STIMULUS REGULATION: A NON-MEDICINAL BEHAVIORAL APPROACH TO ADULTS WITH ADHD

A thesis submitted to the Kent State University Honors College In partial fulfillment of the requirements for Departmental Honors

by

By Christopher N. Spanos

May, 2013
TABLE OF CONTENTS

LIST OF TABLES...........................................................................................................iv

ACKNOWLEDGEMENTS..............................................................................................v

CHAPTER

I. ABSTRACT..............................................................................................................1

II. INTRODUCTION..................................................................................................2

III. METHODS...........................................................................................................7

IV. RESULTS............................................................................................................12

V. DISCUSSION.......................................................................................................13

REFERENCES............................................................................................................15

APPENDIX

A. CONSENT FORM..............................................................................................22

B. ADHD QUESTIONNAIRE..................................................................................24
LIST OF TABLES

Table

1. Description of Participants.................................................................17
2. Means and Standard Deviations of Reading Scores..............................18
3. Paired Samples t-Test of Reading Scores..........................................19
4. Means and Standard Deviations of Listening Scores............................20
5. Paired Samples t-Test of Listening Scores.........................................21
ACKNOWLEDGEMENTS

The research included in this thesis could not have been completed without the help and support of many individuals.

I would like to express my utmost gratitude to my thesis advisor Dr. Beth G. Wildman for creating this opportunity for me, having unfailing confidence, and mentoring me throughout the entire process. Dr. Wildman has played a pivotal role in my success as an undergraduate and has assisted in building the basis for my career as a Psychologist.

I would also like to thank Dr. Robert Stadulis and Dr. Manfred VanDulmen for taking the time out to provide their professional advocacy and guidance in refining and polishing my work.

Finally, I would like to extend my honor, recognition, and total appreciation to my parents John and Jackie for the unconditional love and attention that constituted establishing, shaping, and building the foundation for all that I am.

Thank you all so very much.
ABSTRACT

While psychostimulants are the primary medicinal treatment for ADHD, new behavioral techniques are consistently being uncovered as successful forms of treatment. The objective of this study was to investigate the potential utilization of a kinesthetic task as a means to increase performance in reading and listening comprehension tests for adults with ADHD.

Participants were undergraduate Kent State University students between the ages of 19 and 23 who screened positively for ADHD. These participants completed a questionnaire regarding their ADHD diagnosis, demographics, and academic performance. Participants then performed reading and listening comprehension tests while utilizing a kinesthetic task as a secondary stimulus and without a secondary stimulus as a control condition. Participants with scores above the mean in inattention and the overall ADHD index on the Conners Adult ADHD Rating Scales performed significantly higher on the Kaufman Test of Educational Achievement Reading Comprehension Composite (p < .001) and Listening Comprehension Composite (p < .01).

Findings support that use of the kinesthetic task enhanced performance in reading and listening comprehension. These findings suggest that rather than deprive individuals with ADHD of multiple stimuli, allowing them to engage in a secondary activity during reading and listening tasks can improve performance.
INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is defined by the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders as a persistent pattern of inattention and/or hyperactivity and impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000). The DSM-IV-TR (2000) also reports that ADHD affects 3-7% of school-aged children. While some studies have found links between the genes that produce the neurotransmitter dopamine and the behavioral characteristics of ADHD (Asherson, Kuntsi, & Taylor, 2005), there are no widely accepted causal relationships (Weyandt, 2007).

Diagnosis and Treatment

Though behavioral therapy and parental training have shown promising results, the most prevalent forms of treatment are psychostimulants such as methylphenidate (e.g. Ritalin) and amphetamines such as Adderall (Mayes, Bagwell, Erkulwater, 2009). Still, there are no laboratory measures such as blood tests or accurate neurological assessments that serve as diagnostic tools for ADHD. In accordance with the DSM-IV-TR (2000), diagnosis of ADHD is based on a multistage, multimethod assessment. The evaluation is
strongly based on the assessment of three primary subtypes; inattention, hyperactivity, and impulsivity. Accompanying the primary subtypes are memory problems, restlessness, emotional liability, and problems with self-concept.

Some of the defined symptoms can be considered highly subjective and even obscure such as “often forgetful in daily activities”, “often on the go”, and “often fidgets with hands or feet” (*DSM-IV-TR*; American Psychiatric Association, 2000). The *DSM-IV-TR* (2000) states that 6 or more inattention symptoms and 6 or more hyperactivity and impulsivity symptoms must occur for at least 6 months to a degree that is maladaptive for a diagnosis of ADHD to be made. Though this 6 month, multimethod assessment is considered to be the standard, the average ADHD assessment and diagnosis is completed in 15-45 minutes (Chan, Hopkins, Perrin, Herrerias, & Homer, 2005).

*Inattention in ADHD*

Attention is a cognitive function where an individual selectively focuses on a specific stimulus or group of stimuli while disregarding others. Often, this process is interrupted by a phenomenon termed *attentional capture* (Most, Scholl, Clifford, & Simmons, 2005). Most et al. (2005) found that providing individuals with *distractor* stimuli can lead to unnoticing certain objects. These findings suggest that attention, like working memory, has a somewhat limited capacity for the amount of stimuli that can be focused upon and properly interpreted synchronously. This capacity, like many cognitive functions, varies across different individuals.
The cognitive functions of the brain, such as attention and memory, stem from neurological processes that have been observed to be adaptable and malleable mechanisms (Robinson-Riegler, 2010). Even within a single individual, these functions are strongly affected by culture, environmental exposure, and learning. Tang et al. (2006) found that our biological encoding of numbers may be determined by our reading experiences during language acquisition, a great example of how culture can influence cognitive function. While standardized cognitive functionality and capability exist, general cognition and cognitive ability inherently variable.

In a culture where multitasking is increasingly encouraged, having the capacity of one’s attention met, or being fully stimulated, is becoming more common. Managing multiple stimuli synchronously has become a norm for many children, adolescents and adults. Playing with toys while watching cartoons, texting one friend while talking to another, listening to music while reading a book or participating in a conference call while rigorously taking notes are hardly extraordinary circumstances in today’s culture. In fact, these circumstances are considered the daily norm for many people and are becoming more and more common. Particularly for children with ADHD, being overstimulated can even improve performance in certain tasks (Abikoff, Courtney, Szeibel, & Koplewicz, 1996).

Multitasking in a classroom environment, however, is often frowned upon or even discouraged. It is much more common practice to instruct students to give undivided attention to a single stimulus, a process found to be difficult for many students with ADHD. Students with ADHD have exhibited significantly lower rates of academic
engagement and higher rates of off-task behaviors than non-ADHD students (Vile Junod, DuPaul, Jitendra, Volpe, & Cleary, 2006). Perhaps discouraging off-task behaviors is counter-productive.

According to the *DSM-IV-TR* (2000), distractions or *extraneous stimuli* appear to be at the center of the ADHD diagnosis. Extraneous stimuli are defining factors in inattention and memory and can lead to behavior deemed to be hyperactive and impulsive. Problems adjusting to a school setting and performing academically may also lead to problems with self-concept and emotional liability; the other remaining ADHD subtypes.

Extraneous stimuli can be as explicit as a nearby child talking or as subtle as differences in object color. In many ADHD studies, such as a study on distractibility by Adams, Finn, Moes, Flannery, & Rizzo (2009), extraneous stimuli are placed within noticeable distance of participants in the study and increase the frequency of distraction which, in turn, decreases scores on tasks that require attention.

**Study Aims**

The purpose of this study is to explore whether systematically providing a kinesthetic task improves performance in reading and listening comprehension. Rather than discourage off-task behavior, a second task will be provided to decrease the potential for further distraction from the primary task. For the purpose of this study, we will refer to this technique as *stimulus regulation*.

Participants who have been screened for ADHD will be provided with reading and listening comprehension exams in a simulated study environment. The control
condition will experience no stimulus regulation. In the second condition, or *stimulus regulation* group, participants will be given a basic kinesthetic task as a secondary stimulus while completing the reading and listening comprehension tasks. We hypothesize that there will be improvements in performance in the stimulus regulation group. A Tangle Toy will be used as the secondary stimulus in the stimulus regulation group. The Tangle Toy is the Tangle Therapy line developed by Richard X. Zawitz of Tangle Creations as an ergonomic, manipulative device for stress relief and hand therapy. The Tangle Toys used in this study were donated by Tangle Creations.
METHODS

Participants

Participants were 25 adult undergraduate students of Kent State University. Participants were recruited using the Kent State University Psychology Department Research Subject Pool. Students enrolled in certain majors/courses are required to participate in research. Criteria for participation was that students be 18 years of age or older, have been diagnosed with ADHD or feel strongly that they may have ADHD, and English as a first language due to restrictions of the Kaufman Reading and Listening Comprehension exams. A total of 4 research credits were granted for participating students.

In order to obtain the sample of 25 participants, 50 students were scheduled; 25 did not appear during their scheduled times. Of 25 participants, 17 met the criterion on the Conners Adult ADHD Rating Scales (CAARS) of t-scores greater than the population mean ($t > 50$) on the inattention/memory problems subtype scale and/or t-scores greater than the population mean ($t > 50$) on the ADHD index and less than 8 on the inconsistency index. Of the 17 that met the criterion on the CAARS, 8 were male, 9 were female; ages ranged from 19 to 23 (mean = 20), 4 were currently taking ADHD medication, 13 were taking no ADHD medication, 7 had t-scores higher than 65 in either the inattention or ADHD index CAARS subscales, 7 had been previously diagnosed with
ADHD and 10 had not been diagnosed. Of the 8 participants who did not meet the aforementioned criteria, 2 were due to inconsistency index scores higher than 8 and 6 did not score higher than the population mean (r ≤ 50) on either the inattention/memory problems subtype scale or the ADHD index. Table 1 contains a description of the sample.

**Measures**

The Conners Adult ADHD Rating Scales Short Self-reporting form (CAARS-S:S; Conners, Erhardt, Sparrow, & Conners, 1999) is a 26 item self-report questionnaire which contains nine empirically-derived scales that help assess inattention, memory problems, impulsivity, emotional liability, hyperactivity, restlessness, and problems with self-concept. In addition to the DSM-IV ADHD symptom measures, it also includes a 12 item ADHD index to help identify participants who may benefit from further clinical evaluation and an inconsistency index. The form is a hand scoring, pencil and paper format for individuals 18 and older and takes approximately 10 minutes to complete. The CAARS-S:S has a test-retest reliability of r = 0.85 to 0.91, internal consistency from r = 0.80 to 0.89, and was normed on 1,026 non-clinical adults. Discriminant validity data between the CAARS Short Observer Forms and the DSM-IV ADHD Symptom Subscales displayed correlations of r = .87 in both men and women between the CAARS Inattention and Memory Problems Subscales and the DSM-IV Inattention Symptom Scale (p < .05) and r = .87 in men and r = .81 in women between the CAARS ADHD Index and the DSM-IV Total ADHD Symptom Scale (p < .05). Construct validity data between the...
CAARS Short Self-Report Scales and the CAARS Short Observer Scales displayed correlations in the Inattention and Memory Problems subscales of $r = .43$ in men and $r = .41$ in women ($p < .05$) and in the ADHD Index of $r = .52$ in men and $r = .53$ in women ($p < .05$; Conners, et al. 1999).

The Kaufman Test of Educational Achievement, Second Edition (KTEA-II; Kaufman & Kaufman, 2004) is a standardized achievement test used to measure math, reading, written language and oral language skills for children and adults ranging from ages 4 to 25. The KTEA-II has word recognition and reading and listening comprehension tests, as well as alternate forms to measure progress or response to intervention and age and grade based standard scores ($M=100$, $SD=15$). The internal reliability coefficients range from $r = 0.77$ to 0.85 with overall reliability from $r = 0.87$ to 0.95, and test-retest over $r = 0.90$. Discriminant validity data between the KTEA-II subtests and composites and the Wechsler Individual Achievement Test, Second Edition (WIAT-II; Wechsler, 2001) subtests and composites for grades 6-11 displayed correlations of $r = .69$ between the KTEA-II Reading Comprehension and the WIAT-II Reading Comprehension and $r = .72$ between the KTEA-II Listening Comprehension and the WIAT-II Listening Comprehension. Additional discriminant validity data between the KTEA-II and the Woodcock-Johnson Tests of Achievement, Third Edition (WJ III ACH; Woodcock, McGrew, & Mather, 2001) for grades 6-10 displayed correlations of $r = .67$ between the KTEA-II Reading Comprehension and the WJ III ACH Reading Comprehension and $r = .68$ between the KTEA-II Listening
Comprehension and the WJ III ACH Listening Comprehension (Kaufman & Kaufman, 2004).

Procedure

Participants entered a simulated study environment with a single test administrator (Christopher N. Spanos). The environment is designed to simulate the general atmosphere of a typical classroom with distractions such as a clock, posters on the wall, 2 windows within view, and notes written on a whiteboard with colorful marker. Participants completed a consent form (see Appendix A) along with a questionnaire regarding demographics, academic performance and personal experiences with ADHD (see Appendix B). Students then completed the CAARS-S:S followed by the Kaufman Word Recognition subtest to establish a reading level for the Reading Comprehension portion of the exam. A within-subjects design was used with counterbalancing to eliminate any order effects between participants who manipulated the Tangle during the first assessment of reading and listening comprehension (N = 9) and those manipulating the Tangle during the second assessment of reading and listening comprehension (N = 8). Order of administration was systematically determined to correct for any inequality across groups; the first participant was enrolled in the stimulus regulation condition second and the order of conditions for all of the following participants was opposite of the last participant. All participants were administered the Kaufman Test of Educational Achievement Reading and Listening Comprehension forms A first and forms B second.
Responses to the Word Recognition, Reading Comprehension, and Listening Comprehension subtests were given orally.

Half of the participants were first administered the Reading Comprehension and Listening Comprehension subtests of the Kaufman Test of Educational Achievement with no secondary stimulus provided. Participants who fiddled with any devices of their own (pens, cell phones, etc.) were instructed to put these devices away during the testing period. Following completion of these assessments, participants were given a 3 to 5 minute break. Participants were then provided a Tangle Toy as a secondary stimulus and a 3 to 5 minute period to familiarize themselves with the device. Participants were instructed to utilize the Tangle for the remainder of testing. Finally, participants were administered the alternate forms of both the Reading Comprehension and Listening Comprehension subtests of the Kaufman Test of Education Achievement while simultaneously manipulating the Tangles. Participants who discontinued using the Tangle Toy were reminded to continue using the device during the remainder of that testing period.

The second half of participants was given the Tangles first along with the 3 to 5 minute familiarization period and administered the Kaufman Reading Comprehension and Listening Comprehension subtests while manipulating the Tangles. Following a 3 to 5 minute rest period, these participants were then given the alternate forms of the exams without access to the Tangle.
RESULTS

A paired t-test was used to analyze the data. Participants who met the criterion of the CAARS-S:S (N = 17) had statistically significantly higher reading scores in the stimulus regulation condition ($t = 4.978$, $p < .001$) than reading scores of the control condition. Difference in reading scores had a large effect size (Cohen’s $d = 1.322$). Tables 2 and 3 contain descriptions of these results.

Listening scores of participants who met the criterion of the CAARS-S:S (N = 17) were statistically significantly higher in the stimulus regulation condition ($t = 3.165$, $p < .01$) than in the control condition. Difference in listening scores had a medium effect size (Cohen’s $d = 0.77$). Tables 4 and 5 contain descriptions of these results.

There was no significant difference on chi-square tests of KTEA-II Reading and Listening Comprehension and age, gender, grade point average, ADHD diagnosis, medication, or test order and scores. No significant relationships were found between CAARS Inattention and ADHD Index scores and KTEA-II Reading and Listening Comprehension scores with or without tangles ($p > .3$ for all correlations).
DISCUSSION

The results of this research found significant increases in reading and listening scores in participants under the stimulus regulation condition. These findings suggest that, rather than deprive individuals with ADHD of stimuli, integrating additional stimuli can increase academic performance, specifically in reading and listening comprehension, for adult students with ADHD.

In many school settings where focus on a single stimulus is common practice and encouraged, allowing students who have difficulty with inattention and distraction to utilize a similar, non-disruptive behavioral technique could be beneficial. A small, kinesthetic task, such as the one used in this study, can be easily implemented into a daily routine without disturbing the overall learning environment while increasing academic performance for the individual. Additional research is needed to determine if those who have difficulty with reading and listening comprehension tasks during study periods may have success implementing these same techniques.

The findings of this study are compatible with those of Abikoff et al. (1996) who found that children with ADHD experienced improved arithmetic performance in the presence of auditory stimulation. The present findings in conjunction with those of Abikoff et al. support the need for further research on the underarousal/optimal stimulation theory. This theory postulates that, during tedious or routine tasks, children with ADHD perform better when engaging in self-induced stimulation or in the presence
of external stimulation (Zentall & Zentall, 1983). These findings support the need for further research evaluating the impact of stimulation on academic performance in individuals with ADHD symptoms.

Like all studies, this study has its limitations. While some students in the study had been diagnosed with ADHD, and all were under the inclination that they had the potential for diagnosis, not all participants had indeed been clinically diagnosed. Furthermore, the Conners Adult ADHD Rating Scales Short Self-reporting form is a screening tool only. A score higher than the mean on any of the CAARS subscales is by no means sufficient for a diagnosis of ADHD. A similar study with a full ADHD assessment protocol is necessary to clarify these concerns.

Lastly, considering that all participants were not necessarily ADHD diagnosed, the effects of the stimulus regulation behavioral technique may not be limited to individuals with ADHD. This study particularly recruited participants who had been diagnosed or felt strongly that they fit the ADHD diagnosis and analyzed results of individuals who scored higher on the CAARS:S-S than the mean in areas of inattention, memory problems, and the overall ADHD index. A similar study with participants under no predispositions could help clarify the applicability of the stimulus regulation behavioral technique.
REFERENCES


Mayes, R., Bagwell, C., & Erkulwater, J. L. (2009). Medicating children: ADHD and
pediatric mental health. Harvard University Press.


TABLE 1: Description of Participants

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>17</td>
<td>4</td>
<td>19</td>
<td>23</td>
<td>20.00</td>
<td>1.458</td>
</tr>
<tr>
<td><strong>CAARS Inattention Score</strong></td>
<td>17</td>
<td>38</td>
<td>42</td>
<td>80</td>
<td>59.00</td>
<td>10.914</td>
</tr>
<tr>
<td><strong>CAARS ADHD Index Score</strong></td>
<td>17</td>
<td>36</td>
<td>42</td>
<td>78</td>
<td>56.47</td>
<td>9.063</td>
</tr>
<tr>
<td><strong>Valid N (list-wise)</strong></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2: Means and Standard Deviations of Reading Scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Score With Tangle</td>
<td>102.00</td>
<td>17</td>
<td>8.860</td>
<td>2.149</td>
</tr>
<tr>
<td>Reading Score Without Tangle</td>
<td>94.94</td>
<td>17</td>
<td>11.33</td>
<td>2.749</td>
</tr>
</tbody>
</table>
### TABLE 3: Paired Samples t-Test of Reading Scores

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Correlation</th>
<th>Cohen’s d</th>
<th>t</th>
<th>df</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Score With Tangle &amp; Reading Score Without Tangle</td>
<td>17</td>
<td>.860</td>
<td>1.322</td>
<td>4.978</td>
<td>16</td>
<td>.000*</td>
</tr>
</tbody>
</table>

* Denotes a significance of P < .001
TABLE 4: Means and Standard Deviations of Listening Scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening Score With Tangle</td>
<td>102.00</td>
<td>17</td>
<td>11.180</td>
<td>2.712</td>
</tr>
<tr>
<td>Listening Score Without Tangle</td>
<td>96.35</td>
<td>17</td>
<td>10.500</td>
<td>2.547</td>
</tr>
</tbody>
</table>
TABLE 5: Paired Samples t-Test of Listening Scores

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Correlation</th>
<th>Cohen’s d</th>
<th>t</th>
<th>df</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening Score With Tangle</td>
<td>17</td>
<td>.771</td>
<td>.770</td>
<td>3.165</td>
<td>16</td>
<td>.006**</td>
</tr>
<tr>
<td>&amp; Listening Score Without Tangle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Denotes a significance of P < .01
APPENDIX A: CONSENT FORM

Informed Consent to Participate in a Research Study

Study Title: ADHD & Stimulus Regulation

Principal Investigator: Christopher Spanos, Dr. Beth Wildman PhD

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. You will receive a copy of this document to take with you.

Purpose: To help better understand the roles of distraction in relation to ADHD and potentially uncover ways to limit the adverse effects on attention and examination scores in a classroom setting.

Procedures
First, you will be asked some questions about your experiences with ADHD and complete a self-reported assessment that measures the possible presence and severity of ADHD symptoms (This is in no way a diagnosis of ADHD). This part of the study should take less than 30 minutes. Some people will be asked to continue and complete some short readings and answer questions about the readings. If you are asked to continue and decide to continue, your involvement should last approximately another hour.

Benefits
Participation in this study will help us to better understand the roles of distractions and ways to possibly limit the way they affect attention and scores on examinations in a classroom setting.
**Risks and Discomforts**
There are no foreseeable risks or discomforts associated with this research.

**Privacy and Confidentiality**
No identifying information will be collected. Your signed consent form will be kept separate from your study data, and responses will not be linked to you. Results that are unlinked to your personal data will be sent to the organization that has provided the secondary stimuli for the research (Tangle Creations).

**Compensation**
If you are enrolled in a psychology class that gives credit for experimental participation, you will receive one point for your participation in the questionnaire regarding your experience with ADHD. If you are asked to continue and decide to continue and are enrolled in a psychology class that gives credit for participation, you will receive an additional 2 points. All participants in the reading portion, regardless of enrollment in a psychology class that gives credit for research participation, will be entered in a drawing for a $10 gift card to Target. Participants will have a 1 in 5 chance of winning a gift card.

**Voluntary Participation**
Taking part in this research study is entirely up to you. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. You will be informed of any new, relevant information that may affect your health, welfare, or willingness to continue your study participation.

**Contact Information**
If you have any questions or concerns about this research, you may contact Christopher Spanos at cspanos@kent.edu or Dr. Beth Wildman at 330.672.2119. If you have any questions or concerns regarding ADHD and any assistance that can be provided to you, please contact Student Accessibility Services at 330.672.3391. This project has been approved by the Kent State University Institutional Review Board. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at 330.672.2704.

**Consent Statement and Signature**
I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree to participate in this study. I understand that a copy of this consent will be provided to me for future reference.
APPENDIX B: ADHD QUESTIONNAIRE

ADHD Questionnaire

1. Participant Date of Birth: / / 

2. What is your level of study? (circle one): A. Freshman B. Sophomore C. Junior D. Senior E. Graduate Student

3. What is your current status? A. Ohio Resident B. Out of State Student C. Other

4. What is your current major/minor?

____________________________________________

5. What is your current GPA? A. 3.5-4.0 B. 3.0-3.5 C. 2.5-3.0 D. 2.0-2.5 E. < 2.0

6. Have you ever been diagnosed with ADHD? A. Yes B. No

   If Yes, How old were you when you were diagnosed? ____________

   If Yes, were you diagnosed by (check all that apply):
   ___ Primary Care physician ___ Psychiatrist ___ Therapist or Counselor
   ___ Neurologist ___ School ___ Other

7. Are you currently taking medication for ADHD? A. Yes B. No

8. Do you feel ADHD has a negative effect on your academic performance? A. Yes B. No