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The Impact of Alcohol and ADHD Medication Use on GPA, Mental Distress, and Perceived Stress among College Students

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Abstract

Medication for attention-deficit/hyperactivity disorder (ADHD) is frequently abused and misused alongside alcohol on college campuses. The aim of the study was to assess the relationship between participants' alcohol use, mental distress, and academic performance in relation to their illicit use of ADHD medication. An anonymous cross-sectional survey administered online using Google Forms compiled 702 U.S. college students' responses evaluating their drug usage, academic performance, and mental health. ADHD medication use had a positive association ($p < 0.05$) ($p < 0.01$) with hallmarks of mental distress and perceived stress. There was a negative association ($p < 0.05$) ($p < 0.01$) between alcohol use in the last 12 months and feelings of mental distress and perceived stress. There were negative associations ($p < 0.05$) ($p < 0.01$) found between illicit ADHD medication use and hallmarks of GPA. A positive association ($p < 0.05$) was also found between alcohol use in the last 4 weeks and students' positive perceptions of the effectiveness of illicit ADHD medication. These findings on the relationships between illicit usage of ADHD medication and usage of alcohol as it relates to mental health are important in broadening our understanding of some of the most important risk factors that illicit use of ADHD medication and alcohol usage can have on college students.

Introduction

ADHD and Mechanism of Adderall

ADHD, also known as attention-deficit/hyperactivity disorder, is characterized by a persistent pattern of inattention as well as hyperactivity and impulsivity, both of which impair functioning and/or growth (NIMH, 2022). A lack of self-control or acting without thinking can be signs of impulsivity, while a lack of focus or difficulty staying on task can be signs of inattention. Several ADHD diagnoses are linked to micro and macro structural abnormalities in the brain such as incomplete maturation of white and gray matter density in the brain (Gehricke et al., 2017). Additionally, low amounts of the neurotransmitter dopamine in the brain are a defining feature of ADHD. Dopamine deficits in the basal ganglia are associated with a lack of motivation (Volkow et al., 2009). Due to this, people with ADHD could find it easy to engage in interesting tasks but find it harder to focus on less engaging ones. The current medications for ADHD are mostly intended to lessen the symptoms it produces, especially in terms of focus which can affect academic performance in people with ADHD (DuPaul et al., 2021).

Adderall, one of the most well-known ADHD drugs, became clinically available in the 1990s and now accounts for 25% of prescriptions for people with ADHD (Joyce et al., 2007). Adderall, a prescription stimulant, may improve the attention, memory, self-control, and executive function of a person with ADHD (Weyandt et al., 2018). Because ADHD impairs the production of dopamine, norepinephrine, and serotonin, Adderall, which contains a combination of D- and L-amphetamine salts, increases these levels (Weyandt et al., 2018). More specifically, Adderall stimulates the central nervous system, releasing dopamine (Calipari & Ferris, 2013), which increases euphoria, and norepinephrine (Docherty & Alsufyani, 2021), which promotes alertness and combats ADHD-related inattention. Adderall works by promoting the release of dopamine into the synaptic cleft and blocking its reuptake into the presynaptic neuron (Martin & Le, 2022). Long-term Adderall use, however, could have detrimental effects on several body functions like the heart muscles and vascular system which can in turn lead to a higher blood pressure, heart rate, and body temperature (AAC, 2022). Adderall works well to treat the symptoms of ADHD when used as prescribed; however non-prescription abuse of the drug is a problem due to the variety of side effects it may have, ranging from body reactions such as sweatiness and jitters to psychological conditions such as acute anxiety and paranoia (Tardner, 2021).

Mechanism of Alcohol

While it is debated that alcohol usage could provide some health benefits, the damaging effects that alcohol could have on the brain and behavior are more well known. Alcohol is a central nervous system depressant that can cause a variety of impairments after as few as one to two drinks. This includes but is not limited to slow reaction times and slurred speech (NIAAA, 2004). Alcohol affects the functional connectivity of the brain leading to a transient motor dysfunction (Shokri-Kojori et al., 2017). Although the mechanism of how it occurs is not clear, this motor dysfunction is linked to an increase in the GABA(A) receptor (Hanchar et al., 2005) which is the receptor that inhibits nerve transmission. A long-term impact of alcohol is the physical shrinkage of the brain in the frontal lobe region when consumed in moderate to high amounts (Kubota et al., 2001). Previous research has also found negative associations between alcohol consumption and gray and white matter volumes as well as certain gray matter volumes (Daviet et al., 2022). General symptoms may include poor balance, memory, speech, and decision-making (NIAAA, 2022). Students may use alcohol as a way to relieve stress and increase confidence in social situations, mainly in the short term. However, in the long term, alcohol could surge anxieties and fears (Weiss, 1958).

Illicit Usage of ADHD Medication and Usage of Alcohol on College Campuses

Over the past ten years, there has been a significant increase in the non-medical usage of medications to treat attention-deficit/hyperactivity disorder on college campuses. These ADHD medications include Adderall, Ritalin, Concerta, and Vyvanse, among others. Many ADHD medications are commonly used illicitly for studying, earning them the phrase "study drugs" (Begdache, 2016). The American Psychiatric Association estimated that 3% to 7% of people in the school-age population have ADHD in 2000 (Weyandt & DuPaul, 2006). According to Lakhan and Kirchgessner (2012), prescription ADHD medication use rose quickly among children aged 6 to 12 and 13 to 18, reaching 5.1% and 4%, respectively, in 2008. Adderall, a stimulant, can improve concentration and

memory in ADHD patients. This feature made it attractive to many college students to use illegally to enhance their cognitive function (Hightower, 2016) as well as to lessen the symptoms of restlessness and mental distress (Weyandt et al., 2009). According to a study, the overuse of ADHD medication by people without ADHD has been sharply rising, particularly among college students, with usage rates ranging from 5.3% to 34% (Weyandt et al., 2013). Another study looked at trends in college students' use of Adderall, with 51% of seniors, 31% of juniors, 16% of sophomores, and 19% of freshmen taking the drug as a study aid (Kiernan et al., 2016). Males were also shown to be more likely to use Adderall than females (Kiernan et al., 2016)(Low & Gendaszek, 2002). In a study in the mid-Atlantic region, 78% of first-year college students also obtained stimulants from friends with a prescription, either for free or for a price ranging from $1 to $10 (Arria et al., 2008)(Cregin et al., 2021). Unfortunately, because Adderall and other ADHD medications are prescribed drugs, it is believed to be safe by most illicit users oftentimes missing out on the black box warning of the many negative side effects, which can include sudden death (Lakhan & Kirchgessner, 2012).

The controlled substance schedules created by the Diversion Control Division classify substances according to their legal medical uses, abuse potential, and potential for dependence (DCD, 2018). According to the 2018 definition of controlled substance schedules, substances in Schedule II have a high potential for misuse and can cause both severe psychological dependency and physical dependence. ADHD medication such as Adderall, Ritalin, and Dexedrine have been categorized as Schedule II drugs based on these criteria. Given that “study drugs,” which ADHD medication is classified under, have significant abuse potential (Abelman, 2017), it is crucial to look at how commonly Adderall and other prescription stimulants are used by college students who do not have a prescription.

In addition to the misuse of ADHD medication, alcohol usage on college campuses is prevalent. According to the Substance Abuse and Mental Health Services Administration, in a survey distributed in 2019, 52.5% of college students ages 18-22 drank alcohol compared to people of the same age not in college (SAMHSA, 2019). The usage of alcohol on college campuses is influenced by many factors including age, gender, family history, peer pressure and certain substance use disorders (Gilbertson et al., 2008). Additionally, being part of Greek organizations is associated with higher rates of binge drinking compared to not being part of Greek life due to social norms and possible peer pressure (Chauvin, 2012). Both alcohol and Adderall are two substances that are frequently used on college campuses and may have an impact on a student's lifestyle and well-being.

Current Perception on Study Drugs and their Supposed Advantages

College students have high academic standards and a variety of stressors, which may cause them to turn to study drugs. On college campuses with more competitive admission standards and academic environments, ‘study drugs,’ a phrase used for prescription stimulants, are more accepted. Due to these demanding circumstances, drugs like Adderall are widely acknowledged as ways to cope with academic and social expectations (Petersen et al., 2015).

Many college students believe that using stimulants is both morally right and safe for them physiologically. Self-

medication, having moderation, comparing and contrasting options, and avoiding arguments are a few defenses students may offer for using these study drugs (Desantis & Hane, 2010). Students also think that using ADHD medication will help them focus and develop better study habits (Garnier-Dykstra et al., 2012). The knowledge acquired while taking various cognitive enhancers, including Adderall, has instead been shown to worsen or have no change on academic performance (Arria et al., 2017)(Sharif et al., 2021). However, this information is not well known because prescription stimulant use for those alleged benefits is still a hot topic on college campuses.

Many students publicly self-reported their illicit use of stimulants in a secondary study looking at Adderall discussion on prominent social media platforms, even if they did not report it to a doctor (Sarker et al., 2020). In addition, it was discovered that students frequently overstated their use of drugs like alcohol and amphetamines, with their peers encouraging their use (Perkins et al., 1999). Overall, a combination of significant academic pressure and the false notion that Adderall's effects may enhance academic performance encourages students to abuse it as a study aid.

Gaps in the Literature and Current Objectives

Previous studies have described the illicit use of ADHD medication and alcohol as being a common occurrence on many college campuses. They have investigated the main reasons for the abuse of both substances, such as that prescription stimulants increase productivity and that alcohol relieves stress. Additionally, previous studies (Cregin et al., 2021)(Piazza-Gardner et al., 2016) explain the negative impact that the use of both types of substances has on academic performance in the long term. While these studies contribute to a certain understanding of the prevalence and causes of illicit stimulant use on college campuses, there are limited studies that report on the separate and simultaneous usage of alcohol and ADHD medication by college students, specifically in relation to academic productivity, mental distress, and perceived stress.

Alcohol and ADHD medication, either taken independently or jointly, are commonly misused and abused on college campuses to enhance academic productivity. The two main reasons students abuse ADHD medications are to enhance academic performance and to be able to drink higher amounts of alcohol with minimal to no side effects (Benson et al., 2015). The increase in ADHD medication is associated with an increase in alcohol use (Arria et al., 2013; Sepúlveda et al., 2011). Additionally, a lower GPA, lower mood state, and a decrease in cognitive function are all associated with an increase in alcohol consumption (Piazza-Gardner et al., 2016; Howland et al., 2010). Similarly, an increase in illicit ADHD medication use was associated with depression symptoms (Benson & Flory, 2017) and a lower GPA (Benson et al., 2015).

The use of ADHD medication and alcohol could also synergistically increase the negative consequences of each taken separately (Egan et al., 2013). Although all of these studies briefly assess the effects of alcohol and ADHD medication on productivity and mental health, the effects do not take into account specific neuro behaviors such as mental distress and perceived stress. Unlike mental distress, which measures a substantial disorder that could impair judgment and behavior, perceived stress refers to the extent to which events in a person's life are looked at as stressful, uncontrollable, and unpredictable (Phillips, 2015). Therefore, the purpose of this study was to analyze

the impact of independent or simultaneous alcohol and ADHD medication use on mental health and academic productivity in college students, specifically addressing mental distress, perceived stress, and GPA in relation to both types of substance use. To our knowledge, this is a gap in the literature. Our results could provide a framework for supporting the development of educational programs to promote awareness about the widespread issue on college campuses.

Methods

Survey Design

The Binghamton University Institutional Review Board reviewed and approved the study protocol. The survey consisted of questions regarding prescribed or illicit ADHD medication use, indicators of mental distress, perceived stress, academic performance, and alcohol use. The Kessler Psychological Distress Scale (K6) was used to assess mental distress. K6 measures psychological distress through a 6-item self report measure (SOBC, n.d.). In other words, six different feelings, classified as feeling nervous, hopeless, restless or fidgety, worthless, so depressed that nothing could cheer you up, and that everything was an effort, are reported through a 5-point Likert scale ranging from 0 (None of the time) to 4 (All of the time).

Questions about perceived stress were also asked about and reported through a Likert scale, such as how often participants were able to control the important things in their life (EAP, n.d.). The Ontario Student Drug Use and Health Survey (OSDUHS) was used for questions regarding physical and mental well-being along with perceptions and awareness about using alcohol, tobacco, and other drugs (Boak et al., 2020). In regards to demographics, participants were asked questions about their age, gender identity, major, the college or university they were enrolled in, their major, and the region they resided in.

Collection and Distribution

The survey was created on Google Forms and distributed anonymously using several online platforms to reach college students across the US.. The informed consent was included at the start of the survey, informing participants of anonymity and confidentiality. The informed consent also described that no compensation or incentive would be provided for participation in the survey. Additionally, the survey was described to take around 10-12 minutes to complete. Participants were required to be 18 years and older. After reading the consent form, participants had the option to accept or decline taking the survey. Data was collected between September to December 2022.

Statistical Analysis

Pearson's Correlation Coefficient (PCC), SPSS version 25.0, was used to determine associations between variables. PCC measures how closely two variables are related, from the correlation coefficient varying from –1 to 1 (Emerson, 2015). A p value of less than 0.05 was considered statistically significant.

Results

Demographics

A total of 702 participants completed the survey. Participants were asked a series of questions related to demographics including their gender identity, age range, major, current GPA, what college or university they attended, and what region they resided in. 94.7% of participants that completed the survey were in the adolescent age range (18-29). 5.3% of participants were in the age range of 30-39. All other age ranges contained no participants.

A majority of participants were female (60.5%) while the minority were male (35.9%). 3.6% of participants stated to be non-binary, other, or preferred not to say. 57.2% of participants identified themselves as Non-STEM majors which included the Social Sciences such as Psychology and Sociology, Business, Finance, Accounting, and Management Arts while 42.8% identified themselves as STEM majors which was solely the Natural Sciences, such as Biology and Chemistry. 6.3% of participants had a current GPA of 3.0 or below, 34.3% of participants had a GPA of 3.0-3.49, and 59.4% of participants had a GPA of 3.5 or above. A majority of participants (74.6%) noted that they attended Binghamton University while a smaller portion of participants (25.4%) attended other universities or colleges. Lastly, 99.0% of participants reported to reside in North, Central, and South America, Australia, and Europe, while 1.0% noted to reside in Asia, Africa, and the Middle East. Table 1 below depicts each demographic characteristic and their percentages.

Table 1. Percentages of Study Population Demographic Characteristics

Characteristic	**Percentages**
Age Range	
18-29	94.7
30-39	5.3
40-49	0
50 and above	0
Gender Identity	
Male	35.9
Female	60.5
Other	3.6
Major	
Non-STEM: Social Sciences (Psychology, Sociology,	57.2

Characteristic	Percentages
Economics, Anthropology, History, Political Science, Linguistics), Business, Finance, Accounting, Management, Arts (Music, Art, Art History, Dance, English)	
STEM: Natural Sciences (Biology, Chemistry, Neuroscience, Engineering, Math)	42.8
Current GPA	
Below 3.0	6.3
3.0-3.49	34.3
3.5 or above	59.4
College Attendance	
Binghamton University	74.6
Other College/University	25.4
Habitation	
Western Hemisphere (North America, Central America, South America, Australia, Europe)	99.0
Eastern Hemisphere (Asia, Africa, Middle East)	1.0

ADHD Medication Use, Alcohol Use, and Hallmarks of Mental Distress and Perceived Stress

Table 2 depicts a statistically significant positive correlation ($p < 0.05$, $p < 0.01$) between general ADHD medication use (both prescribed and illicit) and feelings of hopelessness, restlessness, worthlessness, and feeling that everything was an effort, all hallmarks of mental distress. There was also a statistically significant positive correlation ($p < 0.05$, $p < 0.01$) between ADHD medication use and feeling unable to carry out normal activities or unable to control the important things in life, both hallmarks of perceived stress. Lastly, there was a statistically significant negative correlation ($p < 0.05$) between ADHD medication use and feeling on top of things, another hallmark of perceived stress and a statistically significant negative correlation ($p <0.01$) between ADHD medication use and rating mental or emotional health.

In contrast to Table 2, Table 3 depicts that there was a statistically significant negative correlation ($p <0.05$, $p <0.01$) between alcohol use in the last 12 months and hallmarks of mental distress including nervousness, hopelessness, worthlessness, and feeling that everything was an effort. There was also a statistically significant negative correlation ($p < 0.05$, $p < 0.05$) between alcohol use in the last 12 months and perceived stress such as

taking a long time to get over setbacks in life. There was a statistically significant positive correlation ($p < 0.01$) between alcohol use in the last 12 months and rating mental or emotional health and a statistically significant positive correlation ($p < 0.01$) between alcohol use in the last 12 months and feeling on top of things.

Table 2. ADHD Medication Use and Hallmarks of Mental Distress and Perceived Stress

Hallmarks of Mental Distress and Perceived Stress	Correlation
Hopelessness	.103**
Restlessness	.182**
Worthlessness	.087*
Everything was an effort	.082*
Unable to carry out normal activities	.169**
Unable to control important things in life	.097*
Felt on top of things	-.075*
Rate your mental or emotional health	-.132**

*=$p < 0.05$ **=$p < 0.01$

Table 3. Alcohol Use and Hallmarks of Mental Distress and Perceived Stress

Hallmarks of Mental Distress and Perceived Stress	Correlation
Nervousness	-.100*
Hopelessness	-.126**
Worthlessness	-.114**
Rate your mental or emotional health	.103**
Everything was an effort	-.088*
Hard time making it through stressful events	-.097*
Long time to get over setbacks in life	-.079*
Upset because of something happening unexpectedly	-.094*
Unable to control important things in life	-.100*
Felt on top of things	.120**

*=$p < 0.05$ **=$p < 0.01$

General ADHD Medication Use and Academic Performance

Table 4 depicts results between general ADHD medication use (both illicit and prescribed) and aspects of academic performance. There was a statistically significant negative correlation ($p < 0.05$) between ADHD medication use and GPA. Interestingly, there was also a statistically significant negative correlation ($p < 0.05$) between ADHD medication use and a decrease in GPA if not prescribed. In other words, participants were less likely to have a lower GPA if they took illicit ADHD medication. There was a statistically significant positive correlation ($p < 0.01$) between ADHD medication use and the belief that this use provides an advantage in an academic environment.

Table 4. General ADHD Medication Use and Academic Performance

Academic Performance	Correlation
What is your GPA?	-.101*
If not prescribed, did your GPA decrease?	-.383*
Belief that use provides an advantage in an academic environment	.207**

*=p < 0.05 **=p < 0.01

Illicit ADHD Medication Use and Academic Performance

Figure 1 shows responses to a question from the survey about the reasons for illicit ADHD medication use. Aside from participants who answered that they have never taken ADHD medication (75.4%) or that they are prescribed for ADHD medication (10.8%), a large part (11.3%) answered that they used these medications for academic reasons such as focus and concentration compared to participants that used it for non-academic reasons such as weight management or improving athletic performance (1.0%).

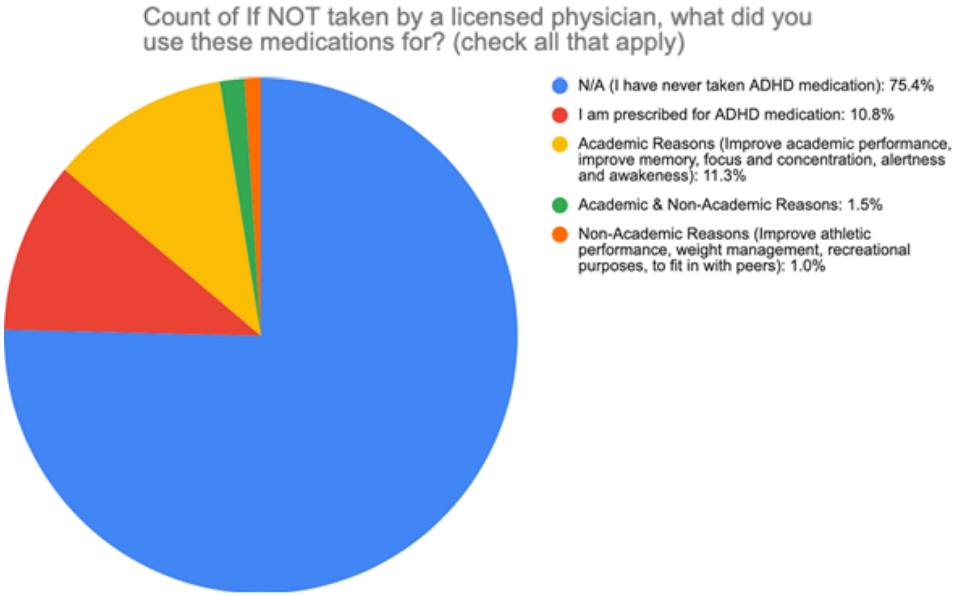

Figure 1. Reasons for Illicit ADHD Medication Use

Table 5 further reflects illicit ADHD medication use in relation to academic performance in terms of GPA. There was a statistically significant negative correlation ($p < 0.05$) between illicit ADHD medication use and current GPA and there was a statistically significant negative correlation ($p < 0.01$) between illicit ADHD medication use and an increase in GPA when not prescribed, conflicting with Table 4.

Table 5. Illicit ADHD Medication Use and Academic Performance (GPA)

Academic Performance	Correlation
What is your current GPA?	-.277*
Increase in GPA from illicit use	-.503**

*=$p < 0.05$ **=$p < 0.01$

Prescribed ADHD Medication Use, GPA, and Hallmarks of Mental Distress

Table 6 shows that were was a statistically significant negative correlation ($p < 0.05$) between an increase in GPA from prescribed ADHD medication and feeling unable to carry out normal activities. In other words, participants who felt they had a recent increase in GPA while taking ADHD medication prescribed to them were less likely to feel unable to carry out normal activities. There was also a statistically significant positive correlation ($p < 0.05$) between an increase in GPA from prescribed ADHD medication and feeling confident in the ability to handle personal problems.

Table 6. Increase in GPA from Prescribed ADHD Medication and Hallmarks of Mental Distress

Hallmarks of Mental Distress	Correlation
Feel unable to carry out normal activities	-.349*
Feel confident in ability to handle personal problems	.288*

*=$p < 0.05$ **=$p < 0.01$

General ADHD Medication Use and Alcohol Use

Table 7 shows correlations between an increase in alcohol use in the last 4 weeks and hallmarks of ADHD medication use, either illicit or prescribed. There was a statistically significant positive correlation ($p < 0.05$) between having 5 or more drinks often in the last 4 weeks and the effectiveness of illicit ADHD medication use for its desired purpose, a statistically significant negative correlation ($p < 0.05$) between drinking alcohol often in the last 4 weeks and a decrease in GPA from illicit ADHD medication use and a statistically significant positive correlation ($p < 0.01$) between drinking alcohol often in the last 4 weeks and the belief that the use of ADHD medication provides an advantage in an academic environment.

Table 7. Alcohol Use and Hallmarks of ADHD Medication Use

Alcohol Use	Hallmarks of ADHD Medication Use	Correlation
5 or more drinks in the last 4 weeks	Effectiveness of illicit use for desired purpose	.260*
Often drink alcohol in the last 4 weeks	Decrease in GPA from illicit use	-.383*
Often drink alcohol in the last 4 weeks	Belief that use provides an advantage in an academic environment	.156**

*=$p < 0.05$ **=$p < 0.01$

Discussion

The goal of this study was to assess and compare the impact of alcohol usage and ADHD medication on undergraduate students' academic performance and mental health on college campuses. Additionally, this study examined whether students who regularly used alcohol and ADHD medications at the same time period would be more likely to experience negative effects on their academic performance and mental health, particularly GPA, mental distress and perceived stress. The following were the study's main findings: 1) The use of ADHD medications, both legally prescribed and illegally obtained, was associated with negative mental health effects such as hopelessness and worthlessness; 2) Alcohol use was associated with positive mental health effects; 3) The use of illicit ADHD medications was associated with a decrease in academic performance; and 4) People who frequently drank alcohol reported an improvement in academic performance when also using illicit ADHD medications.

Demographics

The survey was completed by 702 individuals altogether. A number of demographic questions were posed to participants, including those pertaining to their gender, age range, major, current GPA, previous college attended, and area of residence. The survey's respondents, who ranged in age from 18 to 29, comprised 94.7% of the adolescent demographic. 30 to 39-year-old participants made up 5.3% of the total. There were none in the other age groups. Participants were split 60.5% female to 35.9% male, with women making up the majority. 3.6% were non-binary or other or preferred not to say. While 42.8% of participants classified themselves as STEM majors, which only comprised the natural sciences, 57.2% of individuals identified as non-STEM majors, which included the social sciences including psychology and sociology, business, finance, accounting, and the management arts. A current GPA of 3.0 or lower was held by 6.3% of participants, 3.0 to 3.49 by 34.3%, and 3.5 or higher by 59.4% of participants. A large majority of individuals (74.6%) reported attending Binghamton University, whereas just a minority (25.4%) did so at other colleges or universities. 99.0% of participants said they resided in North, Central, and South America, Australia, or Europe, while just 1.0% said they resided in Asia, Africa, or the Middle East.

Comparing the Impact of ADHD Medication and Alcohol Use on Mental Health and Academic Performance

The results of our study indicated that there was a statistically significant positive correlation between general ADHD medication use (both prescribed and illicit) and various hallmarks of mental distress. The use of ADHD medication was shown to be statistically significantly positively correlated with feelings such as hopelessness and restlessness (see Table 2). According to previous research, the use of ADHD medication has been associated with a decrease in mental health (Cregin et al., 2021)(Benson & Flory, 2017). In addition to feelings of mental distress, however, general ADHD medication use was also statistically significantly positively correlated with hallmarks of perceived stress, such as having the feeling of not being able to carry out normal activities, which has not been researched in the past.

The observed impact of alcohol on mental health, which was demonstrated to be actually connected with favorable mental health impacts (see Table 3), contrasted with the effects of general ADHD medication use on mental health. This is distinct from the connections between alcohol use and mental health that earlier studies have discovered. Previous research demonstrates a link between an increase in detrimental effects on mental health and excessive alcohol usage such as that heavy drinking over an extended period of time tends to decrease mood (Piazza-Gardner et al., 2016). Short-term usage (such as during college years) may initially hasten mental status since it downregulates negative feelings; however, long-term use changes brain chemistry and may result in a worsening of mood. This may help to explain the discrepancy between the noted results. Further research is required, however, to confirm whether such an association exists.

Table 4 depicted conflicting results between general (both illicit and prescribed) ADHD medication use and aspects of academic performance. There was a statistically significant negative correlation between the use of ADHD medication and GPA, although there was a statistically significant positive correlation between the use of ADHD medication and a drop in GPA if they were not prescribed. This meant that those who used ADHD medication illicitly were less likely to have a lower GPA. This is opposed by previous research, which supports that a higher frequency of illicit ADHD medication use is associated with a lower GPA and academic performance (Arria et al., 2008). The idea that taking ADHD medication gives one an edge in an academic setting was statistically significantly positively correlated with the use of ADHD medications, however. Regardless of the consequences, students have believed in previous research to benefit in academic contexts when using prescription stimulants (Garnier-Dykstra et al., 2012), supporting the association from Table 4 as well as the responses in Figure 1.

According to Table 6, there was also a statistically significant negative correlation between an increase in GPA from prescribed ADHD Medication use and hallmarks of mental distress. This supports previous studies that show that prescribed ADHD medication improves mental health symptoms such as motivation when used on people with ADHD (Chan et al., 2016). Table 5, on the other hand, demonstrated that participants who used illicit ADHD medication were more likely to have lower GPAs and had higher chances of their GPA decreasing with ongoing use. This contrasts with Figure 1, where the main reason for illicit use of ADHD medications was marked by

participants to enhance academic performance, showing that while students believe illicit ADHD medication use can benefit them in school work, it can actually have the opposite effect in the long term. This also supports previous research that has shown that an increase in ADHD medication is not associated with an increase in academic performance (Cregin et al., 2021)(Arria et al., 2008)(Arria et al., 2017).

According to Table 7, there was a statistically significant negative correlation between frequent alcohol consumption over the previous four weeks and a drop in GPA caused by illicit ADHD medication, which defies prior studies that claim concurrent use has a negative impact on academic performance. For instance, a multi-center study in North Carolina compiled that simultaneous non-medical prescription stimulant users who also used alcohol were more likely to have lower grade point averages in addition to the abuse of other substances. Interestingly, participants reported harmful side effects from substance use (Egan et al., 2013). This association was the only piece of evidence for this relationship, but it is a crucial first step in understanding the impact of concurrent alcohol and ADHD medication usage on college students' mental health and academic performance.

Significance and Applicability of Findings

Many of the correlations in the current study confirmed findings from other studies. Our study, however, is one of the first to demonstrate the different impacts that concurrent alcohol and ADHD medication use has on college students' mental health and academic performance. This finding is significant as the practice of alcohol drinking with illicit Adderall and ADHD medication use is exploding on college campuses as students are unaware of the consequences.

Limitations and Future Research

One of the study’s main drawbacks was the limited sample size. A bigger sample size would be desired even though the hundreds of people we attracted were sufficient to establish substantial relationships. Additionally, although correlational studies were used to identify correlations between various parameters, it is impossible to determine what additional factors may have had an impact on the data that were gathered. In order to take into consideration every element that can have an impact on our findings, further study in this area is required. Additionally, a study that is more longitudinal in nature may show to be a better approach to perform such a study considering that this one only covered a brief period of time.

Conclusion

The strengths of the study include its large sample size and its research question that fills a gap in the literature. Additionally, it may open a door for further research to further explore this intricate relationship between alcohol, illicit Adderall use and lower academic performance. The cross-sectional nature of the study is a limitation and the use of a survey has its inherent flaws. With further research to establish the factors that might influence the results of simultaneous usage on mental health and academic performance, we hope to prevent the use and abuse of ADHD medication and alcohol among undergraduate college students.

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