Prevalence and Etiology of the Non-Medical Use of Prescription Medications among College Students

Amelia M. Arria, Ph.D.
Associate Professor
Department of Behavioral and Community Health
Director, Center on Young Adult Health and Development
University of Maryland School of Public Health

For more information, email: aarria@umd.edu

Funded by NIH/NIDA R01-DA014845
Overview

1. National Estimates of Prevalence
2. Background on the College Life Study
3. What we know
4. What we suspect
5. What we can do
National Estimates of Prevalence
Past-Year Nonmedical Use of Prescription Drugs among 12- to 17-year-olds, 2002-2012 (SAMHSA, 2013)
Past-Year Nonmedical Use of Prescription Drugs among 18- to 25-year-olds, 2002-2012 (SAMHSA, 2013)

Any Psychotherapeutics
Pain Relievers
Stimulants
Sedatives
Tranquilizers
Prescription stimulants are the only class of prescription drugs that are nonmedically used more by college students than non-college attending peers (during the past month; SAMHSA, 2013)

= 658,000 students

1Other persons aged 18-22 are defined by NSDUH as “respondents aged 18 to 22 not enrolled in school, enrolled in college part time, enrolled in other grades either full or part time, or enrolled with no other information available.”
Past-Year Nonmedical Use of Prescription Drugs, among 12- to 17-year-olds, by Gender (SAMHSA, 2013)

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Relievers</td>
<td>5.1</td>
<td>5.6</td>
</tr>
<tr>
<td>Any Psychotherapeutics</td>
<td>6.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Stimulants</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Tranquilizers</td>
<td>1.4</td>
<td>2.2</td>
</tr>
<tr>
<td>Sedatives</td>
<td>0.2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Past-Year Nonmedical Use of Prescription Drugs, among 12- to 17-year-olds, by Gender (SAMHSA, 2013)
Domains Measured in the CLS

Demographics
- Family Composition
- Gender
- Race/Ethnicity
- Socioeconomic Status
- Parental Education

Mental Health
- Depression
- Bipolar
- Anxiety
- ADHD
- Suicide Ideation

Individual Characteristics
- Personality
- Religiosity
- Sensation-seeking
- Dysregulation
- Perceived Harm
- Physical Health

Stress
- General Distress
- Life Event Stress
- Social Support

Peer Relations

Parent Influences
- Parental Monitoring
- Relationship Quality
- Communication
- Parental Authority Style
- Family History

High School & College Experiences
- Volunteer work
- Extracurricular Activities
- Academic Achievement
- Scholarships
- Goals and Expectations
What We Know

• Different drug classes = different harms
• Definition of nonmedical use
• Motives
• Research Studies of College Students
• Sources of obtaining drugs for nonmedical use
• Access and availability
What We Know, continued

- Diversion is prevalent and fuels nonmedical use
- Overestimation of others use
- Positive and Negative Expectancies
- High-risk Groups for use and diversion
- Strong association with other drug use
Motives

Pills That Increase Your Intelligence

By Donald G. Cooley

Can you feed your brain some special food to make it smarter? Scientists have always laughed at the idea. Now they aren’t quite so cocksure. Maybe your brain does have faster speed and quicker get-away when it runs on certain fuels. New scientific discoveries indicate that brain power can be stepped up by swallowing tablets. These pills are not stimulating drugs but concentrates of a food element you eat every day. Let’s look into the strange story of one particular brain. It wasn’t a very good brain. In fact, it belonged to a fourteen-year-old imbecile boy who had an intelligence quotient of 42 (the average I. Q. is 100). Every year the boy grew twelve months older, but his mental age increased only four and a half months. He kept running an intelligence deficit. Then he was fed little white pills, a dozen
Motives

- Curiosity
- Improve concentration
- Stay awake longer to study
- Stay awake longer to party, drink more
- Get high
- Relieve depression symptoms?

But remember, motives are not the same as risk factors
Research Studies of College Students
Figure 1. Trends in past-year nonmedical use of prescription medications: 2003-2013

Please cite this article as: McCabe, S.E., West, B.T., Teter, C.J. & Boyd, C.J., Trends in Medical Use, Diversion, and Nonmedical Use of Prescription Medications among College Students from 2003 to 2013: Connecting the Dots, Addictive Behaviors (2014), doi: 10.1016/j.addbeh.2014.03.008
Weighted lifetime prevalence of drug use in the first four years of college, by year

Data weighted to adjust for both sampling bias and attrition. Source: College Life Study. Not to be shown or redistributed without written permission from Amelia M. Arria, Ph.D.
How often do users take prescription stimulants nonmedically?

Source: College Life Study. Not to be shown or redistributed without written permission from Amelia M. Arria, Ph.D.
What about students with ADHD who have their own prescribed ADHD medications?

Among 45 first-year college students with ADHD:

- 27% overused their own meds
- 16% nonmedically used someone else’s ADHD meds

In another sample of 55 males (mean age 21) with ADHD:

- 22% misused or took too much of their meds
- 10% got high on their meds
- 8% grinding/sniffing
- Nearly all of the misusers (83%) met criteria for CD and/or SUD, and all were using immediate-release formulations.

Sources:
Among college students, friends and peers are the most common sources to obtain prescription medications used nonmedically.

References:
How are ADHD medications obtained for nonmedical use?

Sources of Medication
*Denotes significant difference from years 1 and 2 (p<.05).

Cost
**Denotes significant difference from years 3 and 4 (p<.05).

DIVERSION

60.2% of one sample of college students with ADHD shared or sold their prescription stimulants;

35.4% of students with prescription analgesics diverted their medications.

Students overestimate how many others use stimulants nonmedically.

Nonmedical Use is also associated with:

High levels of positive expectancies about the purported benefit on performance

Low levels of negative expectancies about the purported benefit on performance

“It will work”

“I won’t get in trouble”

High Risk Groups

- Students attending competitive colleges
- Students involved with Greek organizations
- High-risk drinkers and other drug users
- Students who are academically struggling
- Students who are not risk-aversive
- Students who have misperceptions of prevalence and what is normative
- Students who perceive drugs as benign, safe to use
Nonmedical prescription drug use is strongly associated with alcohol and other drug use

- Numerous studies report past-year prevalence estimates for marijuana use of 85%+
- Cocaine: 35-60%
- Ecstasy: 52%
- Prescription Analgesics: 44%
### Overlap between nonmedical prescription stimulant use and other drug use

<table>
<thead>
<tr>
<th></th>
<th>NON-USERS of Rx Stimulants (n=989)</th>
<th>NONMEDICAL USERS of Rx Stimulants (n=217)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>93.5 %</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Tobacco Cigarettes</td>
<td>55.3</td>
<td>89.4</td>
</tr>
<tr>
<td>Marijuana</td>
<td>62.8</td>
<td>93.5</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>7.0</td>
<td>41.5</td>
</tr>
<tr>
<td>Cocaine</td>
<td>2.8</td>
<td>18.0</td>
</tr>
<tr>
<td>Inhalants</td>
<td>4.8</td>
<td>15.7</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>2.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>0.9</td>
<td>8.8</td>
</tr>
<tr>
<td>Heroin</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Nonmedical use of prescription analgesics</td>
<td>10.1</td>
<td>44.2</td>
</tr>
<tr>
<td>Nonmedical use of prescription tranquilizers</td>
<td>3.7</td>
<td>20.7</td>
</tr>
</tbody>
</table>
What We Suspect

Marijuana and other drug use might be driving academic problems, and nonmedical use of prescription stimulants is a compensatory behavior... a shortcut, and largely unsuccessful.
Nonmedical stimulant users spend less time studying, skip classes more often, and earn lower grades.

Nonmedical Use of Prescription Stimulants for Studying

Marijuana Use

Marijuana Dependence

Skipping Class

Academic Performance

Time
Interpersonal factors are important influences on nonmedical use...

- Academic self-efficacy
- Perception of risk
- Perception of reward
Academic Self-Efficacy

• Definition: Having confidence about your ability to complete academic tasks

• Students who were less confident about their ability to avoid nonmedical prescription stimulant use when they had a large amount of work in a short amount of time were more likely to use (Bavarian, 2013).

• The more students procrastinate, the more likely they are to use prescription stimulants nonmedically. A possible solution: create a personalized study plan that outlines study times, learning goals (and class attendance) (Ponnet, 2015).
Individuals with low academic self-efficacy might be at high risk for NPS use.
Risk and Reward...

1. Is it risky?

2. Is there a benefit to using?

3. Does the benefit outweigh the risk?
Nonmedical use is higher among students who perceive lower levels of harm

However... among sensation-seekers, perceived harm did not influence analgesic use.
Risk and Reward...

The situation is more complex...

*Perception* of risk and *perception* of reward aren’t necessarily two sides of the same coin
Perception of Risk of Drug Use

Risk-taking Propensity/Sensation Seeking

Knowledge of Risks

Ability to Delay Immediate Rewards for Longer-term benefits

Value of Social Appraisals “What will my friends think?”

Perception of Reward

Drug Benefit

Short and Long-term Benefit of Academic Pursuits
- Naturally risk-aversive
- Knowledgeable about biological risks
- Low risk for other drug use
- Doing well academically
- High value placed on future vs. immediate rewards

- Naturally risk-taking
- Misinformed about biological risks
- Moderate risk for other drug use
- Doing well academically
- High value placed on future vs. immediate rewards

- Naturally risk-aversive
- Knowledgeable about biological risks
- Moderate risk for other drug use
- Academically struggling
- High value placed on immediate vs. future rewards

- Naturally risk-taking
- Misinformed about biological risks
- High risk for other drug use
- Academically struggling
- High value placed on immediate vs. future rewards

- Low Perceived Benefit
- High Perceived Risk

- Low Perceived Risk
- High Perceived Benefit
Drug Use “Prototype”

Our understanding of what characterizes a drug user comes is colored by the media, movies, the news, other people, stories we hear, and the images and “criteria” used in our prevention efforts!

The extent to which someone “buys in” to the prototype might influence whether or not they see themselves as a drug user, and whether or not they need help.
What we can do

1. Improve physician education and vigilance
2. Intervene by discussing both risk and reward perceptions
3. Correct student misperceptions
4. Educate parents
5. Focus on more subtle consequences
6. Give non-using students a louder voice
Clinicians: Considerations for Treating ADHD in High-Risk Patients

1. Monitor medication and other drug use
   - Pill counts
   - Frequent office visits
   - Urine toxicology screens

2. Prescribe medications with lower abuse potential
   - Non-stimulants
   - Extended-release preparations

3. Dose judiciously

4. Discuss compliance, “extra doses,” and treatment failure
Clinicians: Considerations for Treating ADHD in High-Risk Patients

5. Utilize regular dosing, not PRN
6. Advocate for safe storage (don’t advertise)
7. Ask about changes in euphoria, cravings
8. Discuss ethical and legal issues around diversion
9. Support prescription drug monitoring programs
**Improving Clinical Practice on College Campuses**

- Increase vigilance regarding diversion and nonmedical use among college-bound patients.
- Partner with local university health centers to promote staff awareness of diversion and the risks of nonmedical use.
- Work with counseling center staff to recognize signs of mental health issues and drug problems... and intervene with students who are academically struggling.
- Screen ADHD patients for illicit drug use and convey risks of diversion.
Students

- Spread the word to other students about the true risks of nonmedical use.
- Challenge misperceptions about “how many people are doing it.”
- Link nonmedical drug use to illicit drug use.
- Dispel “smart drug” myth.
Students on Medication

- Adhere to your provider’s medication instructions.
- Never share your medication... not with anyone.
- Protect your medication from theft.
- Encourage responsible help seeking.
- Convey messages about risks of nonmedical use.
Parents

- Dispel “smart drug” myths.
- Do not condone or facilitate nonmedical use.
- Empower parents to take a central role in preventing nonmedical use of prescription drugs.
- Raise awareness about the opportunities for “new” drug use in college.
- Educate parents to recognize signs of emerging mental health and drug problems.
- Educate parents regarding medication adherence and role modeling of proper use
- Parent effectively to reduce risk of use
Colleges and Universities

- Sponsor ongoing dialogues (let’s say at… Ohio State University…) that raise awareness and share experiences of college professionals

- Develop multidisciplinary campus action plans to reduce nonmedical prescription stimulant use.

- Have students re-think taking 18 credits per semester in the first year of college.

- Consider options for enforcing sanctions against diversion.
Give students who **don’t** use a LOUDER voice
Trends in Abstaining from Illicit Drugs, Alcohol and Cigarettes - Lifetime

2013, 61.9%
2013, 38.9%
2013, 25.1%

8th Grade
10th Grade
12th Grade

Monitoring the Future, not published.
Interlocking Dimensions of Student Success

- Cognitively Strong
- Motivated
- Supported
For more information and a list of publications, please visit:

www.cls.umd.edu

www.cyahd.umd.edu

Thank you!