

Locus of Control and Academic Self-Efficacy as a Function of Attention Deficit Hyperactivity Disorder

ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) is becoming increasingly diagnosed among children, but it is often undiagnosed in college students. Stimulants used to treat this disorder are also being abused on college campuses. This study was designed to examine differences in personality between students with ADHD and students without the disorder. This information could lead to alternative treatments and therapies in place of medication. Previous research has revealed that those with ADHD tend to have more external locus of control and lower academic self-efficacy. This researcher examined differences between these two constructs in college students diagnosed with ADHD (designated DG for Diagnosis Group), students not diagnosed with ADHD (designated NDG No-Diagnosed Group), and students who had not been diagnosed with ADHD but believed they may have the disorder (designated PDG for Potential Diagnosis Group). It was hypothesized that the DG and PDG would have higher locus of control scores and lower academic self-efficacy scores than the NDG. Three surveys were distributed to each student: a demographic index to obtain data related to ADHD diagnosis and other characteristics like age and gender, an academic self-efficacy scale, and a locus of control scale. There were 78 participants, including 40 assigned to the NDG, 21 assigned to the DG and 17 assigned to the PDG. There were no significant differences among the groups for locus of control. However, there was a significant difference between the NDG and PDG for academic self-efficacy. The students who had not been diagnosed with ADHD but believed they had the disorder had lower scores on the Academic Self-Efficacy Scale (ASES) than those who did not believe they had the disorder. There is little research related to ADHD in college students, and it is critical to continue to examine this issue in hopes of addressing treatment for those with the disorder and preventing the misuse of prescription medications for ADHD.

In 2006, approximately 4.5 million children in the United States were diagnosed with attention deficit hyperactivity disorder (ADHD), a neurobehavioral disorder in children that sometimes lasts into adulthood (Center for Disease Control [CDC], 2006). According to the revised text of the fourth edition of *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, 2000)*, a diagnostic manual developed by the American Psychiatric Association, ADHD is characterized by prolonged periods (six months or more) of inattention, impulsivity, and/or hyperactivity to the point that these symptoms are inappropriate and disruptive. There are three types of ADHD. Children diagnosed with predominantly hyperactive-impulsive disorders exhibit fewer than six symptoms of inattention, and the majority of their symptoms involve hyperactive-impulsive behaviors. Children diagnosed with predominantly inattentive disorders exhibit symptoms that are primarily associated with inattention, of which fewer than six involve hyperactive-impulsive behaviors. These children are less likely to be disruptive in classrooms, and their symptoms sometimes go unnoticed. Most children diagnosed with ADHD exhibit combined hyperactive-impulsive and inattentive behaviors (National Institute of Mental Health [NIMH], 2008). The disorder affects behavior and performance of children both at home and at school (Faraone, Sergeant, Gillberg, & Biederman, 2003). According to Faraone, Sergeant, Gillberg and

Biederman, this disorder is not unique in the United States. The prevalence of ADHD is at least as high in children not residing in the United States as in children residing in the United States, based on the criteria of the *DSM-IV-TR*.

Treatments of ADHD include medications and psychotherapy, depending on the particular needs of the child. Most commonly prescribed are stimulants, which have a calming effect on children with this disorder. These stimulants, such as Adderall and Ritalin, typically enable the child to focus and improve his/her functioning (NIMH, 2008). These drugs are widely used among college students. Students claim that the drugs enhance their ability to study. Teter, McCabe, Cranford, Boyd and Guthrie (2009) reported that 8.1% of an undergraduate sample of 21,294 students, including 10,860 women and 10,434 men, disclosed that they had used stimulants without prescriptions. The primary motives of the students, according to Teter et al., were to aid concentration and increase alertness. According to a study by DeSantis, Webb and Noar (2008), students lack guilt about ingesting these medications without prescriptions. DeSantis et al. administered surveys to 1,340 students at a university. They reported that most students did not use the stimulants for entertainment purposes, but they were used to improve academic performance. In addition, these students claimed that access to the drugs was not difficult. Of the sample, 85% reported that obtaining stimulants without a prescription was easy, and 89% of this group received the drugs from friends or significant others. Most of the students indicated that they were not aware that this activity was a crime or that it posed many physical and psychological dangers (DeSantis, Webb, & Noar, 2008).

College students diagnosed with ADHD also misuse their prescription medications. Using a web-based survey, Rabiner, Anastopoulos, Costello, Hoyle, McCabe and Swartzwelder (2009) examined misuse of ADHD medication in 115 students who currently had a prescription. Misuse of the medication was defined as using a higher dosage than prescribed, using medication more frequently than prescribed or using someone else's medication. Results of this study revealed that 31% of the 115 students had misused their ADHD medication in the past six months. In addition, 8% also reported snorting the medication. Students who reported that they had been asked by a peer to give or sell their medication comprised 56%, and medication had been stolen from five students (Rabiner et al., 2009). The most frequent reason for the misuse was to improve concentration for academic tasks, while reports of misuse for nonacademic reasons were rare. Common side effects reported by the students were reduced appetite and problems sleeping; however, 47% to 73% reported that the misuse of the medication usually had the desired effect. The misuse of ADHD medications by students with a prescription seems to indicate dissatisfaction with their current treatment. Rabiner et al. (2009) questioned the benefits of medication for college students with ADHD.

The causes of ADHD are unknown; however, it has been linked to a variety of factors, including genetics, environment and brain injury. In one study by Van Leeuwen, Mervielde, De Clerco and Fruyt (2007), the research revealed that personality may be a predicting factor for child problem behavior, a typical symptom of ADHD. Kern, Rasmussen, Byrd and Wittschen (1999) sampled 117 college students (65 women and 52 men). In their study, 88 subjects served as a control group, 21 had been diagnosed with ADHD, and 8 reported ADHD symptoms but had not been diagnosed. The three groups were tested with a variety of personality measures. The results revealed that the students with ADHD differed from the control group for several of the

personality measures included on the BASIS-A (Wheeler, Kern, & Curlette, 1993), a scale designed to aid in the understanding of a person's approach to life. Examples of scales on the BASIS-A include Belonging-Social Interest (BSI), Going Along (GA), Taking Charge (TC) and Wanting Recognition (WR). Kern et al. (1999) concluded that ADHD is not solely a biological impairment, but may also be influenced by lifestyle personality attributes. In a related study, Cukrowicz, Taylor, Schatschneider and Iacono (2006) studied 1,438 same-sex twins who were reared together. These twins were grouped based on diagnoses of ADHD and conduct disorder (CD). After assessing responses to multiple personality inventories, including the Multidimensional Personality Questionnaire (MPQ) and others, the researchers reported that subjects with ADHD and CD differed significantly from the control group for Constraint and Negative Emotionality. Cukrowicz et al. concluded that personality is indeed a factor in the diagnosis of both ADHD and CD.

In other research, Nigg et al. (2002) examined ADHD in adults and the relationship of this disorder to certain personality traits. They administered the NEO Five-Factor Inventory (NEO-FFI) and several measures of ADHD symptoms to students and their parents to compare these variables in both groups. The NEO-FFI measures personality traits that include extraversion, conscientiousness, agreeableness, neuroticism and openness to new experience. This research revealed a strong relationship between symptoms of ADHD and several of these personality traits. Inattention was related to low conscientiousness and neuroticism, and hyperactivity-impulsivity was related to low agreeableness (Nigg et al., 2002). Martel and Nigg (2006) conducted a similar study and concluded that certain personality characteristics may predispose a person to develop symptoms of ADHD or similar disorders.

Another particular personality characteristic that has been associated with ADHD is locus of control (Lufi & Parish-Plass, 1995). According to Rotter (1990), locus of control is defined as the extent to which an individual believes either that events in life are products of one's own behavior and characteristics or they are controlled by some other outside force(s), like fate or chance, for which he or she is not responsible. Gonzalez and Sellers (2002) tested 42 children diagnosed with ADHD, including 33 boys and 9 girls, who were all 9- to 12-years old. The research revealed that children with ADHD had typically more external locus of control. In related research Banks, Ninowski, Mash and Semple (2008), sampled 82 mothers, 35% of whom had been diagnosed with ADHD. In this study mothers with ADHD had significantly more external locus of control based on scores on the Parenting Locus of Control Scale. These mothers also had very little confidence in their parenting abilities (Banks, Ninowski, Mash, & Semple, 2008).

Another personality characteristic associated with ADHD is academic self-efficacy. Though similar in nature, this construct is fundamentally different from locus of control (Zimmerman, 2000). Self-efficacy, as defined by Bandura (1977), is a person's belief in their own ability to achieve his or her goals. Bandura states that locus of control lacks the task and domain specificity of self-efficacy (Zimmerman, 2000). Academic self-efficacy is a more specific application of the construct of self-efficacy. Zimmerman states that self-efficacy aids in the understanding of student behavior by predicting rate of performance and expenditure of energy. Tabassam and Grainger (2002) sampled 172 elementary school students from grades three to six: 44 were diagnosed with learning disabilities (LD), 42 were diagnosed with LD and ADHD, and

86 were typically achieving students with whom the subjects in the other two groups were matched. Both the LD and LD/ADHD groups scored significantly lower on an academic self-efficacy scale than their typically achieving peers. In addition, there was no significant difference between the groups based on nonacademic self-concept. However, one limitation to this study was the grouping of students with a co-morbid learning disability and ADHD. Not all students who have ADHD also have a learning disability, and this grouping may have skewed the data. A group of students who only had ADHD, and not LD and ADHD combined, may have resulted in more informative results.

Locus of control and academic self-efficacy are inter-related constructs. In a study of 115 university freshmen, Chang and Ho (2009) revealed that students with an internal locus of control had higher scores on a measure of self-efficacy as well as better academic performance. The relationship between these two personality characteristics is also apparent in a study by McIlroy, Bunting and Adamson (2000). The researchers recruited 117 college students from the University of Ulster. Their average age was 23. McIlroy et al. discovered that students with low self-efficacy had higher test anxiety, and students with more internal locus of control had lower test anxiety. The impact of these two variables on academic performance seems clear. Similarly, Uguak, Elias, Uli and Suandi (2007) studied 210 students ranging from ages 11 to 14. The investigators revealed a significant relationship between internal locus of control and academic achievement. The beliefs of control by students appear to have a positive impact on their performance in the classroom. This relationship may extend beyond childhood and into adulthood as students enroll in universities. Though ADHD is most widely considered to be a disorder among children, the prevalence of the disorder in college students is widespread. Additionally, the disorder is undiagnosed among many students. In a sample of 1,080 college students recruited by Garnier-Dykstra, Pinchevsky, Caldeira, Vincent and Arria (2010), 10.3% of the students without clinical diagnoses scored in the clinical range on the Adult ADHD Self-Report Scale (ASRS), a scale to measure ADHD based on the diagnosis criteria in the *DSM-IV-TR*. Students struggling with symptoms of ADHD may be less successful academically than students without these symptoms. Further research to examine this disorder in college students is necessary.

ADHD, locus of control and academic self-efficacy are related on several levels with respect to academic achievement. Further understanding of how these personality characteristics are related to ADHD may aid in treatment and possibly improve the academic performance of students with this disorder. The present study was designed to examine the relationship between locus of control, academic self-efficacy and the diagnosis of ADHD in college students. This researcher proposed that students from Coastal Carolina University (CCU) who were diagnosed with ADHD or who reported symptoms of the disorder but had not been clinically diagnosed would have more external locus of control and lower academic self-efficacy than the students who had not been diagnosed with ADHD.

Method

Design

The design of this non-experimental survey research was between groups.

Participants

Participants in this study were individuals enrolled in classes at CCU, a mid-size university in South Carolina. Data were collected from 78 participants. The ages of subjects ranged from 18 to 56, and the sample included 62 women and 16 men. A non-random convenience sampling procedure was utilized to obtain subjects. Participants represented various academic majors.

Subjects were divided into three groups based on responses on the demographic index: 21 subjects were assigned to the diagnosis group (DG), 17 subjects were assigned to the potential diagnosis group (PDG) and 40 subjects were assigned to the no diagnosis group (NDG).

Materials

The materials utilized in this study included a demographic index, a scale to measure academic self-efficacy and a scale to measure locus of control.

The demographic index was developed by the researcher and included seven items designed to obtain data related to age, sex, class-standing and major. In addition, items were included about whether the students had been diagnosed with and were being treated for ADHD.

The Academic Self-Efficacy Scale (ASES) was developed by Chemers, Hu and Garcia (2001) and was also used in this study. It has eight items, and responses are recorded on the seven-point Likert scales. Responses on the scale range from very untrue (one) to very true (seven). Sample items include “I know how to schedule my time to accomplish my tasks” and “I know how to study to perform well on tests.” The responses reflect the confidence of participants concerning their academic ability. Evidence of reliability is indicated by a coefficient alpha of .81 (Chemers, Hu, & Garcia, 2001).

The third instrument used in this study was the Locus of Control Scale (LOCS), which was developed by Rotter (1990) and is designed to measure locus of control. Subjects read two different statements and are instructed to circle the statement that they most strongly believe reflects their feeling or opinion. The LOCS contains 29 pairs of statements, examples of which include the following: “Children get into trouble because their parents punish them too much” or “The trouble with most children nowadays is that their parents are too easy with them”; and “No matter how hard you try some people just don’t like you” or “People who can’t get others to like them don’t understand how to get along with others.” Evidence of reliability was reported by Uguak, Elias, Uli and Suandi (2007). They reported a reliability coefficient of .75 (without indicating their method for determining the coefficient).

Procedure

Permission was acquired to use the ASES and LOCS in this study. Once granted, the researcher approached professors that she had relationships with and requested permission to ask students in their classrooms to participate in the study. She also asked the faculty members for permission to collect data in their classrooms during class times. The researcher entered each classroom prior to the beginning of class instruction and introduced herself as a researcher collecting data regarding certain personality characteristics and the diagnosis of ADHD. Instructions were read uniformly in each classroom and specified that any student who did not wish to participate should accept surveys, leave them blank and remain seated quietly until all participants had completed the surveys. The researcher indicated that it would take no more than 15 to 20 minutes to complete all survey materials. A complete copy of these instructions can be found in the Appendix. Surveys were collected from the students upon completion and the researcher provided the participants with her contact information by writing it on the dry-erase board at the front of the room. Those students who wished to obtain a copy of the research results were instructed to contact the researcher later in the year. The researcher then thanked the professor and students for their time and exited the classroom. These procedures were completed in four classrooms.

Results

Measures used in this study to collect data included the ASES and the LOCS. Possible scores on the ASES range from 8 to 56, and high scores indicate higher academic self-efficacy. The actual range of scores obtained for this sample was 27 to 56. Possible scores on the LOCS range from 0 to 23, and high scores indicate more external locus of control. The actual scores ranged from 2 to 19.

Forty participants who had never been diagnosed with ADHD and had no reason to believe that they had the disorder were assigned to the no diagnosis group (NDG). The mean score on the ASES for this group was 46.28 and the standard deviation was 7.14. Twenty-one participants who had been diagnosed with ADHD were assigned to the diagnosis group (DG). The mean score on the ASES for the DG was 43.76 and the standard deviation was 7.49. The potential diagnosis group (PDG) included 17 participants who had never been diagnosed with ADHD but believed that they had the disorder. The mean score for the PDG on the ASES was 39.65 and the standard deviation was 4.12. (These descriptive statistics are in Table 1.) A one-way ANOVA (analysis of variance, the statistical test used to measure variance for more than two groups) was calculated to analyze the scores on the ASES among these groups and the results were significant, $F(2,77) = 5.86$, $p < .01$. Results of a Tukey post-hoc test indicated a significant difference between the NDG and the PDG, ($p < .01$).

The mean score for the NDG on the LOCS was 10.88 and the standard deviation was 3.69. The mean score for the DG was 11.38 and the standard deviation was 2.99, and the mean score for the PDG was 11.94 and the standard deviation was 2.86 (see Table 1 for these means and standard deviations). A one-way ANOVA was also calculated to analyze the scores on the LOCS, but the results were not significant, $F(2,77) = .63$, $p > .05$. (See Figure 1 for a comparison of mean scores on both measures.)

Additionally t-tests were calculated for both measures to compare scores between the DG and a combined group, which included the NDG and the PDG (57 total participants). The results of the t-test to compare ASES scores did not reveal significant results, $t(76) = .39, p < .05$. Similarly, results of the t-test to compare LOCS scores on the LOCS did not reveal significant differences between the two groups, $t(76) = .41, p > .05$.

Though the researcher did not hypothesize differences in the DG between those who were currently medicated (12 participants) and those who were not (9 participants), the researcher calculated t-tests to compare scores on both measures between these groups. However, there were no significant differences between the two groups for either ASES scores, $t(19) = .16, p > .05$, or LOCS scores, $t(19) = .37, p > .05$. (See Table 2 for the mean scores and standard deviations of these two groups.) In addition, the researcher calculated a correlation coefficient for all groups between all scores on the ASES and LOCS, $r(76) = -.36, p < .01$. Results of this negative correlation revealed that as self-efficacy decreased, locus of control was more external.

Discussion

The researcher's hypothesis was that students in the DG or PDG would have more external locus of control scores and lower academic self-efficacy scores than students in the NDG. The scores on the LOCS did indicate more external locus of control for both the DG and PDG in relation to the NDG; however, these results were not statistically significant. Therefore, the data did not support the conclusion that students with ADHD or those who believed they had the disorder had more external locus of control scores. The results of this study were not consistent with the hypothesis of the researcher and the findings of related studies (Gonzalez & Sellers, 2002; Banks et al., 2008).

In addition, scores on the ASES for the DG and PDG indicated lower academic self-efficacy compared to the NDG, and the difference was statistically significant between the NDG and PDG. The researcher could not conclude that students with ADHD did not have less academic self-efficacy than those without the disorder. However, students who believed they might have the disorder but had not been diagnosed had lower academic self-efficacy scores than those without the disorder. These findings were consistent with the hypothesis and also with previous research by Tabassam and Grainger (2002). There is limited research for comparison of this study with others regarding student beliefs of morbidity with respect to ADHD.

Results of this study also revealed a moderate negative correlation between scores on the LOCS and ASES, which indicated that those with more external locus of control had lower academic self-efficacy scores. This correlation is consistent with Chang and Ho (2009), who also reported that students with more internal locus of control had higher self-efficacy scores.

One possible confound in this study was the lack of a verified diagnosis. The assignment of each subject to a diagnosis group was based on self-report. Since the diagnoses were not verified by a professional, such as a psychologist, psychiatrist or other medical doctor, it is possible that the diagnoses were not valid. In future research, participants could perhaps be obtained through

Student Health Services, and thus would have documented, verified diagnoses by professionals that would eliminate this confound.

Another possible confound was sample size and representation. The sample included 62 women and 16 men and did not adequately represent the gender ratio on the CCU campus. Also, men are more frequently diagnosed with ADHD (CDC, 2006). In addition, the sample sizes of the groups were not equal. There were 40 participants assigned to the NDG, 21 to the DG and 17 to the PDG. Since the data revealed a trend in the direction of the researcher's hypothesis (see Figure 1), it is possible that a larger sample size that was more representative of the population would yield significant results. Also, 42 of the 78 participants were majors in psychology and surveys were distributed in upper-level psychology courses. It is possible that at least some of these students were familiar with the constructs of locus of control and academic self-efficacy and may have responded differently on surveys compared to non-psychology majors. This prior knowledge may have affected the results of this study.

Other factors such as learned helplessness or self-fulfilling prophecies could have had an impact on the responses of participants as well. In a study by Milich and Greenwell (1991), two groups of young boys were compared for their responses to failure (Milich, 1994). One group of boys had been diagnosed with ADHD and the other group had not. Their responses were assessed based on the learned helplessness paradigm, which accounts for lack of motivation of a person after successive failures. In this paradigm a person "learns" to be helpless because of lack of success in the past. Results of this study revealed that boys with ADHD were not as persistent as boys who did not have ADHD. These boys stopped trying three times as often as those in the control group. Perhaps students who believe they have ADHD may have lower self-efficacy because of their failures in the past. Since students with ADHD tend to have difficulty in school, they may feel that they do not have the ability to succeed in academics.

Also, the idea of a self-fulfilling prophecy may have affected the responses of participants. A self-fulfilling prophecy is, in essence, a prediction of behavior that may be false. This prediction causes a change in behavior, which in turn makes the original prediction true (Merton, 2010). This concept may be applied to ADHD. Students with this disorder are not typically successful in school. Because some students with this disorder are aware of this fact, they may not be as motivated to succeed in the classroom as the students without ADHD. They may begin to exhibit more behaviors that are expected in a child with ADHD, such as poor performance in the classroom. Students with ADHD may not feel that they have the ability to perform well or have control of their behavior because of their disorder. Thus, the students have fulfilled the prophecy of failure or poor performance not because of an actual lack of ability but because the failure or poor performance was expected.

Another possible explanation for the findings in this study could be that college students with ADHD have been successful in managing their disorder, which is reflected by their successes in continuing their education at the undergraduate level. It is possible that young adults with ADHD do have more external locus of control and lower academic self-efficacy; however, college students may fundamentally differ from the population of young adults for these characteristics. Further research could be designed to examine the differences in locus of control and academic self-efficacy between college students and young adults not enrolled at a university.

Another potential focus of future research could be assessing personality characteristics in young children who are more frequently diagnosed with ADHD compared to adults (CDC, 2006). The information resulting from these studies would be useful in the treatment of these children and perhaps could reduce dependency on medication to correct problem behaviors.

Further research could also be conducted with those persons who have not been diagnosed with ADHD by a professional but who have reason to believe that they have the disorder. These students could be administered an inventory to assess symptoms of ADHD to determine if their beliefs are legitimate. One possible tool would be the World Health Organization's Adult ADHD Self-Report Scale (ASRS) screener, which was developed by Kessler et al. (2005). This scale is a brief version of the 18-item ASRS and includes 6 items that reflect the criteria set forth in the *DSM-IV-TR* for ADHD. However, some students feign an ADHD diagnosis in order to obtain prescription stimulant medication (Sollman, 2010). Further examination of undiagnosed ADHD in college students would be beneficial to students who have not been clinically diagnosed yet still struggle with managing the symptoms of this disorder. However, students who may be feigning a diagnosis for other motives would potentially affect this research.

Weyandt and DuPaul (2008) noted that research related to the treatment of college students with ADHD is severely deficient. Also misuse of stimulants used for the treatment of this disorder is becoming an increasing problem on college campuses. The goal of this research was to identify possible factors involved in ADHD that were not biological. The results of this study were intended to aid in the understanding of ADHD and possibly contribute to the improvement of treatment methods that do not involve medication. Further research of these alternative methods may help decrease the abuse of stimulants prescribed for the treatment of this disorder by reducing the frequency at which they are prescribed.

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References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC.
- Banks, T., Ninowski, J. E., Mash, E. J., & Semple, D. L. (2008). Parenting behavior and cognitions in a community sample of mothers with and without symptoms of attention-deficit/hyperactivity disorder. *Journal of Child and Family Studies, 17*, 28-43.
- Center for Disease Control and Prevention. (2006). *Summary health statistics for U.S. children: National health interview survey* (DHHS Publication No. PHS 2007-1562). Washington, DC: U.S. Government Printing Office.
- Chang, M., & Ho, C. (2009). Effects of locus of control and learner-control on web-based language learning. *Computer Assisted Language Learning, 22*(3), 189-206.
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology, 93*(1), 55-64.
- Cukrowicz, K. C., Taylor, J., Schatschneider, C., & Iacono, W. G. (2006). Personality differences in children and adolescents with attention-deficit/hyperactivity disorder, conduct disorder, and controls. *Journal of Child Psychology and Psychiatry, 47*(2), 151-159.
- DeSantis, A. D., Webb, E. M., & Noar, S. M. (2008). Illicit use of prescription ADHD medications on a college campus: A multimethodological approach. *Journal of American College Health, 57*(3), 315-323.
- Garnier-Dykstra, L. M., Pinchevsky, G. M., Caldeira, K. M., Vincent, K. B., & Arria, A. M. (2010). Self-reported adult attention-deficit/hyperactivity disorder symptoms among college students. *Journal of American College Health, 59*(2), 133-136.
- Faraone, S. V., Sergeant, J., Gillberg, C., & Biederman, J. (2003). The worldwide prevalence of ADHD: Is it an American condition? *World Psychiatry, 2*(2), 104-113.
- Gonzalez, L. O., & Sellers, E. W. (2002). The effects of a stress-management program on self-concept, locus of control, and the acquisition of coping skills in school-age children diagnosed with attention deficit hyperactivity disorder. *Journal of Child and Adolescent Psychiatric Nursing, 15*(1), 5-15.
- Kern, R. M., Rasmussen, P. R., Byrd, S. L., & Wittschen, L. K. (1999). Lifestyle, personality, and attention deficit hyperactivity disorder in young adults. *The Journal of Individual Psychology, 55*(2), 186-199.

- Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., . . . Walters, E. E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine, 35*(2), 245-256.
- Lufi, D., & Parish-Plass, J. (1995). Personality assessment of children with attention deficit hyperactivity disorder. *Journal of Clinical Psychology, 51*(1), 94-99.
- Martel, M. M., & Nigg, J. T. (2006). Child ADHD and personality/temperament traits of reactive and effortful control, resiliency, and emotionality. *Journal of Child Psychology and Psychiatry, 47*(11), 1175-1183.
- McIlroy, D., Bunting, B., & Adamson, G. (2000). An evaluation of the factor structure and predictive utility of a test anxiety scale with reference to students' past performance and personality indices. *British Journal of Educational Psychology, 70*, 17-32.
- Milich, R. (1994). The response of children with ADHD to failure: If at first you don't succeed, do you try, try, again? *School Psychology Review, 23*(1), 11-19.
- Merton, R. K. (2010). The self-fulfilling prophecy. *The Antioch Review, 68*(1), 173-190.
- National Institute of Mental Health. (2008). *Attention deficit hyperactivity disorder (ADHD)* (DHHS Publication No. NIH 08-3572). Washington, DC: U.S. Government Printing Office.
- Nigg, J. T., John, O. P., Blaskey, L. G., Huang-Pollock, C. L., Willcutt, E. G., Hinshaw, S. P., & Pennington, B. (2002). Big five dimensions and ADHD symptoms: Links between personality traits and clinical symptoms. *Journal of Personality and Social Psychology, 83*(2), 451-469.
- Rabiner, D. L., Anastopoulos, A. D., Costello, E. J., Hoyle, R. H., McCabe, S. E., & Swartzwelder, H. S. (2009). The misuse and diversion of prescribed ADHD medications by college students. *Journal of Attention Disorders, 13*(2), 144-153.
- Rotter, J. B. (1990). Internal versus external control of reinforcement: A case history of a variable. *American Psychologist, 45*(4), 489-493.
- Sollman, M. J., Ranseen, J. D., & Berry, T. R. (2010). Detection of feigned ADHD in college students. *Psychological Assessment, 22*(2), 325-335.
- Tabassam, W., & Grainger, J. (2002). Self-concept, attributional style and self-efficacy beliefs of students with learning disabilities with and without ADHD. *Learning Disability Quarterly, 25*, 141-151.

- Teter, C. J., McCabe, S. E., Cranford, J. A., Boyd, C. J., & Guthrie, S. K. (2009). Prevalence and motives for illicit use of prescription stimulants in an undergraduate student sample. *Journal of American College Health, 53*(6), 253-262.
- Uguak, U. A., Elias, H. B., Uli, J., & Suandi, T. (2007). The influence of causal elements of locus of control on academic achievement satisfaction. *Journal of Instructional Psychology, 34*(2), 120-128.
- Van Leeuwen, K. G., Mervielde, I., DeClercq, B. J., & DeFruyt, F. (2007). Extending the spectrum idea: Child personality, parenting and psychopathology. *European Journal of Personality, 21*, 63-89.
- Weyandt, L. L., & DuPaul, G. J. (2008). ADHD in college students: Developmental findings. *Developmental Disabilities Research Reviews, 14*, 311-319.
- Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*, 82-91.

TABLES

Table 1--Mean Scores and Standard Deviations for Each Diagnosis Group on Both the LOCS and ASES

LOCS	NDG	DG	PDG
Means	10.88	11.38	11.94
Standard Deviations	3.69	2.99	2.86
ASES	NDG	DG	PDG
Means	46.28	43.76	39.65
Standard Deviations	7.14	7.49	4.12

Note. NDG = no diagnosis group; DG = diagnosis group; PDG = potential diagnosis group.

Table 2-- Mean Scores on the LOCS and ASES for Students in the DG Who Were Currently Medicated and Not Currently Medicated for ADHD

LOCS	Currently Medicated	Not Currently Medicated
Means	11.58	11.11

ASES	Currently Medicated	Not Currently Medicated
Means	42.33	45.67

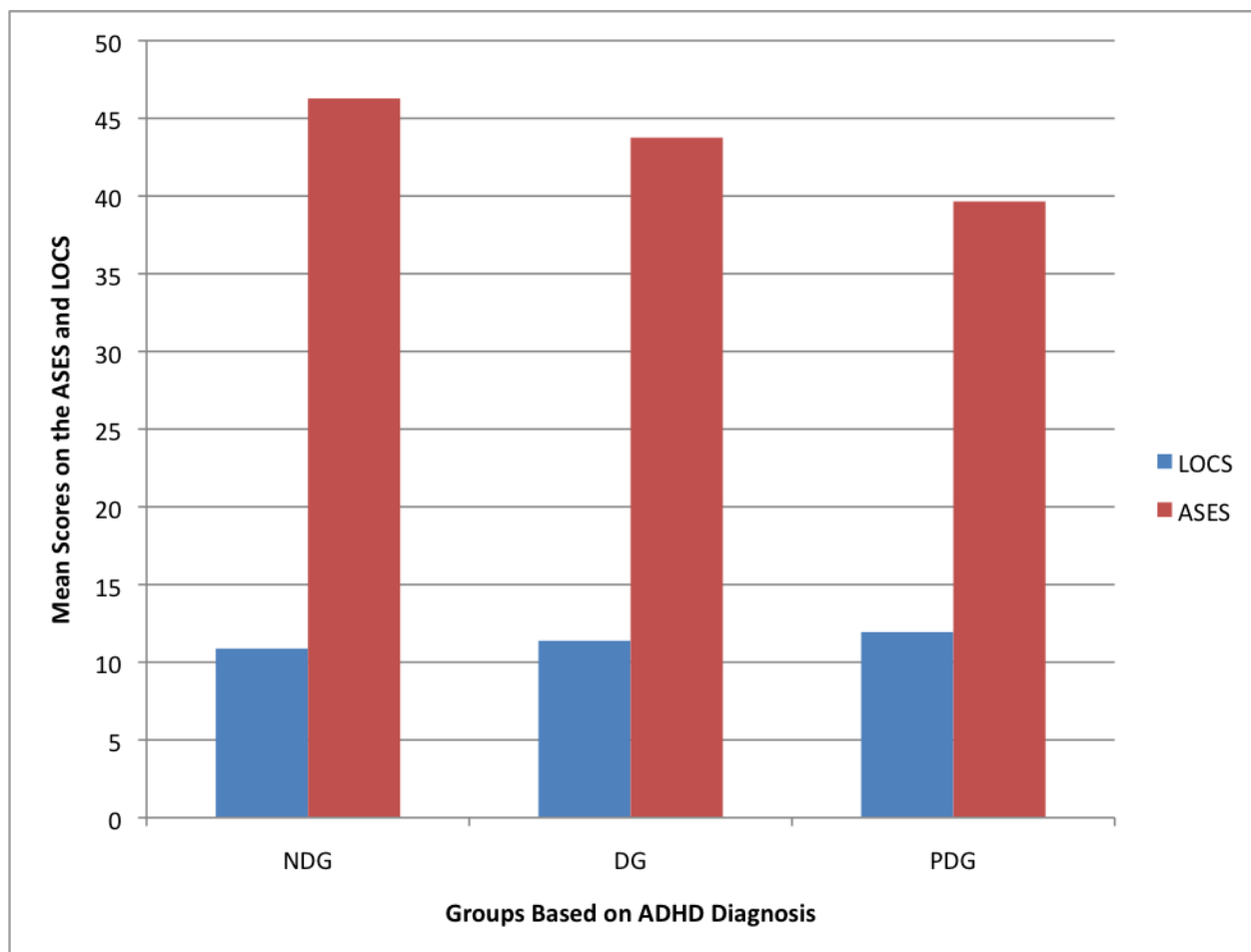
FIGURES

Figure 1--Mean scores on the ASES and LOCS for each diagnosis group

Appendix

Subject Solicitation and In-Class Data Collection Instructions

Hi. My name is Kylie Roberts and I am a senior here at Coastal. I am a psychology major and as part of a research course in which I am enrolled, I am conducting a study to examine Attention Deficit Disorder and certain personality characteristics. I need students to serve as participants in my study. If you agree to be a subject, you'll be asked to complete three surveys. One survey is designed to obtain demographic information about you, and the other two surveys are designed to obtain information about certain personality characteristics you may have. Your participation in this study is completely voluntary and you will be responding anonymously to my surveys so you will not put your name or any other identifying information on the materials. Please respond honestly to all items on both surveys. It will take about 15 minutes to complete the surveys. You are not obligated to participate in this study and you can withdraw from the study at any time. If you choose not to participate, please accept materials anyway, turn them face down on your desk, and sit quietly while other students complete materials. If you have already participated in my study please do not do so again. Once I distribute my survey materials please do not talk to each other. I'll put my name and contact information on the board so if any of you would like to obtain results of my study, you can contact me towards the end of the semester. At that time I'll have all my data collected and analyzed. Are there any questions? Thanks so much for your help.

BIOGRAPHICAL NOTE

Kylie Roberts received a Bachelor of Arts in Psychology from Coastal Carolina University in December of 2010. She plans to attend graduate school to earn a Master of Social Work degree.