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Social Factors in Prescription Stimulant Abuse Among College Students

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SOCIAL FACTORS IN PRESCRIPTION STIMULANT ABUSE
AMONG COLLEGE STUDENTS

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Abstract

In an attempt to maximize their academic performance, many American college students turn toward such prescription stimulant drugs as Adderall and Ritalin, which can increase users' attention span and ability to focus, but are not without risks, including such aversive side effects as anxiety, migraines, and obsessive-compulsive behavior. Prevalence rates for prescription stimulant abuse (PSA) by college students vary widely, with rates as high as 50.6% (McCabe, West, Teter, & Boyd, 2014). PSA among college students is most commonly endorsed for perceived academic benefits, but many students report engaging in recreational PSA, often to resist the depressant effects of alcohol and remain alert and sociable at parties. The current study was designed to examine the social factors influencing students' abuse of prescription stimulants, and to identify differences in these factors between academic and recreational users. A survey of 175 undergraduate students was used to investigate the influence of parental expectations, academic support, resistance to peer influence, alcohol and cannabis use, and fraternity/sorority membership on PSA and purpose of PSA (academic or recreational). Results of independent-samples t-tests and chi-square analyses indicated that users drank more alcohol, obtained lower resistance to peer influence scores, were more likely to be male, more likely to be in a fraternity or sorority, and more likely to have used cannabis in the past year than nonusers. Academic users also had higher scores on parental expectations and resistance to peer influence than recreational users. The results extend previous findings by highlighting differences between academic and recreational users of prescription stimulants. These findings may be useful in identifying populations of college students who are at-risk for different variations of prescription stimulant abuse.

Keywords: Psychostimulant abuse; college students; motives; social influence

PRESCRIPTION STIMULANT ABUSE

Living in the competitive environment of college in the United States, students frequently look to find any shortcut that they believe can help them perform better on the next exam or essay. Seeing a student with a cup (or cups) of coffee in the library the night before a big exam, trying to learn the material they neglected to read in the weeks prior, is a relatively common sight. A new pharmaceutical shortcut to academic endeavors is becoming more widely used, and even accepted, on college campuses across the country: prescription stimulants, most commonly Adderall and Ritalin, which are generally prescribed as a treatment for attention-deficit hyperactivity disorder (ADHD) and the sleep-disorder narcolepsy. Marketed for the treatment of ADHD since 1994, Adderall is an equal mixture of four different amphetamine salts (d-amphetamine saccharate, d,l-amphetamine aspartate, d-amphetamine sulfate, and d,l-amphetamine sulfate) taken as a pill (Ahmann et al., 2001), although some abusers prefer to crush the pill and consume it intranasally (Hartung et al., 2013).

At prescription recommended doses, Adderall has been shown to reduce daydreaming, hyperactivity, and sadness/unhappiness (Ahmann et al., 2001), and it is for these reasons that Adderall, and other prescription stimulants, are so popular among college students hoping to increase their attention span or study for longer periods of time. Due to their rising use among college students, prescription stimulants are now the second most common form of illicit drug use on college campuses, after cannabis, and not including underage alcohol use (Johnston, O'Malley, Bachman, & Schulenberg, 2012). However, prescription-level doses can also carry some undesirable side effects, including loss of appetite, stomachaches, and insomnia, with severity of side effects increasing at higher doses (Ahmann et al., 2001). The *Diagnostic and Statistical Manual of Mental Disorders: Fifth Edition* (DSM-5; American Psychiatric Association, 2013) describes stimulant use disorder as significant impairment or distress due to

PRESCRIPTION STIMULANT ABUSE

abuse of cocaine or amphetamine-like substances, due to comparable central nervous system effects of the two drug classes. The criteria for stimulant use disorder can include tolerance (marked by a need for increased amounts of the stimulant to recreate the desired effect), continued use despite knowledge of physical, social, occupational, psychological, or interpersonal problems caused by use, and withdrawal after cessation, often associated with intense depressive symptoms resembling a major depressive episode. Individuals in this depressive withdrawal state often show increased rates of suicidal ideation (American Psychological Association, 2013). Amphetamine-type stimulants, such as Adderall, have a high potential for addiction if abused, with some users meeting criteria for stimulant use disorder as soon as one week after initial use. Individuals with stimulant use disorder generally follow one of two patterns of use: chronic use, with individuals being under the near-continuous influence of stimulants, or episodic use, with binges of stimulant use separated by brief periods of non-use (American Psychological Association, 2013). Abusers of prescription stimulants tend to use higher-than-recommended doses, which can include such negative side effects as generalized anxiety disorder-like symptoms, nausea, emotional instability, impaired judgment, impaired social functioning, and an increased risk for heart attack and seizures. Rarely, individuals with stimulant use disorder may also develop stimulant-induced psychotic disorder, resembling schizophrenia, with delusion of reference, paranoia, and hallucinations (American Psychological Association, 2013).

Because these stimulants are available with a prescription, many students are able to obtain them from friends who have been diagnosed with ADHD. In one study (Prudhomme White, Becker-Blease, & Grace-Bishop, 2006), when undergraduate participants were asked about the difficulty of obtaining prescription stimulant medication, 28% responded that they

PRESCRIPTION STIMULANT ABUSE

were easy to obtain, and the most common method of obtaining stimulant medication was to purchase them from friends who had prescriptions. Because prescription stimulants are, by definition, available through prescriptions, they may be perceived by some people as being less dangerous than illegal stimulant drugs, such as cocaine and methamphetamine (McCabe & Teter, 2007). This perception may be related to the popularity of PSA on college campuses, with many students not attributing much risk to prescription stimulants after seeing their peers ingest the drugs without any apparent repercussions.

Although there is no conclusive data on the detriments of long-term effects of prescription stimulant use compared to cocaine use, cocaine has been shown to be perceived by college students as more harmful than prescription stimulants (Arria et al., 2008b). More than 25% of students attributed “great risk” to occasional use of prescription stimulants, while a much larger proportion (72.2%) reported occasional cocaine use as a “great risk” (Arria et al., 2008b). It may be the case that students who abuse prescription stimulants perceive less potential danger with illicit drug use in general, as nonmedical misusers (users who illicitly obtain and use stimulant medication without a prescription) of prescription stimulants were found to have significantly higher rates of use for cannabis (72.2%), illicit amphetamines (18.6%), hallucinogens (26.3%), and ecstasy (17.8%) than their college counterparts who identified as nonusers of prescription stimulants (cannabis=24.3%, illicit amphetamines=0.6%, hallucinogens=1.9%, ecstasy=1.0%) (Hartung et al., 2013).

The figures on yearly prescription stimulant use among college students vary widely, ranging from 9.3% to 50.6% (McCabe, West, Teter, & Boyd, 2014; Prudhomme White et al., 2006). Although there is no clear-cut answer on what proportion of the student population uses prescription stimulants, the rates of prescription stimulant use among college students have been

PRESCRIPTION STIMULANT ABUSE

rising during the past decade (Johnson et al., 2012). What is more clear is that universities seem to be a sort of prescription stimulant hotspot, as a result of thousands of young adults, many with prescriptions to treat ADHD symptoms, living and working in close proximity to each other.

Nonmedical use of prescription stimulants has been shown to be significantly more prevalent among college students aged 18 to 22 than among their same-age peers not attending college (Johnston et al., 2012). This finding is in stark contrast to the data collected showing that nonmedical use of prescription opioids, sleeping medication, and anxiety medication is significantly lower among college students than among their same-age peers not in college (Johnston et al., 2012). These differences in nonmedical drug use may point toward a divide between the cultures of college and non-college young adults, with the college students having an inclination towards “uppers”, which would be expected with the higher academic pressures and deadlines inherent with being enrolled in college. No existing research could be found, but a future study could compare high/low academic pressure of college students with high/low career pressure of non-college adults on their respective relationships with class of prescription drug abused, to determine if high achievement pressure, regardless of setting, is a risk-factor for prescription stimulant abuse (Johnston et al., 2012).

Reasons college students give for engaging in PSA can generally be divided into one of two categories: academic reasons (e.g., to help in studying, to increase attention and alertness) and recreational reasons (e.g., to party, to “get high”). The majority of students report using prescription stimulants for academic reasons, which is consistent with the “stereotype” of a prescription stimulant misuser in college (Arria et al., 2013; Hartung et al., 2013; Prudhomme White et al., 2006). Students reporting PSA have also been shown to score higher in tests measuring perceived parental expectations (Hartung et al., 2013). Given that most students who

PRESCRIPTION STIMULANT ABUSE

report abusing prescription stimulants do so for academic reasons, it is likely that these students feel some degree of pressure to succeed in their studies in order to turn to illicit substances for help in the first place. Parents tend to be one of their children's most consistent source of pressure to succeed throughout life, academically or otherwise, including during the emerging adult years when parents are no longer directly involved in the student's academic life, but still provide the parental expectations and pressure that make up some portion of an individual student's motivation to succeed (Arnett, 2000).

An analysis of Twitter posts (tweets) from undergraduate college students mentioning prescription stimulant use showed a skew towards the east coast of the United States, which tends to have universities with more competitive admission requirements (Hanson et al., 2013). The same study also saw an increase in prescription stimulant-related tweets during the middle of the week, as well as during weeks of the year normally associated with final exam periods. Longitudinal data collected from students throughout their college careers have shown a correlation between cannabis/alcohol dependency problems and lower class attendance and cumulative grade point average (GPA) (Arria et al., 2013). A significant number of these students were found to steadily increase their intake of prescription stimulants as a response to the decrease in GPA. These findings provide a possible explanation for why students begin to use prescription stimulants in the first place, using the stimulants as a quick way to "catch up" on their schoolwork after using other recreational drugs. Prior research has shown a much higher incidence of overall drug use among prescription stimulant misusers (Hartung et al., 2013).

Reports on students using prescription stimulants for recreational purposes are much more varied, with percentages of abusers endorsing taking prescription stimulants to have fun, get high, or party ranging from 13% (Hartung et al., 2013) to 65% (Prudhomme White et al.,

PRESCRIPTION STIMULANT ABUSE

2006), with some students endorsing both academic and recreational reasons. In the college setting, recreational abuse of prescription stimulants is frequently associated and paired with alcohol use. Several studies have demonstrated a significantly higher level of overall alcohol use, binge drinking, and driving after binge drinking among students who abused prescription stimulants in the past year (Arria et al., 2013; McCabe, Knight, Teter, & Wechsler, 2005a; Teter, McCabe, Cranford, Boyd, & Guthrie, 2005). In one study's sample of college students, those who first illicitly used prescription stimulants in college were over nine times more likely to report having ingested prescription stimulants and alcohol in the same session than students who had illicitly used prescription stimulants before entering college (Kaloyanides, McCabe, Cranford, and Teter, 2007).

With the majority of abusers of prescription stimulants having first used in college (Arria et al., 2008a), a unique danger manifests around the alcohol-heavy college environment that includes students with little, if any, prior experience with either prescription stimulants or alcohol. When alcohol is ingested alone, the sedative effects experienced increase as the individual's blood alcohol content increases, and these sedative effects normally lead to drinking cessation by way of the individual falling asleep (Egan, Reboussin, Blocker, Wolfson, & Sutfin, 2013). However, when alcohol is consumed concurrently with prescription stimulants, the onset of alcohol's sedative effects is delayed while the blood alcohol content still increases in much the same way as it does when alcohol is consumed alone. The result of this drug effect is an underestimation by the drinker of their own level of intoxication, often feeling energetic and awake even after consuming enough alcohol to cause unconsciousness under normal circumstances, while the underestimation of intoxication is further exacerbated by the increased impulsivity and risk-taking behaviors that are associated with alcohol intoxication (Cherpitel,

PRESCRIPTION STIMULANT ABUSE

1993). These interaction effects of prescription stimulants and alcohol can result in an individual with a very high blood alcohol content who perceives only a mild intoxication. Feeling much less intoxicated than blood chemistry would indicate, individuals who concurrently use alcohol and prescription stimulants are significantly more likely to drive after binge drinking than individuals who only consume alcohol (Teter et al., 2005).

What is the supply source that can keep up with such a high apparent demand for prescription stimulants on college campuses? Prescription stimulants are generally supplied to the student population by other students diagnosed with ADHD, due mainly to these latter students having legal means of obtaining the drugs. More than 40% of college students who had been prescribed stimulant medications to treat ADHD symptoms reported being approached to sell or give away their medication to fellow students (McCabe et al, 2014). When questioned about their methods of obtaining prescription stimulants, 81% of students categorized as nonmedical misusers responded that they received the medication from a friend, with approximately half of them having bought the pills and the other half having received them for free, with a small number of students responding that they had stolen the drugs (Hartung et al., 2013).

So which students are at the highest risk for prescription stimulant abuse? Researchers have found that students who are white and/or male have higher incidences of past-year prescription stimulant abuse (McCabe et al, 2014). DeSantis, Noar, and Webb (2009) found a 55% overall prevalence rate of nonmedical prescription stimulant use among college fraternity members, with rates increasing from 35% during freshman year to 86% by senior year. DeSantis, Noar, and Webb (2010), in an interview-style survey, noted that the communal aspect of fraternity houses was a common factor cited by members as a reason for the commonality of

PRESCRIPTION STIMULANT ABUSE

prescription stimulant use. Many fraternity members involved in the study indicated that they felt safe using the stimulants, which were nearly always provided by their fraternity brothers, with one member explaining,

“It was something that no one like hid at all...Since everyone lives together, it is just a lot more popular with fraternities...it is always around, in my house at least. No real big deal.”

Indeed, several studies have found illicit use of prescription stimulants to be significantly higher among members of social fraternities and sororities than among the general student population (DeSantis, Webb, & Noar, 2008; McCabe et al., 2005a; McCabe et al., 2014). This high rate of PSA may be due in part to the higher average socioeconomic status of fraternity/sorority members (Miller, 1973). Undergraduate students with higher overall family incomes have reported higher rates of prescription stimulant abuse (Teter, McCabe, Boyd, & Guthrie, 2003), and students with high family income are more likely to have been diagnosed with ADHD, providing a possible source of stimulant medication for peers upon reaching college (Prudhomme White et al., 2006).

With nearly all college users of prescription stimulants having received their medication from a friend (Hartung et al., 2013), and the high rate of prescription stimulant use among college students compared to the general population (Johnston et al., 2012), what can essentially be described as a black market for prescription stimulants has developed and operates almost entirely within the college setting, and likely leaks into the surrounding community. This spreading availability is a troubling thought, not only because of the many college students who have potential access to prescription stimulants, but also because of the possibility of high school

PRESCRIPTION STIMULANT ABUSE

and middle school students gaining access to these potentially dangerous, and often misunderstood medications as a result of living in a college community.

To date, most extant research regarding types of prescription stimulant abuse has focused on the differences between types of users in frequency of use, rather than differences between the users themselves. The goals of the present study were to measure rates of prescription stimulant abuse among college students, as well as reasons for use, and to identify differences between academic and recreational abusers of prescription stimulants. Accounting for the extant literature, the hypotheses are as follows: (a) the user group was expected to score significantly lower than the nonuser group in resistance to peer influence; (b) academic users, given their motives for substance abuse, were expected to report higher levels of perceived parental expectations than recreational users; (c) academic users were expected to report less academic support from peers than were nonusers; and (d) students who belong to social fraternities and sororities were expected to be significantly more likely to have engaged in lifetime PSA than those students who do not belong to these organizations. Having a better understanding of the students who abuse prescription stimulants may help college administrators better predict which students are at risk for PSA, and thus more effectively educate the student body about the dangers of stimulant abuse to help students endorse a healthier lifestyle.

Method

Participants

PRESCRIPTION STIMULANT ABUSE

Participants were 275 students from Eastern Illinois University (EIU) who were contacted to complete the survey using Qualtrics software via an email sent to 3000 random students. In order to correct for age and undergraduate class standing, 91 participants over the age of 25 or with graduate student status were removed from the sample. Of these 184 undergraduate participants, 9 were identified as having been diagnosed with ADHD and were excluded from the analysis, leaving a total sample of 175 undergraduate students (76.6% women). The mean age of these participants was 20.65 years ($SD = 1.46$; range: 18-25), and the distribution by class standing was 14.9% freshman, 14.3% sophomore, 36% junior, and 34.9% senior. Based on self-reported prescription stimulant use, participant groups included (a) *nonusers* ($n = 147$), (b) *academic users* (i.e., those students illicitly taking stimulant medication to facilitate academic work; $n = 18$), and (c) *recreational users* (i.e., students illicitly taking stimulant medication to experience the psychopharmacological effects; $n = 10$).

Measures

After providing informed consent, participants completed an online survey via Qualtrics, with all sections and scales presented to participants in a fixed order.

Parental Expectations - Parental expectations were measured with a 5-item subsection of the 35-item Frost Multi-Dimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990). Responses are given on a 5-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (5). A higher score denotes higher perceived parental expectations. Past reports have indicated good reliability between items ($\alpha = .84$) and strong correlations between the parental expectations subscale and other measures of perfectionism (Burns, 1980; Frost et al., 1990; Garner, Olmstead, & Polivy, 1983; Jones, 1968).

PRESCRIPTION STIMULANT ABUSE

Resistance to Peer Influence - Resistance to peer influence was measured using the 10-item Resistance to Peer Influence Scale (RPI; Steinberg & Monahan, 2007). For each item, participants indicated the type of person they were most like (e.g., “Some people hide their true opinion from their friends if they think their friends will make fun of them because of it” or “Some people will say their true opinion in front of their friends, even if they know their friends will make fun of them because of it”) and then if that description was “sort of true” or “really true” about the participant, resulting in scoring on a 4-point scale, with higher scores denoting a greater resistance to peer influence. Previous reports have indicated adequate internal consistency ($\alpha = .73$) and construct validity (Monahan, Steinberg, & Cauffman, 2009). Lower scores in resistance to peer influence have also been correlated to higher scores in measures of risk-taking and impulsivity (Steinberg & Monahan, 2007).

Student Academic Support – Academic support from other students experienced by participants was measured using the 15-item Student Academic Support Scale (SASS; Thompson & Mazer, 2009). Responses were on a 5-point Likert scale, ranging from *not at all* (1) to *about every day* (5), and higher scores on the SASS are reflective of the participant more frequently receiving academic support from fellow students. Past reports have provided evidence for convergent validity, construct validity, and discriminant validity through correlations between the SASS and measures of social support and relational closeness (Mazer & Thompson, 2011). All four subscales of the SASS have also been shown to have high reliability using Chronbach’s alpha: informational support $\alpha=.91$, esteem support $\alpha=.83$, motivational support $\alpha=.85$, and venting support $\alpha=.82$ (Thompson & Mazer, 2009).

Prescription Stimulant Use – After indicating whether they had ever been diagnosed with ADHD, participants provided information about their use of stimulant medication in their

PRESCRIPTION STIMULANT ABUSE

lives (yes/no) and in the past year (yes/no). Participants also indicated their frequency of prescription stimulant use (“a few times a year,” “1-2 times per month,” “every week,” “2-3 times per week,” “every day”) and the purpose for which the participant most often used prescription stimulants. Participants were identified as *academic users* (“perform better on tests”, “focus better in class”, “perform better in schoolwork”) or *recreational users* (“feel energetic”, “help me socialize better”, “get high or experiment”) based on the purpose of use chosen from the six options. The response options for frequency of use and purpose of use were adapted from Prudhomme White et al. (2006).

Cannabis Use – Participants indicated whether or not they had used cannabis in the past year. If the participants answered yes, they then specified how many days during the past 30 days they had used cannabis (0-30).

Alcohol Use – Participants were asked how many days out of the past 30 days they had consumed alcohol (0-30).

Demographics – The following variables were used as demographic indicators because of their potential association with PSA; (a) age, (b) year in college, (c) gender (i.e., male, female, other), and (d) fraternity/sorority involvement.

Procedure

Participants were recruited through email via the Eastern Illinois University email database, whereby survey invitations were sent to 3000 random Eastern Illinois University students. All data were collected over a period of two weeks via Qualtrics, an online survey and data collection software; leaving participants the option to complete the study at their own convenience. Upon completion of the survey, participants were debriefed and provided with a link to an online Google document, where they were invited to leave a comment containing an

PRESCRIPTION STIMULANT ABUSE

email address to enter into a drawing for one of three \$25 Amazon gift cards. The study and all survey procedures were approved by the EIU Institutional Review Board, meeting all applicable ethical standards.

Results

Sample Characteristics – In the sample, 134 participants were women (76.6%), and 33 (18.9%) of the participants were involved in a social fraternity or sorority. Additionally, 61 (34.9%) students were seniors, 63 (36.0%) were juniors, 25 (14.3%) were sophomores, and 26 (14.9%) were freshmen. Among students without a prescription for stimulant medication ($N = 175$), 28 (16%) reported having lifetime prescription stimulant use and 64 (36.8%, $N = 174$) reported past-year cannabis use.

Lifetime PSA Among Students Without a Prescription – Independent samples t-tests were conducted to compare users and nonusers in terms of age, alcohol consumption frequency, resistance to peer influence, student academic support, and parental expectations. Students who had used prescription stimulants at some point in their life were significantly older, $t(169) = 2.25$, $p = .026$, drank more alcohol, $t(30.90) = 3.30$, $p = .002$, and scored significantly lower than nonusers on the Resistance to Peer Influence scale, $t(31.67) = 3.12$, $p = .004$. Contrary to my hypotheses, neither high scores in perceived parental expectations nor student academic support were found to have a significant relationship with lifetime prescription stimulant use. Chi-square tests of independence were performed to examine the relation between lifetime PSA and gender, past-year cannabis use, and fraternity/sorority involvement. Students who had used prescription stimulants were more likely to be male, $\chi^2(2, N = 175) = 9.08$, $p = .011$, and were significantly more likely to have used cannabis in the past year, $\chi^2(1, N = 174) = 34.36$, $p < .001$. Students

PRESCRIPTION STIMULANT ABUSE

involved in social fraternities/sororities were significantly more likely to have used prescription stimulants, $\chi^2(1, N = 175) = 21.13, p < .001$.

Type of PSA – An independent samples t-test was conducted to compare academic users with recreational users in terms of parental expectations, student academic support, and resistance to peer influence. Academic users scored significantly higher than recreational users on the Parental Expectations scale, $t(13.07) = 2.59, p = .022$, and on the Resistance to Peer Influence Scale, $t(26) = 2.86, p = .008$. However, contrary to expectations, there was no significant difference in student academic support scores between academic users and recreational users. Additionally, there was no significant difference in student academic support scores between academic users and nonusers.

Discussion

Contrary to my hypothesis, parental expectations were not significantly associated with lifetime PSA among students without a prescription. It is possible that parental expectations had no significant relationship with overall PSA because of the relatively low perceived danger of prescription stimulants among college students (Arria et al., 2013). Extant research has provided correlations between higher parental expectations and PSA (Hartung et al., 2013), explaining that students may endorse PSA more often when under more pressure from their parents to perform well in school. However, as prescription stimulants have risen in popularity so quickly and the perceived danger surrounding them has remained low (Arria et al., 2013; Johnston et al., 2012), students may, now more than ever, see prescription stimulants as a benign tool (academic or otherwise) that “everybody uses,” regardless of the pressure put on them by parents.

However, academic users had significantly higher scores on parental expectations than did recreational users. No research has been found exploring parental expectations among

PRESCRIPTION STIMULANT ABUSE

academic and recreational prescription stimulant abusers, but this significant difference could reflect differences in the motivations for using prescription stimulants that would be expected of the two types of users, in which academic users would be motivated both by their peers' attitudes toward PSA and by the sources of the student's pressure to perform academically, of which one source is likely to be the student's parents (Arnett, 2000). Recreational users would also be motivated by peer attitudes toward PSA, but not by academic pressures. Reflecting this inference about motivational source of PSA, academic users had significantly higher scores of resistance to peer influence than recreational users. These findings support the argument that recreational users are more susceptible to normative pressures from their peer groups and are therefore more likely to "follow the crowd." This argument may be especially relevant to the recreational use of drugs, as research has indicated that perceived peer influences are highly correlated with recreational use of prescription stimulants and other drugs (McCabe, 2008; Silvestri & Correia, 2016) and that perceived norms are more powerful than actual consequences experienced in predicting future drug abuse (LaBrie, Hummer, Neighbors, & Larimer, 2010).

This evidence that academic users are more resistant to peer influence may indicate an intrinsic difference between the motivations of academic users and recreational users for PSA. Students who use prescription stimulants for recreational purposes could be driven by their sensation-seeking nature, which is a relationship seen among users of other recreational drugs (Kaynak et al., 2013); whereas students endorsing PSA for academic reasons may see prescription stimulants in a completely different light, as if it is not a harmful drug in the colloquial sense, but similar to a drug such as caffeine, supposedly used without consequence to assist in finishing a task.

PRESCRIPTION STIMULANT ABUSE

Consistent with previous research (DeSantis et al., 2009; McCabe et al., 2005b), students involved in Greek life were significantly more likely than non-Greek students to have used prescription stimulants (Greek: 42.4%; Non-Greek: 9.9%). As previously mentioned, the higher PSA rate seen in Greek students may be due to the communal and brotherly/sisterly culture of fraternity and sorority organizations (DeSantis et al., 2010). The close-knit community seen among Greek students may create a kind of positive-feedback loop of PSA, whereby Greek students use prescription stimulants (recreationally or academically) and perceive experiencing benefits from the drug use, and they in turn share their experience with other Greek members, who perceive the same expected positive benefits and tell more members, and so on.

Limiting the prospective power of this study, the prescription group ($N = 9$) was too small to perform a meaningful analysis on, and so was excluded from the analysis. This study is limited in the conclusions that can be reasonably drawn due to the relatively small number (28) of participants found to have engaged in PSA. With a larger overall sample, expecting the same percentage of users, regression analyses could be performed on the two groups of users.

Also, by asking for what purpose users most often use prescription stimulants, users were able to be categorized as academic or recreational much more easily, but as a result, mixed-purpose users were not taken into account. Future research could utilize a scale for frequency of each reason or a ranking system for purposes most endorsed, in order to more account for the diversity of purposes for which students abuse prescription stimulants.

Even when performing an anonymous online survey, participants may still feel motivated to misrepresent their prescription stimulant use to appear more socially desirable, both in their own eyes and in the eyes of the researcher. Moreover, upon receipt of an email with a brief

PRESCRIPTION STIMULANT ABUSE

description of the research, many of the more serious abusers of prescription stimulants may have been reluctant to complete the survey.

A future study specifically examining students involved in social fraternities and sororities could examine reasons for use, as well as perceptions of the danger of PSA, to determine whether fraternity/sorority students have more benign and relaxed attitudes about prescription stimulants than the general student population. Utilizing a larger sample size, future research could also examine differences in sensation seeking between academic users and recreational users. Future information on the motivation for PSA and perceptions among Greek students could point college administrators in a better direction for educating this subset of the student population on the dangers of PSA and other drug abuse.

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PRESCRIPTION STIMULANT ABUSE

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PRESCRIPTION STIMULANT ABUSE

Appendix

Parental Expectations - Frost Multidimensional Perfectionism Scale (Frost et al., 1990)

- a) Strongly disagree
 - b) Disagree
 - c) Neither agree nor disagree
 - d) Agree
 - e) Strongly Agree
1. My parents set very high standards for me
 2. My parents wanted me to be the best at everything
 3. Only outstanding performance is good enough in my family
 4. My parents have expected excellence from me
 5. My parents have always had higher expectations for my future than I have

Resistance to Peer Influence (RPI) (Steinberg & Monahan, 2007)

“For each question, decide which sort of person you are most like then decide if that is ‘sort of true’ or ‘really true’ for you, and mark that choice”

* indicates reverse-scored item

1.
 - Some people go along with their friends just to keep their friends happy
 - Some people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy
 - a. sort of true
 - b. really true
- 2*.
 - Some people think it’s more important to be an individual than to fit in with the crowd
 - Some people think it is more important to fit in with the crowd than to stand out as an individual

PRESCRIPTION STIMULANT ABUSE

- a. sort of true
 - b. really true
3. - For some people, it's pretty easy for their friends to get them to change their mind
- For some people, it's pretty hard for their friends to get them to change their mind
- a. sort of true
 - b. really true
4. - Some people would do something that they knew was wrong just to stay on their friends' good side
- Some people would not do something they knew was wrong just to stay on their friends' good side
- a. sort of true
 - b. really true
5. -Some people hide their true opinion from their friends if they think their friends will make fun of them because of it
-Some people will say their true opinion in front of their friends, even if they know their friends will make fun of them because of it
- a. sort of true
 - b. really true
- 6*. -Some people will not break the law just because their friends say that they would
-Some people would break the law if their friends said that they would break it
- a. sort of true
 - b. really true
7. -Some people change the way they act so much when they are with their friends that they wonder who they "really are"
-Some people act the same way when they are alone as they do when they are with their friends
- a. sort of true
 - b. really true
8. -Some people take more risks when they are with their friends than they do when they are alone
-Some people act just as risky when they are alone as when they are with their friends

PRESCRIPTION STIMULANT ABUSE

- a. sort of true
 - b. really true
9. -Some people say things they don't really believe because they think it will make their friends respect them more
- Some people would not say things they didn't really believe just to get their friends to respect them more
- a. sort of true
 - b. really true
- 10*. -Some people think it's better to be an individual even if people will be angry at them for going against the crowd
- Some people think it's better to go along with the crowd than to make people angry at them
- a. sort of true
 - b. really true

Student Academic Support Scale (SASS) (Thompson & Mazer, 2009)

- a. Not at all
- b. Once or twice
- c. About once a week
- d. Several times a week
- e. About every day

In the past month another student...

1. Explained how to solve a specific problem
2. Clarified how to do an assignment
3. Helped me complete an assignment
4. Showed me how to do something for an assignment
5. Helped me gain a clearer understanding of class materials

PRESCRIPTION STIMULANT ABUSE

6. Explained something from class to me
7. Helped me get a better grade on an assignment
8. Helped raise my confidence about school
9. Made me feel better about school
10. Enhanced my self-esteem through academic support.
11. Encouraged me to study
12. Helped me stay focused on my schoolwork
13. Made sure I got to class
14. Listened to me vent about frustrations with a class
15. Listened to me vent about frustrations with a teacher

Prescription Stimulant Use

1. Have you ever been diagnosed with attention-deficit/hyperactivity disorder? (ADHD)
 - Yes (If yes, skip to “cannabis use”)
 - No
2. Have you ever taken a stimulant medication? (such as Adderall, Ritalin, Concerta, or Vyvanse)
 - Yes
 - No
3. Have you taken a stimulant medication in the past 12 months?
 - Yes (If yes, remaining prescription stimulant questions in present-tense)
 - No (If no, remaining prescription stimulant questions in past-tense)
4. On average, how often do/did you use stimulant medication?

PRESCRIPTION STIMULANT ABUSE

- A few times per year
- 1-2 times per month
- Every week
- 2-3 times per week
- Every day

5. For what purposes do/did you **most often** use stimulant medication?

- To feel energetic
- To perform better on tests
- To help me socialize better
- To get high or experiment
- To focus better in class
- To perform better in schoolwork

*Choice 1, 3, and 4 denote recreational user; Choice 2, 5, and 6 denote academic user

Cannabis Use

1. Have you ever used cannabis/marijuana in the past year?

- Yes
- No

2. During the past 30 days, on how many days did you use cannabis/marijuana?

Alcohol Use

1. During the past 30 days, on how many days did you drink alcohol?

PRESCRIPTION STIMULANT ABUSE

Demographics

1. Age
2. Gender
 - Male
 - Female
 - Other
3. Are you a member of a social fraternity or sorority on campus?
 - Yes
 - No
4. Year in college
 - Freshman
 - Sophomore
 - Junior
 - Senior
 - Graduate Student