externalizing problems and responded better to treatment. The late-onset group, however, displayed higher comorbidity with generalized anxiety disorder than those in the early onset group. The authors suggest that perhaps the individuals with late-onset began to have ADHD-like symptoms secondary to anxiety, and perhaps not all had bona fide ADHD. Nonetheless, these

results collectively suggest that there are significant differences between individuals with early- and late-onset ADHD symptoms.

A study conducted by Willoughby, Curran, Costello, and Angold (2000) examined data from interviews of children diagnosed with ADHD ranging in age from 9 to 16 years old. Those with early-onset ADHD were compared to those with late-onset ADHD across the ADHD-IA and ADHD-C types. Comparisons to the ADHD-HI type were not possible because all participants in this group met only the early-onset criterion. These researchers reported no difference in impairment between the early-onset and late-onset children with ADHD-IA. However, differences between the early-onset and late-onset individuals with ADHD-C indicated support for the age of onset criterion. Early onset of ADHD-C was associated with the worst clinical outcomes (e.g., negative impact on parents' functioning; highest risk for comorbidity with Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and Depression; more likely to receive psychological services). Therefore, when considering ADHD-C, specifically, these results indicate support for an age-of-onset criterion due to the likelihood of different clinical outcomes relevant to the age of onset.

Rucklidge and Tannock (2002) examined potential differences among individuals with early-onset ADHD, adolescent-onset ADHD, ADHD "in remission" (e.g., individuals who met criteria for ADHD in the past but not in the present), and non-diagnosed peers, ranging in age from 13 to 16 years old, to determine if age-of-onset or persistence of symptoms are important variables to consider when diagnosing ADHD. The three ADHD groups performed significantly worse on all tasks than the non-ADHD control group. The childhood onset group displayed slower processing speed, more variability in response time and accuracy in a stop-signal task, and slower naming of words and colors than the

adolescent-onset group. These findings provide support for the age-of-onset criterion of ADHD symptoms, suggesting it is an important prognostic feature for level of later impairment and may be more associated with executive dysfunctions. These researchers suggest that individuals who develop ADHD in adolescence may only be manifesting "ADHD-like" symptoms that are possibly explained more accurately by a different psychological disorder, and that clinicians need to be aware that age of onset may indeed be a distinguishing feature of ADHD.

A study done by Waschbusch et al. (2007) used parent ratings of elementary school students diagnosed with ADHD to examine how age-of-onset corresponded to ADHD symptomatology. Their findings indicated that 20% of children who met a diagnostic threshold for ADHD symptoms and impairment did not meet the age-of-onset criterion. Such children mostly had inattention problems, yet they had more impaired parent-child relationships, self-esteem, family functioning, and higher impairment ratings than their peers who met every ADHD criterion. This higher level of impairment for late-onset children is contradictory to findings in most other studies (e.g., McGee, Williams, & Feehan, 1992). The researchers hypothesized that this was due to the fact that the current study measured impairment by relationship problems, rather than focusing on academic or behavioral problems. While albeit in an unexpected direction (i.e., late-onset associated with *greater* severity), these findings also provide support for a significant difference between the experiences and impairment of individuals with an early-onset and those with a late-onset of ADHD symptoms.

Age of Onset Criterion: Challenges

Numerous other researchers have conducted studies indicating a lack of differences in symptoms and impairment among individuals with early and late onset of ADHD symptoms. ADHD is one of only three childhood psychological disorders that specify an age of onset for symptoms or impairment (Barkley & Biederman, 1998). Applegate et al. (1997) conducted a study with a large group of children who, at the time of the study, met all non-age criteria for an ADHD diagnosis, to specify what ADHD characteristics, if any, distinguished the participants who met the age-of-onset criterion. Notably, the study found significant differences between the three subtypes of ADHD regarding the frequency of significant symptoms prior to age seven. Nearly all of the participants with the ADHD-HI met the age requirement, but 20% of the participants with ADHD-C and 43% of the participants with ADHD-IA did not meet the criterion. The researchers concluded it is not appropriate for the combined and inattentive subtypes to have such a young age-of-onset criterion because it reduces the accuracy of clinicians' diagnoses as the symptoms are not always present at such a young age and suggests that if an age-of-onset criterion is to be used that it should vary by ADHD type. However, the *DSM-IV* (1994) and its age-of-onset criterion had already been published at the time of these findings (Barkley & Biederman, 1997).

Barkley et al. (2008) conducted two large studies (i.e., University of Massachusetts and Milwaukee studies) in which they examined differences between those diagnosed with early- (i.e., before age seven) and late-onset (i.e., age seven or older) ADHD. Findings indicated no group differences, across all DSM-IV criteria, at time of diagnosis. The Milwaukee study also demonstrated that participants who had documented symptoms that presented before age six less accurately estimated the onset of their symptoms, as compared

to those with late-onset ADHD. On average, the former group estimated an age-of-onset four years later than the empirical medical record. Todd, Huang, and Henderson (2008) reported similar findings in regards to the inaccurate recall of ADHD symptom onset, with self- and parent-reports on age of onset tending to 'drag forward' as the reporter ages, indicating a later-onset than the known actual onset of symptoms as documented in a previous study. This finding occurred within all age groups. These researchers argue that the current *DSM-IV-TR* (2000) age-of-onset criterion is not scientifically based, and may in fact be excluding many from an accurate diagnosis due to imprecise memories, as illustrated by their findings. Barkley and colleagues (2008) have suggested that, at a minimum, the age-of-onset criterion be raised to 14-16 years of age to improve the accuracy of diagnosing ADHD, particularly in adults. This alternative age-of-onset threshold would still indicate a childhood-onset disorder, while also increasing the reliability of ADHD diagnoses. However, Barkley and colleagues also indicated that they would support the full removal of the age-of-onset criterion due to their lack of findings signaling any meaningful differences between those with early or late onset of ADHD symptoms.

Another study conducted by Polanczyk and colleagues (2010) evaluated if including children with ADHD symptoms that present between the ages of 7 and 12 years (a) increases the prevalence of the disorder at age 12 or (b) changes the features, impairment, and risk factors associated with ADHD. Results indicated that extending the age-of-onset criterion to age 12 led to a negligible increase (i.e., 0.1%) in the prevalence of ADHD at age 12 years. Further, children with symptoms that appear between ages 7 and 12 years presented with neither different clinical or cognitive features, nor different impairment or risk factors, as compared to children who met the more stringent *DSM-IV-TR* (2000) age of onset criterion.

These findings provide clear support for adjusting the criterion to 12 years of age in future diagnostic criteria, as has been suggested by the *DSM-5* ADHD committee (see above; APA, 2012).

Further research conducted by Hesslinger, van Elst, Mochan, and Ebert (2003) examined two groups of adults diagnosed with ADHD, one meeting criteria for early-onset and the second meeting late-onset criteria. There were no differences between the adults with early-onset ADHD and those with late-onset ADHD, in regards to psychiatric comorbidity and psychopathology. These researchers concluded that clinically relevant ADHD symptoms typically are present before age seven, but that there may also be a group of individuals who present those symptoms at a later time. Kieling and colleagues (2010) support this conclusion, suggesting that the current age of onset criterion has increased false-negatives in the diagnosis of ADHD, as only half of an adult population with clinical features of ADHD recalled an onset before age seven. Overall, this body of work supports Barkley and Biederman's (1997) conclusion that, until empirical research justifies such a specific age-of-onset criterion (e.g., due to a difference in presentation of symptoms or impairment), the age-of-onset criterion needs to be removed or interpreted with caution.

Age of Onset Versus Age of Diagnosis

While the age of onset criterion for ADHD has been highly debated, age-related factors besides symptom onset may be important to examine in terms of their contribution to the adjustment of individuals diagnosed with ADHD. For example, the age at which a psychological disorder is formally diagnosed may affect the individual's interpretation of his or her symptoms, the treatment sought, the accommodations received, or reactions of others, and thereby impact the individual's self perception, treatment-seeking and adherence

behavior, and level of overall adjustment. Further, a missed diagnosis and the absence of treatment for several years can be associated with educational, occupational, and social impairments in adaptive functioning (Goodman, 2009). The current study focused on examining how age of diagnosis may differentiate current severity and breadth of impairment in college students diagnosed with ADHD.

Labeling effect. One factor that might play a role in an individual's outcome subsequent to diagnosis of a mental disorder is the "labeling effect" (Martinez, Piff, Mendoza-Denton, & Hinshaw, 2011). The debate of whether labeling an individual is harmful (i.e., by fostering negative stereotypes) or helpful (i.e., by providing classifications and related interventions) is not new to the field of psychology (Cornett-Ruiz & Hendricks, 1993). Children and adults can experience stigmatization when diagnosed with a mental disorder, which can negatively impact other areas of their lives such as self-esteem and social relationships. At times, individuals will deny or reject the label of a mental illness to protect their self-esteem (Finlay & Lyons, 2005). Other findings indicate that adolescents who participate in self-labeling report higher ratings of depression and a lower sense of mastery (Moses, 2009).

Cultural conceptions of those with psychological disorders do affect the self-perception of affected individuals (Kroska & Harkness, 2006). Those with a psychological diagnosis indicate having higher expectations of rejection, devaluation, and discrimination (Link, 1987). For numerous reasons, it is certainly possible that at times teachers or classmates may treat a child or adolescent diagnosed with ADHD differently than non-diagnosed peers, which in turn could lead the affected individual to "self-stigmatize." When an individual self-stigmatizes or self-labels, he or she internalizes expectations of rejection

and discrimination, and subsequently behaves less functionally due to decreased adaptive thinking and withdrawal from others (Link, 1987; Moses, 2009). Moses (2009) reports that self-stigmatizing individuals with psychological illnesses tend to have begun treatment at a younger age. Therefore, with ADHD being a childhood disorder, the population of early-ADHD-onset individuals may be more susceptible to a negative labeling effect that is expressed in stigmatization and associated feelings of helplessness, hopelessness, and confusion.

However, empirical support for the labeling theory has been inconsistent, with some studies indicating that the more an individual accepts his or her mental disorder, the higher functioning and better overall outcome will be, as opposed to those who reject a personal diagnosis of a mental disorder (Warner, Taylor, Powers, & Hyman, 1989). Therefore, labeling a child or adolescent with a mental disorder could have unexpected and even positive effects, but in any event seems likely to impact the way the individual views him or herself and functions in society.

In addition to possible age-of-diagnosis differences that might stem from labeling, another reason to examine how age of diagnosis may be related to adjustment with ADHD is that reporting on the timing of symptom onset, the current developmental criterion, is not reliable (see above). Therefore, age of diagnosis may provide a useful developmental anchor, as it commonly is concretely documented in assessment reports, takes syndrome-related impairment into account, and also may relate to subsequent self-labeling effects.

Current Study

The purpose of the current study was to measure ADHD symptomatology, co-occurrence of other psychological symptoms (e.g., ODD symptoms, dysregulated mood),

academic achievement (i.e., high school GPA) and adjustment, self-esteem, alcohol use, and risky sexual behavior of college students previously diagnosed with ADHD, and to examine whether age of ADHD diagnosis predicted these independent of the influence of gender or the severity of symptoms. Due to previous findings that those with earlier onset may have more severe symptoms, students with an earlier diagnosis of ADHD were predicted to have lower academic adjustment and achievement, higher rates of ODD symptoms, and more risky health habits when compared to students with a later ADHD diagnosis. It was further hypothesized that the individuals carrying the label of ADHD for a longer period of time (i.e., via early detection) would be more adjusted to the diagnosis, resulting in higher self-esteem, as well as lower levels of depression, anxiety, and stress.

Method

Participants

The sample consisted of 65 college students (53.8% male; 92.3% Caucasian) with pre-existing diagnoses of ADHD. Participants attended Appalachian State University (ASU; 60%), University of Northern Iowa (UNI; 22.9%), or University of Wyoming (UW; 17.1%). The participants were recruited through posted advertisements at the ASU Counseling Center, Office of Disability Services, Psychology Clinic, and the online campus bulletin board system, as well as like mechanisms and offices at the UW and the UNI. Participants were eighteen years of age or older (M = 23.12; SD = 6.43 years). Upon completion of the study, all participants were offered a small material compensation (i.e., USB memory stick), which was the primary incentive.

Pre-existing ADHD diagnoses were corroborated through the use of self- and parent-report diagnostic questionnaires tapping current and childhood ADHD symptoms. Of the

participants whose guardian completed the report (55.4%), there was extremely high consistency between the participant and guardian on reported age of diagnosis (r = .99). Agreement between these two groups of informants on total ADHD symptoms experienced by the participant in the past six months was also substantial (r = .46, p = .005). Given the documented trend for ADHD symptoms, and particularly HI, to wane over time, and in combination with another well-established tendency for retrospectively reported measures to be inaccurate, neither childhood nor adulthood symptoms were given precedence as verification of ADHD. Participants reporting no ADHD symptoms above-clinical-threshold (i.e., 1.5 *SD* above an established normed cutoff for IA or HI on diagnostic scales) or related impairment (i.e., in ≥ 2 domains) in either childhood or adulthood were excluded from the study (n = 5). Exceptions to this rule were made if self- or parent-report(s) made clear that medication or other treatment was ongoing and could account for sub-threshold symptom reports (n = 5) based on review of the author and her supervisor, a licensed clinical psychologist with expertise in ADHD assessment. Participants were asked to report the type of health professional who made their diagnosis, their current and past medication status (e.g., taking Ritalin currently), and their history of psychosocial treatment; these other data were also considered in making inclusion decisions (see Table 1 for details).

All participants received a description of the study as part of the informed consent and subsequently completed a series of online surveys that were administered on SurveyMonkey.com. Participants were not excluded on the basis of comorbidity, gender, race, or any other demographic characteristics. All of the materials and procedures used in the current study were approved by the Institutional Review Boards (IRB) of each participating institution (see Appendix A for Appalachian State University IRB Approval).

Measures

Demographic questionnaire. The demographic questionnaire is a self-report measure (see Appendix B) that taps basic personal descriptive information such as age, race, and gender, as well as specific questions pertaining to ADHD, including grade, year, age of ADHD diagnosis, and previous treatment. High school GPA and college GPA were also queried to provide indices for academic achievement.

Current symptom scale. The Current Symptom Scale is a self-report measure (CSS-A; Appendix C; Barkley & Murphy, 2006) that consists of 18 items tapping the IA and HI symptoms of ADHD, as defined in the *DSM-IV-TR* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000), and referencing behavior in the past six months. Example items include "Didn't listen when spoken to directly" (IA) and "Fidgeted with hands or feet or squirmed in seat" (HI). Responses were made on a four-point Likert-type scale (0 = *never or rarely*; 3 = *very often*). The questionnaire contains 10 additional, similarly-scaled items assessing overall impairment in various domains (e.g., family life, social interactions with others, daily responsibilities) due to ADHD symptoms. In addition, there are eight items tapping behavior conforming to the *DSM-IV-TR* (2000) criteria for ODD within the last six months. All items are scored in a positive direction, with higher scores indicating a greater presence of ADHD symptoms. Means and 1.5 *SD* cutoff points for endorsement of item groups are normed by age (see Barkley and Murphy, 2006). The IA, HI, and impairment scales have been shown to have satisfactory internal reliability amongst undergraduates (N = 1,047; Cronbach's alpha [α] = .80, .73, .86, respectively; Fedele et al., 2010); these and the ODD symptom scale also had good internal reliability in the current sample ($N = 65$; α = .85, .83, .85, .81, respectively).

Childhood symptom self-report scale for adults. This scale (CSS-C; Appendix D) by Barkley and Murphy (2006) is a 34 item, retrospective self-report for adults used in the diagnosis of ADHD, as well as childhood ODD and CD, with scales mirroring those in the CSS-A by tapping behaviors and impairment between the ages of 5 and 12. The IA, HI, impairment, and ODD symptom scales demonstrated robust internal reliability herein (N = 65; α = .86, .89, .87, .88, respectively).

Depression anxiety stress scale (DASS-21). The DASS-21 is a self-report measure (see Appendix E) that is an abbreviated version of the original DASS (Brown, Chorpita, Korotitsch, & Barlow, 1997), with 21 items (7 items per anxiety, depression, and stress subscale) tapping symptoms of physiological hyperarousal (anxiety), an absence of positive affect (depression), and difficulty relaxing, irritability, and agitation (stress) experienced in the past week. These items assess representative symptoms of anxiety and depression, and discriminate between these constructs as they are defined in the *DSM-IV-TR* (2000). Example items include "I was worried about situations in which I might panic and make a fool out of myself" (anxiety), "I felt that life was meaningless" (depression), and "I felt that I was rather touchy" (stress). Responses are made on a four-point Likert-type scale (0 =*did not apply to me at all;* 3 = *applied to me very much, most of the time*). All three subscales have been shown to have strong internal consistency reliability in a large clinical sample (N = 437; α = .96, .89, and .93 for depression, anxiety, and stress respectively), as well as favorable temporal stability (r = .71 - .81; Brown et al., 1997). Data from a large non-clinical adult sample suggests norms for depression (M = 2.83, SD = 3.87), anxiety (M = 1.88, SD = 2.95), and stress (M = 4.73, SD = 4.20; Henry & Crawford, 2005). The depression, anxiety, and

stress subscales demonstrated good internal reliability in the current sample ($N = 65$; $\alpha = .90$, .83, .83, respectively).

Academic engagement questionnaire. The Academic Engagement Questionnaire is a self-report measure (Appendix F) that is a modified version of the National Survey of Student Engagement (NSSE; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2007); consisting of three measures (19 items) assessing time spent studying, time spent in co-curricular activities, and a global measure of engagement in effective educational practices. The items on the global engagement measure contribute equally and are positively related to desired outcomes of colleges for student development. Example items include "Asked questions in class or contributed to class discussions" and "Talked about career plans with a faculty member or advisor." Responses are made on a four-point Likert-type scale (0 = *never;* 3 = *very often*). Academic engagement as measured by the NSSE has shown to be a reliable indicator of academic achievement in college settings. Reliability data has shown the NSSE to have consistent findings ($\alpha = .82$ for college activities, and all other subscales have α coefficients above .75; Kuh et al., 2007). Data from the current sample indicated satisfactory internal reliability ($N = 65$; $\alpha = .74$).

Academic adaptation questionnaire. The Academic Adaptation Questionnaire is a self-report measure (see Appendix G) that consists of the 11 items from the Academic Adjustment subscale on the Student Adaptation to College Questionnaire (Norwalk, Norvilitis, & MacLean, 2009) as well as the six most common complaints reported by students receiving test accommodations in college or graduate school (Lewandowski, Lovett, Codding, & Gordon, 2008). The measure is designed to indicate how well a student is faring in college-level academics, with higher scores indicating better self-reported adjustment. An

example of an item from the academic adjustment subscale is “When I have a big project or paper to do, I break it up into smaller steps.” Responses are made on a four-point Likert-type scale (0 = *never or not at all like me;* 3 = *always or very much like me*). An example of a common academic complaint is “I have to read material over and over to understand it.” These responses consist of four choices (*true; mostly true; false; mostly false*). The academic adjustment measure has been shown to have strong internal reliability (α = .85; Norwalk et al., 2009). Scores on this measure have been strongly and positively associated with ADHD in college students (*r* = .93; Lewandowski et al., 2008). These items as assessed within the current sample had adequate internal reliability (*N* = 65; α = .73).

Rosenberg self-esteem questionnaire (SEQ). The SEQ is a self-report questionnaire (Appendix H) adapted from Rosenberg (1979) that assesses self-image. This short form consists of 8 items and maximizes the internal reliability, with α = .84 in a prior study (Ayduk et al., 2000). Example items include “I feel that I have a number of good qualities” and “I certainly feel useless at times.” Responses are made up of four answer choices (*SA = strongly agree; A = agree; D = disagree; SD = strongly disagree*). This form is administered and scored using Rosenberg’s original instructions in an electronic format. The SEQ has been reported to have strong two-week temporal reliability of .85 (Rosenberg, 1979). Within the current sample, these items also showed good internal reliability (*N* = 65; α = .84).

College alcohol problems scale-revised (CAPS-r). The CAPS-r is a self-report measure (see Appendix I) that is a short, reliable, two-factor instrument used to measure negative consequences experienced by college students when drinking (Maddock, Laforge, Rossi, & O’Hare, 2001). This measure consists of 8 items, which were derived from sequential methods (item analysis, exploratory analysis, and confirmatory analysis)

examining the original 20 items in the CAPS developed by Comrey (1988) and Jackson (1970). These procedures produced two main dimensions of alcohol-related problems: *personal use* and *social problems of alcohol use*. Example items include "Feeling sad, blue, or depressed," "Caused you to feel bad about yourself," and "Drove under the influence" in relation to alcohol use. Responses are made using six answer choices (1 = *Never;* 2 = *Yes, but not in the past year;* 3 = *1-2 times;* 4 = *3-5 times;* 5 = *6-9 times;* 6 = *10 or more times*). The two subscales have been shown to have satisfactory internal reliability in a large sample (N = 663; α = .79 and .75 for the personal problems and social problems, respectively; Maddock et al., 2001). The personal problems and social problems subscales had robust internal reliability in the current sample (N = 65; α = .83, .79, respectively).

Risky behavior questionnaire (RBQ). The Risky Behavior Questionnaire is a self-report measure (Appendix J) that consists of 21 items assessing various types and frequencies of risky sexual behavior. The variables on the questionnaire were taken from the Health and Sex Behavior Questionnaire developed for the Pittsburgh ADHD Longitudinal Study (PALS; Flory et al., 2006). Examples of items include "Have you ever dated a person who was married or in another relationship?," "How old were you when you had your first sexual experience with a partner?," and "How often in your life have you had a sexually transmitted disease or a venereal disease?" The items were adapted from Jessor, Jessor, and Donovan (1981), the Sex and Dating Questionnaire used in the Pittsburgh Adolescent Alcohol Research Center (1996), and Tarter (1997).

Demographic questionnaire for guardians. This self-report measure (see Appendix K) taps basic descriptive information about the guardian's child, such as age, race, and gender, as well as specific questions pertaining to his or her child's ADHD diagnosis,

including grade, year, age of ADHD diagnosis, and previous treatment. The purpose of this questionnaire was to verify the participant's ADHD diagnosis (i.e., sampling grade, year, age, and source of child's ADHD diagnosis) and related information (i.e., ratings of the child's current ADHD symptoms, diagnosis of other psychological disorders, and treatment or accommodations the child received for ADHD).

Adult ADHD other-report scale symptom checklist (ORS). This measure (see Appendix L) consists of 18 items assessing the DSM-IV-TR criteria for ADHD (Adler et al., 2006), and closely follows the format of the CSS-A and CSS-C with instructions tailored for a collateral informant. Items tap deficits such as "problems remembering appointments or obligations" and "[fidgeting or squirming] with your hands or feet when you have to sit down for a long time" Responses are made on a 5-point Likert-type scale (*Never, Rarely, Sometimes, Often, Very Often*). This measure has shown convergent validity with the standard clinician ratings on the ADHD Rating Scale (Adler et al., 2006). Internal consistency was high for both the self- and clinician-administered versions (α = 0.88, 0.89, respectively). Further, there was acceptable agreement between individual items (43-72%), suggesting the Adult ADHD Self-Report scale symptom checklist is a reliable and valid scale for evaluating ADHD in adults. This measure was administered to the parent or guardian of the participant; therefore, the wording was adapted so that the items referred to the child. The IA and HI scales had strong internal reliability in the current sample (N = 36; α = .88, .90, respectively).

Procedures

All participants in this study completed the measures in survey form using the online SurveyMonkey.com platform. The account that hosted this survey was private and was only

available for use by the researchers; access was password protected. Participation in this study required one session of approximately 45 minutes, and all data collected remained confidential; compensation was facilitated by data collected on a separate online survey, to keep identifying information separate from sensitive responses. Participants were prompted how to use a provided hyperlink in a separate browser window to verify their current GPA. At the completion of the survey, participants were thanked for their participation and provided with an additional hyperlink to be inserted into an email and sent to their parent or guardian. The link provided the parent or guardian with informed consent and a brief survey. The survey completed by the guardian (see Appendices K and L) was solicited to verify the participant's ADHD diagnosis (i.e., sampling grade, year, age, and source of child's ADHD diagnosis) and related information (i.e., ratings of the child's current ADHD symptoms, diagnosis of other psychological disorders, and treatment or accommodations the child received for ADHD). Upon completion of the study, student participants were notified by email to collect their reimbursement (i.e., USB memory stick) at a convenient campus location (i.e., author's office). Measures were administered to students in a standardized order as follows: Informed Consent and Demographics, CSS-A, CSS-C, DASS-21, Academic Engagement Questionnaire, Academic Adaptation Questionnaire, SEQ, CAPS-r, and RBQ. Participants from the three universities were directed to three separate surveys with the same measures, differing only in their informed consent and debriefing pages, the latter of which provided contact information for university-based psychological services.

Data Analytic Strategy

The empirical data was analyzed through a series of hierarchical multiple regressions using gender in Block 1, age of ADHD diagnosis in Block 2, adding severity of childhood IA

and HI symptoms (separately) in Block 3, with age of diagnosis x childhood IA, age of diagnosis x childhood HI, and age of diagnosis x gender interactions as the predictor variables being entered in Block 4. Separate regressions were run on the following dependent variables: depression, anxiety, stress, oppositional defiant symptoms, self-esteem, academic achievement and adjustment (combining the academic engagement and academic adaptation scores), college alcohol problems, and risky sexual behavior (frequency of condom use during sexual intercourse, number of sexual partners, times having sexual intercourse under the influence of a substance, and times having sexual intercourse with a stranger).

Supplementary analyses (e.g., follow-up linear regressions, Pearson correlations) were employed, as needed on a post-hoc basis, to further examine trends or research questions emerging from the initial regression analyses.

Results

The means, standard deviations, percentages, and ranges of demographic and independent variables are presented in Table 1. Descriptive statistics of the dependent variables, which, broadly construed, represent general adjustment indices for college students, were calculated (see Table 2). To address potentially problematic statistical tolerance between variables, all analyses were conducted using centered data. A multivariate analysis of variance (MANOVA) performed across gender for all dependent variables indicated differences in outcome areas were not significantly dependent on gender, $F(12, 49) = 1.71$, $p = .09$; Wilks' $\lambda = .71$, partial $\varepsilon^2 = .30$.

Mean and other descriptive information regarding the sample's outcome variable data were examined to gauge impairment and variability relative to normative information. The mean college GPA of participants was a 2.97, which was not indicative of maladjustment

when compared to the mean student GPA at Appalachian State University during data collection (= 2.92; Appalachian State University Registrar's Office, personal communication, February 28, 2012). Participants' reported depressive (*M* = 6.55; *Median* = 6.00) and stress symptoms (*M* = 8.38; *Median* = 7.00) equated to "mild" dysphoria, falling within one standard deviation of the average scores from a non-clinical sample of adults, while the mean of reported anxiety (= 5.63; *Median* = 4.00) fell only slightly above one standard deviation of the non-clinical sample (Henry & Crawford, 2005). Eighty percent of the sample indicated being sexually active, and the mean number of reported lifetime sexual partners was 4.91.

Guardians who completed the symptom reports (55.4%) generally supported the ADHD diagnoses of the participants, with a large majority (75%) nominating the presence of four or more current symptoms in IA or HI domains on the six-item screener, which is an accepted cutoff for adults (Kessler et al., 2005; Kessler & Ustun, 2005). Further, there was extremely high consistency between the participant's and guardian's reported age of diagnosis (r = .99). Correlations between the independent variables (e.g., age of diagnosis, childhood IA and HI symptoms) and the dependent variables were calculated (see Table 3).

Age of diagnosis (AOD) was negatively correlated with childhood IA symptoms (r = -.32; p = .01), childhood HI symptoms (r = -.27; p = .04), and total childhood ADHD symptoms (r = -.31; p = .01), indicating that as the pervasiveness of childhood ADHD symptoms increases, the AOD for ADHD shifts earlier in life. Also, AOD was negatively correlated with childhood ODD symptoms (r = -.27; p = .04), again signaling that more extensive behavior problems are associated with earlier diagnosis. Lastly, AOD was positively correlated with adult self-esteem (r = .27; p = .03), indicating that individuals with a later AOD reported higher levels of self-esteem.

A regression was used to examine how AOD, as well as the other variables entered in hierarchical blocks, was associated with current depressive symptoms as captured by the DASS (see Table 4). Gender was entered in Block 1 (with female = 1 and male = 2), and was not found to associate with current DASS depression score, $R^2 = .01$, $p = .48$. In Block 2, AOD was likewise found to contribute an insignificant amount of predictive power, $\Delta R^2 = .02$, $p = .28$. When self-reported childhood IA and HI symptoms were added to the equation in Block 3, again, no significant degree of variance was explained, $\Delta R^2 = .04$, $p = .27$. Finally, adding the three interaction terms (AOD by gender and childhood IA, HI) in Block 4 did not significantly augment the predictive ability of the model, $\Delta R^2 = .04$, $p = .49$, and, overall, while it accounted for 11.2% of the variance in DASS depression, the final regression model did not have statistically significant power, $F(7, 54) = .97$, $p = .46$, with only childhood HI appearing to have even a marginal individual association with DASS depression score ($\beta = .35$, $p = .08$).

A second analysis examined how current DASS anxiety symptoms related to the regression equation variables (see Table 5). When entered in Block 1, gender was significantly associated with current DASS anxiety score, $R^2 = .10$, $p = .01$, $F(1 ,60) = 6.46$. Entering AOD in Block 2 did not contribute significant power to the model, $\Delta R^2 = .03$, $p = .14$. Adding the childhood ADHD symptom variables in Block 3, on the other hand, did account for a significant amount of variance, $\Delta R^2 = .14$, $p = .007$, $F(4, 57) = 5.25$, while adding the interaction terms in Block 4 did not, $\Delta R^2 = .01$, $p = .93$. Overall, the final regression model accounted for 27.5% of the variance in DASS anxiety and had statistically significant power, $F(7, 54) = 2.92$, $p = .01$, with gender appearing to have an independent effect ($\beta = -.33$, $p = .006$) such that males tended to report lower anxiety. Childhood HI also

appeared to have marginal predictive value (β = .34, p = .06), where self-reported HI symptoms were positively associated with anxiety.

The third hierarchical regression focused on current stress symptoms reported on the DASS (see Table 6). Gender was significantly associated with stress symptoms, R^2 = .08, p = .03, F(1 ,60) = 5.27, whereas AOD was not, ΔR^2 = .03, p = .18. Self-reported childhood IA and HI symptoms enhanced the model's power, ΔR^2 = .16, p = .003, F(4, 57) = 5.28, while entering the interaction terms did not, ΔR^2 = .01, p = .90. Overall, the final model explained 27.8% of the variance in DASS stress scores and was statistically significant, F(7, 54) = 2.97, p = .01, with gender (β = -.316, p = .01) and childhood HI (β = .399, p = .02) appearing to have individual associations with DASS stress score, such that higher childhood HI symptoms and female sex were associated with higher current stress.

A hierarchical regression was also conducted on current ODD symptoms as captured by the Current Symptom Scale (see Table 7). Gender was not significantly associated with current ODD, R^2 = .03, p = .18. Similarly, AOD did not contribute a significant amount of predictive power, ΔR^2 = .03, p = .22. However, when self-reported childhood IA and HI symptoms were added to the equation, a significant degree of variance was explained, ΔR^2 = .28, p < .001, F(4, 57) = 7.07. Finally, adding the three interaction terms did not significantly augment the predictive ability of the model, ΔR^2 = .01, p = .86. The final model accounted for 34.1% of the variance in ODD, F(7, 54) = 3.99, p = .001, with childhood HI appearing to have an individual association with current ODD symptoms (β = .446, p = .009).

Another analysis tested the hypothesis that AOD would be significantly associated with self-esteem as tapped by the Rosenberg SEQ (see Table 8). Gender was marginally related to self-esteem, R^2 = .06, p = .07, while AOD contributed a significant amount of

predictive power, $\Delta R^2 = .08$, $p = .03$, $F(2, 59) = 4.47$. When self-reported childhood IA and HI symptoms were added to the equation, no significant degree of variance was explained, $\Delta R^2 = .04$, $p = .24$. The three interaction terms also did not significantly augment the predictive ability of the model, $\Delta R^2 = .04$, $p = .46$. Overall, the final regression model accounted for 21.2% of the variance in self-esteem, which was marginally significant, $F(7, 54) = 2.08$, $p = .06$. Among the individual variables included as predictors in this final model, only gender appeared to have a significant, independent association with self-esteem ($\beta = .268$, $p = .03$). Though the interaction terms did not appear to be significant, an exploratory analysis with solely gender and AOD entered into a single-block equation had significant predictive power, $R^2 = .133$, $F(2, 60) = 4.59$, $p = .01$, with gender and AOD providing significant, independent associations with self esteem ($\beta = .242$, $p = .05$; $\beta = .275$, $p = .03$) respectively.

A hierarchical regression was also used to test the hypothesis that AOD would be significantly associated with academic adjustment as measured by the Academic Engagement and Academic Adaptation Questionnaires (see Table 9). The Academic Engagement and Academic Adaptation Questionnaires were combined to represent an overall academic adjustment score due to the two measures tapping aspects of academic behavior shown to be highly correlated with academic achievement in college students (Baker & Siryk, 1984; Fuller, Wilson, & Tobin, 2011). Indeed, the two measures were significantly correlated in the current data ($r = .33$, $p = .007$), providing further support for the combining of these measures. The combined score was derived through calculating the average item scores of each measure and summing for a new variable (e.g., academic adjustment). Gender was not significantly associated with academic adjustment, $R^2 < .001$, $p = .91$. AOD also did not contribute a significant amount of predictive power, $\Delta R^2 = .06$, $p = .06$. When self-reported

childhood IA and HI symptoms were added, a significant degree of variance was explained, $\Delta R^2 = .13$, $p = .02$, $F(4, 57) = 3.26$. Finally, adding the three interaction terms did not significantly improve the predictive ability of the model, $\Delta R^2 = .04$, $p = .49$. Overall, the final regression model accounted for 22.2% of the variance in academic adjustment and was statistically significant, $F(7, 54) = 2.20$, $p = .049$. However, only childhood HI had an independent association with academic adjustment ($\beta = -.361$, $p = .048$). An exploratory analysis with AOD and childhood HI symptoms entered into a single-block equation had significant predictive power, $R^2 = .179$, $F(2, 59) = 6.45$, $p = .003$, though, again, AOD did not have a significant association ($\beta = .152$, $p = .221$) and childhood HI symptoms provided a significant, independent association with overall academic adjustment ($\beta = -.357$, $p = .005$).

Another regression was used to test the hypothesis that AOD would be significantly associated with self-reported frequency of sexual intercourse while under the influence of a substance, as measured by the RBQ (see Table 10). Gender was not significantly associated with sexual intercourse under the influence, $R^2 = .05$, $p = .10$. AOD contributed a marginal amount of predictive power, $\Delta R^2 = .06$, $p = .05$, $F(2, 59) = 3.44$. When self-reported childhood IA and HI symptoms were added to the equation in Block 3, no significant degree of variance was explained, $\Delta R^2 = .01$, $p = .76$. Finally, adding the three interaction terms did not add to the predictive ability of the model, $\Delta R^2 = .01$, $p = .95$. The final regression model accounted for 11.8% of the variance in self-reported frequency of times having sexual intercourse under the influence, and did not have statistically significant power, $F(7, 54) = 1.04$, $p = .42$, with only AOD appearing to have even a marginal individual association with frequency of sexual intercourse while under the influence ($\beta = .299$, $p = .08$). When considered by itself in an exploratory regression, AOD appears to have a similar association

with the self-reported frequency of sexual intercourse while under the influence in the past year, $R^2 = .06$, $F(1, 61) = 3.76$, $p = .057$.

A hierarchical regression was used to test the hypothesis that AOD would be significantly associated with self-reported overall number of sexual partners, as captured by the RBQ (see Table 11). Gender, $R^2 = .01$, $p = .44$; AOD, $\Delta R^2 = .01$, $p = .56$; self-reported childhood IA and HI symptoms, $\Delta R^2 = .08$, $p = .08$; and the three interaction terms, $\Delta R^2 = .01$, $p = .88$, predicted no significant degree of variance, respectively. Overall, the final regression model accounted for 11.1% of the variance in number of sexual partners, and did not have statistically significant power, $F(7, 54) = .97$, $p = .47$, with only childhood HI appearing to have an individual association with number of sexual partners ($\beta = .455$, $p = .02$). However, when considered by itself in an exploratory regression, childhood HI symptoms did not appear to have a meaningful association with the number of sexual partners, $R^2 = .03$, $F(1, 62) = 2.19$, $p = .14$.

Hierarchical regression models testing the hypotheses that AOD would be significantly associated with (a) academic achievement by self-reported GPA (see Table 12), (b) self-reported alcohol problems in the past year as captured by the CAPS-r (see Table 13), (c) self-reported condom use as assessed by the RBQ (see Table 14), and (d) number of times having sexual intercourse with a stranger or person just met as tapped by the RBQ (see Table 15) all had no statistically significant predictive power at any step. There were also no indications that individual variables were significant predictors in their own right in these analyses.

In an additional exploratory analysis, a MANOVA performed across age of onset (e.g., younger than age 7 years versus 7 years of age or older) for all dependent variables

indicated that differences in the outcome areas were not significantly dependent on age of onset, $F(12, 37) = .92$, $p = .539$; Wilks' $\lambda = .771$, partial $\varepsilon^2 = .229$. Therefore, the age of onset criterion did not appear to significantly play a role in areas of overall adjustment as measured in this study.

Discussion

The purpose of the current study was to investigate the potential relationship between AOD and a broad array of general measures of adjustment in college. Generally, the overall hypothesis that AOD would have a significant predictive relationship with adjustment was not supported. However, exploratory analyses suggested by the initial results reveal that a few specific outcomes (e.g., sexual intercourse while under the influence, self-esteem) appeared to have some association with AOD, providing support for further examination of the relation of AOD on later-life adjustment. Participants' reported number of occurrences of sexual intercourse while under the influence in the past year was positively related to AOD. This outcome variable is representative of two identified areas of risk for adults with ADHD: problematic sexual behavior and substance use (Flory et al., 2006). A relevant consideration for this finding is that individuals with more IA symptoms have tended to have a later AOD, while individuals with more HI commonly have an earlier AOD (Applegate et al., 1997). Coupled with the negative association noted in this sample between more prominent childhood inattention and AOD, this finding seems to provide support for a relatively novel association between IA symptoms, in addition to HI, and alcohol-related problems in college students (Glass & Flory, 2011).

Another aspect of later-life adjustment significantly related to AOD was participants' self-esteem. Results indicated self-esteem was positively correlated with AOD, in that the

older a participant was when diagnosed with ADHD, the higher his or her reported self-esteem. This finding is consistent with the labeling effect theory, in which individuals diagnosed with a psychological illness tend to self-stigmatize, which in turn can lead to helplessness, hopelessness, confusion, and higher expectations of rejection and devaluation (Link, 1987; Moses, 2009). Perhaps participants with an earlier ADHD AOD may indeed engage in more (i.e., earlier) negative self-labeling, corresponding with the finding that individuals with psychological illnesses who self-stigmatize tend to begin treatment at a younger age (Moses, 2009). While early identification of disorders may be both warranted and beneficial, this finding suggests that common treatments for ADHD in childhood (e.g., medication, behavioral management via parent training) may not go far enough in terms of psychoeducation and support of affected children; future research might investigate how clinicians can better ensure that children's self-concept is not negatively impacted by early ADHD diagnosis and more directly probe for evidence of self-stigmatizing thought. However, it is possible that the observed effects of AOD on self-esteem may also be accounted for by case severity, as individuals with more childhood ADHD symptoms, a profile found to be negatively correlated with AOD, may also be experiencing higher levels of functional impairment. Such a higher degree of maladjustment may, in turn, lead to increased self-criticism and criticism by others, both of which may be internalized in beliefs about one's competence and worth. While it is worth noting that ADHD symptom (HI and IA) x AOD interaction terms were included in hierarchical regression and did not add appreciable predictive power, neither direct main effects of functional impairment nor an impairment x AOD interaction were directly assessed in the hierarchical models used herein.

One explanation for the overall lack of significant findings may be due to an early AOD being highly related to more severe childhood ADHD symptoms. For example, results indicated AOD was significantly correlated with childhood IA symptoms (r = -.32; p = .01), childhood HI symptoms (r = -.27; p = .04), and total childhood ADHD symptoms (r = -.31; p = .01). Therefore, adding these variables into the hierarchical analysis may wash out AOD effects in instances where the zero-level association would otherwise seem meaningful (e.g., current ODD symptoms). While an examination of the tolerance statistics in the hierarchical analyses did not confirm this post-hoc reasoning (tolerances all ≥ .417), an examination of the partial correlation between AOD and childhood ODD symptoms showed the relatedness to decline markedly after controlling for child IA and HI (zero-level r = -.27, partial r = -.10). Possible considerations for addressing this issue in future studies are discussed below.

Another explanation for the lack of relationship may be due to the nature of the sample in the study. For example, the sample lacked variability in several aspects, including age, race, and even impairment, as all participants can be considered to be part of a relatively high functioning ADHD subpopulation (i.e., college or graduate students with ADHD; Gropper & Tannock, 2009). In fact, Daley and Birchwood (2009) report data from a longitudinal study suggesting that only 12% of individuals diagnosed with ADHD in childhood go on to complete a Bachelor's degree, as compared to nearly half of their non-diagnosed peers. Further, the majority of the sample from the current study reported their impairing symptoms occurring at or after seven years of age, which has at times been associated with milder cases of ADHD (e.g., Karam et al., 2009). The distribution of AOD in this sample has a large range (4 – 40 years) and is slightly skewed (M = 14.17; *Median* = 13.00). Further, there are clusters within this distribution that may possibly affect the

findings. For example, 24.6% of individuals below the AOD mean indicated an AOD at 7 or 8 years of age, while a similar 23.1% of individuals above the AOD mean indicated an AOD between 17 and 20 years of age. Therefore, replicating this study with a more diverse sample that better represents the full range of AODs, symptoms, and impairment experienced by individuals diagnosed with ADHD, may allow a better test of whether AOD has a meaningful role in life outcomes. The possibility of null findings relating to the lack of variability within the sample is further addressed in the Limitations section below.

Unlike AOD, gender and reported childhood HI symptoms appeared to significantly affect several areas of later-life adjustment (e.g., anxiety, stress, ODD symptoms, and academic adjustment) among these participants with ADHD. Specifically, females reported higher levels of anxiety and stress; individuals with higher levels of reported childhood HI symptoms indicated higher levels of anxiety, stress, ODD symptoms, as well as lower academic adjustment. These findings provide support for pursuing future comparison of men and women with ADHD as to their adulthood adjustment, and echoes prior research concluding that gender has not received enough attention in the research of ADHD symptoms and impairment (Karam et al., 2009). That HI symptom severity was shown to be predictive of more impairment in adulthood is also consistent with prior research. For example, Fischer and Barkley (2006) conducted a longitudinal study examining children with and without heightened levels of HI in several areas of adaptive functioning and lifestyle. Their findings indicated children with more HI experienced more impairment in social relationships (e.g., fewer close friends, more trouble keeping friends, more likely to argue with friends) as well as more problems with self-sufficiency in adulthood (e.g., more likely to have been homeless). However, other studies (e.g., Canu & Carlson, 2003; Gudjonsson,

Sigurdsson, Gudmundsdottir, Sigurjonsdottir, & Smari, 2010) have indicated that inattention may be more impairing for adults with ADHD. Therefore, the overall evidence as to whether HI or IA symptoms are worse for adults seems equivocal.

Limitations

The findings reported herein should be interpreted while taking into account certain limitations of the study's design. Although reports of multiple informants were sought out to verify participants' ADHD diagnosis and inclusion in the study, no clinical interviews or assessment records were utilized, which falls short of accepted clinical practice for formal diagnostic evaluation. Still, although clinical interviews are recommended and common in practice (Lahey & Wilcutt, 2002), more recent research (Pelham, Fabiano, & Massetti, 2005) has provided support for the use of multiple informant questionnaires as efficient, parsimonious, and accurate evaluations of ADHD. However, only a slim majority of participants' guardians (55.4%) responded to the request for current diagnostic impressions of the students in the study, limiting the author's ability to confirm participants' ADHD diagnoses. Further, comorbid childhood diagnoses, childhood treatment, and latency from AOD to treatment were not accounted for in the regression models. Also, as mentioned above, the data derived from this sample may not be adequately representative of AOD's association with outcomes of adults with ADHD, simply because it is uncommon within that more inclusive group to be able to handle the academic demands of college. Accordingly, examination of the relationship between ADHD AOD and long-term outcomes should be undertaken in clinically-identified samples including adults across the range of education experience.

A second limitation, alluded to above, was that all predictor and dependent variables were derived from self-report measures. Previous literature (Todd et al., 2008) has shown the tendency for self-report data to be unreliable. Specifically relevant to the current study, underreporting of childhood ADHD symptoms, as well as inaccuracy in recall of age of onset of ADHD symptoms have been problematic with retrospective self-report data (Barkley et al., 2008). Even though participants were instructed to rate their ADHD symptoms and related impairment as if they were off medication, with the intent to capture the extent of their underlying ADHD symptomatology and impairment, such estimates may not be perfectly accurate, particularly in those who have consistently used pharmacotherapy. Another limitation of the current study was the lack of variability within the sample, which consisted of predominately Caucasian, college-age participants, with the majority (80%) currently taking prescribed medication for their ADHD symptoms. If the majority of participants are being adequately treated for their ADHD symptoms, it may be less likely for many of them to be experiencing elevated levels of depression, anxiety, stress, and risky behavior, as compared to non-diagnosed peers. If there was any kind of ceiling for deficits in such areas of adjustment in the sample, AOD would have little chance to statistically associate with life outcomes due to decreased range in the dependent variables.

Finally, and related to the ceiling effect discussed above, the sample was presumed to be impaired or maladjusted when compared to national norms of college students, due to the common associations between impairment and an ADHD diagnosis; however, this assumption did not seem to hold true. For example, the participants did not report experiencing significant problems related to alcohol in the past year, even though prior research suggests this is a common issue for undergraduates both with (Glass & Flory, 2011)

and without (Velazquez et al., 2011) ADHD. Moreover, research indicates that 86% of college students are sexually active, with individuals aged 15 to 24 years-old accounting for half of the 10 million new cases of sexually transmitted diseases occurring each year (Ross & Bowen, 2010). While a nearly-equivalent proportion of the current sample (80%) reported being sexually active, no participants indicated ever having a sexually transmitted disease (although one must admit that this result may be due to social desirability bias). Further, Ross and Bowen indicate that college students typically report having four lifetime sexual partners (i.e., 4.18 for men, 3.88 for women), which seems fairly congruent with the current sample's reports, again suggesting no relative impairment.

In regards to assumed academic impairment, as noted above, the mean college GPA of participants indicated that the students in this presumably impaired sample are actually performing equivalently to their peers in the general student population. Similarly, their current depressive and stress symptoms seemed to be within a relatively normal range. In terms of symptoms of comorbidity or impairment, only anxiety seemed to be elevated in this sample, but just moderately so. This overall lack of impairment and restriction of range may, in fact, limit the ability to determine if AOD affects eventual outcomes in college students diagnosed with ADHD. Therefore, again, it would be beneficial to recruit future samples outside the relatively well-adjusted college student population and examine outcomes in clinical populations of adults with ADHD to obtain more trustworthy estimates of AOD effects.

Future Directions

With the majority of studies examining "onset factors" and long-term outcomes related to ADHD focusing on age of *symptom* onset, there is a dearth of knowledge regarding

how AOD may play a role in affected adults' adjustment. The current study provided an initial look at AOD's association with comorbid depression and anxiety symptoms, academic adjustment, self-esteem, alcohol use, and risky sexual behavior, but left several areas of well-being to be explored in the future. For example, future studies might want to examine AOD's relationship with high school GPA, post-college job performance, adult personality, romantic relationship dynamics, or self-stigmatization in individuals diagnosed with ADHD.

A second direction includes examining in more detail how AOD may have an effect in certain domains of adjustment that are indicated by the current data. For example, AOD boosted predictive power for self-esteem and specific risky sexual behaviors when first entered into the hierarchical regression model. Further and more detailed analyses (e.g., looking at components of self-esteem instead of global self-esteem) of how AOD affects outcomes in larger and more diverse adult samples is also indicated. Among other advantages (e.g., increased statistical power), research utilizing a larger sample of adults with ADHD diagnoses would likely provide more variability within the sample (e.g., age, race, impairment), as well as allow for contrasts of subgroups determined by AOD, such as those diagnosed in early childhood versus others diagnosed in adulthood. This would also allow for comparisons to be made between these latter two subgroups across the different variables (e.g., gender, ADHD type) while controlling for ADHD severity (e.g., child and current ADHD symptoms), which may yield information regarding how the extremes in terms of AOD might affect outcome.

The current study collected data on age of onset as well as AOD, leaving a variety of possible analyses that could investigate the relationship between age of onset and AOD. Age of onset has been abundantly studied in its relation to adjustment outcomes for individuals

with ADHD, with the consensus finding that the earlier the age of onset is, the more impairment is likely to be severe (Karam et al., 2009). Therefore, earlier onset of symptoms and higher impairment are likely to be associated with an earlier AOD; however, the exact relationship (i.e., lag between age of symptom onset and AOD) has yet to be examined.

A final consideration for future studies is to examine the impact of other factors related to AOD on long-term outcomes of those with ADHD. For example, early diagnosis that is *followed up with early intervention* may be related to quite different outcomes than early diagnosis alone. Therefore, further consideration of the ages at which participants received treatment or academic accommodations, as well as the extent of the services, may provide a new dimension in investigations of the relationship between AOD, severity of ADHD symptoms, and adjustment. Comorbidity is another aspect that may play a role in the recognition of impairment or treatment services being provided earlier, as might the degree of functional impairment. For instance, individuals with early-onset often have more externalizing disorders; whereas, individuals with late-onset have a higher prevalence of internalizing disorders (Karam et al., 2009). In sum, although the current study has taken a preliminary look at the role of AOD in ADHD, many future directions exist for examining this further.

Other Reflections Regarding AOD

The present study was conducted with the hypothesis that reported AOD would provide a more reliable variable than the recall of age of onset for ADHD symptoms. Recalling age of onset for ADHD symptoms has been shown to be unreliable in both parent and child report. This discrepancy is unlikely to occur with AOD, which tends to co-occur with an evaluation or documentation, and is followed by intervention (e.g., medications or

school accommodations), all of which mark the timing in memory. The current findings suggest AOD is highly reliable across parent and child informants with a near perfect correlation (r = .99), even in adulthood. Therefore, AOD provides a concrete, accurate time when ADHD symptoms were present in an individual, and may prove to be of more value than often unreliable age of onset data when conducting retrospective research.

Another important finding in this college sample is that only 38.5% of participants recalled the age of onset for their ADHD symptoms to be prior to the age of seven years, though 90.4% of participants reported symptoms at or before age 12 years. In addition, an exploratory analysis indicated participants' age of onset (i.e., being before age seven-years or after age seven-years) for ADHD symptoms had no significant association with any of the areas of later-life adjustment as assessed by the current study. These findings provide support for the removal or pushing back of the age of onset criterion in an ADHD diagnosis, as more than half of the participants, all of whom indicated experiencing a significant amount of IA or HI symptoms or ADHD-related impairment, would not meet full criteria for an ADHD diagnosis as defined in the DSM-IV-TR.

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Table 1

Descriptive Statistics: Demographic and Independent Variables

Variable	**Descriptive/*M* (*SD*)**	**Observed Range**
Gender	53.8% male	
Ethnicity	92.3% Caucasian	
Class Standing		
Year 1 of College	18.5%	
Year 2 of College	23.1%	
Year 3 of College	21.5%	
Year 4 of College	27.7%	
Graduate School	6.2%	
Age	23.12 (6.43) years	18 – 55
ADHD-IA Diagnosis	16.9%	
ADHD-HI Diagnosis	3.1%	
ADHD-C Diagnosis	21.5%	
ADHD-NOS Diagnosis	12.3%	
ADD Diagnosis	40.0%	
Diagnosis by Psychiatrist	38.5%	
Diagnosis by Family Physician	33.8%	
Diagnosis by Psychologist	26.2%	
Diagnosis by Mental Health Professional	20.0%	
Age of Diagnosis	14.17 (8.23) years	4 – 40
Age of Onset	7.75 (3.59) years	1 – 18
Comorbidity (any Axis I or II)	53.8%	
ADHD Medication – Current	80.0%	
ADHD Medication – Past Only	6.2%	
Therapy/Counseling – Current	21.5%	
Therapy/Counseling – Past Only	44.6%	
Academic Accommodations – Current	41.5% (lifetime = 46.2%)	
Adult IA	16.15 (5.48)	6 – 27
Adult HI	12.71 (5.55)	1 – 26 [a]
Total Adult ADHD Symptoms	28.86 (10.05)	7 – 53 [a]
Adult Areas of Impairment	4.46 (2.60)	0 – 10
Parent Current Symptom Report	10.44 (4.33) symptoms	2 – 18
Child IA	18.17 (5.68)	4 – 27
Child HI	15.27 (6.70)	1 – 27
Total Child ADHD Symptoms	33.44 (11.47)	8 – 54
Child Areas of Impairment	4.34 (2.39)	0 – 8

Note. IA = DSM-IV Inattention scale score; HI= DSM-IV Hyperactivity/Impulsivity scale score; Diagnosis was able to be made by multiple professionals; *n* = 65 students.
[a] = maximum possible score differs from highest observed score, as follows: Adult HI = 27; Total Adult ADHD Symptoms = 54.

Table 2

Descriptive Statistics of Dependent Variables

Variable	**Descriptive/*M* (*SD*)**	**Observed Range**
Depression Scale	6.55 (4.94)	0 – 21
Anxiety Scale	5.63 (4.70)	0 – 17 [a]
Stress Scale	8.38 (4.76)	0 – 21
Self Esteem	22.25 (5.06)	0 – 32
Academic Achievement (GPA)	3.0	1.70 – 3.93 [a]
Academic Adjustment	2.25 (0.76)	0.21 – 4.20 [a]
College Alcohol Problems	15.74 (8.55)	0 – 40 [a]
Number of Sexual Partners	4.91 (12.49)	0 – 94
Not Sexually Active	20%	
Frequency of Condom Use		
Almost Always	26.2%	
Most of the Time	9.2%	
About half the Time	3.1%	
Some of the Time	3.1%	
Hardly Ever	6.2%	
Never	20.0%	
No Response	32.2%	
Frequency of Sexual Intercourse Under the Influence in Past Year		
Almost Always	1.5%	
Most of the Time	0.0%	
About half the Time	6.2%	
Some of the Time	18.5%	
Hardly Ever	24.6%	
Never	35.4%	
No Response	13.8%	
Frequency of Sexual Intercourse with a Stranger in Past Year		
No Response	9.2%	
Never	81.5%	
One Time	6.2%	
Two Times	3.1%	
Three or More Times	0.0%	

Note. [a] = maximum possible score differs from highest observed score, as follows: Anxiety Scale = 21; Academic Achievement (GPA) = 4.0; Academic Adjustment = 6; College Alcohol Problems = 48; *n* = 65 students.

Table 3

Pearson's Correlations between Independent and Dependent Variables

	AOD	IA	HI	Dep	Anx	Stress	ODD	SE	GPA	AA	CAP	Condom Use	Sex Partners	SUI	SWS
AOD	1														
IA	-.321*	1													
HI	-.267*	.716**	1												
Dep	-0.138	0.095	0.208	1											
Anx	-0.178	.329**	.389**	.607**	1										
Stress	-0.164	.313*	.417**	.662**	.737**	1									
ODD	-.265*	.540**	.615**	0.196	.346**	.266*	1								
SE	.273*	-0.196	-.257*	-.435**	-.461**	-.525**	-0.12	1							
GPA	0.078	-0.153	-0.118	-0.056	-0.151	-0.08	-0.165	0.027	1						
AA	0.242	-.332**	-.405**	-0.208	-0.178	-0.232	-0.15	.454**	0.109	1					
CAP	-0.169	0.137	0.196	.277*	0.119	.247*	0.15	-0.068	-0.232	0.026	1				
Condom Use	0.128	-.297*	-0.186	-0.043	-0.126	-0.045	-0.123	0.053	0.059	.251*	.335**	1			
Sex Partners	0.076	-0.027	0.185	.294*	0.003	0.162	0.171	-0.186	-0.035	-0.16	0.202	.340**	1		
SUI	0.241	-0.041	0.029	0.106	-0.03	0.104	0.096	0.123	-0.035	0.055	-0.094	.290*	0.106	1	
SWS	-0.005	-0.065	0.073	.280*	0.042	.293*	-0.001	-0.061	0.119	-0.048	.378**	0.197	.248*	.299*	1

Note. AOD = Age of Diagnosis; IA = Inattention; HI = Hyperactivity-Impulsivity; Dep = Depression; Anx = Anxiety; ODD = Oppositional Defiant Disorder; SE = Self Esteem; GPA = Grade Point Average; AA = Academic Adjustment; CAP = College Alcohol Problems; SUI = Sexual intercourse under the influence; SWS = Sexual intercourse with a stranger.

**: $p < .01$; *: $p < .05$.

Table 4

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Current Depressive Symptoms.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.01	
Gender	-.89	-.09	-.70	.48		
Block 2:					.03	.02
Gender	-.91	-.09	-.72	.48		
Age of Diagnosis	-.08	-.14	-1.09	.28		
Block 3:					.07	.04
Gender	-1.04	-.11	-.83	.41		
Age of Diagnosis	-.07	-.11	-.81	.42		
Childhood IA	-.13	-.15	-.79	.43		
Childhood HI	.21	.29	1.58	.12		
Block 4:					.11	.04
Gender	-1.05	-.11	-.82	.42		
Age of Diagnosis	.02	.03	.18	.86		
Childhood IA	-.15	-.17	-.86	.39		
Childhood HI	.25	.35	1.81	.08		
Age of Diagnosis x Gender	.000	-.004	-.02	.98		
Age of Diagnosis x Childhood IA	.004	.05	.25	.81		
Age of Diagnosis x Childhood HI	-.30	-.24	-1.45	.15		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 5

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Current Anxiety Symptoms.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.10	
Gender	-2.91	-.31	-2.54	.01		
Block 2:					.13	.03
Gender	-2.93	-.31	-2.58	.01		
Age of Diagnosis	-.10	-.18	-1.50	.14		
Block 3:					.27	.14
Gender	-3.09	-.33	-2.91	.005		
Age of Diagnosis	-.04	-.07	-.59	.56		
Childhood IA	.05	.07	.40	.70		
Childhood HI	.24	.34	2.09	.04		
Block 4:					.28	.01
Gender	-3.11	-.33	-2.85	.006		
Age of Diagnosis	-.02	-.04	-.26	.80		
Childhood IA	.07	.08	.46	.65		
Childhood HI	.24	.34	1.95	.06		
Age of Diagnosis x Gender	-.003	-.04	-.22	.83		
Age of Diagnosis x Childhood IA	-.003	-.04	-.23	.82		
Age of Diagnosis x Childhood HI	-.08	-.06	-.43	.67		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 6

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Current Stress Symptoms.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.08	
Gender	-2.69	-.28	-2.30	.03		
Block 2:					.11	.03
Gender	-2.71	-.29	-2.33	.02		
Age of Diagnosis	-.10	-.17	-1.36	.18		
Block 3:					.27	.16
Gender	-2.90	-.31	-2.70	.009		
Age of Diagnosis	-.03	-.06	-.47	.64		
Childhood IA	-.004	-.01	-.03	.98		
Childhood HI	.30	.42	2.59	.01		
Block 4:					.28	.01
Gender	-2.99	-.32	-2.70	.009		
Age of Diagnosis	-.03	-.06	-.39	.70		
Childhood IA	.03	.03	.19	.85		
Childhood HI	2.84	.40	2.32	.02		
Age of Diagnosis x Gender	-.01	-.12	-.69	.50		
Age of Diagnosis x Childhood IA	.004	.04	.26	.79		
Age of Diagnosis x Childhood HI	-.05	-.04	-.27	.79		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 7

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Current ODD Symptoms.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.03	
Gender	-1.55	-.17	-1.36	.18		
Block 2:					.06	.03
Gender	-1.57	-.17	-1.38	.17		
Age of Diagnosis	-.09	-.16	-1.25	.22		
Block 3:					.33	.28
Gender	-1.75	-.19	-1.79	.08		
Age of Diagnosis	.01	.01	.07	.94		
Childhood IA	.14	.17	1.10	.28		
Childhood HI	.28	.41	2.66	.01		
Block 4:					.34	.01
Gender	-1.65	-.18	-1.64	.12		
Age of Diagnosis	.02	.04	.25	.80		
Childhood IA	.10	.13	.77	.45		
Childhood HI	.30	.45	2.71	.009		
Age of Diagnosis x Gender	.01	.14	.83	.41		
Age of Diagnosis x Childhood IA	-.01	-.07	-.45	.65		
Age of Diagnosis x Childhood HI	.002	.002	.01	.99		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 8

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Self-Esteem.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.06	
Gender	2.38	.24	1.88	.07		
Block 2:					.13	.08
Gender	2.41	.24	1.97	.05		
Age of Diagnosis	.17	.28	2.27	.03		
Block 3:					.17	.04
Gender	2.52	.25	2.08	.04		
Age of Diagnosis	.14	.23	1.78	.08		
Childhood IA	.05	.05	.29	.77		
Childhood HI	-.19	-.25	-1.43	.16		
Block 4:					.21	.04
Gender	2.70	.27	2.20	.03		
Age of Diagnosis	.12	.19	1.22	.23		
Childhood IA	.01	.01	.07	.95		
Childhood HI	-.19	-.25	-1.37	.18		
Age of Diagnosis x Gender	.02	.22	1.16	.25		
Age of Diagnosis x Childhood IA	-.02	-.24	-1.39	.17		
Age of Diagnosis x Childhood HI	.17	.13	.87	.39		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 9

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Academic Adjustment.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.00	
Gender	.02	.02	.12	.91		
Block 2:					.06	.06
Gender	.03	.02	.14	.89		
Age of Diagnosis	.02	.24	1.92	.06		
Block 3:					.19	.13
Gender	.05	.03	.29	.78		
Age of Diagnosis	.01	.14	1.09	.28		
Childhood IA	-.01	-.05	-.27	.79		
Childhood HI	-.04	-.34	-1.96	.06		
Block 4:					.22	.04
Gender	.03	.02	.14	.89		
Age of Diagnosis	.02	.19	1.22	.23		
Childhood IA	.002	.02	.10	.92		
Childhood HI	-.04	-.36	-2.02	.05		
Age of Diagnosis x Gender	-.003	-.22	-1.17	.25		
Age of Diagnosis x Childhood IA	.001	.05	.28	.78		
Age of Diagnosis x Childhood HI	-.03	-.16	-1.06	.29		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 10

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Risky Sexual Behavior (Sexual Intercourse While Under the Influence of Alcohol or Drugs).

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.05	
Gender	.85	.21	1.69	.10		
Block 2:					.10	.06
Gender	.86	.22	1.75	.09		
Age of Diagnosis	.06	.24	1.97	.05		
Block 3:					.11	.01
Gender	.84	.21	1.68	.10		
Age of Diagnosis	.06	.26	1.98	.05		
Childhood IA	-.02	-.05	-.25	.80		
Childhood HI	.04	.12	.68	.50		
Block 4:					.12	.01
Gender	.85	.21	1.65	.10		
Age of Diagnosis	.07	.30	1.79	.08		
Childhood IA	-.02	-.05	-.27	.79		
Childhood HI	.04	.13	.69	.50		
Age of Diagnosis x Gender	.002	.05	.23	.82		
Age of Diagnosis x Childhood IA	-.003	-.09	-.49	.63		
Age of Diagnosis x Childhood HI	-.02	-.05	-.29	.78		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 11

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Risky Sexual Behavior (Number of Sexual Partners).

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.01	
Gender	2.49	.10	.78	.44		
Block 2:					.02	.01
Gender	2.51	.10	.78	.44		
Age of Diagnosis	.12	.08	.59	.56		
Block 3:					.10	.08
Gender	2.03	.08	.65	.52		
Age of Diagnosis	.14	.09	.70	.49		
Childhood IA	-.65	-.30	-1.61	.11		
Childhood HI	.78	.42	2.31	.03		
Block 4:					.11	.01
Gender	2.26	.09	.70	.49		
Age of Diagnosis	.24	.16	.95	.35		
Childhood IA	-.74	-.34	-1.70	.09		
Childhood HI	.85	.46	2.38	.02		
Age of Diagnosis x Gender	.03	.12	.59	.56		
Age of Diagnosis x Childhood IA	-.02	-.08	-.43	.67		
Age of Diagnosis x Childhood HI	-.23	-.07	-.43	.67		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 12

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Academic Achievement (GPA).

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.04	
Gender	-.21	-.20	-1.56	.13		
Block 2:					.05	.01
Gender	-.21	-.20	-1.54	.13		
Age of Diagnosis	.01	.08	.60	.55		
Block 3:					.06	.02
Gender	-.21	-.20	-1.53	.13		
Age of Diagnosis	.002	.03	.22	.82		
Childhood IA	-.01	-.15	-.78	.44		
Childhood HI	.000	.004	.02	.98		
Block 4:					.07	.01
Gender	-.22	-.21	-1.58	.12		
Age of Diagnosis	.001	.02	.11	.91		
Childhood IA	-.01	-.10	-.49	.63		
Childhood HI	-.002	-.03	-.13	.90		
Age of Diagnosis x Gender	-.001	-.16	-.79	.43		
Age of Diagnosis x Childhood IA	.001	.07	.39	.70		
Age of Diagnosis x Childhood HI	-.01	-.04	-.22	.83		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 13

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for College Alcohol Problems.

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.003	
Gender	-.92	-.05	-.42	.68		
Block 2:					.03	.03
Gender	-.95	-.06	-.44	.67		
Age of Diagnosis	-.18	-.17	-1.33	.19		
Block 3:					.06	.03
Gender	-1.11	-.07	-.51	.62		
Age of Diagnosis	-.14	-.13	-.97	.34		
Childhood IA	-.07	-.05	-.24	.81		
Childhood HI	.25	.20	1.06	.29		
Block 4:					.10	.04
Gender	-1.05	-.06	-.47	.64		
Age of Diagnosis	.02	.02	.12	.91		
Childhood IA	-.10	-.07	-.33	.74		
Childhood HI	.31	.24	1.27	.21		
Age of Diagnosis x Gender	.01	.05	.25	.81		
Age of Diagnosis x Childhood IA	-.02	-.09	-.51	.61		
Age of Diagnosis x Childhood HI	-.51	-.24	-1.43	.16		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 14

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Risky Sexual Behavior (Condom Use).

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.01	
Gender	-.37	-.08	-.61	.55		
Block 2:					.02	.02
Gender	-.36	-.08	-.60	.55		
Age of Diagnosis	.04	.13	.99	.33		
Block 3:					.10	.08
Gender	-.37	-.08	-.63	.53		
Age of Diagnosis	.01	.04	.29	.78		
Childhood IA	-.14	-.33	-1.80	.08		
Childhood HI	.02	.07	.36	.72		
Block 4:					.15	.05
Gender	-.43	-.09	-.72	.48		
Age of Diagnosis	.03	.10	.60	.55		
Childhood IA	-.11	-.27	-1.40	.17		
Childhood HI	.01	.04	.20	.85		
Age of Diagnosis x Gender	-.01	-.15	-.75	.46		
Age of Diagnosis x Childhood IA	-.004	-.10	-.54	.59		
Age of Diagnosis x Childhood HI	-.09	-.15	-.94	.35		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Table 15

Results of Hierarchical Regression Analyses Testing the Effects of Gender, Age of Diagnosis, Childhood IA and HI Symptoms, and Their Interactions in Accounting for Risky Sexual Behavior (Sexual Intercourse with Someone Just Met).

	b	β	*t*	*p*	R^2	ΔR^2
Block 1:					.004	
Gender	-.07	-.06	-.49	.63		
Block 2:					.004	.00
Gender	-.07	-.06	-.49	.63		
Age of Diagnosis	.00	-.01	-.04	.97		
Block 3:					.04	.04
Gender	-.08	-.08	-.58	.57		
Age of Diagnosis	-.001	-.02	-.14	.89		
Childhood IA	-.02	-.25	-1.32	.19		
Childhood HI	.02	.25	1.34	.19		
Block 4:					.06	.02
Gender	-.07	-.06	-.48	.63		
Age of Diagnosis	-.01	-.08	-.49	.63		
Childhood IA	-.03	-.28	-1.40	.17		
Childhood HI	.02	.25	1.28	.21		
Age of Diagnosis x Gender	.001	.13	.64	.53		
Age of Diagnosis x Childhood IA	.000	-.04	-.21	.83		
Age of Diagnosis x Childhood HI	.02	.15	.91	.37		

Note. Gender: female = 1; male = 2. IA = Inattentive symptoms; HI = Hyperactivity-Impulsivity symptoms; *n* = 65 students.

Appendix A

IRB Approval

To: Theresa Egan CAMPUS MAIL

From: Julie Taubman, Institutional Review Board
Date: 9/06/2010
RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
Study #: 11-0033

Study Title: Examining Differences Associated with Age of Diagnosis for Attention Deficit Hyperactivity Disorder (ADHD)
Submission Type: Initial
Expedited Category: (7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.

Approval Date: 9/06/2010
Expiration Date of Approval: 9/05/2011

This submission has been approved by the Institutional Review Board for the period indicated. It has been determined that the risk involved in this research is no more than minimal.

Investigator's Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects occur it must be reported immediately to the IRB. Best wishes with your research!

CC:
Will Canu, Psychology

Appendix B

Demographic Questionnaire

1. What color are your eyes?
2. What town were you born in?
3. What was the name of your first family pet? (Enter 'none' if not applicable)
4. What month were you born in?
5. How many sisters do you have? (Please include any biological, adopted, and stepsisters in your count)
6. Are you right or left-handed?

7. Gender: _____Male _____Female

8. Race:

_____Caucasian _____African American _____Asian
_____Hispanic/Latino _____ American Indian _____Other

9. Age: _____Years _____Months

10. Indicate the university you attend:
    1. Appalachian State University
    2. University of Wyoming
    3. University of Northern Iowa

11. Year in School:

    _____Freshmen _____Sophomore _____Junior _____Senior
    _____Graduate

12. Are you participating in this study for Extra Credit or Experiential Learning Credit (ELC)?

    _____Yes _____No

13. High School GPA: __. __ Scale used: ____

14. SAT score: Verbal_____ Quantitative_____

15. If you have completed one or more semesters in college, what is your overall GPA? (To confirm your GPA, you can log into your student account at [http://portal4.appstate.edu/cp/home/loginf] and click on the Self Service tab, then click the Student tab, next click Student Records, click Academic Transcript, and click Submit. Scroll to the bottom to view your cumulative GPA.)

16. College Major or intended major: _____

17. ADHD Diagnosis:

_____ADHD (Predominantly Inattentive)
_____ADHD (Predominantly Hyperactive-Impulsive)
_____ADHD (Combined Type)
_____ADHD Type Not Specified
_____ADD (Attention Deficit Disorder)

18. How old were you when you were first diagnosed with ADHD? ____ years old

19. What grade were you in when you were first diagnosed with ADHD? _____ grade

20. What was the year when you were first diagnosed with ADHD? _____

21. Who diagnosed you with ADHD?
____Psychiatrist
____Family Physician
____Psychologist
____Counselor
____Other mental health professional

22. Have/Do you take medication for your ADHD symptoms:

_____Yes _____No

23. If you answered yes to the question (#22) above, when is this:

____Currently ____Past ____Both – Past and Presently

24. Have you AT ANY TIME received treatment for your ADHD symptoms indicated above (counseling, prescription medication, psychotherapy, etc.)? Please include receiving academic accommodations (e.g., extra time on tests) as a "yes."

____Yes ___No

25. If you answered yes to the question above (#24), what treatments have you received in the past? Please specify all that apply:

Prescription medication	Biofeedback
Psychotherapy	Dietary Prescriptions
Other counseling	Academic tutoring
Electroconvulsive Therapy	Academic accommodations
None (Only current treatment)	

26. If you indicated in the above question (#25) that prescription medication was received as a treatment for any psychiatric condition, please list the medication(s).

_____

27. If you answered yes to #24, what treatments are you CURRENTLY using? Please specify all that apply:

Prescription medication
Psychotherapy
Other counseling
Electroconvulsive Therapy
None (discontinued all intervention)
Biofeedback
Dietary Prescriptions
Academic tutoring
Academic accommodations

28. If you indicated in the above question (#27) that you are CURRENTLY taking prescription medication as a treatment for any psychiatric condition, please list the medication(s). _____

29. If you are currently taking medication(s), did you take the medications listed in #27 today? _Yes _No

30. If you are eligible for academic accommodations for your coursework at ASU, which are you approved for? Please specify all that apply:

Extended test time (e.g., time and a half)
Distraction reduced environment
Use of assistive technology
Access to instructor notes/Powerpoints
Use of laptop in class for note-taking
Additional allowances for computer use
Priority seating in classrooms
Audio-recorded lectures
Use of a note taker
Priority registration

31. Have you ever been diagnosed with any other psychological disorder, such as major depression, panic disorder, social phobia, or any learning disabilities?

___Yes ____No

32. If you answered yes to the question above (#25), please select all appropriate diagnoses below:

Learning Disorder- Reading
Learning Disorder- Writing
Learning Disorder- Mathematics
Other Learning Disorder
Autism
Asperger's Disorder
Other autistic spectrum disorder
Bipolar Disorder (i.e., Manic Depression)
Depression (i.e., Major Depressive Disorder)
Dysthymic Disorder
Other Depressive Disorder
Generalized Anxiety Disorder
Obsessive-Compulsive Disorder
Panic Disorder
Post Traumatic Stress Disorder (PTSD)
Social Phobia
Specific Phobia (ex. Arachnophobia)
Other Anxiety Disorder
Anorexia
Bulimia
Other Eating Disorder
Substance Abuse

Schizophrenia Substance Dependence
Other: please specify _____

33. What is the relationship to the person you will be sending the link to in verification of your ADHD diagnosis?

Relationship_____

34. Would you like to be contacted in the future to participate in other ADHD-related research?

____Yes ____No

Appendix C

Current Symptom Scale

Instructions: Please circle the number next to each item that best describes your behavior *during the past 6 months.*

If you have been taking medication to address attention difficulties related to ADHD in the recent past, please make your answers apply to when you are OFF medication (i.e., it has worn off, you skip a day, etc.).

The rating scale is as follows:
0 Never or Rarely
1 Sometimes
2 Often
3 Very Often

Sample Inattention Items:
Fail to give close attention to details or make careless mistakes in my work.
Have difficulty sustaining my attention in tasks or fun activities.

Sample Hyperactivity-Impulsivity Items:
Fidget with hands or feet or squirm in seat.
Leave my seat in situations in which seating is expected

Sample Areas of Impairment:
In my home life with my immediate family
In my work or occupation

Sample Oppositional Defiant Disorder Items:
Lose temper
Argue

Appendix D

Childhood Symptom Self-Report Scale for Adults

Instructions: Please circle the number next to each item that best describes your behavior *when you were a child age 5 to 12 years.*

The rating scale is as follows:
0 Never or Rarely
1 Sometimes
2 Often
3 Very Often

Sample Inattention Items:
Didn't listen when spoken to directly.
Didn't follow through on instructions and fail to finish work.

Sample Hyperactivity-Impulsivity Items:
Felt restless.
Talked excessively.

Sample Areas of Impairment:
In my home life with my immediate family
In my social interactions with other children

Sample Oppositional Defiant Disorder Items:
Argued with adults
Actively defied or refused to comply with adults' requests or rules

Appendix E

Depression Anxiety Stress Scale (DASS-21)

Instructions: Please read each statement and circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me a considerable degree, or a good part of the time
3 Applied to me very much, or most of the time

Sample Depression Items:
I couldn't seem to experience any positive feeling at all.
I felt I wasn't worth much as a person.

Sample Anxiety Items:
I was aware of dryness of my mouth.
I experienced trembling (e.g. in the hands).

Sample Stress Items:
I found it hard to wind down.
I tended to over-react to situations.

Appendix F

Academic Engagement Questionnaire

Instructions: Check the answer that best captures how frequently you have engaged in the following behaviors *during this semester*.

Scale:
0 Never
1 Sometimes
2 Often
3 Very Often

Sample Items:
1. Asked questions in class or contributed to class discussions
2. Made a class presentation
3. Prepared to or more drafts of a paper or assignment before turning it in
4. Come to class without completing readings or assignments
5. Worked with other students on projects during class
6. Worked with classmates outside of class to prepare class assignments
7. Tutored or taught other students (paid or voluntary)
8. Participated in a community-based project as part of a regular course
9. Used an electronic medium (listserve, chat group, internet, etc.) to discuss or complete an assignment
10. Used e-mail to communicate with an instructor

Appendix G

Academic Adaptation Questionnaire

Check the answer that best captures how frequently you tend to engage in each of the following in your schoolwork.

Scale:
0 Never or not at all like me
1 Sometimes or somewhat like me
2 Frequently or much like me
3 Always or very much like me

Sample Items:
1. I wait to do homework assignments and papers until the last minute. (R)
2. I take good, organized notes in class.
3. I begin studying for a test the night before, or just before it begins. (R)
4. I read the textbooks and other assigned readings for my classes.
5. I review my notes from a previous class before attending the next one.

Appendix H

Rosenberg Self-Esteem Questionnaire-Short Form (SEQ)

Instructions: Please indicate whether you *Strongly Agree (SA), Agree (A), Disagree (D), or Strongly Disagree (SD)* with the following items.

Sample Items:

1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times I think I am no good at all.	SA	A	D	SD
3. I feel that I have a number of good qualities	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD

Appendix I

The College Alcohol Problems Scale-Revised (CAPS-r)

Instructions: Use the scale below to rate HOW OFTEN you have had any of the following problems over the past year *as a result of drinking alcoholic beverages*.

Sample Items:

1. Feeling sad, blue, or depressed
   (1) Never (2) Yes, but not in the past year (3) 1-2 times
   (4) 3-5 times (5) 6-9 times (6) 10 or more times

2. Nervousness, irritability
   (1) Never (2) Yes, but not in the past year (3) 1-2 times
   (4) 3-5 times (5) 6-9 times (6) 10 or more times

3. Problems with appetite or sleeping
   (1) Never (2) Yes, but not in the past year (3) 1-2 times
   (4) 3-5 times (5) 6-9 times (6) 10 or more times

4. Drove under the influence
   (1) Never (2) Yes, but not in the past year (3) 1-2 times
   (4) 3-5 times (5) 6-9 times (6) 10 or more times

5. Illegal activities associated with drug use
   (1) Never (2) Yes, but not in the past year (3) 1-2 times
   (4) 3-5 times (5) 6-9 times (6) 10 or more times

Appendix J

Risky Behavior Questionnaire (RBQ)

1. How often in the past year did you see a doctor immediately or go to the hospital emergency room because you were injured (e.g., broken bones, fractures, sprains, cuts requiring stitches)?

Never	1 Time	2 Times	3-5 Times	6-10 Times	More Than 10 Times
0	1	2	3	4	5

What were the reasons? _____

2. How often in the past year did you see a doctor immediately or go the hospital emergency room because of alcohol poisoning or because of a drug overdose?

Never	1 Time	2 Times	3-5 Times	6-10 Times	More Than 10 Times
0	1	2	3	4	5

3. Have you ever been involved in a romantic relationship?
    1. No
    2. Yes

    3a. If yes, how many romantic relationships have you had? ____ Number
    3b. If yes, what is the length of your longest romantic relationship?
    ____ years, ____ months

4. Have you ever lived with a romantic partner to whom you were not married?
    1. No
    2. Yes

    4a. If yes, how many romantic partners (not including your spouse) have you lived with?
    ____ Number
    4b. What is the longest amount of time you have lived with a romantic partner to whom you were not married?
    ____ years, ____ months

5. Have you ever dated a married person or someone who was in another relationship?
    1. Never
    2. Once or twice
    3. A few times
    4. Many times

6. How often in the past year did you go out on a date with someone?

Never	1 Time	2 Times	3-5 Times	6-10 Times	11-20 Times	20 Times or more
0	1	2	3	4	5	6

7. Are you dating someone fairly regularly or going steady now?
   No Yes

   7a. If yes, is the person you are dating the only partner you are seeing now?
   No Yes

8. Have you ever had sexual relations (more than kissing, but not intercourse)?
   No Yes

9. How old were you when you had your first sexual experience with a partner (more than kissing, but not intercourse)? _____ years

10. Have you ever had sexual intercourse? Yes No

    If NO, check here (_____) and skip to question #21.

11. How old were you the FIRST TIME you had sexual intercourse? _____ years

12. What was your relationship to the first person with whom you had sexual intercourse?
    1. Engaged
    2. Going steady
    3. Dating casually
    4. Friend
    5. Knew each other a little
    6. 1-night stand
    7. Other _____

13. How many DIFFERENT partners have you ever had sexual intercourse with in your life?

None	1	2	3	4	5	6	7	8	9	10	More than 10

14. How many times did you have sexual intercourse in the PAST YEAR?

Never	1 Time	2 Times	3-5 Times	6-10 Times	11-20 Times	20 Times or more
0	1	2	3	4	5	6

15. When you had sex in the past year, how often was each type of birth control or disease prevention method used (answer for all types used)?

	Almost always	Most of the time	About half the time	Some of the time	Hardly ever	Never
Birth Control Pills	1	2	3	4	5	6

Condoms	1	2	3	4	5	6
Foam, cream, jelly	1	2	3	4	5	6
Diaphragm or cervical cap	1	2	3	4	5	6
Withdrawal ("Pulling out")	1	2	3	4	5	6
Rhythm method ("Safe days")	1	2	3	4	5	6
Other_____ _____	1	2	3	4	5	6
None	1	2	3	4	5	6

16. When you had sex in the past year, who USUALLY made the decision about whether or not to use birth control?
    1. I Did
    2. My Partner Did
    3. We Both Did

17. How often in the past year have you had sex while under the influence of alcohol or drugs?

Almost always	Most of the time	About half the time	Some of the time	Hardly ever	Never
1	2	3	4	5	6

18. If you are female, how many times have you been pregnant?
    Never _____# of Times N/A

19. If you are male, how many times have you made a girl pregnant?
    Never _____# of Times N/A

20. How often in the past year have you had sex with someone you did not know or someone you just met?

Never	1 Time	2 Times	3-5 Times	6-10 Times	More Than 10 Times
0	1	2	3	4	5

21. How often in your life have you had a sexually transmitted disease or venereal disease?
    Never _____# of times

Appendix K

Demographic Questions for Guardian

Please answer the following questions to allow us to link your answers to your child's while maintaining as much privacy as possible, online (i.e., not asking for your child's name, social security number, etc.).

1. What color are your child's eyes?
2. What town was your child born in?
3. What was the name of the first family pet in your child's life? (enter 'none' if not applicable)
4. What month was your child born in?
5. How many sisters does your child have? (please include any biological, adopted, and stepsisters in your count)
6. Is your child right or left handed?

7. What is your child's gender:

_____Male _____Female

8. What is your child's race:

_____Caucasian _____African American _____Asian
_____Hispanic/Latino _____ American Indian _____Other

9. What is your child's current age:

_____Years _____Months

10. What is your relationship to your child?

Mother _____ Father _____ Other legal guardian _____

11. What is your child's Attention-Deficit/Hyperactivity Disorder (ADHD) diagnosis?

_____ADHD (Predominantly Inattentive; (has also been called Attention-Deficit Disorder or ADD)
_____ADHD (Predominantly Hyperactive-Impulsive)
_____ADHD (Combined Type)
_____ADHD without any subtype diagnosis (e.g., doctor just said ADHD)
_____ None—my child was never diagnosed with ADHD or ADD

12. How old was your child when he/she was first diagnosed with ADHD? ____ years old

13. What grade was your child in when he/she was first diagnosed with ADHD? _____ grade

14. What was the year when your child was first diagnosed with ADHD? _____

15. Who diagnosed your child with ADHD? _____

16. What was this person's profession?

____ Physician, MD, OD (family doctor or pediatrician)
____ Psychiatrist
____ Psychologist
____ School Counselor
____ Other mental health professional

17. Has any additional diagnosis or diagnoses been given to your child, in terms of psychological disorders? Please indicate any additional diagnosis below, selecting "None" if that is the case.

____ Learning Disability
____ Oppositional Defiant Disorder
____ Conduct Disorder
____ Depression
____ Bipolar Disorder
____ Anxiety disorder
____ Pervasive developmental disorder (e.g., autism, asperger's)
____ Other
None

18. Has your child taken medication for his/her ADHD symptoms:

_____Yes _____No

If Yes, does your child currently continue to take ADHD-addressing medication?

_____Yes _____No

19. What specific kind of treatment and/or special accommodations has your child received for his/her ADHD?

_____
_____

Appendix L

Adult ADHD Self-Report Scale Symptom Checklist for Guardians

Instructions: Please answer the questions below, rating your child on each of the criteria shown using the scale on the page. As you answer each question, place an X in the box that best describes how your child has conducted him/herself over the past 6 months.

The rating scale is as follows:
0 = Never
1 = Rarely
2 = Sometimes
3 = Often
4 = Very Often

Sample Inattention Items:
How often does your child have trouble wrapping up the final details of a project, once the challenging parts have been done?
How often does your child have problems remembering appointments or obligations?

Sample Hyperactivity-Impulsivity Items:
How often does your child fidget or squirm with his/her hands or feet when he/she has to sit down for a long time?
How often does your child appear overly active and compelled to do things, like driven by a motor?

VITA

Theresa Egan graduated from St. Mark's High School in Wilmington, Delaware in 2005. In 2009, she graduated summa cum laude with a Bachelor of Science Degree in Psychology from James Madison University. She is a member of the National Society of Collegiate Scholars and Psi Chi, and received Psi Chi Professional Development Grants for her undergraduate honors thesis research, which involved training discrimination of blood alcohol level in college students. Her graduate research has focused on examining relationships among psychological symptoms, behaviors, and areas of adjustment within the context of Attention-Deficit/Hyperactivity Disorder. Theresa has presented research posters in San Francisco at the Association for Behavioral and Cognitive Therapies in 2010 and in Chicago at the International Society for Research in Child and Adolescent Psychopathology in 2011.

In fulfillment of program requirements at Appalachian State University, Theresa completed a practicum at the Appalachian State University Psychology Clinic and the Appalachian State University Counseling Center. She completed her internship at Duke Medical Center in Durham, North Carolina focusing on pediatric neuropsychological assessments. Theresa graduated from Appalachian State University with a Master's Degree in Clinical Health Psychology in May 2012. She plans to pursue a Ph.D. in clinical psychology and hopes to eventually become a professor of psychology.