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# ADHD Symptomatology, Academic Dishonesty, and the Use of ADHD Stimulant Medications Without a Prescription

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## 1. Introduction

Concern about the misuse of stimulant medications for Attention Deficit Hyperactivity Disorder (ADHD) among college students has been increasing in recent years, with numerous studies reporting widespread illicit use of the medications. Students who use stimulant medications without a prescription often report that they use stimulants for academic reasons, although recent research suggests that many students may be self-medicating undiagnosed symptoms of ADHD (Peterkin, Crone, Sheridan & Wise, 2011). Although researchers have begun to examine the risk factors and correlates of illicit stimulant use, questions remain about how students who use and do not use the medications view stimulant use and the degree of academic distress among those using stimulants.

ADHD has been characterized as an inability to sustain attention, impulsivity, and hyperactivity (Weyandt & DuPaul, 2008). Affecting 3-7% of the school-aged population, it was previously thought to be limited to childhood. However, it is now recognized that ADHD symptoms frequently continue into adolescence and adulthood. For instance, Biederman, Mick and Faraone (2000), studied 19-year-old boys who had been diagnosed with ADHD as children and found that as many as 90% continued to exhibit at least sub-threshold levels of ADHD symptoms. In these cases, symptoms tend to present themselves differently. For example, the hyperactive motor activity expressed in a school aged child is more likely to manifest itself as mental or emotional restlessness in an adult.

ADHD is often treated by a combination of behavior modification techniques and stimulant medications (Svetlov, Kobeissy, & Gold, 2007). Stimulant medications include methylphenidate (MPH) and amphetamines which are dispensed under the brand names Adderall, Focalin, Concerta, or Ritalin. These medications work on the dopamine and noradrenaline systems in the brain, and can help to reduce fatigue, increase attention and alertness, and suppress appetite. MPH has been shown to work by binding to the dopamine transporter and inhibiting dopamine uptake. Amphetamines, on the other hand, penetrate the cell membrane through transport and diffusion in order to interact with the vesicular monoamine transporter-2. Vesicular dopamine is displaced and a newly synthesized intraneuronal monoamine is activated by means of reverse transport. This can result in a

rapid build-up of synaptic monoamine, which does not occur in the use of MPH; thus increasing the abuse potential in amphetamines over MPH (Svetlov et al., 2007), although abuse remains a possibility with MPH.

The abuse potential of these medications increases as people begin to share or misuse their prescription, or obtain such medications without a prescription. When prescribing a stimulant medication, physicians begin with a low dose, and slowly increase to therapeutic levels in order to reduce the risk of addiction and side effects. Along with the benefits, stimulant medication use also comes with potential side effects; such as headaches, stomach aches, sleep problems, and tics (Hall, Irwin, Bowman, Frankenberger & Jewett, 2005). These side effects can be minimized with prescriber supervision, however those using without a prescription do not have the benefits of these precautions (Svetlov et al., 2007).

Stimulant medications are known as “universal performance enhancers”, because they increase attentiveness and wakefulness in all populations; child or adult, ADHD or not (Svetlov et al., 2007). However, it is important to note that multiple studies have shown that ADHD medications do not improve academic ability or cognitive skills, such as adaptability, planning, and acquisition of new information (For review, see Advokat, 2010). Despite the lack of evidence for cognitive enhancement, there is a widespread belief, even among those who do not use stimulant medications at all, that these medications will help improve academic achievement (Advokat, Guidry, & Martino, 2008).

The National Survey on Drug Use and Health estimates that roughly 14.2% of full time college students between the ages of 18 and 22 used prescription medications for non-medical reasons at least once between 2002 and 2004 (Ford & Schroeder, 2009). More recent studies indicate higher rates with up to 35% of surveyed undergraduate students reporting the use of stimulant medications without a prescription (DeSantis, Webb, & Noar, 2008; Judson & Langdon, 2009; Wilens et al., 2008). The reasons for illicit use of these medications include experimentation, getting high (Ford & Schroeder, 2009), improving academic performance or weight loss (Advokat, 2009). The use of these medications for recreational purposes is more prevalent between the ages of 18 and 25 than any other age group (Hall et al., 2005). Additionally, some use stimulant medications without a prescription as a means to alleviate some sort of distress (Kadison, 2005). Many believe that stimulant medications are a safe way to maximize performance with minimal risk. With the way these drugs are marketed, many are led to believe that stimulants are a “magic bullet for complex problems”, thus potentially influencing healthy people to seek out such medication use (Kadison, 2005).

Those who have a tendency to misuse stimulant medications may choose to take that route instead of “street substances”, because they are perceived to be safer (Ford & Schroeder, 2009). This is, in part, due to the fact that these medications are considered to be “pure” because they have a known chemical composition. These medications are easier to obtain, and there is less likelihood of arrest. Stimulants are also generally perceived as more socially acceptable (Ford & Schroeder, 2009). Those looking to obtain stimulant medications without a prescription have discovered the ability to do so by buying them off of their peers, or over the internet (Kadison, 2005). Further, the ability to obtain a prescription despite the lack of necessity facilitates the misuse of these medications. Those looking to obtain a prescription for stimulant medications know which symptoms to report to their physicians (Kadison,

2005). In recent studies of adults being assessed for ADHD, between one-fifth and one-half of all patients are believed to have exaggerated their symptoms (Marshall et al., 2010; Sullivan, May, & Galbally, 2007). Given the ease with which symptoms are faked, prescriptions for stimulant medications can be easy to obtain.

One explanation for illicit medication use is the theory of planned behavior (Judson & Langdon, 2009). The theory of planned behavior states that the attitudes, beliefs about social norms, and perceived control work together in order to create intentions predictive of health related behavior. For example, if a student were to believe that the illicit use of stimulant medications were safe and ethical, while simultaneously believing that others feel the same way and the drug will improve his/her ability to control behavior, this student would be likely to use the medication illicitly. In contrast, those who believe such use is wrong, and that others also believe it is wrong are much less likely to use (Judson & Langdon, 2009).

Another theory behind the misuse of stimulant medications is the general strain theory (Ford & Schroeder, 2009). The general strain theory states that there are three elements that contribute to the cause of stress: the failure to achieve positively valued goals, the removal of positively valued stimuli, and the addition of noxious stimuli. From an academic standpoint, good grades and overall academic success would count as a positively valued goal. Those who are unable to meet this goal, regardless of the amount of effort put forth, are likely to experience strain. Dropping of grades or a loss of financial aid, in addition to negative encounters with faculty members can be seen as a removal of positively valued stimuli. Experiencing verbal or physical abuse from peers, and harsh reactions or judgment from faculty would fall under the addition of noxious stimuli. With a collaboration of all three elements, a student is more likely to experience negative affective states. Therefore, academic strain can be related to depression, which in turn is related to the non-medical use of prescription stimulants. In this case, the medication is used as an academic tool by means of providing the ability to stay up later and focus, while also working as an emotional tool in order to escape the stress of daily life (Ford & Schroeder, 2009).

The primary self-reported motivation for stimulant misuse in college is academic (Judson & Langdon, 2009). Reports of misuse seem to be higher in the northeastern part of the United States, in schools where admission requirements are more stringent. Students have also reported discontinuing the use of stimulant medications with a prescription in high school, yet finding it necessary to start up again in college. Additionally, some students admit to stockpiling their medications, and using more than directed in times of high academic demand (Judson & Langdon, 2009).

The choice to use stimulants, then, may be precipitated by stress, fear of failure, and academic struggle, leading students to self-medicate. Students who use stimulant medications without a prescription may also be struggling with undiagnosed symptoms of ADHD. Indeed, a recent study found that 71% of stimulant misusers had a positive screening for adult ADHD (Peterkin et al., 2010), indicating that they had enough symptoms to seek medical attention for an official diagnosis and the use of medication, though not the path to that use, may not necessarily be inappropriate.

ADHD is commonly known for its relation with academic impairment (Weyandt & DuPaul, 2008). In fact, even students with subclinical ADHD struggle academically. These students tend to have greater difficulty weeding out useless information, and honing in on relevant

aspects of a lecture (Norwalk, Norvilitis, & MacLean, 2009). Although subclinical ADHD students have been found to commit less time to studying and achieving goals, those with a clinical diagnosis of ADHD demonstrate further academic impairment. Those with the hyperactive-type of ADHD report less education, lower grades, and more failed courses than students without ADHD by adulthood (Advokat, 2009). Although college students with ADHD tend to have better study skills and a greater record of academic success than those with ADHD who do not attend college, they still function below the level of college students without the disorder (Weyandt & DuPaul, 2008). ADHD college students have lower grade point averages, report more academic problems, and are more likely to end up on academic probation than the rest of the college population. In addition, these students are also less likely to attend classes and graduate from the university (Weyandt & DuPaul, 2008).

Regardless of whether students meet criteria for ADHD or not, the use of stimulant medications without a prescription may indicate that students are struggling with adjustment to college. Students with clear motivations to attend college (including those attending for personal or financial gain) have better study habits, higher grade point averages, and a stronger ability to make decisions than students attending college out of expectation or default (Phinney, Dennis, & Osorio, 2006). This is due to a level of “motivational readiness” that those attending for ambiguous reasons seem to lack (Norvilitis, Reid, Ling, & Chen, in press). Motivations are likely to influence how students engage and respond in school settings (Phinney et al., 2006). Students who are driven by the expectations of others, who are attending college out of obligation, or those attending simply to avoid a less desirable option are not as likely to put forth as much effort, and therefore succeed as students attending college with a meaningful purpose. The value that one has in education also influences the motivations and efforts of the college student (Phinney et al., 2006). As one might expect, research indicates that those with ADHD struggle with motivation to attend college (Norvilitis et al., in press).

In addition, those struggling with these types of motivation and academic concerns are likely to be more accepting of other cheating behaviors. These behaviors include copying homework, plagiarizing, and any other type of academic dishonesty or forgery (Engler, Landau, & Epstein, 2008). Although it is estimated that between 66% and 75% of college students participate in cheating behaviors, students are less likely to do so when they are able to display their own level of competence within a particular subject. Another predictor of cheating behavior is the students’ perceptions of their peers’ attitudes towards the concept of cheating itself. Those who believe their friends and classmates partake in cheating behaviors are more likely to cheat as well (Engler et al., 2008). Students who take stimulant medications without a prescription with the intent to better their grades are engaging in a form of academic dishonesty. Regardless of whether or not the medications actually improve cognitive functioning, student who use stimulants without a prescription often do so with the specific intent of improving their grades. The motivation to participate in this type of cheating behavior can be due to a lack of mastery in a subject, or a belief that several others within the school do so as well.

Thus, the present study sought to examine ADHD symptomatology, motivations to attend college, and perceptions of cheating among those who do and do not use ADHD stimulant medication without a prescription. It was expected that the study would replicate prior work indicating that those who use stimulant medication without a prescription would be



more likely to have higher levels of ADHD symptomatology. It was further expected that those who use stimulant medication without a prescription report more default and less career or personal motives to attend college than those who do not report such use. It was also expected that stimulant users would report more acceptance of cheating behaviors and more cheating. In addition, the study examined beliefs about whether stimulant use is a cheating behavior and beliefs about the prevalence of side effects. It was expected that those who use stimulants would underestimate the side effects and that students would view stimulant use as cheating.

## 2. Method

### 2.1 Participants

The 184 participants of this study included 36 male (19.7%) and 147 female (80.3%) college students, with one student failing to report gender. Of these, 42 (22.8%) were between the ages of 18-19, 79 (42.9%) were 20-21, 35 (19%) were 22-23, 7 (3.8%) were 24-25, and 21 (11.4%) were 26 and older. Further, 16 (8.7%) were in their freshman year of school, 43 (23.4%) were sophomores, 76 (41.3%) were juniors, 46 (25%) were seniors, and 3 (1.6%) were fifth-year seniors or beyond. In addition, 21 (11.5%) were natural science majors, 117 (63.6%) were in social science, 16 (8.7%) were in arts and humanities, 4 (2.2%) education, and 25 (13.7%) were majoring in applied fields, with one student failing to report a major.

The majority of the participants were white ( $n = 125$ , 68.7 %), 43 (23.6%) were African-American, 10 (5.4%) Hispanic, 2 (1.1%) Asian, and 2 (1.1%) Native American, with 2 students failing to report ethnicity. Participants had a range of grade point averages (GPA), with 33 (18.0%) having a GPA from 3.51-4.0, 49 (26.6%) with 3.01-3.5, 59 (32.2%) with 2.56-3.0, 33 (18.0%) with 2.01-2.5, and 9 (4.9%) with a GPA of 2.0 or below, with one student failing to report a GPA.

Five (2.7 %) participants reported that they were diagnosed with ADHD in the past but no longer met criteria for the disorder. Ten (5.4%) reported a current diagnosis of ADHD.

### 2.2 Materials and procedure

Following the completion of written informed consent, participants were asked to complete a survey consisting of demographic information and several scales to assess several factors:

**Attention Deficit Hyperactivity Disorder.** ADHD was assessed using the Current Symptoms Scale (CSS; Barkley & Murphy, 1998). The CSS is a self-report measure comprised of 18 symptoms, with 9 items each comprising the inattentive and hyperactivity subscales. All items are scored on a scale ranging from 1 (*Never or Rarely*) to 4 (*Very Often*). Higher scores indicate more ADHD symptoms. The authors recommend a cut-off score of 1.5 standard deviations above the mean to suggest possible ADHD (Barkley & Murphy, 1998). Test-retest reliability of this measure is good ( $r = .82$ ) and internal consistency is adequate (Cronbach's alpha .63 to .75; Aycicegi, Dinn, & Harris, 2003). In the present study, internal consistency was .84 for the inattentive scale and .79 for the hyperactivity scale.

In addition, participants were asked if they have ever been diagnosed with ADHD but no longer meet criteria for the disorder, if they are presently diagnosed with ADHD, and if they believe that they should be screened for ADHD.

Item	Mean (SD)
It is ok to take stimulant medications that are prescribed while studying the night before a test.	2.72 (1.22)
It is okay to take memory enhancing vitamins throughout the semester to try to get ahead in school.	2.79 (1.11)
It is considered cheating to work in a group and not contribute. (R)	3.23 (1.16)
It is considered cheating to lie about family circumstances in order to get an extension on an assignment. (R)	3.36 (1.25)
It is okay to copy another person’s work, as long as I cite it.	3.41 (1.23)
It is okay to take a sedative before a test to calm my nerves.	3.51 (1.07)
It is not okay to copy another person’s work under any circumstances. (R)	3.54 (1.33)
If I ran out of time to do my homework, it is okay to copy a friend’s homework to get an A, as long as I understand the material.	3.57 (1.20)
It is okay to copy a friend’s homework, as long as I return the favor.	3.75 (1.15)
It is okay to take stimulant medications that are not prescribed while studying the night before a test.	3.84 (1.07)
I am cheating myself if I do not take the time to truly learn the Information provided in class. (R)	3.94 (1.08)
If I do not understand the material, it is okay to copy a friend’s homework so I can get an A.	3.95 (1.04)
It is okay to copy another person’s work, as long as it does not happen often.	4.13 (1.00)
It is okay to copy another person’s work and not cite it, as long as it is not the entire assignment.	4.22 (0.93)
It is okay copy another person’s work, as long as nobody else is aware of it.	4.25 (0.88)
If I had trouble sleeping the night before, it is okay to copy a friend’s test.	4.28 (0.86)

Note. Means for (R) items have been reverse scored to be consistent with the other items. Lower scores indicate greater acceptance of the behavior.

Table 1. Acceptability of cheating scale

**Motivation to Attend College.** Motivation to was assessed using the Student Motivation for Attending University-Revised (SMAU-R; Phinney et al., 2006). The SMAU-R is comprised of 7 subscales designed to tap different motivations students may have for attending college. These include Career/Personal (Sample item: “To achieve personal success”; 10 items); Humanitarian (“To contribute to the welfare of others”; 4 items); Default (“There are few other options.”; 6 items); Expectation (“Parents/family would be very disappointed.”; 5 items); Prove Worth (“To prove to others that I can succeed in college.”; 3 items); Encouragement (“I was encouraged by a mentor or role model.”; 3 items) and Help Family (“It would allow me to help parents/family financially”; 2 items). The authors reported good to strong reliabilities, ranging from .70 (Encouragement) to .87 (Help Family). Items were scored on a 1 (*Strongly Agree*) to 5 (*Strongly Disagree*) scale. Thus, higher scores indicate lower levels of agreement with each motivation. Subscale composite scores are averages of the items in the factor, to allow

comparisons between the subscales. In the present study, reliability varied between subscales, but was generally good (Career/Personal:  $\alpha = .76$ ; Humanitarian:  $\alpha = .80$ ; Default  $\alpha = .71$ ; Expectation:  $\alpha = .83$ ; Prove Worth:  $\alpha = .85$ ; Encouragement:  $\alpha = .75$ ; Help Family:  $\alpha = .78$ ).

**Acceptability of Cheating.** Sixteen items were created for the present study to examine acceptability of various cheating behaviors and attitudes toward various behaviors (See Table 1). All items were rated on a 5-point scale from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*). Internal consistency for the new scale was good ( $\alpha = .85$ ). Higher scores indicate less approval of cheating. Although the total score is intended to be used as an indication of overall acceptability of cheating, it is also interesting to look at the mean scores for each item to examine the relative acceptability of individual behaviors and attitudes.

**Perceptions of Psychostimulants.** Nineteen items were created to examine perceptions of psychostimulant use. Each item was rated on a 5-point scale from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*). Items were grouped into three factors: beliefs about stimulant use for ADHD, beliefs about stimulant use without ADHD, and attitudes toward the acceptability of stimulant use. Principal components factor analysis with varimax rotation indicated support for the three factor model, with two items failing to load on any factor, creating a 17-item final scale (See Table 2). Internal consistency of the three subscales was good (Beliefs about Stimulant Use for ADHD,  $\alpha = .85$ ; Beliefs about Stimulant Use without ADHD,  $\alpha = .91$ , and Attitudes toward the Acceptability of Stimulant Use,  $\alpha = .78$ ).

Item
Factor 1: Beliefs about Stimulants without a Prescription (Initial Eigenvalue 6.49)
Stimulant medications help those without ADHD to improve their grades.
Stimulant medications help those without ADHD sustain attention.
Stimulant medications help those without ADHD to complete tasks on time.
Stimulant medications help those without ADHD to make new friends.
Stimulant medications help those without ADHD to think more critically.
Stimulant medications help those without ADHD to learn new material faster.
Stimulant medications work better on those without ADHD, because they are less impaired.
Factor 2: Beliefs about Stimulants for ADHD (Initial Eigenvalue 2.83)
Stimulant medications help those with ADHD improve their grades.
Stimulant medications help those with ADHD sustain attention.
Stimulant medications help those with ADHD complete tasks on time.
Stimulant medications help those with ADHD to think more critically.
Stimulant medications help those with ADHD to learn new material faster.
Factor 3: Attitudes about the Acceptability of Stimulant Use (Initial Eigenvalue 1.87)
Stimulant medications work the same on those with and without ADHD.
It is safe to take stimulant medications without a prescription, as long as the dose is what a doctor would prescribe if I were to have a prescription.
It is safe to take stimulant medications without a prescription, as long as I express symptoms of ADHD.
It is safe to take stimulant medications because they are harmless.
It is socially acceptable to take stimulant medications.

Table 2. Perceptions of Stimulant Use



**Stimulant Use.** A single item asked if participants currently take stimulant medication without a prescription or not. In addition, five items asked how often participants have taken stimulant medications in the past six months to improve school work, to get high, to get more energy or stay up late, to enhance social interactions, and to lose weight. These five items were summed to create a combined stimulant use score. Participants were also asked which of these reasons was their primary reason for the use of stimulant medications without a prescription.

In addition, participants were asked if they have a prescription for psychostimulants and if they have friends who take stimulant medication with or without a prescription.

Finally, to assess knowledge and experience of side effects, participants completed two scales. The first asked if it is possible to experience various symptoms on a five-point scale from never to very often and the second asked if participants had experienced these symptoms on a three-point scale (never, once, more than once). Ten side effects were listed, six that are actual side effects (headache, nausea, stomachache, changes in appetite, sleeplessness, and dizziness) and four that are not (sore throat, temporary numbness in arms or legs, runny nose, higher sensitivity to pain). For the knowledge of side effects, mean scores were calculated for the actual side effects and the non-side effects, allowing for the calculation of a difference score. Lower scores indicated lower levels of knowledge of actual side effects.

### 3. Results

#### 3.1 Prevalence of stimulant use

A total of 18 participants (17.7%) reported currently using stimulant medications without a prescription, and 14 participants (7.8 %) reported using such medications with a prescription. In addition, 50 students (27.2%) reported using non-prescription stimulants at some point in the last six months. The primary motivation for illicit use of stimulant medications was to get high (44%), followed by staying up late (20 %), improving grades (18 %), and losing weight (18 %).

Eighty-three participants (45.6%) reported having a friend who takes stimulant medications without a prescription. Those who reported having friends who take stimulants were more likely to report use themselves [ $F(1, 171) = 16.65, p < .001, \eta^2 = .09$ ].

A total of 42 (24 %) participants (both prescribed and illicit users) reported experiencing at least one side effect while using stimulant medication. Side effect questions asked if the person had ever experienced the particular side effect, so it is possible that those who had used stimulants more than six months ago but not in the last six months also endorsed these items. The most commonly reported side effect was sleeplessness, with 36 (19.6%) participants reporting experiencing this at least once following use.

#### 3.2 Attitudes toward and knowledge of stimulant use

Students distinguished between the use of stimulants for those with ADHD and stimulants for those without ADHD. Beliefs about stimulant use for ADHD were very modestly related to attitudes toward the acceptability of stimulant use ( $r = .15, p = .04$ ), whereas beliefs about stimulant use without ADHD were much more strongly related to attitudes toward the acceptability of stimulant use ( $r = .41, p < .001$ ).

As might be expected, those who reported more use of stimulants had more positive beliefs about stimulants for ADHD ( $r = .18, p = .02$ ), stimulant use without ADHD ( $r = .22, p = .004$ ), and the overall acceptability of stimulants ( $r = .32, p < .001$ ). Knowledge of the side effects of stimulant use was related to actually having experienced side effects ( $r = .18, p = .02$ ), but was not related to beliefs about stimulant use for ADHD ( $r = -.10, p = .19$ ), beliefs about stimulant use without ADHD ( $r = -.05, p = .48$ ), or the acceptability of stimulant use ( $r = .04, p = .56$ ).

### 3.3 Relationship between stimulant use, attitudes toward cheating, and the motivation to attend college

There was a relationship between acceptance of cheating and illicit stimulant use ( $r = .40, p = .001$ ), such that those who used stimulants were more accepting of cheating. Illicit stimulant use was also related to students only attending college to prove someone wrong ( $r = .19, p = .01$ ), or because they did not know what else to do with their lives ( $r = .16, p = .04$ ). Stimulant use was unrelated to the remaining motivations to attend college (Career  $r = -.08, p = .28$ , Help Family  $r = -.05, p = .55$ , Encouragement from Others  $r = -.04, p = .61$ , Expectation of Others  $r = .02, p = .83$ , and Humanitarian reasons  $r = .01, p = .90$ ).

### 3.4 Stimulant use, attitudes toward stimulant use, and ADHD symptomatology

Illicit stimulant medication use was related to self-reported inattentive ( $r = .21, p = .007$ ) and hyperactive symptoms ( $r = .29, p < .001$ ). Further, those who reported a belief that they should be assessed for ADHD were also more likely to report stimulant use [ $F(1, 167) = 27.21, p < .001, \eta^2 = .14$ ].

## 4. Discussion

The results of the present study support prior research indicating that the nonprescription use of stimulant medications is widespread on campus (Ford & Schroeder, 2009; Judson & Langdon, 2009). Although the primary reported reason is to get high, a number of students reported use to improve grades or to stay up late. One possible reason for needing assistance to stay up late is to get the necessary energy to complete school work.

The use of stimulants without medical supervision is unsafe for many reasons and there are many well-established side effects. However, the present study identified a number of other concerns associated with their use. Notably, those who reported use were also more likely to be accepting of academic dishonesty. They also report attending college for reasons other than the desire to truly learn. These are the students who are attending for reasons of default or expectation. That is, they are in college because they were not sure what else they could be doing or because someone expected it of them. This combination of motivations to attend college and acceptance of cheating suggests that these students may be floundering in college without direction. Without an intrinsic goal, attending college becomes much more tedious and overwhelming than originally anticipated. This general sense of feeling lost within the college community not only contributes to academic strain, but may lead to distress as well. Indeed, many students who use stimulants without a prescription believe that they should be tested for ADHD. In fact, as also found in the Peterkin and colleagues study (2010), they report more ADHD symptoms than those who do not use stimulants without a prescription, supporting the idea that this is a group that is struggling.

In addition, these students tend to be more likely to have at least one friend who takes stimulant medications without a prescription. That is, those who are accepting of stimulant misuse and cheating behaviors tend to travel in groups with those who maintain similar beliefs. It is possible, then, that their friends are similarly lost in college.

It is difficult to know which came first: the default or expectation motives to attend college, the higher levels of self-reported inattention and hyperactivity, peer use of stimulants or personal stimulant use. What is clear is that simply addressing non-prescription stimulant use will likely not be sufficient. Colleges must address the lack of direction and ADHD symptomatology if they wish to tackle the problem of stimulant use on campus. Although not examined in this study, it is possible that addressing these issues would improve academic performance and increase retention.

On a more positive note, although many students report using stimulants without a prescription, their use is not widely condoned. When asked about the acceptability of various forms of cheating, the non-prescription use of stimulants is about as acceptable as copying homework, which is in the middle of the hierarchy. Thus, the use of stimulants to improve grades is considered more acceptable than cheating on a test or final project, which sits at the top of the cheating hierarchy, but less acceptable than lying about family circumstances to get an extension on an assignment.

Despite the intriguing results and potential implications of this research, there are limitations as well. First, there were not enough male participants to meaningfully investigate any gender differences. Future research should examine this issue. Second, there are questions about the reliability of self-report measures. It is possible that some participants may have been concerned about reporting symptoms or use, despite the anonymous nature of the questionnaire. Given that concern, it is possible that these issues were underreported in the present study.

Overall, however, this study has confirmed prior research on the prevalence of use and expanded that research to examine academic concerns among those who use stimulants without a prescription. Many questions persist, however. Future research should investigate whether any interventions would prove useful in reducing stimulant use and improving motivation to attend college.

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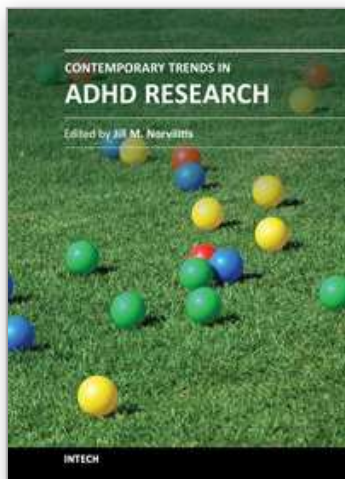
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With many children and adults affected by Attention Deficit Hyperactivity Disorder, researchers strive to understand the underpinnings of ADHD and associated factors on both a basic and applied level. The goal of this volume is to explore some of the broad array of research in the field of ADHD. The 12 chapters cover a variety of topics as varied as postural control, endocrine dysfunction, juvenile justice, and academic outcomes. These chapters will provide valuable insights for students reading about ADHD for the first time, researchers wishing to learn about the latest advances, and practitioners seeking new insight in the field.

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