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Self-Medication Practices of Undergraduate College Students:

Non-Medical Prescriptive Stimulant Use

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Abstract:

Purpose: The purpose of this study was to determine self-medication practices of undergraduate students enrolled at the University of Connecticut in attempt to inform future educational efforts on drug misconceptions in order to encourage safe medication practices among incoming undergraduate students.

Background: Non-medical use of stimulants prescribed for attention-deficit/hyperactivity disorder (ADHD) treatment has gained attention due to non-medical prevalence rates in U.S. colleges. Current literature investigates circumstances, demographics and motives in sample populations that increase student misuse of these prescription medications.

Methods:

Design: Multi-method research strategy investigating the perceived focus group coded data to the actual self-reported Adhere Tx Know My Meds™ online survey. Analysis of the perceived versus actual data attempts to identify students awareness of stimulant use and the actual prevalence of stimulant use.

Participants: Undergraduate students (18+) enrolled at the University of Connecticut that voluntarily responded to participate in campus focus groups and/or to the online survey.

Results:

Focus Group: Of the discussed medications that were coded via a focus group communication content analysis the second most common mentioned product was the use of Adderall at 28 counts behind energy drinks at 41 counts. Students reported that they believed others used Adderall to help them: study, stay awake in general, stay awake to drink alcohol and/or suppress ones appetite.

Survey Data: Of the 1976 survey participants, 73 (3.7%) reported using a prescription stimulant to treat one or more of the conditions listed on the survey questionnaire. The following were self-reported conditions in which participants reported stimulant use: Enhance mental performance (83.6%), stay awake (37%), weight loss (1.4%), anxiety/depression (6.8%), pain relief (2.7%), mix with alcohol (8.2%) and/or drinking preparation (2.7%).

Conclusions & Implications: Perceived focus group rational use of ADHD medication was reflected in self-reported survey results. Reported stimulant use included enhancing mental performance, staying awake, weight loss and drinking preparation.

Implications: Results will be developed into educational awareness planning and interventions for incoming undergraduate students to encourage safe medication practice.

LITERATURE REVIEW

Non-medical use of stimulants prescribed for attention-deficit/hyperactivity disorder (ADHD) treatment has gained attention due to non-medical prevalence rates in U.S. colleges ranging from zero to 25% according to a national survey (McCabe et al., 2005). Multiple research groups have surveyed the college population to determine what circumstance or characteristics in a sample population increase student's misuse of these prescription medications. The current literature attempts to answer recent discussion on stimulant use, side effects, non-prescription misuse occurrence and prevalence characteristics among college students. For future implications the three subgroups will be discussed:

- 1) Evaluating stimulant use and side effects
- 2) Investigate the use of stimulants among colleges related to characteristics that increase ones use of non-medical stimulant abuse
- 3) Rationale for stimulant use on U.S. college campuses.

Evaluating Stimulant Use and Side Effects

One might ask, "Are undergraduate college students well educated about the side effects of stimulants use?" DeSantis and Hane (2010) interviewed 175 students at a southeastern university to identify how students conceive ADHD stimulants and their illegal use. In fact, participants justified their drug use as being morally acceptable. Participants also positively responded to stimulants being physically harmless. This finding was also highlighted in DeSantis, Noar and Webb's (2009) study geared towards the fraternity population a year prior. Furthermore, Desantis, Noar and Webb (2010) found that students also felt as if nonmedical users have little health information about stimulants. With this notion in mind that non-prescriptive stimulant use is thought of as

“physically harmless,” what attention deficit hyperactivity disorder (ADHD) and pharmacological information should students be aware of?

Attention deficit hyperactivity disorder (ADHD) is diagnosed in children who display symptoms before age 7 and have symptoms presented in at least two settings (e.g. at school and home). Symptoms presented in ADHD children include impulsiveness, inappropriate degree of inattention, fidgeting, talking excessively, being constantly “on the go” and hyperactivity. However, although “hyperactivity” is part of the disorder’s name, it is not necessary a symptom found in all children diagnosed with ADHD (Varcarolis & Halter, 2010).

The treatment for ADHD for decades has been psychostimulants, which have been proven to be effective in 70% to 80% of patients with the disorder (Nazario, 2009). The stimulant drugs used to treat ADHD include: Adderall, Adderall XR, Concerta, Dexedrine, Focalin, Focalin XR, Metadate CD/ER, Methylin , Ritalin, Vyvanse and Daytrana. Of these stimulant drugs, Adderall XR, Concerta, Vyvanse and Focalin XR are not FDA approved for children. Methylphenidate (Ritalin, Methylin) is the most widely used psychostimulant because of its simplicity and safety in use (Varcarolis & Halter, 2010). In the present study, participants answered positively to taking stimulants such as Adderall, Vyvanse, Ritalin/ Methylphenidate, Concerta, and/or Dextroamphetamine. Adderall was the most common stimulant users reported taking followed by Vyvanse. The most common side effects of stimulant-based medications in patients with ADHD are decreased appetite (22-36%) resulting in weight loss (4-9% pediatric; 11% in adults), insomnia (12-17% pediatric, 27% adults), jitteriness, xerostomia (35%) and headaches (26%). To reduce medication side effects administration times have been established.

Taking the stimulant after meals is recommended in the pediatric population to prevent weight loss and growth reduction related to the decreased appetite following the medication consumption. The appetite is least during the daytime making it ideal to eat a large breakfast in the morning prior to administration (Stein, 2003). To prevent symptoms such as insomnia, minimum effective dosages are essential as well as the time of administration being before 4:00pm (Varcarolis & Halter, 2010). It has been reported that the risk for stimulant-induced hypertension is 7-22% in the pediatric population (Micromedex 2.0, 2012).

Alternatives to stimulant drugs are nonstimulants such as the norepinephrine reuptake inhibitor Strattera that is approved in children, adolescents and adults. Common side effects of Strattera are increased systolic or diastolic arterial pressure, tachycardia, weight loss (7.1-29.1%), decrease in appetite (11% adult, 16% pediatric), abdominal pain (7.1%-29.1%), headaches (19% pediatric) insomnia (16% adult, <2% pediatric), erectile dysfunction (9% adult) and menopausal flushing (8% adult) (Micromedex 2.0, 2012). Nonstimulant drugs improve concentration and assist in impulse control without the risk of abuse. The downside to these medications is the slow therapeutic response that can take up to 3 weeks (Lehne, 2010). On the other hand, Strattera extended release has a duration of 24 hours compared to Ritalin's duration of 3-5 hours requiring medication administration 2-3 times a day. Once-a-day dosage of Strattera in children has been noted to be more convenient and helps avoid the potential stigma of taking medications at school (Varcarolis & Halter, 2010). Use of Strattera was not reported amongst the 73 users within this campus study.

Intuniv (guanfacine), a centrally acting antihypertensive, is FDA approved for children and teens between ages 6 and 17, but not adults. According to the FDA, Intuniv was shown to have an effect on decreasing the heart rate and prolonging the mean QTc in healthy adults. In addition to Intuniv's cardiac considerations, there are concerns with liver and renal clearance of the drug that has not been proven safe or effective in the adult population (FDA, 2011). In cases where stimulants and nonstimulants are ineffective, alternative medications are used to treat ADHD such as Tricyclic antidepressants (TCAs), Catapres (clonidine), Duraclon (clonidine injection), Kapvay (clonidine), Nexiclon (clonidine), and Wellbutrin (bupropion). TCAs (elavil, norpramin, pamelor, tofranil) are not significantly used in regards to psychiatric illnesses due to their side effects and narrow therapeutic index (Varcariolis & Halter, 2010). The side effects alone have been found to make individuals nonadherent with these medications causing a high "drop out rate" at higher dosages. Side effects of TCA's include sedative effects, anticholinergic symptoms (dry mouth, blurred vision, difficulty urinating), orthostatic hypotension, lowered seizure threshold, increased risk of cardiac arrhythmias, and weight gain. TCA's also carry the risk of narrow-angle glaucoma (APA, 2010).

Concurrent use of Alcohol and Stimulants

The upcoming publication of Allen and Gabbay (2012) discusses amphetamine effects on negative emotionality and alcohol use. The theory is that alcohol can be sedative in varying amounts to some but stimulating to others. These stimulating effects are described as making one feel "excited, energetic, and talkative." The stimulating effects are discussed as being more prominent in heavy drinkers or those that have a

family history of alcoholism. Allen and Gabbay extend the current literature on the combination of amphetamine with negative emotionality suggesting feelings of negative emotionality (the intensity in which one experiences emotion) can encourage one to act impulsively and irrationally thus making one more prone to drink excessively (Allen & Gabbay, 2012).

The downside to drinking while taking stimulants is the potential cardiovascular effects of combining the two. Although the mechanism of the interaction is unknown, it is reported that 30mg of intravenous methamphetamine and 1gm/kg of ethanol over 30 minutes increased the heart rate by 24 beats/minute compared to methamphetamines alone. An increase in cardiac work and myocardial oxygen consumption can result in adverse cardiovascular events (Micromedex 2.0, 2012).

Another concern with combining stimulants with alcohol is that the stimulants mask the sedative effects of the alcohol. Typically, when one consumes alcohol one eventually feels tired from the CNS depressant effect. However, when a stimulant is added, one is more alert and prone to drink for a longer period of time. Drinking for a longer period of time puts one at risk for higher alcohol blood levels and greater CNS depressant effects. Although research on ADHD stimulant use with alcohol is still underway, other stimulant-like substances have been studied to determine guidelines for alcoholic beverage ingredients. For example, alcoholic beverages in the past that also contained caffeinated energy drinks have been banned from the market due to the stimulant masking effects (Ferreira et al., 2006).

SSRIs, SNRIs and Stimulant Use

Amphetamines and methylphenidates increase extracellular serotonin, norepinephrine and dopamine. The increase in serotonin in the extracellular space may potentiate the amount of serotonin available when one is concurrently taking selective serotonin reuptake inhibitors (SSRIs) or serotonin norepinephrine reuptake inhibitors (SNRIs). The risk of increased amounts of serotonin is the potentially life threatening event called serotonin syndrome. Serotonin syndrome symptoms include altered consciousness, irritability, confusion, hallucinations, coma, memory impairment, shivering, blood pressure fluctuations, hyperreflexia, myoclonus, ataxia, tremors, rigidity, and gastrointestinal symptoms such as cramping, nausea, vomiting and diarrhea (Moore, 2010). In addition to the risk of serotonin syndrome, using stimulants concurrently with SNRIs can also increase the amount of extracellular norepinephrine. High levels of norepinephrine can result in an elevated blood pressure, an elevated pulse and increased amount of anxiety (Varcarolis et al., 2010). Therefore, concurrent use of amphetamines, SSRIs and SNRIs is not advised.

Population focus:

Misuse of prescription stimulants on college campuses has gained recent attention due to the rising amount of stimulant prescriptions that came hand-in-hand with the increase in the diagnosis of attention deficit hyperactivity disorder (ADHD) in the United States. In fact, according to the National Institute of Drug Abuse, the number of stimulant prescriptions increased from 5 million in 1991 to 45 million in 2010 (National Institute of Drug Abuse, 2011). Current literature has questioned characteristics and motivation behind the use of stimulants in college settings. Multiple studies suggest higher rates of abusing stimulants for non-prescription use were higher among white males (Kroutil et

al., 2006; McCabe et al., 2006) and between the ages of 18 to 25 (Kroutil et al., 2006). In contradiction, White, Becker-Blease & Grace-Bishop (2006) found similar user patterns among males and females. In regards to age, Pilkinton and Cannatella's secondary analysis of the quantitative data obtained from the National Survey of Drug Use and Health (NSDUH) of 2009 found that participants between the ages 26-34 years of age were more likely to report using stimulants non-medically. The chi square analysis found the use of stimulants to be at 10.12% for the age group of 26-34, 9.88% for ages 35-49 and 9.63% for ages 18-25. In this particular study, male whites were also among the highest to misuse the drug (9.07%) followed by white females (8.79%) (Pilkinton, Melinda, 2012).

Non-Prescription Stimulant Use Literature:

McCabe and colleagues (2005) examined the prevalence rates and correlation of non-medical prescription stimulates use among US colleges via the design of a self-administered mailed survey containing 20 questions regarding demographics, substance use and other health behaviors. The quantitative study involved one hundred and nineteen 4-year US colleges with a representing sample of 10,904 randomly selected college students in 2011. The use of non-prescribed stimulant use was measured by the self-reported behavior to the question "how often, if ever, have you used any of the drugs listed below? Do not include anything you used under a Doctors orders." Drug items included Ritalin, Dexedrine or Adderall and were scaled on 1) never used; 2) used but not in the past 12 months; 3) used, but not in the past 30 days; and 4) used in the past 30 days. Results of this questionnaire were as follows: 6.9% reported life-time non-medical

use of prescription use, 4.1% reported use non-medical use in the past year and 2.1% reported in the past month. Analysis of individual college proposed that non-prescription stimulant use ranged from zero to 25%. Overall multivariate regression analysis findings indicated an increase of non-medical prescription use among college students that were male, white, were members of fraternities or sororities, attended colleges in the north-eastern region of the US and colleges with high admission standards. Regardless of high admission standards, rates were also higher among students that earned lower grade point averages. Furthermore, users were more likely to report the use of marijuana, cigarettes, alcohol, ecstasy and cocaine. There is a probability that this study underestimated the amount on non-prescription use among college students due to limiting the questionnaire to three stimulants (e.g. Ritalin, Adderall and Dexedrine). McCabe and colleagues did not examine the use of other stimulants such as Concerta, Focalin, Focalin XR, Metadate CD/ER, Methylin, Vyvanse and Daytrana. Furthermore, the survey was limited to 4-year college universities so that students attending a 2-year college program were excluded from the sample population. Although results were not generalized to the entire college population and were limited to self report, the suggested increase of non-prescription stimulant use among particular demographics were comparable to other surveys.

The fraternity population in which McCabe and colleagues (2005) deemed in having an increased incidence of non-prescriptive stimulant use was investigated in another study. DeSantis, Noar and Webb (2009) used a quantitative method to investigate the use of ADHD stimulants by fraternity members. Of the 307 participants, 55% (n=170) reported nonmedical use of ADHD stimulants. The demographics of these users were high among the upperclassmen, those living off campus and those who regularly

smoked marijuana. The majority of fraternity members reported obtaining stimulants from friends for academic motives. These individuals also did not view ADHD stimulants as dangerous.

To follow up on the previous study, Desantis, Noar and Webb (2010) used a qualitative approach to investigate the use of ADHD stimulants by fraternity members via 79 in-depth interviews. The interviews suggested the following: 1) stimulants are easy to obtain; 2) nonmedical users have little health information about stimulants; 3) academic stress creates a context for stimulant use; and 4) a small number of prescribed users supply a majority of nonmedical users. Non-prescriptive stimulant users reported using ADHD stimulants in periods of high academic stress and suggested that it reduced fatigue, increased reading comprehension, interest, cognition and memory.

For a larger demographical population DeSantis, Webb and Noar (2008) studied 1,811 undergraduate students at a large public, southeastern university in the United States. This quantitative and qualitative methodology investigated participants from the fall 2005 through the fall of 2006. The authors administered surveys to participants and conducted 175 in-depth interviews. Results found that of the study participants 34% reported non-prescriptive stimulant use. User's also reported that stimulants were used in periods of high academic stress, and found that stimulants reduces fatigue, increased reading comprehension, interest, memory and cognition. Of the 34% users many had little information about the drug and found that obtaining the drug was easy and socially acceptable, a similar finding in previous studies (DeSantis & Hane, 2010) (Desantis, Noar and Webb, 2010).

Weyandt and colleagues (2009) also investigated the potential misuse of prescription stimulants (e.g. methylphenidates or amphetamines) among a random sample of 390 college students at a public university located in the northeastern region of the US. In relationship to McCabe and colleagues (2005) quantitative national study, non-prescription stimulant use was suggested to be higher in the northeast coast. Weyandt and colleague's unique study explored the relationship between psychological variables and nonmedical stimulant use. This quantitative non-experimental study revealed in the 40-item questionnaire that 7.5% of students reported non-prescription stimulant use within the past 30 days. Prevalence was highest at 9.3% for students that used stimulants but did not in the past 12 months. Results indicated that 60% of students reported knowing other students who misused stimulants and 50% of the population "agreed or strongly agreed" that stimulants were "easy to get on this campus." College users reported higher degrees of psychological distress and internal restlessness as measure by brief symptom inventory (BSI) and internal restlessness scale (IRS). Although the study doesn't find a direct correlation between the two variables, it is conferred that students experiencing higher distress levels may have a greater risk for misusing prescription stimulants. This study warrants further investigation on psychological relationships with non-prescription stimulant use.

White, Becker-Blease & Grace-Bishop (2006) utilized an Internet survey to investigate the use, misuse and abuse of stimulant medications among a northeastern US university (The University of New Hampshire). The 29-question surveys were distributed via student e-mail addresses, 150 paper surveys within undergraduate classes, which resulted in 1,025 returned surveys in which 975 were electronic. Of the respondents 16%

reported misuse of a stimulant medications and 96% of who specified the medication reported the misuse of Ritalin. Unlike McCabe (2005) and Kroutil (2006) who found a greater incidence among males, the researchers of this quantitative study found similar correlations among females and males. Unlike other studies, this questionnaire asked users to identify the route of medication administration. Among respondents that misused stimulants 40% reported using stimulant medications intranasal. The abuse of the nasal route carries the risk of damaging the nasal mucosa and cartilage due to the stimulant's vasoconstrictive effects. Furthermore, although nasal bioavailability of amphetamines and methylphenidates is not established, one must keep in mind that other stimulants such as methamphetamines abused via the nasal passage can have a bioavailability of 79% (Harris et al., 2003). Therefore, when taking the ADHD stimulant medications other than prescribed there is a risk of potentiating the medication's side effects. In addition to the potentiated effects, the large amounts of dopamine released in the brain during stimulant abuse can produce euphoria thus increasing the risk of addiction (Diana, 2011). The rationale for abusing stimulant medication included partying, reducing hyperactivity, improving attention, and improving grades.

Rationale for Stimulant Use on U.S. College Campuses:

Rabiner and colleagues (2009) investigated college student motives and perceived consequences of non-medical use of ADHD medications via a quantitative non-experimental study. The web-based survey population was limited to 3,407 students among one public and one private university in the southeastern US. The online questionnaire asked participants about motives, perceived events and potential adverse consequences that could result from non-medical use of ADHD medication. Results

suggested that 5.4% of respondents reported non-medical use of ADHD medication associated with self-reported attention difficulties. Furthermore, respondents reported the rationale for the non-prescription use of ADHD medication was for the enhancement in studying rather than for nonacademic motives. Users viewed that non-medical use was beneficial regardless of reported side effects. Similar to McCabe and colleagues (2005) self reported GPAs were lower among students using non-prescribed stimulant medications. In regards to survey reliability, the survey could not represent a diverse or larger geographical population due to the sample that included a larger recruitment percentage of white students and females, and a smaller recruitment percentage of African American participants. Furthermore, the sophomore class was overrepresented in the private college sample due to the survey invitation to all sophomores rather than a random selection of 50% of the class. The sophomore class represented 41% of the 1,744 respondents in the private college. On the other hand, in the public college population the sophomore entries were at 26% of 1,646 respondents. Therefore, of the combined private and public participants (n=3,390) the sophomore representation was at 23%, thus, the class was represented similar to that of the other classes in the overall demographic total.

Carroll, McLaughlin and Blake (2006) investigated the knowledge and patterns of nonmedical use of stimulants intended to treat ADHD among a sample of 347 undergraduate college students. The anonymous 23-question survey was distributed to a private liberal arts college in New England. Researchers found that 9.2% reported nonmedical stimulant use, 71.4% reported having peers who used non-prescribed stimulants, 44.3% knew of peers that they do not believe had ADHD but made ADHD

medications-seeking visits to a physician, and 53% knew of people who sold stimulants to students. Researchers proposed that the use of nonmedical stimulants were due to the belief that stimulants help individuals study better, stay awake and lose weight. Unlike other studies, the investigators questioned knowledge of stimulant effects. It was concluded that nonusers who knew of peers that took non-prescribed medications knew more of the stimulant effects than those who did not have peers that used stimulants. Given this information, the researchers suggested that there is a probability that students can become tempted to the “beneficial effects” of non-medical stimulant experienced by their peers.

The Garnier-Dykstra and colleagues (2012) longitudinal interview-conducted study examined non-medical prescription stimulant use trends including motives, routes of administration, sources, cost and risk factors. The population consisted of 1,253 individuals enrolled in a college life study at a public university in mid-Atlantic region of the US. Researchers used generalized estimating equations to examine longitudinal trends in the data that was collected during the academic years of 2004-2005 to 2008-2009. Uniquely to this study, risk factors of non-prescribed stimulant use were investigated overtime. Results showed that 61.8% of the participants were offered prescription stimulants for nonmedical use by their 4th year and by the 4th year 31% of participants had used non-prescription stimulants. The misuse of stimulants was reported to be due to studying (73.8% to 91.5% annually of the groups). Unlike White, Becker-Blease & Grace-Bishop (2006) study, intranasal administration was limited to less than 17% of users. Users reported obtaining prescriptive stimulant medications primarily from friends (73.9%) for free or for \$5 or more per pill. Similar to other literature lower GPAs and

alcohol use were associated with non-prescription stimulant use (McCabe et al., 2006). In regards to generalization, this study was limited to one university and had notable differences in interviewing participants between midterm and final time periods.

Teter and colleagues (2005) also investigated the prevalence and motives for illicit prescription stimulant use. A Web survey TO was administered to a random sample of 9,161 undergraduate college students. Of the survey respondents who reported illicit use of prescriptive stimulants 8.1% (n=689) reported lifetime use and 5.4% (n=458) reported past-year use. The most prevalent motives were to help concentrate, increase alertness, and to provide a high. There were no gender differences in the motives of use; however, men were more likely than woman to report non-prescriptive stimulant use. Lifetime use was reported higher for White (9.5%) and Hispanic (8.9%) students than for other racial student groups (5.8%), African Americans (2.7%) and Asians (4.9%). The use of prescriptive stimulant use positively correlated with the use of alcohol and drug use. The study suggested that the use of stimulants with alcohol and other drugs might be to counteract the depressant effects of other substances.

Conclusion

Self-report studies have shown nonmedical use of ADHD prescription stimulants. Nonmedical stimulant use ranges were as follows: zero to 25% (McCabe et al, 2005), 9.3% (Weyandt et al., 2009), 9.2% (Carroll, McLaughlin & Blake, 2006), 16% (White, Becker-Blease & Grace-Bishop, 2006) and 55% among the fraternity population according to McCabe and colleagues (2005). The actual (self-report) data can be compared to the perceptual data of Carroll, McLaughlin and Blake (2006) quantitative report. Carroll, McLaughlin and Blake investigated the knowledge and patterns of

nonmedical use of stimulants intended to treat ADHD and found that 71.4% reported having peers who used non-prescribed stimulants, 44.3% knew of peers that they do not believe had ADHD but made ADHD medications seeking visits to a physician, and 53% knew of people who sold stimulants to students.

In respect to individual motives for using nonmedical ADHD prescriptions, respondents reported in Rabiner and colleagues (2009) study that misuse was solely for academic purposes and that studying benefits outweighed the risks. Garnier-Dykstra and colleagues (2012) unique longitudinal interview studied nonmedical stimulant use trends including motives, routes of administration, sources, cost and risk factors. Results showed that 61.8% of the participants were offered prescription stimulants for nonmedical use by their 4th year and by the 4th year 31% of participants had used non-prescription stimulants. Similar to Rabiner and colleagues (2009) the misuse of stimulants was reported to be due to studying (73.8% to 91.5% annually of the groups). Researchers hypothesized nonmedical use of ADHD medications was due to academic purposes. However, unlike other studies that focused on ADHD medication abuse to be used for studying solely, Carroll, McLaughlin and Blake (2006) reported the use of ADHD medications was to study better, stay awake and lose weight. Similarly, Teter and colleagues (2005) study of undergraduate students via a Web survey reported illicit use of prescriptive stimulants to help concentrate and increase alertness. The third motive for the use of stimulants was to provide a high, a rationale not discussed in other articles.

The literature suggests that actual data ranges (self-reported) and perceived data (peer report) conflict regarding how many college students actually use ADHD medication for nonmedical purposes. In fact, as many as 71.4% of peers reported

knowing someone who used ADHD medication for nonmedical purposes (Carroll, McLaughlin and Blake, 2006). Evaluating the actual versus perceived data is limited due to the risk of underreport in self-report studies. Furthermore, studies cannot represent a larger geographic region. In fact, national prevalence research is limited - the McCabe and colleagues (2005) study was the only national survey designed to determine nonmedical stimulant use among the college population.

METHODS

Design: A multi-method research strategy was used to compare focus group perceptions of stimulant use to the actual self-reported medication use captured by the AdhereTx Know My Meds TM online survey. Analysis of the perceived versus actual stimulant use attempts to identify student awareness of stimulant use on campus and the actual prevalence of stimulant use.

Participants: Inclusion criteria for participation in the study were as follows:

Undergraduate students (age 18+) enrolled at the University of Connecticut, with a high school degree or equivalent (required for admission to the university), and could speak and read English (focus groups and the survey were provided in English only).

Participants voluntarily responded to participate in campus focus groups and/or to the online survey.

Procedure:

The following is a general overview of the study implementation:

- Completion of a literature review
- IRB application submission and approval

- Focus groups recruited and conducted
- Focus group communication content analysis
- Adhere Tx Know My Meds™ online survey database developed based on focus group results and significant findings in the literature
- Online survey trialed by undergraduate researchers
- Students recruited for AdhereTx Know My Meds™ online survey via undergraduate listserv email
- Online survey open for two-week time frame
- Survey analysis following removal of incomplete surveys and unreasonable entries.
- Multi-method comparison of perceived focus group data versus actual survey data.

Focus Group

Prior to focus group recruitment, an IRB application was submitted to be inspected for study confidentiality and participant safety. To ensure that all research participant's rights and welfare was protected, the IRB application provided an in-depth explanation of the study implementation. Following the approval of the IRB application, recruitment of participants and focus groups were conducted.

Focus Group Recruitment: Students for the focus groups were recruited via flyer and via an UConn undergraduate listserv email during the spring semester of 2011 (Refer to Appendix A: Focus Group Flyer). The five undergraduate honors students spoke to groups of students on campus (in dining halls, general education lecture halls, residential halls, library, cultural centers, and student union common areas) to introduce the study. Two incentives were presented to students for completion of participation: a \$10 gift card to the UConn Co-op and refreshments during the focus group session. Students interested in participating in the focus groups were given a “quarter card” with the principal investigator's designated phone number and instructions to leave their first name and telephone number. An undergraduate student researcher contacted interested students to

make an appointment to review the consent form (See: Appendix B: Focus Group Consent Form). An undergraduate student met with each student to review the consent form in the Center for Health, Intervention, and Prevention (CHIP) building located on campus. After consent was obtained, students were scheduled to participate in one of four focus groups, occurring during the months of March and April 2011. Participant consent forms were locked in a secured office at the school of nursing with the focus group electronic recorders and the focus group notes.

Focus groups were held on campus at the CHIP building for a timeframe of forty minutes to one hour. During each session, two to three undergraduate researchers and the principal investigator were present. One of the undergraduate researchers took on the role as the facilitator of the focus group and the second and third student, if present, undertook the role of the note taker and overseer of the two electronic recorders. The facilitator read from a pre-determined script to provide fidelity of the focus group process (See: Appendix C: Focus Group Script). The facilitator sat at the end of the table and students and note takers sat to the sides (Appendix D: Focus Group Seating Arrangement) to promote conversation amongst the participants. Each participant was assigned a number as a recording identifier. Numbers ensured confidentiality, were referred to during note taking and were documented during electronic recording transcriptions. The facilitator asked participants at random a series of questions from the script. Participants were given the option to pass the question entirely or add more information after each group discussion.

Focus group statistics: A total of 21 undergraduate students participated in the focus groups. Four focus groups were arranged with a collection of four to seven participants in each group (See: Appendix E: Focus Group Composition). Focus group statistics were as follows: 4 freshmen (20%), 12 sophomores (60%), 2 juniors (10%) and 2 seniors (10%). Of the participants, 14 (67%) were females and 7 (33%) were males (See: Appendix F: Focus Group Characteristics).

Focus Group Analysis: The four focus group electronic recordings were transcribed via two undergraduate student researchers. The transcribed conversation included participant identifier numbers (1-7) to be referred to later for examination. Transcribed focus groups were then analyzed via a communication content analysis. The content analysis was broken up into focus group questions and variables (medications per group) (See: Appendix G: Focus group communication content analysis). Defining characteristics and examples of when to apply a count were established for consistency. For example, medications were counted once per participant for each question if either of the following criteria were met: 1) When a participant stated the medication, and 2) There was mutual agreement by another participant after someone else stated the medication. Therefore, if a participant stated “Marijuana” as an answer to a question and another participant mutually agreed (“yes”, “yeah”, “same”) the medication was counted as two distinct counts.

Following the communication content analysis of the transcription, questions were further broken down into medications mentioned per question (See: Appendix H: Focus Group Counts per Discussion Question). The rationale was to see the desired

outcome of each medication (stay awake, improve mental performance, alleviate colds or sinus problems, etc.). The communication content analysis was further broken down into counts for each substance to establish what focus group participants thought “others” were taking most for each desired outcome (See: Appendix I: Substance Counts per Communication Content Analysis). The top ten ranking substances stated were energy drinks, Adderall, marijuana, caffeine, alcohol, Nyquil, Advil, ibuprofen, Benadryl and Tylenol (See: Appendix J: Top ten ranking counts). All substances stated by focus group participants were added to the AdhereTx Know My Meds™ online survey for future focus group comparison.

Survey:

Survey Recruitment: The survey email message was sent out to the undergraduate listserv during April of 2011. The email informed students of the survey, provided the survey web link, and instructed students to copy and paste the survey web address into a browser to ensure anonymity (See: Appendix K: Listserv Message for Survey). The incentive for completing this survey was a chance to win one of thirty \$25 UConn Co-op gift cards. To prevent linking the survey to the participant, participants were provided a randomly generated six-digit number that went into the drawing for the gift cards after survey completion. After the closure of the survey, thirty winning six-digit codes were chosen at random and then were announced via email to the undergraduate listserv. Winners were to present their winning six-digit number to the principal investigator at the school of nursing to receive the gift card.

Survey Statistics: Following removal of surveys deemed incomplete or erroneous, the final sample was $N=1976$. Of the respondents 1392 (70.4%) were females and 584 (29.6%) were male. The class standing in which participants classified themselves in was as follows: 539 freshmen (27.3%), 503 sophomores (25.5%), 476 juniors (24.1%) and 455 seniors (23.0%). Demographics such as race/ethnicity, self-health reports and current residencies were reported (See: Appendix L: Survey Sample Characteristics).

Instrument Used:

An AdhereTx Know My Meds™ online survey was utilized for this research study. The survey consisted of a medication database developed for a previous medication survey, updated with the current literature as of 2011 and the focus group communication content analysis. The AdhereTx Know My Meds™ online survey was repeatedly trialed for problems and efficiency. After all glitches of the system were removed, the survey was advertised via the same online undergraduate listserv used for the focus group collection. After the two week time period during which the survey was open, incomplete surveys were eliminated and survey data were analyzed.

The survey itself was broken up into three categories: 1) Daily living, 2) Symptoms and conditions, and 3) Medications (See: Appendix L: Survey Sample Characteristics).

1. Daily living questions asked participants about baseline characteristic data such as gender, class standing, race/ethnicity, student group memberships (sports, clubs, sororities/fraternities, etc.), residency, who do you live with, exercise in last month, where are most meals eaten, and the primary source of medical information.

2. The symptoms and condition category asked participants questions such as symptoms presenting in the past month, medical conditions in the past year, self-rated health (poor, fair, good, very good or excellent), smoking status, hours of sleep per night and amount of exercise over the past month.
3. Medication questions asked individuals if they took anything for particular conditions such as high blood pressure, high cholesterol, for eye issues, diabetes, low thyroid, depression, pain, anxiety, for cold or sinus problems, to help sleep, to stay awake, for indigestion, to supplement (vitamins, minerals, herbs), to improve sexual performance, to lose weight, to gain muscle or improve athletic performance, and if one took any other prescribed or over-the-counter medications.

If participants answered an affirmative to any of the previous stated medication questions, they were redirected to a medication database that provided an organized A-Z dropdown list for individuals to find their medication(s). Participants were also given the option to type in their medication if the generic or brand name of their medication was not available on the database. More than one medication could be chosen for each question. For each medication chosen, the participant was directed to answer how many days a week they took the medication over the past month. On the same screen participants were to choose when and how many times they took the agent by clicking on a 24-hour period face clock. Participants were then redirected back to answer the remaining questions.

Prior to closure of the survey, participants were asked if they had wine, beer or

liquor in the past month. If participants selected “yes” to this question, they were prompted with further questioning on the number of drinks they would have on a standard day, how many days a week they drank, did they take something to prepare for drinking, was anything mixed with the alcohol and did they take anything for a hangover. To maintain drink size consistency a standard drink reference was also displayed.

Survey Analysis

A total of 2281 surveys were collected during the two week time period. Two hundred and eighty surveys (12% of surveys) were deemed incomplete and, therefore, eliminated. The remaining 2001 surveys were then examined for validity. Surveys were reviewed for unreasonable entries and surveys from these participants were removed accordingly. For example, participant number 2740 positively answered to taking the following medications and dosages for pain: 1 Omnaris, 7 Zyrtec, 12 Marijuana dosages, 6 ibuprofen, and 6 dosages of Vyvanase. After elimination of 25 erroneous surveys, the UConn School of Nursing graduate assistant statistician and the undergraduate researchers analyzed the remaining 1976 surveys, approximately 9% of the undergraduate population (Students, 2011).

RESULTS

Multi-method analysis:

A multi-method research strategy was utilized to compare the perceived focus group coded data to the actual self-reported AdhereTx Know My Meds™ online survey. Focus group data were coded via a communication content analysis, to determine the most prevalent medications focus group participants thought “others” were taking and for

rationale of use. Adderall was the second most mentioned substance that participants in the focus groups thought others were taking. Statistically, Adderall fell at 28 counts following energy drinks at 41 counts. Students reported that they believed others used Adderall: to help them study, to stay awake in general, to stay awake to drink alcohol and/or to suppress ones' appetite.

Focus group stimulant use rationales were compared to the survey's 73 (3.7%) participants who reported using a prescription stimulant (Adderall, Vyvanse, Ritalin/ Methylphenidate, Concerta, and/or Dextroamphetamine) to treat one or more of the conditions listed on the survey questionnaire. The following were self-reported conditions in which participants reported stimulant use: 5 (6.8%) anxiety/depression, 2 (2.7%) drinking preparation, 61 (83.6%) improvement of mental performance, 1 (1.4%) to lose weight, 6 (8.2%) to mix with alcohol, 2 (27%) for pain relief, and/or 27 (37.0%) to stay awake (See: Appendix M: Rationale of Stimulant Use). Counts per category were obtained via patient identification numbers that were extracted from the filtered survey database. Counts for each category were established based on the amount of people who answered positively to that single category. Participants could answer positively to several rationales of use. Therefore, when concluding category percentages each category was divided by the filtered amount of participants in total. The filtered list of participants exempted a participant from being counted twice if he or she answered to more than one rationale of use.

The participants who answered positively to the use of stimulants (n=73) were further evaluated via their designated patient identification number. Each patient identifier number was analyzed from the filtered survey demographical database of the

1976 participants. Statistics extracted from the database included male/female, class standing, living/residency, group affiliation, race/ethnicity, self health rating, conditions in the last year, symptoms in the past month, exercise in the last month, sleep per night and/or wine, beer and liquor consumption.

Of survey participants who reported stimulant use, 52 (71.2%) indicated that they were females and 21 (28.8%) as males. Class standing was reported as 27 (37%) juniors, 21 (28.8%) seniors, 16 (21.9%) sophomores and 9 (12.3%) freshmen. Of participants who answered positively to stimulant use, 35 (47.9%) stated that they lived in a dorm room, 26 (35.6%) in an off-campus apartment, 3 (4.1%) at home, 3 (4.1%) at a sorority/fraternity house, 1 (1.4%) with another adult, and 5 (6.8%) living somewhere other than what was listed under the database. Group affiliation was as follows: 22 (30.1%) no group, 20 (27.4%) pre-professional group, 15 (20.5%) sorority/fraternity house, 16 (21.8%) intramural sports team, 7 (9.6%) club sports team, 6 (8.2%) cultural center group, 3 (4.1%) division 1 sports team and 3 (4.1%) in a student music/dance group. Of participants who reported stimulant use, 64 (87.7%) identified themselves as white, 3 (4.1%) of Asian decent, 3 (4.1%) other, 2 (2.7%) Hispanic, 1 (1.4%) “more than one race.” A total of 32 (43.8%) participants rated their health as good, 22 (30.1%) as average, 15 (20.5%) as fair and 4 (5.5%) as poor. “Conditions in the last year” statistics indicated 37 (50.7%) suffered from anxiety, 23 (31.5%) from depression, 2 (2.7%) from high BP, 1 (1.4%) from high cholesterol, 4 (5.5%) from an irregular heartbeat and 10 (13.7%) from asthma. Symptoms in the past year reported were: 55 (75.3%) suffered from a headache, 49 (67.1%) had difficulty sleeping, 48 (65.8%) had fatigue, 44 (60.2%) reported difficulty concentrating, 40 (54.8%) experienced a cough, 39 (53.4%) had a

cold, 36 (49.3%) reported pain, 28 (38.4%) had diarrhea and 26 (35.6%) reported depression. Of participants who reported stimulant use, 32 (43.8%) answered to exercising a few times a week, 37 (50.7%) received 7 to 8 hours of sleep and 66 (90.4%) reported positively to the consumption of wine, beer and/or liquor. For further demographics results refer to Appendix N: Stimulant Use Demographics.

The survey statistics cannot support a significant correlation between the use of stimulants and an individual demographic variable. However, a comparison between stimulant user demographics to total survey demographics can assist in characterizing stimulant users who responded to the survey. Referring to Appendix O: Demographical Comparison, several comparative demographics can be highlighted. For example, of stimulant users 71% were seniors, though in total, seniors only represented 23% of the total survey population; another example, 35.60 % of stimulant users lived on an on-campus apartment compared to the 20.10% total survey population; 20.50% affiliated themselves with a sorority/fraternity versus the 13.60% total respondents; 87.70% white to 73.70% of total population; and 50.70% of users answering positively to an anxiety condition (more than double) in comparison to 24.10% of the total. Symptoms over the last year were as follows: Nicotine craving resulted in a 30.10% report by stimulant users compared to the 4.40% of total survey respondents (a 6.84 fold difference) and difficulty concentrating reported by 60.20% of stimulant users compared to 35.10% of the total survey respondents. Other symptoms in stimulant users compared to the total survey respondents were: fatigue 65.80% to 46.00%, depression 35.60% to 14.10%, difficulty sleeping 67.10% to 38.90%, diarrhea 38.40% to 22.90%, memory change 9.6% to 4.10%, dizziness 31.50 % to 15.80%, and unsteadiness 15.10% to 6.00% respectively.

Currently, literature suggests that stimulant use is highest among the white population, however, due to the similarity between the users and the actual population demographics this conclusion cannot be assumed in this survey (87.7% of users and 73.7% of total respondents reported that they were white). The following similarities in demographics suggest refutable findings in this survey: Weight loss 15.10% to 11.20% of the total survey respondents, headache of 75.30% among users to 64.50%, sleep per night of 7 to 8 hours occurring among users at 50.70% to the total 52.10%, high blood pressure at 2.70% to 2.20%, asthma at 13.70% to 12.40% among the total survey respondents, and 21.80% to 22.30% regarding intramural sport affiliation, and 70.40% of survey respondents were females compared to the 71.20% of total survey respondents that were female. In the current literature stimulant use was either similar amongst male and female or higher in the male population. These survey results cannot determine a specific gender affiliation with stimulant use. The male (28.80% stimulant user respondents to 29.60% total respondents) and female (71.20% stimulant user respondents to 70.40% total respondents) are comparable in proportions in both categories suggesting that there is no association of gender identity with stimulant use among respondents in this survey.

Examination of the demographics helps to characterize who is more likely to use prescription or non-prescriptive stimulant medications. Conclusive data cannot be solely determined via survey and focus group data, however, can be suggestive of demographics that increase one's use of a stimulant (medically or non-medically) on a college campus. Overall, the analysis of the perceived focus group data versus actual survey data attempts to identify student's awareness of stimulant use and the actual prevalence of stimulant use.

DISCUSSION

Documenting illegal use of substances was not an objective of this study, however, campus held focus group members repeatedly mentioned prescribed stimulants for nonmedical use on campus. After the communication content analysis of what participants thought others were taking, Adderall came up second in the number of mentions. Focus group questions were generalized towards the objective of the entire study to obtain any self-medication practices, therefore, were not specific to questions that would only pertain to stimulants. For example, one question was “Is there anything you think college students take to help gain muscle?” (See: Appendix G: Focus group communication content analysis). In the actual survey data a similar questionnaire produced a positive response to stimulant use at 73 (3.7%) participants. Of these participants, the most frequent rationales for use were to improve mental performance (83.60%) followed by to stay awake (37%).

The potential use of stimulants on campus for nonmedical use raises the question of safety. In regard to stimulant users, 66 (90.4%) answered “yes” to drinking “wine, beer or liquor.” Concurrent use of alcohol and stimulants can cause one to drink more due to the a stimulant’s ability to increase wakefulness. Therefore, an individual may not realize the depressant effects of the alcohol until larger amounts are consumed. Another safety risk is the concurrent use of SSRIs and/or SNRI’s and stimulants. Of survey respondents, 31.50% of stimulant users reported suffering from depression, more than a two-fold greater percentage than the 13.30% that reported the condition in the overall survey. With SSRIs and SNRIs being a common treatment for depression, one might ask what is the safety risk of their concurrent use with stimulants? In fact, of stimulant users 10 (13.7%) also reported the use of an SSRI (e.g. Lexapro, Citalopram, Sertraline, Fluoxetine,

Paroxetine) concurrently with stimulants. This practice increases the risk of serotonin syndrome due to amphetamine and methylphenidate effects on increasing extracellular serotonin, norepinephrine and dopamine. Only 1 (1.4%) reported the use of a SNRI (e.g. Cymbalta) concurrently with a stimulant. Without adequate knowledge this participant could be at increased risk of extracellular norepinephrine, thus, increased risk of high blood pressure related issues.

Given the potential risks and side effects of stimulant use alone or concurrently with other medications, further investigation of self-medication practices is needed. Furthermore, educational awareness planning and interventions should be set in place to encourage safe self-medication practices among incoming undergraduate students.

Study Strengths and Limitations

The current study presented with both strengths and limitations in regard to its implementation and results. Strengths of the online survey format include the availability of the survey for a 3-week time frame, volunteer response rate of 10% of the population, a broad questionnaire database to collect demographical and substance use of the large undergraduate population, and for its unique identification system that preserved anonymity. Anonymity was maintained via specific survey identifiers that could not be tracked back to the computer or person whom took the survey. Furthermore, survey prizes were selected amongst the survey participant identifiers to prevent collecting any data on participants that could occur otherwise. Survey content allowed for a comprehensive data collection and consisted of an in-depth medication list. The medication list was updated to current participant practices based on campus led focus groups. Survey respondents were also provided with reliable computer animations. For

example, when asking participants the amount of alcohol they consumed, participants were given animated glasses with a reference marker of how much constitutes “1 drink.” In a similar sense, when participants were asked about the timing of a medication, they were given a 24-hour clock face in which they could identify multiple times of substance administration throughout the day. Participants were also able to correct previous answers prior to survey submission.

After survey submission participants could not go back into the previous survey screen via the Web address. Web address restrictions prevented completed surveys from being submitted more than once. Furthermore, participants could not copy their survey web address into an alternative browser to “pick-up” where they left off. This method prevented several same survey submissions – a practice to receive higher chances of winning one of the thirty \$25 gift cards. The limitation to this method was that study participants would have to complete the survey in one sitting.

The online methodology, while efficient in distributing the survey to a large participant pool, potentially had several pitfalls. The current survey was only provided in an English format. The single language format could potentially result in incorrect responses or exclude participants who are not proficient in English. If participants required clarification of the survey or its content, there was no way in which they could contact the researchers. As a result, lack of clarification could result in incorrect answers, incomplete surveys or aborted survey submissions. In addition, although participants were informed of the confidential nature of the survey (and illicit drug use was not an objective of the survey), respondents may have omitted medication usage in fear of the consequences of illicit drug use.

Another limitation is that stimulant use was not investigated in this survey for its medical or non-medical purpose. In other words, respondents were not asked on how medications were acquired. Conclusive findings could not be made due to the lack of direct correlation between the respondents actual reported medication use. Survey demographics could only be suggestive of information when comparing indirect percentages amongst the stimulant users and the general survey population.

The length of the survey depended on participant responses to the questionnaire. If respondents reported, “yes” to a question in the survey, then they were prompted with an additional screen. This method has two downfalls - 1) The participant may opt out of the survey if survey length accumulates 2) the participant may answer “no” to questions to prevent further prompts. Furthermore, if medications were not listed on the database participants were prompted with a free-text space. The free-text method requires additional effort and knowledge on self-medications that may result in incomplete surveys or opting out of the survey altogether.

Implications

The frequency of stimulant use among the college population varies widely in the current literature. Furthermore, there is a discrepancy between the actual number of students taking stimulants and what college students think “others” are taking. For example, in this study 73 (3.7%) of the survey participants reported positively to stimulant use (medically or non-medically). On the other hand, in the perceived focus group data, Adderall was the second highest drug reported by college students that they thought “others” were taking for specific conditions. Further national studies should investigate self-reported and peer-reported prevalence rates and motivation of use of

ADHD stimulants for non-medical use among the college population. Knowledge on side effects of ADHD stimulants should be further evaluated in the population. Student report of non-prescriptive stimulant use as being “physically harmless” (DeSantis & Hane, 2010) (DeSantis, Noar & Webb, 2009) warrants development of educational awareness planning. Preventative measures should be set forth based on results to attempt to inform future educational efforts on drug misconceptions, thus, to encourage safe medication practices among incoming undergraduate students.

Appendix A: Focus Group Flyer



University of Connecticut

School of Nursing

seeking undergraduate students for a focus group!

Do you know the types of over-the-counter products *your peers* are using to treat common health problems?

Please share your insight with us during a focus group with 8 other undergraduate students. The information you provide will help us direct a study that investigates self-medication habits of students. This study will help us

provide information useful in preventing adverse self-medication habits!

All responses are completely confidential!

Each participant will receive a \$10 gift card to the Co-op and refreshments will be served.

Please contact Professor Patricia Neafsey, PhD, principal investigator, at (860)-486-0508 if you are interested in participating. Leave a message with your first name and phone number. The first 50 people who respond will be eligible to participate in one of the focus groups.

Appendix B: Focus Group Consent Form

Consent Form for Participation in a **Focus Group** Research Project

Principal Investigator: Patricia J. Neafsey, RD, PhD, Professor
School of Nursing

Student Researchers: Heather Buck, Kara Dazkevich, Michelle Santos, Kristin Summers, Kim Vo, Janet Knecht

Study Title: Over the Counter Self-medication Practices by Undergraduate Students

1. 1. Invitation to Participate

You are invited to participate in this research study. We are developing an electronic survey to find out what over-the-counter (OTC) products undergraduate students take to self-medicate common problems.

2. Purpose

The purpose of the focus group is to help us identify specific over the counter products (medicines, nutritional supplements, tobacco and alcohol) that we should include in our database for the survey.

The electronic survey will have questions such as "Over the past month, did you

take anything for pain?" If the student answers "yes," he/she will then select the name of the product from an electronic alphabetical list. The student will then be asked when (time of day) he/she took the product and how many days per week in the past month they took it.

3. Description of the Focus Group Procedures

You will participate in one of 5 focus groups. You will meet with 6 other undergraduates in your focus group and 3 undergraduate UConn nursing student researchers for approximately 1.5 hours. The focus group sessions will be audio-taped. One student researcher will run the group session, one will monitor the tape recorder and one will take notes. The principal investigator or graduate assistant will also be present. You will be asked your age, gender, and semester-standing. The group will be read each question on the current survey and asked "What products do you think *other* students use to self-medicate this problem?" You do not have to mention what *you* actually use for the problem.

You may ask us to stop recording at any time. You may ask us to destroy the tape at any time. The audio tapes will be transcribed to a text file for the researchers' use. The transcriptionist will not transcribe names of individuals so that the confidentiality of your responses will be protected. The audio tapes and transcriptions will be stored in a locked cabinet in Professor Patricia Neafsey's office at the University of Connecticut. A copy of each transcription will be available to each student researcher and returned to the locked file when not being analyzed.

4. Risks and Inconveniences

There are no risks to your health from participating in this focus group. You may find it uncomfortable to talk in front of a small group. You should not talk about the specific items/topics discussed during the focus group after the session ends. You should not talk about the people in the focus group to others who are not in the group. It is possible that someone in the group may repeat what you have said to others who are not in the focus group. The only inconvenience is committing the time to the study itself by participating in the focus group discussion.

5. Benefits

The focus group will help us design a survey that includes products that undergraduate students use to treat common problems. This will reduce the need for students who participate in our survey to have to type in product names that are not included in the database and reduce the time it will take to complete the survey.

6. Economic Considerations

You will a \$10 UConn Coop gift card to compensate you for your time participating in the focus group. Food will also be served during the focus group session.

7. Confidentiality

When we write about the research or talk about the study, you will not be identified. All information will be kept confidential and kept in a secure location used only by the researchers. The audio tapes will be erased after one year.

You should also know that the UConn Institutional Review Board (IRB) and the Office of Research Compliance may inspect study records as part of their auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people that reviews research studies to make sure they are safe for participants.

8. Voluntary Participation

You do not have to be in this study if you do not want to be. If you agree to be in the focus group, but later change your mind, you may drop out of the study at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate.

9. Do You Have Any Questions?

Take as long as you would like before you make a decision. We will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the principal investigator, (Patricia J. Neafsey, 860-486-0508). If you have any questions concerning your rights as a research subject, you may contact the University of Connecticut Institutional Review Board (IRB) at 860-486-8802.

Authorization:

I have read this form and decided that _____ will
(name of subject)

participate in the project described above. Its general purposes, the particulars of involvement and possible hazards and inconveniences have been explained to my satisfaction. My signature also indicates that I have received a copy of this consent form.

Signature: _____

Relationship: _____

Date: _____

Signature of Primary Investigator_____
Phone*or*_____
Signature of Person Obtaining Consent_____
Phone

Appendix C: Focus Group Script

Welcome

Thank you for making your time available to attend our focus group. I'm name of student researcher #1, and this is name of student researcher #2 and name of student researcher #3. We are nursing honor students working on identifying and characterizing adverse self-medication behaviors among UConn undergraduates. Your participation today is very valuable to our study, because you can help us identify specific products (medicines, nutritional supplements, tobacco and alcohol) that we should include in the survey for our study. We are not interested in *your* personal behaviors. Rather we want to know what you have observed or heard of *other* students taking to self-medicate common health problems. Ultimately, your participation will enhance future educational interventions for incoming students and their parents with the aim of reducing adverse self-medication behaviors.

Right to Withdraw

It is important that you know that your participation today is strictly voluntary; you may withdraw at any time, for any reason and there will not be any consequences. Your answers will be recorded during this session for research use only. You may leave the session at any time. You may ask us to stop recording or destroy the tape at any time. The audio tapes will be transcribed to a text file for the researchers' use, however, your names will not be transcribed so that the confidentiality of your responses will be protected.

Consent Form

At this time, we would like you to review the consent form again and ask any questions or bring up any concerns that you may have at this time.

Participants Introduction

Now that you know about all of us and the study we are conducting, tell us a little about yourselves (age, semester standing and college).

Discussion

~ We will go around the table for each question so each participant is involved ~

- To open this discussion I would like to know what specific products (medications, drugs, supplements, etc) came to mind when you first heard about our study? (If students give a general answer ask for specific drug names)
- The University of Connecticut is a Division I school of athletics and many other students want to avoid the “freshmen 15” and stay healthy. What nutritional supplements do you think students may be taking to help them achieve their ideal body weight and build?
 - Is there anything people take to help lose weight?
 - Is there anything you think college students take to help gain muscle?
- Now I am going to ask about a series of other common health problems. What do you think students may be taking to:
 - Relieve stress?
 - Help fall asleep?
 - Stay awake?
 - Improve mental performance?
 - Improve sexual performance?
 - Alleviate colds or sinus problems?
 - Prevent sickness or “catching a cold”
 - Prevent or treat allergies or asthma?
 - Treat stomach issues or for indigestion or gas?
 - Relieve anxiety or depression?
 - Reduce pain or a headache?
 - Relieve dry eyes?
- Alcohol is substance consumed by many college students.
 - Are there any products that you think students may be taking *before* they drink alcohol?
 - Are there any products that you think students may be mixing with alcohol?
 - What are the most common products or strategies college students use to “get rid of” or relieve a hangover?
- Are there any additional comments you would like to share that would improve our study?

Closing Remarks

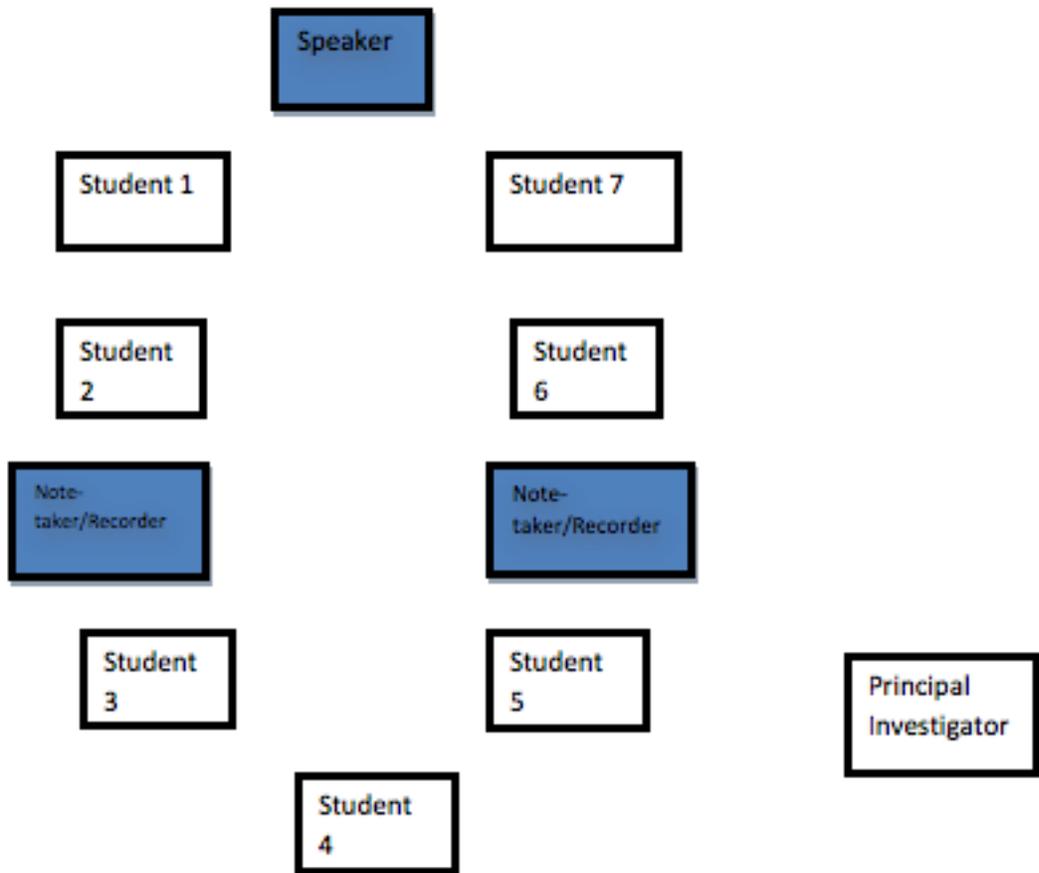
Thank you for participating. Your input is greatly appreciated.

Additional information (during discussion):

- **Focus group leader will reflect back a summary of what was heard.**

- **Even participation will be ensured. If one or two people are dominating the meeting, then others will be called on. A round- table approach will be used (going in one direction around the table) giving each person a minute to answer the question.**

Appendix D: Focus Group Seating Arrangement



Appendix E: Focus Group Composition

	Group #1 (3/24/11)	Group #2 (3/25/11)	Group #3 (3/31/11)	Group #4 (4/1/11)
Participant 1	Female/Senior	Female/Senior	Female/Sophomore	Female/Sophomore
Participant 2	Male/Freshman	Male/Freshman	Female/Sophomore	Female/Sophomore
Participant 3	Female/Sophomore	Female/Sophomore	Female/Junior	Female/Sophomore
Participant 4	Female/Sophomore	Female/Sophomore	Female/Sophomore	Male/Junior
Participant 5	Male/Freshman	Male/Freshman	N/A	Female/Junior
Participant 6	N/A	N/A	N/A	Male/Sophomore
Participant 7	N/A	N/A	N/A	Male/Sophomore

Appendix F: Focus Group Characteristics

Gender		
	Female	14 (67%)
	Male	7 (33%)
Class Standing		
	Freshman	4 (19%)
	Sophomore	12 (57%)
	Junior	3 (14%)
	Senior	2 (10%)

Appendix G: Focus group communication content analysis

Focus Group Discussion Question	Variables (medication/total count)	Definition (Definitions of each individual self-medication practice apply throughout count)	Examples
	<i>Key color:</i> ◆ Focus group 1 ◆ Focus group 2 ◆ Focus group 3 ◆ Focus group 4		

<p>What specific products (medications, drugs, supplements, etc) came to mind when you first heard about our study?</p>	<p>Adderall 2 3 5</p>	<p>Medications were counted once per participant for each question. Counts included: 1) when a participant stated the medication 2) mutual agreement within the group after someone else stated the medication. One of the counts is from participant 3 who stated she agreed with everything that was said before. In this case mutual agreement was reached.</p>	<p>1: Adderall Kim: Adderall? 1: yea Kim: okay 2: same Adderall 1: the first thing I thought of was <u>Adderall</u> Kim: Adderall, okay 3: Yea, I thought of <u>Adderall</u> and just like Ibuprofen Kim: Ibuprofen and Adderall 3: yea Kim: okay 4: um I thought of Advil uh <u>Adderall</u> and then uh Viagra</p>
	<p>Sleep Medication 2</p>	<p>When “sleep medication” was mentioned without a specific drug name it was placed in this category. One of the counts is from participant 3 who stated she agreed with everything that was said before. In this case mutual agreement was reached.</p>	<p>Participant 5: um sleep medication Michelle: And what about sleeping one? Participant 5: sleeping ones just typical over the counter CVS brand sleep medication. Michelle: just like the generic? Participant 5: generic brand</p>

	<p>NSAIDs: Advil 1, 1, 2 Ibuprofen 2, 2, 4 Aspirin 0, 1 3 Naproxen 2</p>	<p>One of the counts for Aspirin, Naproxen, Advil, and Ibuprofen come from participant 3 who stated she agreed with everything that was said before. In this case mutual agreement was reached.</p>	<p>3: I was thinking just Advil 2: Um I just thought of like overuse of Tylenol and <u>Ibuprofens</u> and <u>Aspirins</u> Kim: okay 3: Yea, I thought of Adderall and just like <u>Ibuprofen</u> Kim: Ibuprofen and Adderall 3: yea Kim: okay 4: Um I thought of <u>Advil</u> uh Adderall and then uh Viagra</p>
	<p>Aceitaminophen 2 Tylenol 0, 1</p>	<p>One of the counts for acetaminophen is from participant 3 who stated she agreed with everything that was said before. In this</p>	<p>2: Um I just thought of like overuse of <u>Tylenol</u> and <u>Ibuprofens</u> and <u>Aspirins</u> Kim: okay</p>

		case mutual agreement was reached.	
	VIAGRA: 0, 1		4: Um I thought of Advil uh Adderall and then uh <u>Viagra</u>
	Weed 1		
	Jaeguer 1		
	Ginseng: 0, 1		1: I thought of ginseng, because I know people that take that
	Creatine 1, 2		4: um I was thinking of like ibuprofen and also like nutritional substances like creatine and I know that some people take that 4: I was thinking of um it's like they put it for like protein it's like guys who wanna bulk up it's like not whey protein but it's like another. 3: <u>Creatine</u> 4: Yea, <u>creatine</u> , that's it
	Sudafed 1		5: I thought of Sudafed cuz I remember in health class a couple years ago they said that you could make meth out of it somehow.
	Anxiety Medication 1	Counts were placed in this category when the participant didn't state a specific anxiety medicine.	2: Anxiety medication
	Pepto Bismol 1		
	Robitussin 1		

	Nyquil 3	One of the counts is from participant 3 who stated she agreed with everything that was said before. In this case mutual agreement was reached.	
	Cough Drops 2	<p>Counts were included here if the participant couldn't name a specific brand of cough drops.</p> <p>One of the counts is from participant 3 who stated she agreed with everything that was said before. In this case mutual agreement was reached.</p>	<p>Participant 4: uh I would say sleeping medications again like a Nyquil sort of thing. Um adderall definitely. Uh advil headaches and like um would you consider a <u>cough drop</u> medicine like I guess so.</p> <p>Michelle: Any specific brands at all?</p> <p>Michelle: Cough drops?</p> <p>Participant 4: not that I would know of</p>
	Keystone 1		
	Caffeine1		
	Jungle Juice 1		
	For Lokos 1		
	Smoking Cigarettes 2	A second count was included because participant 2 agreed with what participant 1 said.	<p>Participant 1: Well smoking as well if you're going tobacco it says in here so definitely a lot of college students smoke. And chew a lot of them do.</p>

		Mutual agreement was reached.	I don't anyways Participant 2: yeah
	Chewing Tobacco 2	A second count was included because participant 2 agreed with what participant 1 said. Mutual agreement was reached.	Participant 1: Well smoking as well if you're going tobacco it says in here so definitely a lot of college students smoke. And chew a lot of them do. I don't anyways Participant 2: yeah
The University of Connecticut is a Division I school of athletics and many other students want to avoid the "freshmen 15" and stay healthy. What nutritional supplements do you think students may be taking to help them achieve their ideal body weight and build? <i>Note: in the third focus group Michelle also included that people use to lose weight.</i>	Steroid 1, 1	Rules above apply. Also, medication was counted for when stated regardless known self medication practices.	2: um... I don't know, I uhh would like to think it's only just protein but uh I mean there are have been like several top schools that are caught with kids using steroids and trainers allowing that to happen so Kim: okay, so do you think that's really dominant on the UConn campus? 2: not sure 3: just to like they think they're like trying to be like healthy if they take a multivitamin. And um I have heard of some people taking <u>steroids</u> but I don't know specific names of them
	Benefiber 1		
	Alli 1		
	Metamucil 1		
	Fiber 1		
	Wheat		

	Protein 2		
	Hydroxycut 1		
	Flax Seed 1		
	Athedroprogec 1	NOTE: unknown drug and questionable spelling	P1: Yeah I mean I can't say our athletes but a lot of athletes like athedroprogec (9:50) like athedrin products stuff like that. Like just Black market stuff
	Protein 1	When the general term "protein" was used it was counted here. The type of protein was not specified.	P7: um I know like some people I know that do like wrestling or whatever they like try to like spit all day to like dehydrate themselves so they don't take like a medication but that's like one of the things they do. And like a lot of guys I know use like protein to get bigger not to lose weight. but
	Diet supplement pills 1 2		3: I know a lot of girls that like take those stupid diet supplement pills like as seen of TV and stuff and I think that like that is more prevalent in college age Kim: okay, do you know any specific names? Or just the ones that... 3: I have no idea
	Dot Fit 1	Dot Fit was included in its own category even though it is a type of diet supplement.	2: Um I also have heard of a supplement called <u>DotFit</u> which has like therm accelerators um I think it's a fat repel there's a ton of different things Kim: Okay, DotFit 2: DotFit, yea

	Adderall 1		4: Um I know that even though some students will use Adderall to um help focus on studying there are some girls that I've come across that have said "oh I'm taking it because it suppresses my appetite and doesn't make me hungry"
	Creatine 1, 1	Above rules apply. Supplements were counted for when stated but stores were not included when vaguely stated and do not belong to a type of self-med practice: nutritional supplement, NSAID, over-the-counter, and herbal.	5:um I'm thinking that if they really wanna get big and the working out just isn't doing enough for them they might also use like creatine and all those other things that they see in like GNC like bottles. 4: Um to like lose weight I just like just basically like she said multivitamins and then like the <u>creatine</u> I said beforehand but other than that like I feel like people just don't eat
	Laxatives 1 2		1: laxatives
	Whey Protein, 1		2: umm I know people like taking supplements of <u>whey protein</u> by mostly protein shakes Kim: okay
	Multivita min: 3 2		3: Um, uh I mean I think a lot of people take like <u>multivitamins</u> um 4: Um to like lose weight I just like just basically like

			<p>she said <u>multivitamins</u> and then like the creatine I said beforehand but other than that like I feel like people just don't eat</p> <p>1: yea I definitely know the <u>multivitamin</u> and fish oil like for the whole healthy approach but then exactly what 4 said about not eating and like drinking coffee instead or things like with a lot of caffeine just to like keep going</p>
	Fish Oil: 1		<p>1: yea I definitely know the multivitamin and <u>fish oil</u> like for the whole healthy approach but then exactly what 4 said about not eating and like drinking coffee instead or things like with a lot of caffeine just to like keep going</p>
	Caffeine: 2		<p>1: yea I definitely know the multivitamin and fish oil like for the whole healthy approach but then exactly what 4 said about not eating and like drinking coffee instead or things like with a lot of <u>caffeine</u> just to like keep going</p> <p>4: Definitely a lot of <u>caffeine</u></p>
	Hard Alcohol 1		<p>4: well um I don't like um I also think a lot of people I think people concentrate on the <u>hard alcohol</u> because the beer is known to give you more calories.</p>
Is there anything people take to help lose weight?	Hydroxycut 1		<p>1: Um I know people take like <u>hydroxycut</u>, like</p>

			specifically, yea, because it's always like on TVs.
	Diet Pills 1		3: Yeah actually she reminded me I have heard of other people taking like <u>diet pills</u> Kim: diet pills 3: I don't know exactly which ones but yea Kim: But you think it's common on campus? 3: Yea, amongst girls, more common among females, yea
	Adderall 1		1: I uh actually I know people who have taken <u>Adderall</u> to lose weight because it like suppresses your appetite
	Smoking cigarettes 1		3: what about like, like <u>smoking cigarettes</u> ? 3: I don't know I just think some people do that to lose weight
	Sorbitol 1		4: She was having diarrhea because she was eating so much gum a day to like make sure she didn't like eat food Kim: So it was like gum with laxatives in it 4: yea Dr. Neafsey: It's sorbital 4: Yea exactly, <u>sorbitol</u>
	Laxatives 1		1: I think that <u>laxatives</u> too are just used like in general
Is there anything you think college students take to help gain muscle?	Protein powders 1 1	Supplements that would stated as "mixed" were counted	4: just a lot of um protein powder substances I see like people mixing their energy drinks at the gym

		separately at individual variables.	3: um yea well I mentioned that I do think some people take steroids uh I don't know specific names of them um I mean not so much supplements but I think a lot of people do like <u>protein shakes</u> or like protein bars.
	Muscle Milk 3	Mutual agreement was reached because participant 3 agreed with participant 5 . Mutual agreement was reached again. Participant 7 stated	Participant 3: basically what number 5 said. Participant 7: "Um I don't know. Probably what everyone else said. There's not anything that I can think of."
	Wheat Protein 2	Mutual agreement was reached because participant 3 agreed with participant 5 ("basically what number 5 said")	Participant 7: "Um I don't know. Probably what everyone else said. There's not anything that I can think of."
	Protein 5	Mutual agreement reached with participant 7	
	Protein bars 1		3: um yea well I mentioned that I do think some people take steroids uh I don't know specific names of them um I mean not so much supplements but I

			<p>think a lot of people do like protein shakes or like <u>protein bars</u>.</p> <p>Kim: Okay, do you know like specific bars or protein bars people take?</p> <p>3: um Powerbar comes to mind</p> <p>2: uh as for the <u>protein bars</u> it's mostly just what's available here</p>
	<p>Steroids 1, 4</p>	<p>Mutual agreement reached with participant 7. They stated, "Um I don't know. Probably what everyone else said. There's not anything that I can think of."</p>	<p>3: um yea well I mentioned that I do think some people take <u>steroids</u> uh I don't know specific names of them um I mean not so much supplements but I think a lot of people do like protein shakes or like protein bars.</p>
	<p>Cachable en 1</p>	<p>Spelling is unknown. According to participant 1 Cachableen is a type of steroid.</p>	<p>P1: yeah I don't I want to say it's like it's probably like a derivative or something probably like a cachableen or something like that but I mean I don't know. It's like its different everywhere. Everyone uses different things. It just depends what you're trying to do. You have a kid that is trying to run track and he knows he needs thighs and like you're going do something for his lower body. Someone needs like upper body. It's just different types. I can't really say what kids really use. It's not like a universal</p>

			thing or anything.
	Whey 2		4: Just like the <u>whey</u> protein or the wheat...uh w-h-e-y I don't know how to pronounce it 2: Um I have just seen the <u>whey</u> protein the muscle milk brand
	Energy drinks 1		
What do you think students may be taking to relieve stress?	Pain medications 1 1	Medication was counted for when stated regardless known self medication practices.	3: Umm pain medications? Maybe? 4: I think a lot of people take um like <u>Advil</u> if they're like stressed out and they need to sleep they'll take like Advil
	Adderall 1		4: Um <u>Adderall</u> , a lot of Adderall.
	Keystone 2		
	Smirnoff 1		
	Mikes Hard Lemonade 1		
	Ativan 1		
	Old English 1		
	Colt 45:		
	Smoking Cigarettes 1		
	Brunettes 1		
	Jungle Juice 1		
	Ever clear 1		
	Grain		

	alcohol 1		
	Sleeping pills 1		5: um maybe if they're like too stressed to sleep or something they might take like sleeping pills
	Melatonin 2		1: Benadryl, if they want to get a good nights sleep, I also know someone who's taking <u>melatonin</u> Kim: Melatonin, Benadryl, okay, any other ideas? 2: I've just heard of <u>Melatonin</u> as well ~melatonin counted twice because 1 and 1 agreed.
	Benadryl 1		1: <u>Benadryl</u> , if they want to get a good nights sleep, I also know someone who's taking melatonin
	Marijuana 1 4		2: I would say alcohol, <u>marijuana</u> is definitely used I know of a person that thinks that they have it under control with mixing their anxiety medication with marijuana in a certain way
	Nyquil 2		4: I think a lot of people take um like Advil if they're like stressed out and they need to sleep they'll take like Advil or what's that cold medicine 1: Robitussin? 4: No 2: <u>Nyquil</u> ? 4: <u>Yea Nyquil</u> a lot ~counted twice because 2 and 4 agreed

	<p>Anxiety medications 1 3 1</p>	<p>Count included if medication category was stated but specific medication was unknown.</p> <p>If the same person said anxiety medication on two different occasions I only counted it once. In this instance participant 2 said anxiety medication is mixed with marijuana and used alone. I only counted it once.</p>	<p>3: I know a lot of girls that are on like anxiety medicines like I don't know the specific like brand or anything</p> <p>4: I know like for um as people who are like who are like actually like um like who have gone to like actual doctors like they'll like for like anxiety they get a lot of um <u>Prozac</u> like I know a few people who are on Prozac.</p> <p>2: I would say alcohol, marijuana is definitely used I know of a person that thinks that they have it under control with mixing their <u>anxiety medication</u> with marijuana in a certain way</p> <p>2: um and then just a lot of people are prescribed like the <u>anxiety medications</u>, Lexapro is one that I've heard a lot of. I don't know if it would be misuse or um people that need a certain one may forget to take it and then take someone else's regardless of whether it's the same brand</p>
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	Alcohol 2 2		<p>1: Um for stress a lot of people drink they're like "oh I'm gonna relieve stress on the weekends" and just get really drunk</p> <p>Kim: okay</p> <p>1: so <u>alcohol</u>, any type of alcohol</p> <p>2: I would say <u>alcohol</u>, marijuana is definitely used I know of a person that thinks that they have it under control with mixing their anxiety medication with marijuana in a certain way</p>
	Dubra 2	Note: Dubra is a type of alcohol. It was included in a separate count.	4: I know a lot of kids drink Dubra which is fucked up. It's kind of like the cheap alternative to a lot of people.
	Hard Alcohol 2		
	Energy Drinks 1	Participant mentioned that energy drinks can	P2: mm well a lot of people do energy drinks just to like keep the little energy

		be mixed with hard liquor	boost with depending which you want to mix it with vodka or anything else.
	Jack Daniels 1	Specific type of hard liquor mentioned.	
	Ecstasy 1	Also mentioned that it was mixed with drinking.	4: Like mixed ecstasy with drinking and a lot of drinking
Help fall asleep?	Tylenol PM 4 1	Count included if one participant stated a medication and another participant shared verbal agreement (ex. "yeah)	4: umm definitely I've heard of like Tylenol PM and Nyquil...people using that umm Kim: okay 4: I guess it has like something that does help them sleep in it but Kim: okay so Tylenol and Nyquil 5: Yeah also like those other like specific sleeping pills like Unisom or just taking benadryl
	Nyquil 4 1 4		2: I guess Nyquil on occasion, but sometimes that starts out with a cold and then they just continue taking it
	Unisom 1		
	Lunesta 1		
	Ambien 1		
	Sleeping medications 1	Counts were placed here if participant didn't know the name of a specific sleeping medication.	

	Benadryl 1 1 1		1: <u>Benadryl, Melatonin</u> P5: um I know one individual who has a nightly routine of taking um a little extra Benadryl and a glass of whiskey and he cannot fall asleep any other way. Um so it is very unhealthy but
	Whisky 1		P5: um I know one individual who has a nightly routine of taking um a little extra Benadryl and a glass of whiskey and he cannot fall asleep any other way. Um so it is very unhealthy but
	Tea 2		4: <u>green tea</u> 2: It's called sleepy-time Celestial <u>tea</u>
	Melatonin 1		1: <u>Benadryl, Melatonin</u>
	Weed 3		
	Marijuana 1		P7: oh and um. I do know of some people. Um You know the humidifiers during the winter time? Um well um some people will put um marijuana right where the steam comes out so that then its kind of like calms the whole room down. Quote in quote.
	Alcohol 2		P3: I think a lot of people use alcohol as a way to fall asleep too just because sometimes it takes their minds off from things and then that way they're not restless when they are trying to sleep.
Stay awake?	Adderall 2 1 2	Mutual agreement was	5: um I've heard of Adderall and also you

		counted for (ex “Same thing”). One count per participant: If mutual agreement was established and then participant mentions the medication again, that medication will only receive one point for that participant.	always see people drinking like Monsters or those energy shots. Kim: okay, energy shots and Monsters. Uh number 1? 1: same thing. Kim: same thing? 1: lots of Adderall. 4: Well then that just makes me think of like the exact opposite like to stay up I feel like people take Adderall to like stay to make sure they stay up and like study, everyone takes Adderall
	Monster 3 4		4: Um I’ve heard of people even using caffeine pills to stay awake
	Energy shots 3	Count included when “energy drinks” were stated. Count did not extend to specific types when participant stated “all those energy drinks”	3: Red Bull and all those energy drinks Ex: In this case the count went towards energy drinks. Regardless of the “all” phrase the count did not extend to Monster drinks.
	5 hour energy 1 2	Energy shots were counted separately from specific brands mentioned	2: yeah um Monsters, those 5 hour energy’s um
	Caffeine pills 1		
	Tea 1		
	Amp 1		

	Caffeinated Soda 1		
	Red Bull 1 1 3		
	Energy drinks 1 2 5	Energy drinks were counted separately from specific types. If substances were mixed they were each counted separately	3: Red Bull and all those energy drinks 1: <u>energy drinks</u> , any type of energy drink 3: yea 1: I see those all over campus 1: um people mix like alcohol and <u>energy drinks</u> all the time
	Alcohol 1 1	Alcohol was put in a separate category even though it was stated to be taken with energy drinks by participant 1	1: um people mix like <u>alcohol</u> and energy drinks all the time
	Coffee 1 4		4: Coffee *laughs*
	Zanies 1		
	Vitamin B12 supplements 1		
	Ecstasy 1		
	Cocaine 1		
	Caffeine 2 1		4: To stay awake I know people will do like <u>caffeine</u> and adderall and I know it's not like good for them that's a lot of like 2: Just excess <u>caffeine</u>
Improve mental	Adderall		3: All I can think of is

performance?	2 1 6		Adderall 2: People say Adderall
	Ritalin 3		
	Zipfizz 1		P5: um focus formula is one of them but it's in a capsule. Um there's <u>Zipfizz</u> um which is one of the drink powders. Yeah.
	Vitamin B 1		P5: um I agree Adderall, Ritalin. Um There's also there's supplements sold at vitamin stores called focus formula and um other <u>vitamin B</u> derived pills or powders for drinks that um help stimulate the brain illogically.
	Focus Formula 1		P5: um I agree Adderall, Ritalin. Um There's also there's supplements sold at vitamin stores called <u>focus formula</u> and um other vitamin B derived pills or powders for drinks that um help stimulate the brain illogically.
	Water 1		P6: um I feel like I heard of something called like Ritalin but um I don't know some people I know drink lots of <u>water</u> because they feel like it clears their mind.
	Caffeine 1 1		4: Adderall and then Caffeine sometimes
	Ginseng 1		1: well I know that people take like <u>Ginseng</u> and they do their vitamins too because they think it helps them be healthy
	Anti-anxiety medicatio		

	ns 1		
	Symbalta 1		
	Lexapro 1		
	Multivita min 1		1: well I know that people take like Ginseng and they do their <u>vitamins</u> too because they think it helps them be healthy
	ADD medicatio ns 1	Count only included when participant did not know specific type of ADD medication. Adderall count was counted separately.	5: yea ya know the usual ADD medications that people take
	Phuldan (Possibly Focalin?? ?) 1	Participant did not know the exact name of the medication but knew it was similar to Adderall.	
improve sexual performance?	Viagra 1 1 1	Viagra was counted for regardless of other participant disagreement.	3: Viagra *laughs* Kim: okay, Viagra 4: Um, I don't really hear of that many people like using drugs like Viagra our age 4: I definitely said the Viagra like I know like even not like there's an issue but just like to like see how like or like they like it's like this new thing I guess just to try it
	Alcohol 2 1 3		1: Some people say like <u>alcohol</u> like I've known people that say like "Oh I'll drink so I can have sex

			later”
	Ecstasy 4		
	Molly 1		
	Valvetro/ a?? 1	Spelling unknown	
	KY Fire and Ice 2	Mutual agreement present	P5: um I don’t know if you will consider um the product. I don’t know what it’s called but its like the commercial its icy and the n its hot it’s a KY product. I don’t know what it is but P6: Fire and ice P5: fire and ice! That’s it!
	Marijuan a 3 1	Marijuana was counted for for each mutual agreement (ex “yeah”) after medication was stated.	3: I’ve heard of like using marijuana 4: yea 1: yea
Alleviate colds or sinus problems?	Mucinex 1 1		2: um, <u>mucinex</u> , um people still use Airborne whether I don’t know if that’s effects or not...the little tablets that you put into your drink
	Advil 1		
	Antibiotic s 2		2: and I also know um uh the use of a <u>Z-pak</u> I think that Azithromycin’s the name for it, but uh like people that like have been prescribed a Z-pak for travels or something will just leave it at in their dorm so that when they think they get a strep throat they’ll just take it regardless and just not go to the infirmary and just kinda treat themselves and see where it goes. 4: um not for this is like for

			the treatment in which I completely forgot about but um people always take like antibiotics like they'll have antibiotics and take it and like even if it's like a cold and you know it's a virus and it's not gonna help you
	Airborne 1		2: um, mucinex, um people still use <u>Airborne</u> whether I don't know if that's effects or not...the little tablets that you put into your drink
	Claritin 1		1: and I know what you said about people like mixing it they'll mix like the Tylenol cold with like the Benadryl with like <u>Claritin</u> and with like Nyquil and Sudafed and all at the same time like
	Advil cold and sinus 1	Advil count was separate from specific types of Advil.	3: uh Mucinex and like Advil, Advil cold and sinus, um Motrin, um yea
	Tylenol cold and sinus 1		1: and I know what you said about people like mixing it they'll mix like the <u>Tylenol cold</u> with like the Benadryl with like Claritin and with like Nyquil and Sudafed and all at the same time like
	Motrin 1		
	Dayquil 2 2	Count was not included to previous medications when there was no key words to mutual agreement (ex "yeah," "agree"). Count was	3: uh Mucinex and like Advil, Advil cold and sinus, um Motrin, um yea Kim: okay 4: um that covers a lot of them I guess uh, Dayquil <i>Ex: In this case there was no mutual agreement.</i> 4: um that covers a lot of them I guess uh, Dayquil

		included when mutual agreement phrases were said.	Kim: Dayquil 5: yea Sudafed, Nyquil <i>Ex: mutual agreement phrase (“yea”) was used. In this case, count was included to previous medication that was “agreed to” (Dayquil)</i>
	Nyquil 1 4 4		3: Sure, actually, I have a cold, yea I mean what is there... <u>Nyquil</u> ...I mean I think a lot of people take cold medicine ~participant 4 mentioned Nyquil later as well ~participant 1 mentioned Nyquil as well 2: um I know a few people that over uh misuse um <u>Nyquil</u> like they’d rather their treatment is to take it to like knock themselves out for 24 hours and they think like when they wake up and they’re fine that it’s gone and they’re fine so uh
	Choroseptic spray 2	Mutual agreement is present	P7: um to like to try to like prevent it I know like people that use like airborne a lot. Um and like try to load up a lot like on their vitamin C like their have like 5 oranges and like 3 glasses of orange juice and like um like and once they like have it like Nyquil to fall asleep when they are sick. Um yeah and

			cough drops and stuff like that. Um Like those sprays for like the back of their throat. I don't know what they are called. (33:15) P6: <u>Chloraseptin</u> ? Is that it? For the sore throat? P7: <u>yeah yeah yeah</u>
	Aspirin 1		P2: I would definitely say Nyquil. And some people might take <u>aspirin</u> but just for like the headache effects.
	Vitamin D 1		
	Sudafed 1 2		3: and I also thought of Sudafed I kinda forgot about that one ~Participant 1 mentioned Sudafed later as well
	"smoke" 1		2: um actually I've even heard of some people who smoke just to Kim: smoke? 2: it actually clears out your system
	Vicks 2	Mutual agreement was reached and was accounted for.	3: Vicks 4: oh I was just gonna say that <i>Ex: Participant 4 was going to say the same brand name so this was counted for.</i>
	Benadryl 3 3		3: whatever, <u>Benadryl</u> , or I don't know different names of it ~Participant 4 mentions Benadryl later as well ~Participant 1 mentioned Benadryl as well
	Zinc 1		
	Vitamin C	Emergen-C and	2: <u>Vitamin C</u>

	3 1	plain vitamin C were included in this count	3: I was just gonna say the packets of vitamin C 1: Emergen-C drink things 3:yea
Prevent sickness or "catching a cold?"	Airborne 1 1 1		3: airborne 2: Um the same airborne I think people take to like on the first sign of anything
	Vitamin C supplements 4 1 3	Vitamin C supplements included pills, gummies, sugar packets and food sources (ex. Oranges, juices).	1: vitamin C pills Kim: Vitamin C? 4: yeah those little chewy gummy things <hr/> 1: sugar packets you put in the water with vitamin C <hr/> 5: A lot of people like to eat things that have vitamin C in them like oranges, I think carrots, or just like drink juices that have it 1: vitamin C
	Vitamin water 1		4: maybe even like vitamin waters and stuff people just drink those
	Cold Ease 1		
	Gargling with salt water 1		
	Sinus rinse 2	Includes Neomed or Neti Pot	
	Aspirin 1		P2: I know a lot of people take vitamins and. Well I mean some of them just might even take forms of. Well, like aspirin just to prevent getting sick like oh ill just take one and fall asleep. Hopefully I get better.
	Multivita	Mutual	4: Just multivitamins

	mins 2 1 4	agreement was reached so was accounted for. Gummy vitamins is included in this count (mentioned once)	Kim: multivitamins 3: yea <i>Ex: in this case, multivitamins were counted twice due to a participant 3 agreement (“yea”)</i> 3: um which I don’t think has any impact, usually, you should be taking it all the time but um I really don’t I mean maybe people take a <u>multivitamin</u> to prevent a cold but in general I don’t think people take that much stuff
Prevent or treat allergies or asthma?	Claritin 1 1 2		
	Benadryl 1 1 3		
	Advair 1		
	Zyrtec 1		
	Sudafed 1		
	Clarinet 1		
	Rhincort 1		
	Tylenol 1 1		
	Singulair 1		
	Nasonex 1		
	Albuterol 1		
	Cloritromi ton 1	Unknown pronunciation and unknown spelling	
Treat stomach issues or for indigestion or gas?	Gas-X 3 1 5	Mutual agreement was reached for gas-x, beano, and	5: like gas-X or beano Kim: okay 5: and then I don’t know, if they’re like constipated

		laxatives.	they can take laxatives Kim: okay 1: same thing Kim: same thing? 2: same, plus like uh Mylanta <i>Ex: In this case, participant 1 and 2 agreed to participant 5's statements. Each agreement received one count per participant.</i>
	Antibiotics 1		
	Beano 3 3		
	Laxatives 3 1 2		
	Mylanta 2		
	Flaxseed Oil 1	Note: Because participant 3 said "basically what everyone else has said," an extra count was added to every comment that was said before participant 3 for this question.	P3: um Basically what everyone else has said but I also know some people that take um flax seed oil um to prevent any types of infection.
	Tylenol 2		
	Enema 2		
	Smoking cigarettes 2		P1: uh after kids have like I mean stomach pain and stuff like that some kids can <u>smoke</u> to get rid of it. Some or um like smoke marijuana to get rid of it.
	Marijuana 2		P1: uh after kids have like I mean stomach pain and stuff like that some kids can smoke to get rid of it. Some or um like smoke <u>marijuana</u> to get rid of it.
	Pepto-bismol 1		

	2 2		
	Tums 1 2 3		
	Antacids 3		
	Mineral oil 1		
	Fish Oil 1		
	Fiber 2		
Relieve anxiety or despression?	Marijuan a 1 1 3		
	alcohol 2 1 4	Regardless of type alcohol consumption (binge, # of drinks) it was counted only once. Mutual agreement was reached.	4: And um drinking too Kim: drinking, okay. Um, like what specific drinks would you say? 4: um well there's like a lot of supposedly binge drinking because most college students that I've heard have more than the 4 drinks or whatever a night um a lot of hard alcohol and um mixed drinks and stuff like that <hr/> 5: same thing as what everyone else said <i>Ex: Mutual agreement to previous alcohol statement</i>
	Anti- deprese nts 4	I counted the term "anti- depressent" in this count. It was used if the participant did not know the specific name of an anti- depressent.	
	Cocaine 1		
	Koland Tea 1		
	Klonapin 1		

	Ativan 3		
	Lexapro 1 3		
	Xanax 2		
	Cymbalta 1		
	Prozac 1 3		
	Zoloft 1 1		
Reduce pain or a headache?	Advil 1 2 3		
	Icy Hot 2		
	Heating pads 2		
	Ibuprofen 1 2		
	Bengay 1		
	Codeine 1		
	Menthol 1		
	Tiger Disease 1		
	Vicodin 2		4: um I know like a lot of people who will like use the <u>Vicodin</u> like they buy it from people who like didn't use it
	Immitrex 1		
	Tylenol 1 2 3		
	Motrin 1 1 1		
	Excedrin 1 3		
	Calcium 1		
	Percocet 1		
	Marijuan a 1 1		
	Aspirin 2		
Relieve dry eyes?	Visine 1 2 3		4: I've heard of <u>Visine</u> a lot like not even just dry

			eyes but like um this sounds like stupid but uh for people who have contacts and don't wanna pay for it they'll like use the visine to keep their contacts like active for like 6 months like longer than they're supposed to be used.
	Humidification 1		
	Contact solution 1		
	Eye Drops 2	Participant did not know the names of any particular eye drops so it was counted in this general category.	
	Systane 1		
Alcohol is a substance consumed by many college students. Are there any products that you think students may be taking <i>before</i> they drink alcohol?	Advil 1 3		<p>3: Some people take like Advil and they think that it will get rid of their hangover Kim: and that's before, um 3: yea Kim: okay 3: or even like even like during, I've heard of people taking that at like the end of the night Kim: okay, so they take it before, during, or after 3: yeah, yeah <i>Ex: in this case Advil was counted for in the "during" and "after" alcohol question too.</i></p>
	Tylenol 2		
	Motrin 2		
	Pepto-	Specific brand	4: um, before they consume

	bismol 1 2	name, pepto- bismol, was counted separately from the antacid statement.	alcohol umm well there's always like a lot of interactions with like alcohol I know that just on an average day that a lot of people consume like um like Pepto bismol or like antacids and like all sorts of things that could conflict
	Antacid 1 2		
	Ecstasy 3		
	Water 3		
	Adderall 1		5: I know some people take um Adderall so they can get like more energetic before they drink
	Marijuana 1 1 5		
	Cocaine 1		
	Cigarettes 1		
	Milk 1		P3: um basically so far what everyone else has said. Um but I also know people that they drink milk before they start drinking which is kind of weird to me. Um But I guess it prevents like any other types of like stomach problems that might be associated if you drink too much alcohol
	Ibuprofen 3		
	Energy Drinks 1		2: um I mean and with mixing they'll use Red Bulls or any kind of <u>energy drinks</u> right before or with their drink.
	Caffeine 2		

<p>Are there any products that you think students may be mixing with alcohol?</p>	<p>Advil 1</p>		
	<p>Tums 1</p>		<p>5: um and also like they'll take like Tums so they don't get sick while they drink Kim: okay so they take that during 5: yeah <i>Ex: This answer was stated under the "before" question but because it was clarified to be during the alcohol consumption it was included in this question count as a possibility of mixing interaction.</i></p>
	<p>Red Bull 1 1 4</p>	<p>Specific energy drinks, red bull, were separated from the energy drink count. Juices, sodas, cocktail mixes were not included because they do not fit as a potential harm to medication interactions. Note: participants 1 and 2 specified that Red bull combined with jaeger is known as a "jaeger bomb."</p>	<p>4: umm Red Bull and energy drinks umm and I don't know, regular other things like gaterades, sodas, um cocktail mixes, whatever they can mix it with 2: um I mean and with mixing they'll use <u>Red Bulls</u> or any kind of energy drinks right before or with their drink.</p>
	<p>Coffee 3</p>		
	<p>Energy drinks 1 4</p>		<p>2: um I mean and with mixing they'll use <u>Red Bulls</u> or any kind of <u>energy</u></p>

			<u>drinks</u> right before or with their drink.
	Caffeine 4		
	Soda 4		
	Juices 3	The general term "juice" and lemonade were included in this count.	
	Gummy snacks 2		
	Jello Shots 1		
	Roofies 1		4: I mean just like mixing with just like a lot of caffeine and then like there are definitely like <u>roofies</u> but most of that isn't like intentional
	Monster 1		
	Four Lokos 1		
	Marijuana 1		
	LSD 1		
	Ecstasy 1		
	Lexapro 1		
	Grenadine 2		
	Redline 2		
	Blue Curacao 2		
	Jungle Juice 2	In this case many different alcohol types are mixed together.	
	Irish Car Bomb 2	Exactly what is mixed to create an Irish Car Bomb was not specified by participant 7	

	Klonopin 1		
	Cocaine 1		
What are the most common products or strategies college students use to "get rid of" or relieve a hangover?	Advil 1 2 2		
	Tylenol 1		
	Aspirin 1		
	Ibuprofen 1		
	Caffeine 1		
	Carbohydrates 1 1 2		3: a lot of carbs too, to soak up the alcohol
	Tums 1		
	Alcohol 1 2	Alcohol was accounted for regardless of unknown practice.	4: um I don't know if it's really common but sometimes people have a drink the next day I don't know if that's so much common like here but I have heard it done before Kim: so like the day after 4: yea day after
	Coca-Cola 2		
	Tomato juice 1		
	Fruit Juice 2		
	Powerade /Gatorade e 1		
	Multivitamin 2		
	B complex 1		
	Coffee 1		
	Cold shower 2		

	Water 7		
	Hot Sauce 1		
Are there any additional comments you would like to share that would improve our study?	Drugs are used in excess 1		<p>1: a good portion of our school I think misuses it and that like relates to anything—Alcohol, drugs, like anything, even like herbal remedies I feel like people just like misuse them it’s just like</p> <p>Kim: okay</p> <p>1: like excess</p>

Appendix H: Focus Group Counts per Discussion Question

Focus Group Discussion Question	Variables (medication/ <u>total count</u>)
Q1: What specific products (medications, drugs, supplements, etc) came to mind when you first heard about our study?	Adderall 10
	Sleep Medication: 2
	NSAIDs: Advil 4 Ibuprofen 8 Aspirin 4 Naproxen 2
	Aceitaminophen 2 Tylenol 1
	VIAGRA: 1
	Weed 1
	Jaeguer 1
	Ginseng: 1
	Creatine 3

	Sudafed 1
	Anxiety Medication 1
	Pepto Bismol 1
	Robitussin 1
	Nyquil 3
	Cough Drops 2
	Keystone 1
	Caffeine 1
	Jungle Juice 1
	For Lokos 1
	Smoking Cigarettes 2
	Chewing Tobacco 2
Q2: The University of Connecticut is a Division I school of athletics and many other students want to avoid the “freshmen 15” and stay healthy. What nutritional supplements do you think students may be taking to help them achieve their ideal body weight and build? Note: in the third focus group Michelle also included that people use to lose weight.	Steroid 2
	Benefiber 1
	Alli 1
	Metamucil 1
	Fiber 1
	Wheat Protein 2
	Hydroxycut 1
	Flax Seed 1
	Athedroprogec 1
	Protein 1
	Diet supplement pills 3
	Dot Fit 1
	Adderall 1
	Creatine 2
	Laxatives 3
	Whey Protein 1
	Multivitamin: 5
	Fish Oil: 1

	Caffeine: 2
	Hard Alcohol 1
Q3: Is there anything people take to help lose weight?	Hydroxycut 1
	Diet Pills 1
	Adderall 1
	Smoking cigarettes 1
	Sorbitol 1
	Laxatives 1
Q4: Is there anything you think college students take to help gain muscle?	Protein powders 2
	Muscle Milk 3
	Wheat Protein 2
	Protein 5
	Protein bars 1
	Steroids 5
	Cachableen 1
	Whey 2
	Energy drinks 1
Q5: What do you think students may be taking to relieve stress?	Pain medications 2
	Adderall 1
	Keystone 2
	Smirnoff 1
	Mikes Hard Lemonade 1
	Ativan 1
	Old English 1
	Colt 45: 1
	Smoking Cigarettes 1
	Brunettes 1
	Jungle Juice 1
	Ever clear 1
	Grain alcohol 1
	Sleeping pills 1
	Melatonin 2
	Benadryl 1
	Marijuana 5
	Nyquil 2
	Anxiety medications 5
	Alcohol 4
	Dubra 2
	Hard Alcohol 2

	Energy Drinks 1
	Jack Daniels 1
	Ecstasy 1
Q6: Help fall asleep?	Tylenol PM 5
	Nyquil 9
	Unisom 1
	Lunesta 1
	Ambien 1
	Sleeping medications 1
	Benadryl 3
	Whisky 1
	Tea 2
	Melatonin 1
	Weed 3
	Marijuana 1
	Alcohol 2
Q7: Stay awake?	Adderall 5
	Monster 7
	Energy shots 3
	5 hour energy: 3
	Caffeine pills 1
	Tea 1
	Amp 1
	Caffeinated Soda 1
	Red Bull 5
	Energy drinks 8
	Alcohol 2
	Coffee 5
	Zanies 1
	Vitamin B12 supplements 1
	Ecstasy 1
	Cocaine 1
	Caffeine 3
Q8: Improve mental performance?	Adderall 9
	Ritalin 3
	Zipfizz 1
	Vitamin B 1
	Focus Formula 1
	Water 1

	Caffeine 2
	Ginseng 1
	Anti-anxiety medications 1
	Symbalta 1
	Lexapro 1
	Multivitamin 1
	ADD medications 1
	Phuldan (Possibly Focalin???) 1
Q9: improve sexual performance?	Viagra 3
	Alcohol 6
	Ecstasy 4
	Molly 1
	Valvetro/a?? 1
	KY Fire and Ice 2
	Marijuana 4
Q10: Alleviate colds or sinus problems?	Mucinex 2
	Advil 1
	Antibiotics 2
	Airborne 1
	Claritin 1
	Advil cold and sinus 1
	Tylenol cold and sinus 1
	Motrin 1
	Dayquil 4
	Nyquil 9
	Choroceptic spray 2
	Aspirin 1
	Vitamin D 1
	Sudafed 3
	"smoke" 1
	Vicks 2
	Benadryl 6
	Zinc 1
	Vitamin C 4
Q11: Prevent sickness or "catching a cold?"	Airborne 3
	Vitamin C supplements 8
	Vitamin water 1

	Cold Ease 1
	Gargling with salt water 1
	Sinus rinse 2
	Aspirin 1
	Multivitamins 7
Q12: Prevent or treat allergies or asthma?	Claritin 4
	Benadryl 5
	Advair 1
	Zyrtec 1
	Sudafed 1
	Clarinex 1
	Rhincort 1
	Tylenol 2
	Singulair 1
	Nasonex 1
	Albuterol 1
	Cloritromiton 1
Q13: Treat stomach issues or for indigestion or gas?	Gas-X 9
	Antibiotics 1
	Beano 6
	Laxatives 6
	Mylanta 2
	Flaxseed Oil 1
	Tylenol 2
	Enema 2
	Smoking cigarettes 2
	Marijuana 2
	Pepto-bismol 5
	Tums 6
	Antacids 3
	Mineral oil 1
	Fish Oil 1
	Fiber 2
Q14: Relieve anxiety or despression?	Marijuana 5
	alcohol 7
	Anti-depressents 4
	Cocaine 1
	Koland Tea 1
	Klonapin 1
	Ativan 3

	Lexapro 4
	Xanax 2
	Cymbalta 1
	Prozac 4
	Zoloft 2
Q15: Reduce pain or a headache?	Advil 6
	Icy Hot 2
	Heating pads 2
	Ibuprofen 3
	Bengay 1
	Codeine 1
	Menthol 1
	Tiger Disease 1
	Vicodin 2
	Immitrex 1
	Tylenol 6
	Motrin 3
	Excedrin 4
	Calcium 1
	Percocet 1
	Marijuana 2
	Aspirin 2
Q16: Relieve dry eyes?	Visine 6
	Humidification 1
	Contact solution 1
	Eye Drops 2
	Systane 1
Q17: Alcohol is a substance consumed by many college students. Are there any products that you think students may be taking <i>before</i> they drink alcohol?	Advil 4
	Tylenol 2
	Motrin 2
	Pepto-bismol 3
	Antacid 3
	Ecstasy 3
	Water 3
	Adderall 1
	Marijuana 7
	Cocaine 1
	Cigarettes 1

	Milk 1
	Ibuprofen 3
	Energy Drinks 1
	Caffeine 2
Q18: Are there any products that you think students may be mixing with alcohol?	Advil 1
	Tums 1
	Red Bull 6
	Coffee 3
	Energy drinks 5
	Caffeine 4
	Soda 4
	Juices 3
	Gummy snacks 2
	Jello Shots 1
	Roofies 1
	Monster 1
	Four Lokos 1
	Marijuana 1
	LSD 1
	Ecstasy 1
	Lexapro 1
	Grenadine 2
	Redline 2
	Blue Curacao 2
	Jungle Juice 2
	Irish Car Bomb 2
	Klonopin 1
	Cocaine 1
Q19: What are the most common products or strategies college students use to "get rid of" or relieve a hangover?	Advil 5
	Tylenol 1
	Aspirin 1
	Ibuprofen 1
	Caffeine 1
	Carbohydrates 4
	Tums 1
	Alcohol 3
	Coca-Cola 2
	Tomato juice 1
	Fruit Juice 2

	Powerade/Gatorade 1
	Multivitamin 2
	B complex 1
	Coffee 1
	Cold shower 2
	Water 7
	Hot Sauce 1
Q20: Are there any additional comments you would like to share that would improve our study?	Drugs are used in excess 1

Appendix I: Substance Counts per Communication Content Analysis

ADDERALL	10+1+1+1+5+9+1 Q1, Q2, Q3, Q5, Q7, Q8, Q17	28
ADD medication	1 Q8	1
SLEEP MEDICATION	2 Q1	2
ADVIL	4+1+6+4+1+5 Q1, Q10, Q15, Q17, Q18, Q19	21
ADVIL COLD AND SINUS	1 Q10	1
Ibuprofen	8+3+3+1 Q1, Q15, Q17, Q19	15
Aspirin	4+1+1+2+1 Q1, Q10, Q11, Q15, Q19	9
Pain Medications	2 Q5	2
Naproxen	2 Q1	2
Acetaminophen	2 Q1	2
Tylenol	1+2+2+6+2+1 Q1, Q12, Q13, Q15, Q17, Q19	14
Tylenol PM	5 Q6	5
Tylenol cold and sinus	1 Q10,	1
Viagra	1, 3 Q1, Q9	4
Weed	1+3 Q1, Q6	4
Jaeguer	1 Q1	

		1
Ginseng	1+1 Q1, Q8	
		2
Creatine	3+2 Q1, Q2	
		5
Sudafed	1+3+1 Q1, Q10, Q12	
		5
Anxiety Medication	1+ 5+1 Q1, Q5, Q8	
		7
Pepto Bismol	1+5+3 Q1, Q13, Q17	
		9
Robitussin	1 Q1	
		1
NYQUIL	3+2+9+9 Q1, Q5, Q6, Q10,	
		23
Cough drops	2 Q1	
		2
Keystone	1+2 Q1, Q5	
		3
Caffeine	1+2+3+2+2+4+1 Q1, Q2, Q7, Q8, Q17, Q18, Q19	
		15
Caffeine Pills	1 Q7	
		1
Coffee	5+3+1 Q7, Q18, Q19	
		9
Caffeinated Soda	1 Q7	
		1
Jungle Juice	1+1+2 Q1, Q5, Q18	
		4
Four Lokos	1+1 Q1, Q18	
		2
Smoking Cigarettes	2+1+2+1 Q1, Q2, Q13, Q17	
		6
Chewing Tobacco	2	

	Q1	
Steroid	2+5 Q2,Q4	2
Benefiber	1 Q2	7
Alli	1 Q2	1
Metamucil	1 Q2	1
Fiber	1+2 Q2, Q13	1
Whey protein	2+2 Q2, Q4	3
Hydroxycut	1+1 Q2, Q3	4
Flax seed	1 Q2	2
Flaxseed oil	1 Q13	1
Athedroprogec	1 Q2	1
Protein	1+5 Q2, Q4	1
Protein Powders	2 Q4	6
Protein bars	1 Q4	2
Diet supplement pills	3+1 Q2, Q3	1
Dot Fit	1 Q2	4
Laxatives	3+1+6 Q2, Q3, Q13	1
		10

		3
Multivitamin	5+1+7+2 Q2, Q8, Q11, Q19	
		15
Zinc	1 Q10	
		1
Calcium	1 Q15	
		1
Vitamin B12 supplements	1 Q7	
		1
Vitamin B	1 Q8	
		1
Vitamin D	1 Q10	
		1
Vitamin C	4+8 Q10, Q11	
		12
Vitamin water	1 Q11	
		1
Fish oil	1+1 Q2, Q13	
		2
Hard alcohol	1+2 Q2, Q5	
		3
Grain alcohol	1 Q5	
		1
Alcohol	4+2+2+6+7+3 Q5, Q6, Q7, Q9, Q14, Q19	
		24
Sorbitol	1 Q3	
		1
Muscle Milk	3 Q4	
		3
Milk	1 Q17	
		1
Cachableen?	1 Q4	
		1
Energy drinks	1+1+8+1+5	

	Q4, Q5, Q7, Q17, Q18	16
Energy Shots	3 Q7	3
5 hour energy	3 Q7	3
Monster	7+1 Q7, Q18	8
Red Bull	5+6 Q7, Q18	11
Smirnoff	1 Q5	1
Mikes Hard Lemonade	1 Q5	1
Jack Daniels	1 Q5	1
Whisky	1 Q6	1
Ativan	1+3 Q5, Q14	4
Old English	1 Q5	1
Colt 45	1 Q5	1
Brunettes	1 Q5	1
Ever clear	1 Q5	1
Sleeping pills	1 Q5	1
Melatonin	2+1 Q5, Q6	3
Benadryl	1+3+6+5 Q5, Q6, Q10, Q12	15

Marijuana	5+1+4+2+5+2+7+1 Q5, Q6, Q9, Q13, Q14, Q15, Q17, Q18	27
Dubra	2 Q5	2
Ecstasy	1+1+4+3+1 Q5, Q7, Q9, Q17, Q18	10
Unisom	1 Q6	1
Lunesta	1 Q6	1
Ambien	1 Q6	1
Sleeping medications	1 Q6	1
Tea	2+1 Q6, Q7	3
Koland Tea	1 Q14	1
Amp	1 Q7	1
Zanies	1 Q7	1
Cocaine	1+1+1+1 Q7, Q14, Q17, Q18	4
Ritalin	3 Q8	3
Zipfizz	1 Q8	1
Focus Formula	1 Q8	1
Water	1+1+3+7 Q8, Q11, Q17, Q19	12
Gargling with salt water	1 Q11	

		1
Cymbalta	1+1 Q8, Q14	2
Lexapro	1+4+1 Q8, Q14, Q18	6
“Phuldan” (possibly Focalin?)	1 Q8	1
Molly	1 Q9	1
Valvetro??	1 Q9	1
KY Fire and Ice	2 Q9	2
Mucinex	2 Q10	2
Antibiotics	2+1 Q10, Q14	3
Airborne	1+3 Q10, Q11	4
Claritin	1+4 Q10, Q12	5
Motrin	1+3+2 Q10, Q15, Q17	6
Dayquil	4 Q10	4
“Smoke”	1 Q10	1
Choroseptic Spray	2 Q10	2
Vicks	2 Q10	2
Cold Ease	1 Q11	1
Sinus rinse	2	

	Q11	2
Advair	1 Q12	1
Zyrtec	1 Q12	1
Clarinet	1 Q12	1
Rhincort	1 Q12	1
Singulair	1 Q12	1
Nasonex	1 Q12	1
Albuterol	1 Q12	1
Cloritromiton	1 Q12	1
Gas-X	9 Q13	9
Beano	6 Q13	6
Mylanta	2 Q13	2
Enema	2 Q13	2
Tums	6+1+1 Q13, Q18, Q19	8
Antacid	3+3 Q13, Q17	6
Mineral Oil	1 Q13	1
Anti-depressants	4 Q14	

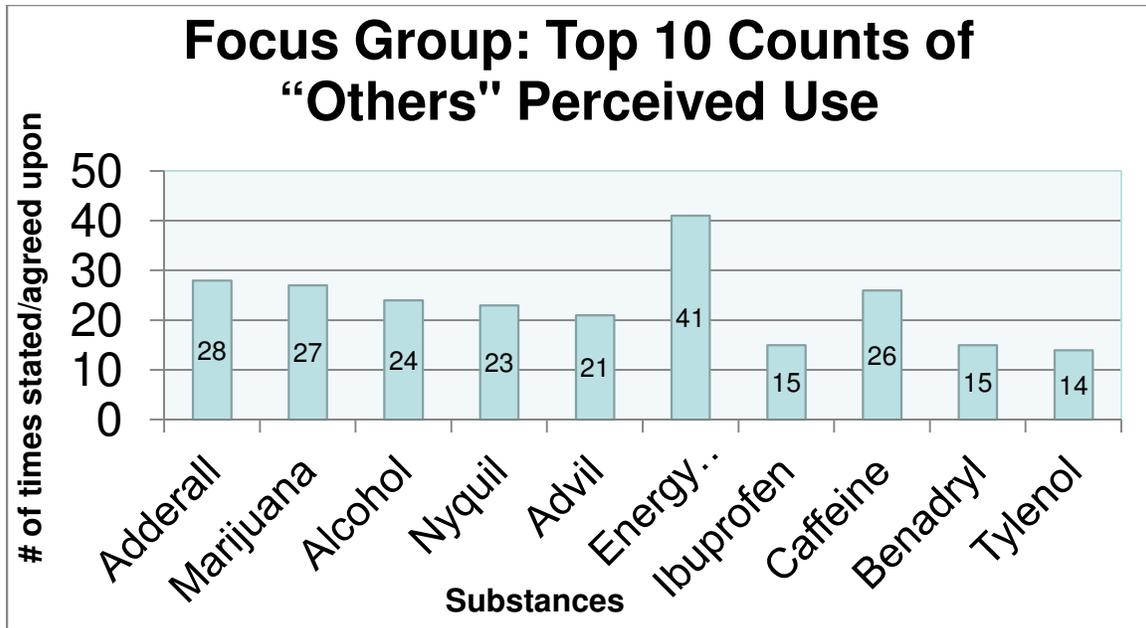
		4
Klonopin	1+1 Q14, Q18	
		2
Xanax	2 Q14	
		2
Prozac	4 Q14	
		4
Zoloft	2 Q14	
		2
Icy Hot	2 Q15	
		2
Heating Pads	2 Q15	
		2
Bengay	1 Q15	
		1
Codeine	1 Q15	
		1
Menthol	1 Q15	
		1
Tiger disease	1 Q15	
		1
Vicodin	2 Q15	
		2
Immitrex	1 Q15	
		1
Excedrin	4 Q15	
		4
Percocet	1 Q15	
		1
Visine	6 Q16	
		6
Humidification	1 Q16	
		1
Contact solution	1	

	Q16	
		1
Eye Drops	2	
	Q16	
		2
Systane	1	
	Q16	
		1
Soda	4	
	Q18	
		4
Juices	3+2	
	Q18, Q19	
		5
Gummy snacks	2	
	Q18	
		2
Jello Shots	1	
	Q18	
		1
Roofies	1	
	Q18	
		1
LSD	1	
	Q18	
		1
Grenadine	2	
	Q18	
		2
Redline	2	
	Q18	
		2
Blue Curacao	2	
	Q18	
		2
Irish Car Bomb	2	
	Q18	
		2
Tomato juice	1	
	Q19	
		1
Carbohydrates	4	
	Q19	
		4
Coca-cola	2	
	Q19	
		2
Powerade/Gatorade	1	
	Q19	

		1
B Complex	1 Q19	1
Cold Shower	2 Q19	2
Hot Sauce	1 Q19	1
Additional comment: "Drugs are used in excess"	1 Q20	1
		1

Appendix J: Top ten ranking counts

Rank	Substance	Counts (# of mentions)
1	Energy Drinks	41
2	Adderall	28
3	Marijuana	27
4	Caffeine	26
5	Alcohol	24
6	Nyquil	23
7	Advil	21
8	Ibuprofen	15
9	Benadryl	15
10	Tylenol	14



Appendix K: Listserv Message for Survey

What do college students use to treat common health problems?

Complete our **survey** for an opportunity to
win one of 30 **\$25 Co-op gift cards!**

Who: UConn undergraduate students (YOU)

What: An anonymous and confidential survey about your self-medication habits

Where: On your computer

When: Now! The survey will be available at the link below through 10/11/2011

Why: The data collected will be used to help develop an educational program for future UConn students. Upon completion of the survey you will automatically be entered into a drawing for a \$25 gift card to the UConn Co-op. The 30 winning numbers will be posted on a follow-up listserv Daily Digest email the week after the close of the survey.

How: Click on the link at the bottom of this email message to start the survey

Please scroll down and read the fine print below, then
click the survey link at the bottom of this email message.

****This survey is part of a research study at UConn, so *please* respond honestly. To maintain the integrity of the survey data, complete the survey on your own, in private, and do not post the link to any other sites or forward this email to non-UConn students. ****

Information Sheet for Participation in a Research Study

Principal Investigator: Patricia J. Neafsey, PhD, Professor, School of Nursing

Student Researchers: Heather Buck, Kara Dazkevich, Michelle Santos, Kristin Summers, Kim Vo, Janet Knecht

Study Title: Over-the-Counter Self-medication Practices by Undergraduate Students IRB # H11-019

1. Introduction

You are invited to participate in a research study to help us survey what over-the-counter (OTC) products undergraduate students take to self-medicate common problems.

2. Why is this study being done?

Results of the survey will help us develop and evaluate an educational program for incoming freshman concerning how to avoid adverse self-medication behaviors.

3. What are the study procedures? What will I be asked to do?

The electronic survey will have questions such as "Over the past month, did you take anything for pain?" If you answer "yes," you will then select the name of the product from an electronic alphabetical list. You will then be asked when (time of day) you took the product and how many days per week in the past month you took it.

4. What other options are there?

You may skip any questions. You may exit the survey at any time.

5. What are the risks or inconveniences of the study?

The only inconvenience is the time (approximately 15 minutes) you spend taking the survey.

6. What are the benefits of the study?

Your participation will enhance future educational interventions for incoming students and their parents with the aim of reducing adverse self-medication behaviors.

7. Will I receive payment for participation? Are there costs to participate?

Once you have completed the survey, you will receive a certificate to print out with a 6 digit random number. A week after the survey closes, an email will be sent to the undergraduate listserv with the 30 winning numbers, selected at random. If you are a winner, bring your certificate to Patricia Neafsey, Ph.D, principal investigator in Storrs Hall 311. Your certificate can never be connected back to your survey responses.

8. How will my personal information be protected?

The survey host (AdhereTx Co.) uses an Amazon cloud server that exceeds all Health Insurance Portability and Accountability Act of 1996 (HIPAA) requirements for secure, legal, and ethical communication of electronic medical record information. No personal identification information (such as name, college, major, home town or birth date) will be collected by the survey. Survey participant information will be recorded solely by a random number generated by the survey software. The researchers will not be able to trace a participant ID to a specific student. AdhereTx Corp. will destroy the survey data once the principal investigator has received the final data file (at the end of the survey time window) and backed it up on appropriate media in a locked cabinet in the School of Nursing. Therefore, neither the principal investigator, nor AdhereTx Corp. would ever be able to trace the survey data back to a specific IP address or computer from which the survey was taken. The 6-digit random number on your survey certificate (for the gift card drawing) will be *different* from the random number assigned by the survey as the participant ID. The participant ID numbers and certificate numbers will not be associated in the research database so that the researchers can never link a survey response to a certificate number. When we write about the research or talk about the study, you will not be identified. All information will be kept confidential and kept in a secure location used only by the researchers. You should also know that the UConn Institutional Review Board (IRB) and the Office of Research Compliance may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

9. Can I stop being in the study and what are my rights?

You do not have to be in this study if you do not want to. If you agree to take the survey, but later change your mind, you may exit the survey at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate. You will be notified of all significant new findings during the course of the study that may affect your willingness to continue.

10. Whom do I contact if I have questions about the study?

We will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the principal investigator, (Patricia J. Neafsey, 860-486-0508). If you have any questions concerning your rights as a research subject, you may contact the University of Connecticut Institutional Review Board (IRB) at 860-486-8802.

11. Authorization

By copying and pasting the link to the survey below in a new browser session, you confirm that you have read the previous information and are comfortable with completing this survey. You also indicate that you understand the general purpose of the survey, any possible inconveniences, and the confidentiality policy.

COPY AND PASTE THE LINK BELOW TO YOUR BROWSER TO COMPLETE THE SURVEY.

<http://uconn-research.adheretx.com>

Appendix L: Survey Sample Characteristics

Gender (%)		
Females		1392 (70.4)
Males		584 (29.6)
Class Standing (%)		
Freshmen		539 (27.3)
Sophomores		503 (25.5)
Juniors		476 (24.1)
Seniors		455 (23.0)
Race, Ethnicity (%)		
White or Caucasian		1457 (73.7)
Black		60 (3)
African American		25 (1.3)
Asian		215 (10.9)
Native American		7 (0.4)
Hispanic		87 (4.4)
Latino		43 (2.2)
Native Hawaiian		3 (0.2)
Pacific Islander		12 (0.6)
More than one race		57 (2.9)
Other		45 (2.3)
Residency		
At home		117 (5.9%)
Campus Apartment		398 (20.1%)
Dorm Room		1405

		(71.1%)
Sorority/fraternity house		18 (0.9%)
Other		35 (18%)
Who Living With (%)		
Live by self		147 (7.4)
Spouse		13 (0.7)
Child		11 (0.6)
Other Relative		88 (4.5)
Friend		1385 (70.1)
Other adult		139 (7)
Other		222 (11.2)
Student Group Membership (%)		
Intramural sports team		441 (22.3)
Club sports team		208 (10.5)
Division 1 sports team		63 (3.2)
Sorority/fraternity		268 (13.6)
Student music/dance group		190 (9.6)
Student government		119 (6)
Pre-professional group		520 (26.3)
Cultural center group		262 (13.3)
No group		538 (27.2)
Conditions in last year (%)		
High Blood Pressure		44 (2.2)
High Cholesterol		52 (2.6)
Arthritis		12 (0.6)
Anxiety		476 (24.1)
Diabetes		12 (0.6)
Irregular Heartbeat		72 (3.6)
Osteoporosis		2 (0.1)
Depression		263 (13.3)
Asthma		246 (12.4)
Hypothyroidism		33 (1.7)
COPD / Emphysema		4 (0.2)
Cancer		1 (0.05)
Stroke		1 (0.05)

Blood Clot Legs		2 (0.1)
Ulcer		12 (0.6)
Kidney Disease		7 (0.4)
Smoking Status (%)		
Current Smoker		336 (17)
Once a week		180
Once a day		26
Twice a day		19
More than twice a day		51
No answer		60
Used chewing tobacco		42
Once a week		22
Once a day		6
Twice a day		5
More than twice a day		6
No answer		3
Used nicotine replacement		2
Alcohol use in last month (%)		1215 (61.5%)
Never drink		351
≥ 3 drinks/day		
Self-rated health in last month (%)		
Poor		53 (2.7)
Fair		189 (9.6)
Good		909 (46)
Very Good		481 (24.3)
Excellent		342 (17.3)
Exercise in last month (%)		
Not at all		224 (11.3)
A few times a month		485 (24.5)
Once a week		235 (11.9)
A few times a week		756 (38.3)
Daily		275 (13.9)

Hours of sleep per night (%)		
Under 5 hours		69 (3.5)
5 to 6 hours		781 (39.5)
7 to 8 hours		1029 (52.1)
Over 8 hours		96 (4.9)
Where most meals eaten (%)		
Dining halls		1439 (72.8)
Order out		63 (3.2)
Place of residence		502 (25.4)
Symptoms in last month (%)		
Pain		739 (37.4)
Fatigue		908 (46)
Difficulty Sleeping		769 (38.9)
Allergies		714 (36.1)
Cough		834 (42.2)
Menstrual cramps/PMS		883 (44.7)
Leg Cramps		253 (12.8)
Sexual dysfunction		40 (2)
Difficulty concentrating		693 (35.1)
Cold		1118 (56.6)
Swollen Ankles		38 (1.9)
Headache		1274 (64.5)
Weight Gain		323 (16.3)
Cold Hands		371 (18.8)
Constipation		232 (11.7)
Dizziness		313 (15.8)
Diarrhea		453 (22.9)
Depression		279 (14.1)
Irregular heart beat		57 (2.9)
Vision change		97 (4.9)
Nicotine Craving		87 (4.4)
Skin change		140 (7.1)
Weight Loss		221 (11.2)
Taste or Smell Changes		33 (1.7)
Memory change		81 (4.1)

Unsteadiness		118 (6)
Falls or near falls		77 (3.9)
Bladder problems		110 (5.6)
Sources Medication Information (%)		
Information on Label		459 (23.2)
Family		1239 (62.7)
Friends		290 (14.7)
Personal health care provider		702 (35.5)
Coach		18 (0.9)
Student health service		122 (6.2)
Magazines		45 (2.3)
Other		270 (13.7)

Appendix M: Rationale of Stimulant Use

Rationale for Use	n=73
Anxiety	5 (6.8%)
Drinking preparation	2 (2.7%)
Mental Performance	61 (83.6%)
lose weight	1 (1.4%)
Mix with Alcohol	6 (8.2%)
pain reliever	2 (2.7%)
stay awake	27 (37.0%)

Appendix N: Stimulant Use Demographics

Demographics of Stimulant Use	
n= 73 (3.7%) of 1976	52 (71.2%) Female 21 (28.8%) Male
Class Standing	21 (28.8%) senior
	27 (37.0%) junior
	16 (21.9%) sophomore
	9 (12.3%) freshmen
Living/Residency	26 (35.6%) off-campus apartment
	35 (47.9%) dorm room
	1 (1.4%) with other adult
	5 (6.8%) other
	3 (4.1%) at home
	3 (4.1%) sorority/fraternity house
Group affiliation	15 (20.5%) sorority/fraternity

	22 (30.1%) no group
	20 (27.4%) pre-professional group
	7 (9.6%) club sports team
	16 (21.8%) intramural sports team
	6 (8.2%) cultural center group
	3 (4.1%) division 1 sports team
	3 (4.1%) student music - dance group
Race/Ethnicity	64 (87.7%) white
	3 (4.1%) asian
	3 (4.1%) other
	2 (2.7%) Hispanic
	1 (1.4%) "more than one race"
Self Health Rating	32 (43.8%) good
	22 (30.1%) average
	15 (20.5%) fair
	4 (5.5%) poor
Conditions in the last year	37 (50.7%) anxiety
	23 (31.5%) depression
	2 (2.7%) high BP
	1 (1.4%) high cholesterol
	4 (5.5%) irregular heartbeat
	10 (13.7%) asthma
Symptoms in past month	39 (53.4%) cold
	36 (49.3%) pain
	40 (54.8%) cough
	22 (30.1%) nicotine craving
	44 (60.2%) difficulty concentrating
	48 (65.8%) fatigue
	26 (35.6%) depression
	49 (67.1%) difficulty sleeping
	11 (15.1%) weight loss
	17 (23.3%) weight gain
	28 (38.4%) diarrhea
	10 (13.7%) constipation
	10 (13.7%) skin change
	7 (9.6%) memory change
	55 (75.3%) headache
	23 (31.5%) dizziness
	11 (15.1%) unsteadiness
	4 (5.5%) falls or near fall
	7 (9.6%) bladder problems

	7 (9.6%) vision changes
	3 (4.1%) taste/smell change
Exercise in last month	13 (17.8%) not at all
	32 (43.8%) A few times a week
	17 (23.3%) a few times a month
	7 (9.6%) daily
	4 (5.5%) once a week
Sleep per night	2 (2.7%) under 5
	30 (41.1%) 5 to 6
	37 (50.7%) 7 to 8
	4 (5.5%) over 8
Wine, Beer, liquor consumption	66 (90.4%) Yes
	2 (2.7%) No
	5 (6.8%) I never drink

Appendix O: Demographical Comparison

		Stimulant Demographics	Survey Demographics
Gender	Female	71.20%	70.40%
	Male	28.80%	29.60%
Class standing	Senior	71%	23%
	Junior	28.80%	24.10%
	Sophomore	37%	25.50%
	Freshmen	12.30%	27.30%
Living/Residency	Off-campus apartment	35.60%	20.10%
	Dorm room	47.90%	71.10%
	Other	6.80%	1.80%
	At home	4.10%	5.90%
	Sorority/Fraternity house	4.10%	0.90%

Group affiliation	Sorority/Fraternity	20.50%	13.60%
	No group	30.10%	27.20%
	Pre-professional group	27.40%	26.30%
	Club sports team	9.60%	10.50%
	Intramural sports team	21.80%	22.30%
	Cultural center group	8.20%	13.30%
	Division 1 sports team	4.10%	3.20%
	Student music - dance group	4.10%	9.60%
Race/Ethnicity	White	87.70%	73.70%
	Asian	4.10%	10.90%
	Other	4.10%	2.30%
	Hispanic	2.70%	4.40%
	"More than one race"	1.40%	2.90%
Conditions in the last year	Anxiety	50.70%	24.10%
	Depression	31.50%	13.30%
	High bp	2.70%	2.20%
	High cholesterol	1.40%	2.60%
	Irregular heartbeat	5.50%	3.60%
	Asthma	13.70%	12.40%
Symptoms in past month	Cold	53.40%	56.60%
	Pain	49.30%	37.40%
	Cough	54.80%	42.40%

	Nicotine craving	30.10%	4.40%
	Difficulty concentrating	60.20%	35.10%
	Fatigue	65.80%	46.00%
	Depression	35.60%	14.10%
	Difficulty sleeping	67.10%	38.90%
	Weight loss	15.10%	11.20%
	Weight gain	23.30%	16.30%
	Diarrhea	38.40%	22.90%
	Constipation	13.70%	11.70%
	Skin change	13.70%	7.10%
	Memory change	9.60%	4.10%
	Headache	75.30%	64.50%
	Dizziness	31.50%	15.80%
	Unsteadiness	15.10%	6.00%
	Falls or near fall	5.50%	3.90%
	Bladder problems	9.60%	5.60%
	Vision changes	9.60%	4.90%
	Taste/smell change	4.10%	1.70%
Sleep per night	Under 5	2.70%	3.50%
	5 to 6	41.10%	39.50%
	7 to 8	50.70%	52.10%
	Over 8	5.50%	4.90%

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