

## Non-Medical Use of Prescription Stimulants at the College of Charleston

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### Introduction

The prevalence of illicit drug use among adolescents and college-age students has long been a major social concern. Oetting and Beauvais (1987) assert that the majority of drug use begins during the adolescent or preadolescent years. A study of adolescent drug use by Kandel et al. (1976) revealed that 29 percent of participants have ever used marijuana, and that 48 percent of these marijuana users have tried other illicit drugs as well. Studies have also shown that adolescents who begin using drugs at young ages have a significantly higher risk of developing physical symptoms and psychological distress later in life (Hansell and White 1991). The negative repercussions that arise from long-term drug use and abuse make it very important to recognize trends in illegal drug use and factors that contribute to these trends.

Though evidence shows that drug use peaked in the late 1970s and has been declining ever since, certain drug behaviors, such as the use of club drugs like ecstasy and the misuse of prescription drugs (their use in any way other than prescribed) have been increasing in the last decade (Pope et al. 2001; Wilford et al. 1993; Yacoubian et al. 2003). One major area of contention has been the overprescription of stimulants used to treat Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD). Recent years have seen a vast proliferation in the rate of prescription of medications used to treat these disorders, with studies reporting as much as a 2.5-fold increase between 1990 and 1995 (Safer et al. 1996). Even more recently, the media has paid some attention to the abuse (defined as the non-

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therapeutic and excessive use) of Adderall and Ritalin, two of the most popular drugs used to treat ADD and ADHD. The increased rate of prescription has made these drugs readily accessible to certain subpopulations, namely college students, who have reported using the drugs in ways other than intended by physicians: to concentrate and study, to counteract the effects of other drugs, or to remain alert while out partying, especially when drinking, often taking more than one dose at a time, and sometimes even snorting the drug (Koch 1999; Jaffe 2002; Low and Gendaszek 2002; McCabe et al. 2005; Szufliuta 2002; Teter et al. 2005).

Previous research on teen drug abuse identifies peer influence as the single most significant factor in drug use, though psychological well-being and lifestyle characteristics are also correlated (Hansell and White 1991; Kandel et al. 1976; Oetting and Beauvais 1987). There have been a number of recent studies devoted to measuring illicit prescription stimulant use, all of which have shown that this issue has not been blown out of proportion, as some critics contend (Low and Gendaszek 2002; McCabe et al. 2005; Teter et al. 2005). Studies have also shown that illicit prescription amphetamine use is most prevalent among students in the Northeast, especially on small, competitive campuses, though there is less research involving schools in other geographic locations. The purpose of this research is to examine the prevalence of the abuse and misuse of these drugs on a medium-sized, Southern college campus, and to study whether the purposes of illicit use are similar to those of other drugs.

### **Literature Review**

The abuse of stimulants prescribed for ADD and ADHD has increasingly been the focus of public interest. The most common method of treatment for youths diagnosed with ADD or ADHD or any other attention disorder is by psychotropic medication, usually stimulants such as methylphenidate (Ritalin), dextroamphetamine (Dexadrine), and mixed salts amphetamine (Adderall) (McCabe et al. 2005). Despite the fact that ADHD has a relatively undefined etiology, and the validity of diagnoses may be called into question, since many are based on elements of hearsay and information from sources external to the patient, these types of stimulants are still the first and primary

course of treatment (Shaw et al. 2002). These drugs tend to produce a calming effect in children with these disorders, allowing them to concentrate and work more effectively for longer periods of time (Wolfe 2003). A 2004 study revealed that there has indeed been an increase in the rates of psychotropic prescriptions given to children, and that a high proportion of children — as many as 64 percent — are receiving such treatment without the presence of clinical indications of psychosis (Lyons et al. 2004). Though this estimate of general pediatric overprescribing behavior doesn't relate specifically to ADD and ADHD, it is a figure similar to the 50 percent of children receiving stimulant medications without meeting DSM-IV diagnostic criteria for ADHD reported by Jensen et al. (1999).

Most research regarding medication used by youths diagnosed with ADD and ADHD focuses on Ritalin, which has been used as treatment for a longer period of time than Dexadrine and Adderall. The rates of methylphenidate, or Ritalin, use among youths have risen for all age groups. The percent of elementary school students taking medication rose from 1.07 percent in 1971 to 5.96 percent in 1987; for middle school students, the increase was from .59 percent in 1975 to 2.98 percent in 1993; the prevalence among high school students went from .22 in 1983 to .70 percent in 1993 (Jensen et al. 1999). In 1995, it was estimated that 2.8 percent of American youths, approximately 1.5 million children between the ages of five and eighteen, are receiving stimulant treatment (Safer et al. 1996), although Wolfe (2003) suggests that recent studies show this figure to be closer to 7 to 10 percent. Production quotas for Ritalin have also exploded, increasing from 1768 kg in 1990 to 10,410 kg in 1995, but this six-fold increase cannot necessarily be attributed entirely to an increase in the rate of prescriptions, as part of it may be due to an increase in the duration of use: the proportion of students with ADD or ADHD receiving stimulant medications in middle and high school rose from 11 percent in 1975 to 31 percent in 1995 (Safer et al. 1996).

Another issue in the controversy over the recent prevalence of prescription rates for stimulants is the adverse side effects that can result from extended use. The most common of these side effects are addiction, insomnia, and nervousness. Appetite loss, hostility, abdominal pain, weight loss, paranoia, skin irritation, allergic reactions, lethargy,

depression, hallucinations, and stunted growth are also possible side effects (National Institute on Drug Abuse 1999; Wolfe 2003). A 1986 study by Henry Nasrallah (reported in Koch 1999) presents some evidence that brain shrinkage is “significantly more frequent” in men who were diagnosed with ADD as children and treated with stimulants. However, the lack of causal data suggests further studies should be carried out to verify this finding.

Many critics of stimulant treatment also cite Ritalin’s classification as a high abuse drug by the DEA as evidence that students are abusing and selling their prescriptions (Wolfe 2003). Many media sources have identified the tendency of young adults to treat these stimulants as a sort of prescribed cocaine (Jaffe 2002; Koch 1999). Interviews with students reveal that there is a market for these drugs on college campuses, with pills being sold for anywhere between \$2-\$10 (*Brown University* 2005). Recent research reveals that, contrary to claims by psychologists at the National Institute of Mental Health, reports of abuse are not exaggerated, with prevalence rates on campus as high as 35.5 percent in one study, though estimates generally range between six and eight percent (*Brown University* 2005; Low and Gendaszek 2002; McCabe et al. 2005; Teter et al. 2005). Reports show that adolescents are using these drugs to concentrate, increase alertness, and to supplement other drug use in order to gain a high, especially in conjunction with heavy drinking. The pills are ingested orally, crushed up and snorted, much like cocaine, or even injected (Jaffe 2002; Koch 1999; Szufliata 2002).

We must consider whether the academic performance enhancing function of Ritalin, Dexadrine, and Adderall, a purpose very different from that of most illicit drug use, is associated with the demographic, social, and personality factors related to the abuse of stimulant medications in comparison to the correlates of other types of drug abuse. A number of studies on adolescent drug abuse support the notion that peer influence is the primary factor in determining whether or not a teen will use illicit drugs; however, depression, “liberal political attitudes, high involvement in peer activities, lack of closeness to parents, and low church attendance” (Kandel et al. 446), as well as weak family attachments, low self-esteem, and socioeconomic status, have been found to be at least slightly influential (Oetting and Beauvais 1987). Though there is no evidence that high levels of psychological distress and physical

illness increase the tendency toward drug use among adolescents, there has been some verification that long-term drug use can increase risk of developing higher levels of such distress and illness (Hansell and White 1991).

Adolescent sub-populations appear to be those most at risk of using and abusing illicit drugs, and it has been shown that the majority of drug use begins during adolescence (Oetting and Beauvais 1987). A 30-year longitudinal study carried out by Pope et al. (2001) reveals that the weekly use of alcohol among college students has remained relatively stable over the last few decades, though the use of most illegal drugs has been declining since 1978 (2001). This is not true for all drugs: the use of ecstasy (MDMA) and other club drugs appears to be on the rise — in fact, ecstasy has become the second most widely tried drug after marijuana (Pope et al. 2001). Also on the rise is prescription drug abuse. Findings from the National Household Survey on Drug Abuse show that the number of people who used prescription drugs for non-medical purposes exceeds 6.3 million. The highest abusing group of Americans is young adults aged between the ages of 18 and 25, six percent of whom report illicit use (NIDA 2003). Though these numbers represent the entire population, they are also indicative of the adolescent sub-populations with whom this study is concerned. For example, a 2002 study shows that Oxycontin, an opioid that, like Adderall and Ritalin, has been increasingly used in ways other than prescribed, has been tried by 9.5 percent of high school students, and 72 percent of students claim that the drug was not at all difficult to obtain (Holstege et al. 2002). The importance of measuring other types of drug use in this study lies in the recognition that prescription and non-prescription drug use are related, with users often even combining prescription and nonprescription drugs (Caces et al. 1998; NIDA 2003; Wilford 1993).

Pope and his colleagues conducted a 30-year longitudinal study of the drug use and lifestyle of college students, finding that users receive lower grades than and spend less time in extracurricular activities than do nonusers (2001). Because Adderall and Ritalin increase concentration and keep those who take them more alert, the most common use of these drugs on college campuses is to increase the effectiveness of studying (McCabe et al. 2005; Teter et al. 2005), a finding that may suggest higher grades and more community and on-campus involvement

that in users of other illicit drugs. Low and Gendaszek (2002) relate the tendency to use prescription amphetamines illicitly to the characteristics of perfectionism and sensation-seeking, a link that seems to be supported by their research. It will be interesting to determine whether students at the College of Charleston are using these drugs for the same reasons as students on other campuses.

Another key consideration is whether the alcohol and drug surveys administered by most college administrations accurately portray the numbers of students using prescription stimulants for non-medical purposes. In taking the CORE drug survey given at the College of Charleston myself, I found that there was no clear category into which I would have classified the use of drugs such as Ritalin, Dexadrine, and Adderall. It is my contention that few students would acknowledge this use as “Cocaine (crack, rock, freebase)” or “Amphetamines (diet pills, speed)” (CORE 2005), since these response categories do not suggest medications prescribed by doctors.

### **Methods**

This study is based on a survey of a random sample of 500 College of Charleston students generated by the Office of Institutional Research. The sample was stratified by school of major (e.g., School of Business, School of Humanities and Social Sciences, etc.), as well as participation in the Honors College, to represent the breakdown of students by school and department at the college as a whole. Each of the five hundred selected students was sent a survey, along with a cover letter describing the research project and a detailed explanation of informed consent.

The survey was created for this study and consisted of thirty-five questions. The first twenty-seven questions were taken almost directly from the CORE drug survey, and assess basic demographic information about respondents. The last eight questions inquired about the medical and non-medical use of prescription stimulants, as well as whether the respondent has been diagnosed with ADD or ADHD.

The response rate of the survey was very low, despite the promise of a fifty-dollar gift certificate to the campus bookstore. Of the 500 surveys sent out, only 75 were returned, for an overall response rate of 15 percent. Considering, though, that the 2005 CORE survey had 900 respondents out of more than 10,000 students, a 9% response rate, the

response of this study was not unusual compared to other forms of drug use assessment.

**Results**

Due to suggestions that there is significant variation in the non-medical use of stimulants from school to school, this use must be measured on a local basis to adequately assess the true nature and extent of the problem. This study seeks to measure the prevalence of the non-medical use of prescription stimulants at the College of Charleston. Despite a low response rate, the population sampled appeared to be similar to the college as a whole, although class standing (shown in Table 1) and gender (shown in Table 3) were a bit skewed. Comparisons of ethnicity were almost identical, as evident in Table 2.

**Table 1: Class Standing Comparison**

Class Standing	Sample	C of C
Freshman	14.7 %	26.3 %
Sophomore	14.7 %	24.2 %

**Table 2: Ethnicity Comparison**

Ethnicity	Sample	C of C
White	82.4 %	82.0 %
Black	13.5 %	7.0 %
Other	4.1 %	10.0 %

**Table 3: Gender Comparison**

Gender	Sample	C of C
Female	75.0 %	64.0 %
Male	23.6 %	36.0 %

Table 4 shows that the drug use prevalence results were almost identical to the lifetime prevalence rates reported in the 2005 Executive Summary of the CORE alcohol and drug survey administered at the College of Charleston (“Executive Summary” 2005).

**Table 4: Substance Use Lifetime Prevalence Comparison**

Substance	Sample	C of C	National
Tobacco	57.3 %	59.0 %	55.8 %
Alcohol	90.7 %	90.9 %	88.1 %
Marijuana	52.0 %	58.7 %	49.7 %
Cocaine	17.3 %	17.9 %	9.8 %
Sedatives	16.0 %	15.4 %	8.5 %
Opiates	5.3 %	4.2 %	3.1 %

This study found the reported lifetime prevalence rate of illicit stimulant medication use among respondents to be 21.3 percent. Illicit use was defined as use of a prescription stimulant in any manner other than prescribed. Table 5 shows the reported stimulant use behaviors among the sample. The most commonly prescribed and ingested drug

**Table 5: Stimulant Behavior Among Sample**

Never taken stimulants: 64 %
Only with prescription: 13.3 %
Without prescription: 21.3 %

was Adderall, which was being taken by 50 percent of those with a prescription. Only 13.3 percent of the students who participated had been diagnosed with ADD or ADHD, but 16 percent of the sample had been prescribed a stimulant medication. Of the total population, 6.8 percent of the students surveyed reported having purchased a prescription stimulant, but 19.2 percent of the students who have used prescription stimulants at some time in their lives admitted to such a purchase. Reports of cost and dosage ranged between \$1.00 and \$4.00 and 10 and 30 mg, respectively, though most students who had taken

the medication illicitly did not pay for the pills they ingested. Although only 2.7 percent of the total population had at one time sold a prescription stimulant, 16.7 percent of those with a prescription from a doctor reported making such a sale, charging between \$3.00 and \$4.00 for 10 and 20 mg pills.

It would appear that the most common usage of stimulant medications was to stay awake or study, a conclusion similar to that of an earlier study by Teter et al. (2005), which determined that most students use these drugs with the intention of increasing concentration and the effectiveness of studying. 56 percent of students have used a prescription stimulant to pull all-nighters or last-minute study sessions; 16 percent of students use the drugs only as prescribed, taking the normal daily dosage; 12 percent of students have used these medications to stay awake and go out with friends; 8 percent of students use them as needed, taking them only when necessary. As respondents were given the opportunity to select as many responses as suited their actual usage patterns, the percentages corresponding to the actual responses given by the participants is detailed below.

**Key**

**1:** As prescribed, taking the normal daily dosage

**2:** As needed, taking only when necessary

**3:** To pull all-nighters or last-minute study sessions

**4:** As prescribed and as needed

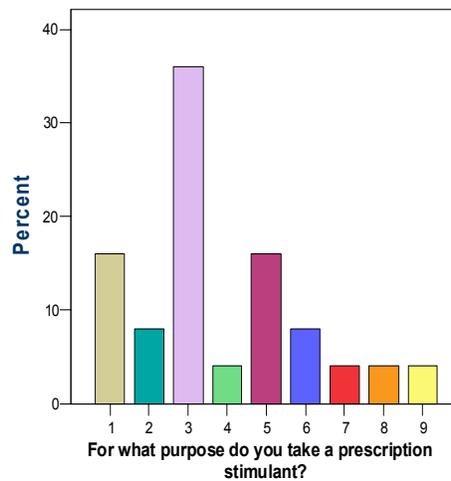
**5:** As needed and to pull all-nighters or last-minute study sessions

**6:** To pull all-nighters and last-minute study sessions and to go out with friends.

**7:** As prescribed, as needed, and to pull all-nighters or last-minute study sessions

**8:** As needed, to pull all-nighters or last-minute study sessions, and to go out with friends

**9:** As prescribed, as needed, to pull all-nighters or last-minute study sessions, and to go out with friends



Of the students who reported prescription stimulant use, the primary method of ingestion is oral, with 88 percent of users taking by mouth. Another 4 percent reported that their primary method of ingestion is nasal, and ingestion occurs by crushing and snorting the drug. The last

8 percent of users have ingested a stimulant medication in both of these manners.

Reported demographic characteristics of prescription stimulant users revealed that most of those who take these drugs in an illicit manner are from white, upper- and middle-class homes. Every participant who reported any use of a stimulant medication other than prescribed was white (100 percent), and 78.6 percent reported having a family income of greater than or equal to \$80,000. This is not surprising, since 89.3 percent of those who had been diagnosed with ADD or ADHD and 90.9 percent of those who had received a prescription to a stimulant medication had family incomes of greater than or equal to \$80,000. Thus, it would appear that those who are using it illicitly are those who have access to it, either personally or through peers.

Students who engaged in the non-prescription use of prescription stimulants were no more likely than their peers to be involved in activities either on or off campus, and did not appear to be busier or more studious than non-users. Employment was not found to be related to prescription stimulant use, as shown in Table 6, and 68.8 percent of those who

**Table 6: Stimulant Use and Employment**

Currently employed: 43.8%
Not currently employed: 56.3%

admit to illicit psycho-stimulant use study ten or fewer hours a week. Only 31.3 percent of those who have taken a stimulant medication illicitly report studying between ten and twenty hours a week, while 52.1 percent of their non-using peers report such extensive study habits. Of the illicit psycho-stimulant users, only 31.2 percent report volunteering any time with off-campus organizations, while 54.2 percent of non-users participate in volunteer activities. No students who were involved

**Table 7: Stimulant Use and Grades**

A: 7.1%	B: 78.6%	C: 14.3%
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in three or more extracurricular activities reported illicit stimulant use. It is interesting to note that grades may in fact be related to prescription stimulant use, as most users reported a B average, evidenced in Figure 4 — the average GPA of the College of Charleston is a 2.92, somewhat lower than the average 3.27 GPA reported in this study.

As reflected in earlier studies, stimulant use appears to be strongly linked to other drug use and risk-taking behaviors. Strangely enough, however, 43.8 percent of those who reported using a prescription stimulant in an illicit manner failed, when asked, to report cocaine or stimulant use. It would appear that students are not associating the use of *prescription* stimulants with that of other amphetamines.

**Table 8: Drug Use Comparison by Illicit Use and Non-Use of Prescription Stimulants**

<b>Substance Used</b>	<b>Illicit Users of Stimulant Medication</b>	<b>Non-Users</b>
Tobacco	93.8 %	45.8 %
Alcohol	93.8 %	89.6 %
Marijuana	87.5 %	41.7 %
Cocaine	56.3 %	6.3 %
Sedatives	43.8 %	8.3 %
Opiates	25.0 %	0 %

**Conclusions**

It is possible that the low response rate of this study, 15 percent, may exaggerate some of the reported statistics, though the demographic characteristics do mirror those of the College of Charleston population. Another limitation that must be considered is the wording of response

categories. Just as the CORE survey fails to include Adderall and Ritalin as examples of amphetamines, this survey grouped cocaine and amphetamines, which were exclusive categories on the CORE survey, into a single group of stimulants, with cocaine listed as the sole example. This may have contributed to the high number of prescription stimulant users who failed to report stimulant use, although it is unlikely that the categories of the CORE survey — “Cocaine” and “Amphetamines” (CORE 2005) — would be more commonly associated with prescription stimulants than the category of “Stimulants.” Thus, despite the fact that these response categories were not identical, the lack of reporting of stimulant medication use found on this survey may indeed extend to the CORE survey as well.

This study shows that the illicit use of prescription stimulants is common among undergraduate students and more prevalent at the College of Charleston than the studies by Teter et al. (2005) and McCabe et al. (2005) would suggest. Furthermore, it is a primarily white middle- and upper-class phenomenon, often used to improve academic performance and to remain alert, both while studying and while out with friends. In fact, the recreational use denied by some experts (*Brown University* 2005) was not uncommon in the students surveyed, with 12 percent admitting to using a stimulant medication to stay awake and go out with friends. It seems, though, that the correlation between psychostimulant use and perfectionism found by Low and Gendaszek (2002) may not be valid, if perfectionism can be measured by academic performance and involvement in on- and off-campus activities. In fact, if participation in the Honors College on this campus is any indication of perfectionism, then this relationship is probably not valid, since none of the students participating in this program report stimulant use, although 14.1 percent of the sample was enrolled in the Honors College.

Though most experts claim that there is no occurrence of overprescription when it comes to prescription stimulants, and they may, in fact, be underprescribed (*Brown University* 2005; Safer et al. 1996), this claim was not supported by the findings from this sample. Instead, despite the fact that only 13.3 percent of respondents had been diagnosed with ADD or ADHD, 16.0 percent of the students in the sample had been prescribed a stimulant medication.

The most significant finding of this research proved to be the

methodological implications of the results. 43.8 percent of students who reported using a prescription stimulant failed on an earlier occasion to report stimulant use. This finding may show that students consider drugs such as Ritalin, Dexadrine, and Adderall in a context very different from that of other stimulants and may not recognize their classification as amphetamines. Evidence from the CORE survey shows that there is a much higher stigma associated with cocaine and amphetamine use than that associated with other drug use. For example, 80.8 percent of participants believe their friends would disapprove if they tried cocaine once or twice, while only 32.1 percent believe that their friends would disapprove if they tried marijuana once or twice. Additionally, 83.6 percent of student respondents rate the regular use of cocaine and 77.1 percent rate the regular use of amphetamines to be a “great risk,” while only 40.1 percent rate the regular use of marijuana to be as high of a risk (“Executive Summary” 2005). This is supplemented by the finding that 56.3 percent of those students who report non-medical use of prescriptions stimulants believe that drug use leads to negative situations and should not be available or used (on a scale of “somewhat agree” to “strongly agree”). An informal focus group held to assess these findings did seem to imply that students do not associate prescription stimulants with illegal stimulants; some do not even recognize these medications as “drugs” and would not report this use on a survey such the CORE survey.

A concurrent drug and alcohol use study being conducted at the College of Charleston by Bakanic and Burkett avoided this methodological complication by listing Adderall and Ritalin, popular stimulant medications, as examples of stimulants. Their reported stimulant use rate was more than twice the 17.3 percent stimulant use rate reported in this study. Thus, it would appear that this use has not been adequately measured on most college campuses, since the survey methods commonly used to assess drug and alcohol use do not specifically mention this form of substance abuse and, due to the nature and acceptability of prescription stimulants, students fail to report the use of these drugs as stimulant or amphetamine use.

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