Many research articles have been written about the symptoms, effects, and coping strategies of Attention Deficit Hyperactivity Disorder (ADHD). With a prevalence rate ranging from 3% to 5% of all children (Anderson, Williams, McGee, & Silva, 1987) it is not surprising that there has been a flux of information on the topic and this particular age group. Despite the fact that around 4.7% of adults have the disorder (Barkley, 2002; Biederman, Mick, & Faraone, 2000; Mick, Faraone, & Biederman, 2004; Weiss & Weiss, 2004), there has been less of a focus on adults and the ways they manifest ADHD. In the past, researchers and clinicians believed that children outgrew the disorder as they became older and that symptoms dissipated with time. However, we now know this to be false because longitudinal studies show that 66% to 85% of children continue to exhibit symptoms well into adulthood (Biederman et al., 2000). Typically, adults display two components of ADHD: inattentiveness and impulsivity (Wadsworth & Harper, 2007).

Similarly, the majority of the research studies and literature on ADHD has been centered on males. According to Arnold (1996), females with ADHD have been neglected in the research until recently. Even though more males are diagnosed with the disorder, Arnold estimates that 1% of females (approximately 1 million women) have the disorder as well. The ratio of ADHD for boys and girls is 5:1; however, there should be an even smaller gap in the numbers because females are typically less overt in their manifestations of the disorder (Arnold, 1996). Overall, females have less hyperactivity, fewer attention issues, and less externalizing behaviors when compared to their male counterparts. Therefore, they are seen as having less symptoms of ADHD (Arnold). Unlike males with ADHD who are mainly hyperactive and impulsive, females are usually characterized with the inattentive type of ADHD (Nadeau, 2002). The ratio of adult ADHD for males to females is 1:1 (Scudder, 2001).

Girls with ADHD often have been excluded from the research because they do not fit the typical example of the disorder. Instead of being hyperactive, they are instead more passive, introverted, and submissive. Rather than acting out or misbehaving like boys with ADHD, girls may internalize feelings of inadequacy, which leads to guilt and shame, a common denominator among women with ADHD (Solden, 1995). In females, ADHD symptoms may include forgetfulness, disorganization, low self-esteem, anxiety, hyper-talkativeness, or emotional reactivity (Quinn, 2005).

**Comparing the Psychological and Physical Health of ADHD and Non-ADHD Female College Students**

Attention Deficit Hyperactivity Disorder (ADHD) is a well-known phenomenon that affects many children and adults alike. Even though both groups are afflicted by this disorder, the majority of research on the subject is focused on children and more specifically males (Arnold, 1996). Although males are referred and diagnosed with the disorder at a higher rate than females, women are displaying symptoms of ADHD and comorbid disorders at comparable rates (Quinn, 2005). The purpose of this study is to assess the differences in the psychological and physical health of female college students with ADHD and without ADHD by testing self-reports of stress, role overload, fatigue, mental health, and optimism. Results indicated that women with ADHD report significantly greater fatigue and role overload than their non-ADHD counterparts.
According to Quinn, females with ADHD are said to “suffer in silence” and may suffer from low self-esteem, impaired social relationships, and a general demoralization. Due to their internalization of symptoms, these girls and women may become anxious, depressed, and socially withdrawn. As a result females with ADHD may be diagnosed with depression and/or anxiety as comorbid disorders (Quinn).

Previous research shows that females with ADHD often have been overlooked by researchers, physicians, and others. In a study conducted by Rucklidge and Kaplan (1997), the researchers found that women who were diagnosed with ADHD as adults reported having more stress, anxiety, depression, and low self-esteem. In another study done by Katz, Goldstein, and Geckle (1998), women had more psychological distress than males with ADHD. Women have also reported having a poorer self-concept than their male counterparts (Arcia & Conners, 1998).

In addition to females, college students have also been neglected in the research until recently. The majority of research and attention is still being given to children even though the prevalence rate for college students has been estimated to be between 2% to 11% (DuPaul et al., 2001; Heliegenstein, Conyers, Berns, Miller, & Smith, 1998; Weyandt, Linterman, & Rice, 1995). According to Heliegenstein, Guenther, Levy, Savino, and Fulwiler (1999), scholars have not focused on the issues and needs of college students in regards to ADHD. Murphy and Barkley (1996) have suggested that college students are not included in samples because most ADHD studies are done at mental health or ADHD specialty clinics. The symptoms of ADHD in college students are manifested differently and they may include being easily distracted, restless, and impulsive. As a result, students’ academic performance and abilities, while in school, can be negatively impacted (Richards, Rosén, & Ramirez, 1999). However, Dooling-Litfin and Rosén (1997), emphasize the importance of studying college students with ADHD because their attendance of college demonstrates that they can be successful in relation to education.

A growing body of research shows that there are many differences between the sexes in the diagnosis, manifestation, and psychological impact of ADHD. In the current study we assess the differences between female college students with ADHD and those without ADHD looking specifically at stress, role overload, fatigue, mental health, and optimism. ADHD can have a severe impact on the behavior and social life of individuals with the disorder compared to controls that do not have ADHD. In addition, some research has shown that there may be differences in the physical and emotional health of children with ADHD. In a European study conducted by Nøvik, Hervas, Ralston, Dalsgaard, Pereira, Lorenzo, and the ADORE study group (2006), the authors reported that boys and girls were similar in the main symptoms of the disorder but that girls rated themselves as higher on somatic issues compared to boys in the study. Also, these girls tended to internalize their problems more than boys. The authors concluded that these girls had more emotional symptoms than the boys. For both genders, there were reports of anxiety and depression as well as physical problems including headaches, loss of appetite, and abdominal pain (Nøvik et al.).

Another issue that affects individuals with ADHD is stress. In 2002, Gonzalez and Sellers conducted a study to determine the amount of stress in children with ADHD and the coping skills these children used. They found that children with ADHD had a higher level of stress than their peers and that this problem needed to be researched. In addition, they concluded that these children with ADHD had lower self-esteem and poorer self-concept and as a result their coping skills needed to be evaluated. The ineffective and unproductive coping skills these children were using led to the need for a stress-management program (Gonzalez & Sellers, 2002). Based on the findings presented, we hypothesize that individuals with ADHD are at a greater risk of psychological and physical health problems including increased stress, increased role overload, increased fatigue, decreased mental health, and decreased optimism.

**Method**

**Participants**

All 880 students at a private liberal arts college for women in the Southeast were asked to complete an on-line survey. One hundred and ninety-two undergraduate college women chose to complete the survey assessing ADHD. The average age was 20.72 years ($SD = 2.99$). In this sample of participants, 140 students were Caucasian, 31 students were African American, 9 students were Hispanic, 4 students were Asian, 2 students were American Indians, and 5 students were multiracial. One student did report her race. Eighty-four of the participants considered themselves to have ADHD and 108 participants classified themselves as non-ADHD. In the group of students who reported they had ADHD, 32 had received a medical diagnosis by a licensed professional and 52 reported they had never received a medical diagnosis.

**Materials**

All participants were administered an electronic survey that asked students to self-report if they had
ADHD or not. In addition, demographic information including ethnicity, age, class year, major area of study, and grade point average were collected in the survey. Students were also asked to list any disabilities they may have been diagnosed with in the past.

The rest of the survey included scales assessing stress level and coping skills, role overload, mental health, and fatigue. There were also questions regarding childhood experiences with ADHD and internal restlessness.

**Fatigue.** The survey included a section assessing general fatigue. The Fatigue Assessment Scale (FAS) by Michielsen, De Vries, Van Heck, Van de Vijver, and Sijtsma (2004) consists of 10 statements such as “I am bothered by fatigue” and “Mentally, I feel exhausted.” Answers were coded on a 5-point Likert scale ranging from 1 to 5, with 1 being never and 5 being always. Higher scores indicate greater fatigue. Michielsen et al. reported that their factor analysis indicated that the ten items measured one factor, explaining 48% of the variance, which establishes content validity. They also obtained an alpha coefficient of .87. For this study, Cronbach’s alpha was measured and was found to be .85.

**Mental health.** In addition, the survey contained a short version of the General Health Questionnaire (GHQ-12: Goldberg, 1972) to evaluate mental health. The questionnaire consisted of 12 questions such as “Have you recently been feeling unhappy and depressed?” Answers to these questions were rated on a scale of 1 to 5, where 1 indicated strongly disagree and 5 indicated strongly agree. Higher scores on these statements signify higher mental health. Hardy, Shapiro, Haynes, and Rick (1999) obtained an alpha coefficient of .89 for this questionnaire and also found convergent and discriminant validity as perceived by the participant. Cohen et al. (1983) compared the PSS to the Center for Epidemiologic Studies Depressive Scale (CES-D; Radloff, 1977), which measures depressive symptomatology and found that the PSS measured a different and independent predictive construct. Cohen et al. (1983) conducted three samples and obtained coefficient alphas of .84 to .86. In order to test reliability, a Cronbach’s alpha was computed for this study and it was found to be .79.

**Optimism.** The Life Orientation Test (LOT, Scheier & Carver, 1985) was used to assess optimism. The LOT contains 12 items with 4 being filler items. An example item includes “In uncertain times, I usually expect the best.” Each statement was rated on a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree. Higher scores on this scale represent higher optimism. The LOT has shown adequate internal consistency (Cronbach’s alpha = .76) and 4-week retest reliability (.79; Scheier & Carver). LOT scores also correlated positively with self-esteem and negatively with measures of hopelessness, depression, perceived stress, alienation, social anxiety, and symptoms of physical illness (Scheier & Carver) providing evidence for convergent and discriminant validity. A Cronbach’s alpha coefficient of .88 was found for the current study.

**Role overload.** For the evaluation of role overload, the survey included a five-item scale developed by Duxbury, Higgins, and Lee (1994). According to the authors, role overload is “when the total demands on time and energy associated with the prescribed activities of multiple roles are too great to perform the roles adequately or comfortably (p. 450).” An example item from the scale is “I feel I have more than I can comfortably handle.” Each statement was rated on a scale of 1 to 5, with 1 being strongly disagree and 5 being strongly agree. Higher scores on these statements signify higher role overload. Duxbury et al. found that role overload correlated with work to family conflict and family to work conflict, which establishes evidence for the construct validity of the scale. The authors performed an alpha coefficient and got .85 for their role overload scale. A Cronbach’s alpha coefficient was conducted and resulted in .87 for the current study.

**Stress.** In order to assess the level of stress, each participant completed the Perceived Stress Scale (PSS), which was created by Cohen, Kamarck, and Mermelstein (1983). The scale includes 14 questions that evaluate stress for the past month, for example, “In the last month, how often have you felt that you were unable to control the important things in your life?” Each question was rated using a Likert scale from 1 to 5, where 1 indicated never and 5 indicated very often. Higher scores on the scale signify higher stress as perceived by the participant. Cohen et al. (1983) compared the PSS to the Center for Epidemiologic Studies Depressive Scale (CES-D; Radloff, 1977), which measures depressive symptomatology and found that the PSS measured a different and independent predictive construct. Cohen et al. (1983) conducted three samples and obtained coefficient alphas of .84 to .86. In order to test reliability, a Cronbach’s alpha was computed for this study and it was found to be .79.

**Design and Procedure**

Researchers sent an electronic version of the survey through an email to all students at a private liberal-arts college in the Southeast. Before completing the survey, each participant read an informed consent explaining the purposes of the study. In addition, students in the introductory psychology classes were given research credit for participating in the study.

**Results**

For all statistical analyses, each ADHD student was matched with a non-ADHD student based on race, class year, and age resulting in 42 matched pairs.
was hypothesized that students with ADHD would report higher stress than their non-ADHD counterparts. To test this hypothesis, a dependent samples t test was calculated to compare the total stress of college women with ADHD and college women without ADHD. The results indicated that there was no significant difference between the two groups, $t(39) = 1.17, p > .05$ for perceived stress.

Additionally, it was hypothesized that there would be a difference between the amount of role overload reported by women with ADHD and those without ADHD. To assess this, a dependent samples t test was conducted to compare the role overload scores reported by both groups. A significant difference was found, $t(39) = 2.28, p < .05$. The mean for women with ADHD was 19.08 ($SD = 4.14$), and the mean for women without ADHD was 17.15 ($SD = 4.18$) indicating that the women with ADHD felt greater role overload.

Our next hypothesis was that women with ADHD would report worse mental health than their non-ADHD peers. To test this hypothesis, another dependent samples t test was calculated. Results showed that there was no significant difference between the two groups for mental health, $t(41) = -.97, p > .05$.

We also hypothesized that women with ADHD would report greater fatigue than women without ADHD. Using a dependent t test, a significant difference between women with ADHD and women without ADHD was obtained, $t(39) = 2.52, p < .05$. The mean for women with ADHD was 30.98 ($SD = 7.12$), and the mean for women without ADHD was 27.58 ($SD = 5.85$) indicating that the women with ADHD felt greater fatigue.

The final hypothesis was that there would be a difference in overall optimism between the two groups with women without ADHD reporting higher optimism than women with ADHD. Using a dependent t test, a significant difference between the two groups was not found, $t(39) = -1.97, p > .05$.

**Discussion**

The purpose of this research was to explore the differences between female college students with ADHD and without ADHD on reported stress, mental health, fatigue, role overload, and optimism. The school work and lifestyle of college students may be challenging in general; however, female college students with ADHD report greater fatigue and role overload than female college students without ADHD. Aside from the pressure of attending college, women with this disorder have the added pressure that comes with this diagnosis because they may find it difficult to concentrate, organize, and have high self-esteem.

According to Scudder (2001), the number of adults with ADHD is similar across genders. Despite this fact, the majority of research is conducted on males. Similarly, Selden (1995) reports that instead of showing externalizing behavior like boys these girls with ADHD may instead internalize their feelings of insufficiency and this could lead to negative feelings about themselves. As a result, females may have difficulty with organization, self-esteem or confidence, and anxiety (Quinn, 2005). Keeping these facts in mind, the study of female college students with ADHD was a practical direction to go in. Studying this population and the challenges they experience on a daily basis allows researchers to suggest ways of helping this group. Based on the current study, it would be beneficial to create support systems for these women through counseling, peer groups, and college administrations. Discussing their issues with a professional counselor through either the on-campus counseling center or a private off-campus counselor could decrease negative symptoms for these women. Similarly, discussing the symptoms with other ADHD students could provide additional support. Both of these resources could have a positive effect on the fatigue and role overload of these women. Another way of helping these students is by proposing policies to administrators that guarantees these women adequate accommodations for their disability.

One limitation of this study was that the sample size was fairly small. This study should be replicated at a larger, public university. Because this study was conducted at a small private college, all students tended to report similar levels of stress, which is possibly due to the intensity of classes and academic rigor. A further limitation of this study is that the variables studied were based on self-reports. Similarly, the categorization of students on the basis of ADHD was based on self-reports also. The results would have been more reliable if the students who reported ADHD had shown proof of their diagnosis.

This study had several benefits. First, both females as well as college students have previously received little attention from researchers. The majority of the research on ADHD has been centered on males as well as children. Therefore, a study on the needs and issues faced by female college students was vital. By bringing attention to this demographic, these students’ difficulties are acknowledged and suggestions for coping can be brought forth. Another benefit of this study was the attention given to stress and health of college students. In general, there have been very few studies about the psychological and physical health of people with ADHD and even fewer studies using college students with this disorder.
ADHD and Non-ADHD Female College Students

As stated above, in the future, research on this topic should include a larger sample size of students. By increasing the sample size, researchers could investigate the differences between races or ethnicities. Students who are members of minority groups may be at an even greater disadvantage when diagnosed with ADHD because they often resist seeking medical help or counseling (Davidson, Yakushka, & Sanford-Martens, 2004). As a result, there may be differences with the stress and health of these groups so larger and more diverse samples are needed to identify these issues.

In addition, a larger sample size would allow researchers to determine the differences between different age groups. Even within a college sample, older women with ADHD (upper-class women and return-to-college students) may be better at handling stress than younger students with ADHD (under-class women). The transition to college can be difficult for any student but students with disabilities and more specifically ADHD are likely to find this time to be even harder than their peers. Also, upper-class students are more accustomed to the services offered in college for students with disabilities or health issues. They may be more likely to take advantages of these accommodations. For these reasons, the differences in health and stress between age groups should be studied.

Finally, future research studies should focus on the differences between students who have been officially diagnosed with ADHD and those students who have not been officially diagnosed. Furthermore, students who report an official diagnosis of ADHD should be prompted to provide proof of their diagnosis from a medical professional. Individuals who are diagnosed as ADHD may differ in their coping, level of stress, and health because they are often receiving professional help for this disorder. In addition, they may be using medication and other techniques to handle their ADHD and the problems that come with it. In contrast, students who have not been officially diagnosed are most likely unable to take medication to control their ADHD symptoms. As a result, they may have difficulty coping with the responsibilities of college and the changes that come with this new time in their lives.

References


APPENDIX

1. Have you ever been diagnosed by a medical doctor, psychiatrist or psychologist with ADHD or ADD?
   • Yes
   • No

2. Have you been diagnosed by someone other than a doctor (e.g., teacher, parent, or school counselor)?
   • Yes
   • No

3. If so, how old were you when you received this diagnosis?

4. If yes, how do you feel you are coping?
   • Quite Well
   • Satisfactorily
   • Neutral
   • Unsatisfactorily
   • Quite Poorly

5. Have you been officially or unofficially diagnosed with other types of learning disabilities? If so, please name them here.