

**Recommendations for an Effective Prescription Stimulant Awareness for Higher
Education Institutions**

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**Recommendations for an Effective Prescription Stimulant Awareness for Higher
Education Institutions**

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Abstract

This paper examines the dangers of prescription stimulant misuse. Rates of misuse, specifically Adderall misuse, are highest among college age students and can increase likelihood of further drug use in life, which underlines a serious health crisis. Higher education institutions have a responsibility to implement effective prescription stimulant awareness programs in order to combat the issue. However, few education institution drug programs exist that address prescription stimulant misuse due to lack of general education on the dangerous of misuse and relative newness. Therefore, this paper will A) educate the public and B) analyze and compare existing education institution drug programs to determine what makes a drug program, or elements of a drug program, effective. From this information, the paper will suggest what an ideal prescription stimulant awareness program for higher education institutions should look like.

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I. Introduction

Statement of Problem

Adderall is a prescription stimulant approved by the U.S. Food and Drug Administration to treat attention deficit/hyperactivity disorder (Gudmundsdottir, Munro, Rathkey, & McCallum, 2016). Today, consumption of Adderall for non-medical purposes by college age students is on the rise (MD Week, 2016). In 2012 (Garnier-Dykstra, Caldeira, Vincent, O'Grady, & Arria) a study took place, which examined non-medical use of prescription stimulants among college students. Of the 1,253 college students surveyed, 45.8% of those who were offered prescription stimulants reported using them for reasons other than their intended medical purpose. This misuse is a serious health crisis; it has been found non-medical use of the prescription stimulant Adderall can increase the risk of further substance abuse (Chen, Strain, Alexandre, Alexander, Martins, & Mojtabai, 2014). When Adderall is misused, tolerance to the stimulant increases and the likelihood of abusing other drugs that have similar chemical makeups and produce similar, but stronger, effects, like Methamphetamine, increase as well (Sussman, Pentz, Spruijt-Metz, & Miller, 2006). Due to Adderall misuse being on the rise among college age students for reasons like increased attention while studying and enhancement of alcohol (Sussman, et al., 2006), it is important education administrations drug programs bring awareness to the dangers of prescription stimulants, specifically the misuse of the “popular” prescription stimulant Adderall.

Purpose of Study

This paper will provide an overview of the prescription stimulant Adderall. Literature that depicts how Adderall misuse can increase the likelihood other prescription drugs misuse or illegal drug abuse will be highlighted. High rates of misuse among college age students will be emphasized; misuse will refer to consumption beyond a prescribed dose, use for reasons outside

of medical purpose, and use without a prescription. Connecting the danger(s) of prescription stimulants to college age students and their high rates of Adderall misuse will emphasize the importance of effective public response, specifically the response of higher education institutions.

This paper will analyze and compare current education institution drug prevention and intervention programs, identifying their failures and successes. From this information, conclusions will be drawn as to what an ideal higher education institution drug program would consist of; an emphasis on the dangers of prescription stimulant misuse, specifically Adderall awareness, is essential. The paper will in essence argue Adderall as the pharmaceutical gateway drug among college age students.

Significance or Implications of the Study

Like Adderall, methamphetamine, cocaine, ecstasy, and bath salts are also stimulants; they trigger the central nervous system, telling the intended chemicals in the brain to go into overdrive (Chen et al., 2014). When Adderall is misused, the individual is often consuming the prescription drug in doses higher than intended, or they are enhancing Adderall's strength by using it in combination with other legal/illegal drugs. This increases the likelihood of those misusing Adderall becoming tolerant to its effects and seeking a more intense version of the feeling(s) it produces; use of illegal stimulants similar in chemical makeup, such as methamphetamine, can fulfill this desired effect (Chen et al., 2014).

Research indicates Adderall is highly addictive, highly misused among college age students, and can lead to further drug use. However, higher education institutions lack drug prevention and intervention programs that bring awareness to prescription stimulant misuse and the dangers associated with misuse. As stated by Ron Schachter (2012, p.41), "It's a drug

prevention conversation- and program- that was largely missed...”. Ron Schachter (2012) noted the importance Adderall misuse be effectively addressed, stating youth believe it’s “safe” and/or “okay” to abuse the drug since it’s legal, meaning pharmaceutically produced, and prescribed to such high numbers of students and their peers. Even if a drug is legal, misusing it can be detrimental to one’s health and can lead to further issues in life, such as illegal drug use. An example to compare this to is alcohol consumption; alcohol is legal, however, misusing it, meaning consuming it in copious amounts, can have negative effects. This is known and understood by youth, however the misuse of the legal prescription drug Adderall is not viewed with the same severity. Universities across the United States implement a version of alcohol prevention programs on campus (Education Development Center & Safe Drug-Free Schools Program, 2008), yet prescription stimulant misuse is lacking.

College age students are a vulnerable population and higher education institutions have a responsibility to bring awareness to dangers of prescription stimulants, specifically Adderall misuse. However, current research fails to address what makes education institution drug prevention and intervention programs effective; pinpointing these components will guide the design of an ideal prescription stimulant awareness program for higher education institutions implementation.

Methods of Approach

Secondary analysis of previous theoretical and statistical findings is the method of approach. The research and data analyzed will be obtained from scholarly journals, books and law enforcement data sites (e.g. NCJRS, BJS). The paper will specifically analyze rates of Adderall misuse among college age students, how prescriptions stimulant misuse increases

likelihood of further drug use, and effective components of existing education institution drug prevention and intervention programs.

To determine the effective components of a prescription stimulant awareness program for college age students, a comparative analysis of existing education institution drug prevention and intervention programs will be conducted. For instance, the paper explore the University of Arizona's drug model developed in 1990, which was implemented by their drug prevention task force. The program will be compared to additional drug prevention/intervention programs, such as Western Washington University's Alcohol Prevention Initiative, which aimed to alter social norms on campus surrounding drug prevention (Education Development Center, & Safe Drug-Free Schools Program, 2008). Through comparative analysis of multiple programs, the paper will identify components within each program that were effective in reaching the intended audience and implementing change. Successful similarities across the analyzes education institution programs will be noted, along with drawbacks to avoid in the design of an ideal prescription stimulant awareness program.

It is anticipated the secondary analysis of research will suggest prescription stimulant misuse, specifically Adderall misuse, a dangerous epidemic among college age students, potentially leading to further drug use. It is additionally anticipated secondary analysis will suggest a lack of prescription stimulant awareness in higher education institutions. Adderall misuse is a relativity new, growing issue, which may present limitations in findings; comparative analysis will consequently be an essential method of approach in identifying effective components of existing drug prevention and intervention programs for an ideal prescription stimulant awareness program.

Contribution to the Field

This paper will connect prescribable stimulant misuse, specifically the misuse of Adderall, to education institutions through the depiction of rates of misuse among college age students and their common practices of misuse (e.g. study drug, drug enhancer, etc.). The paper will make recommendations for effective components of an ideal stimulant awareness program for college age students. It is acknowledged prescription stimulant misuse can lead to further drug use; with college age students misusing Adderall at such high rates, they are at increased risk of further drug use, which calls for effective intervention and prevention among the population. The specific contribution of the paper will be the comparative analysis of existing drug prevention and intervention programs implemented by education institutions, highlighting effective elements of the programs to indicate what an ideal prescription stimulant awareness program for college age students should look like.

The paper will further indicate a need for increased education of prescription stimulant dangers, specifically Adderall misuse awareness, among the criminal justice field. The public anticipates college age students to use alcohol before the age of 21 and/or experiment with Marijuana, including law enforcement; this research will emphasize another important issue to watch for among college age students, which is prescription stimulant misuse, specifically Adderall misuse. Shedding light on the issue increases the likelihood of law enforcement effectively combating it, which could potentially decrease further drug use issues connected to prescription stimulant misuse.

Anticipated Outcomes

It is anticipated this research paper will serve as a guide for higher education institutions in regard to effective components of an ideal prescription stimulant awareness program for college age students. It will draw attention to the need for effective, swift response by the higher

education institutions. Through efforts to inform higher education institutions of the issue and propose an ideal, effective prescription stimulant awareness program, the research on misuse will simultaneously educate the criminal justice system and encourage them to do their part in deterring the misuse.

II. Literature Review

Overview of Stimulants, History, & Intended Use

Central nervous system stimulants enhance the cognitive function of those who consume them, increasing awareness and lessening fatigue (Abelman, 2017). They include prescription stimulants, caffeine, and illicit stimulants, such as cocaine or crystal meth (Moore, 2014). An important difference exists between the different types of central nervous system stimulants, which is their intended use. For example, prescription stimulants are legal and medically prescribed by a doctor with the intent to improve the learning and memory systems. Illicit stimulants, on the other hand, are not legally produced and are consumed with the intent to create pleasure or alternative desired feeling.

There are three categories of prescription stimulants: methylphenidate, dexamethylphenidate and amphetamine combinations (Sussman, Pentz, Sprujiti-Metz, & Miller, 2006). Pharmaceutical brand names for methylphenidate stimulants include, but are not limited to, Ritalin or Concerta (Chen, Strain, Alexandre, Alexander, Mojtabai, & Martins, 2014); dexamethylphenidate's include Focalin (Sussman et al., 2006), and amphetamine combination stimulants include, but once again are not limited to, Adderall or Dexedrine (Chen et al. 2014). As explained by Abelman (p.1, 2017), all three categories of prescription stimulants “inhibit dopamine and norepinephrine reuptake in the brain”, which are neurotransmitters that influence cognitive awareness and pleasure.

In 1944, doctors created what they believed would be a non-addictive prescription stimulant, methylphenidate (Sussman et al., 2006). It wasn't until the 1960's they began using it

to control excessively hyper and/or cognitive deficit concerns in children, which is today medically termed Attention Deficit Hyperactivity Disorder and defined as, "...dysfunctions that hinder attention regulation, motor behavior, impulsivity, emotional expression, and planning." (Sussman et al., p.2, 2006). As previously discussed, prescription stimulants impede upon the neurotransmitters that regulate cognitive function and pleasure. Those with ADD/ADHD are understood to have an imbalance of these neurotransmitters (Abelman, 2017); therefore, the ADD/ADHD pharmaceutical drug market grew in popularity, drastically expanding over the next few decades. Today, ADD/ADHD is commonly treated via the pharmaceutical prescriptions Adderall, Ritalin, and Concerta (Prosek, Giordano, Turner, Bevely, Reader, LeBlanc, Molina, Vera, & Garber, 2018).

Prescription Stimulant Misuse

In 2010, public health officials and law enforcement became increasingly concerned by growing rates of pharmaceutical drug misuse (Lamonica & Boeri, 2012). Misuse of pharmaceutical medication(s) includes using the drug beyond the medically prescribed dosage, using the drug without having been prescribed, and/or using the drug for reasons other than the intended medical purpose (Prosek et al., 2018). Examples of prescription stimulant misuse for reasons other than intended medical purpose include to stay awake (Garnier-Dykstra, Caldeira, Vincent, O'Grady, & Arria, 2012), recreational use (Sussman et al., 2006), and weight loss (MD Week, 2016).

According to research (Chen et al., 2014), most prescription stimulant misusers are 18-25 years of age, which suggests college age students are at higher risk of misuse than those not attending university. In fact, according to Chen et al. (p.830, 2014) college students are two times more likely to misuse prescription stimulants than those not attending university. MD

Week (p. 1, 2016), supports this information, stating most 18- 25-year old's who are misusing Adderall without a prescription are obtaining the drug from friends or family members. Due to prescription stimulants being pharmaceutically regulated, young adults misusing the drug without a prescription or those with a prescription using it beyond its intended purpose attempt to validate the misuse because the drugs are regulated; misusing a prescription drug can be just as dangerous/destructive as misusing an illicit non-pharmaceutical drug.

The 2013 study *Tweaking and Tweeting: Exploring Twitter for Nonmedical Use of a Psychostimulant Drug (Adderall) Among College Students* (Hanson, Burton, Giraud-Carrier, West, Barnes, & Hansen, 2013) explored tweets on social media site Twitter to better understand the public health issue prescription stimulant misuse. Their analysis of Twitter found rates of Adderall related tweets to be highest among those who attend college. Of the 132,099 users they analyzed who had submitted Adderall related tweets, 27,473 mentioned consuming Adderall for reasons other than intended medical purpose (Hanson et al., p. 1, 2013). Another study, *Nonmedical Use of Prescription Stimulants During College: Four-Year Trends in Exposure Opportunity, Use, Motives, and Sources* (Garnier-Dykstra, p.1, 2012), collected data from 1, 253 college students on nonmedical use of prescription stimulants. Of the students surveyed, it was found that by year four of college, two-thirds (61.8%) were offered prescription stimulants for reasons other than intended medical purpose and approximately 31% accepted the offer(s).

Risks of Prescription Stimulant Misuse

The three categories of prescription stimulants, methylphenidate, dexamethylphenidate and amphetamine combinations, have been classified as Schedule II drugs by the United States Drug Enforcement Administration (DeSantis, Anthony & Cohen, 2013). A Schedule II drug is labeled such if there is high potential for abuse and dependency (Chen et al., 2014). As stated by

Moore (2014, p. 1) when discussing schedule II prescription stimulants, “These drugs are generally recognized as addictive, meaning that tolerance and withdrawal syndrome can occur.”. Therefore, widespread increase in prescription stimulants, rising rates of misuse by prescription holders, or use by non-prescription holders is cause for concern.

Some say prescription stimulants, like Adderall, and prescription painkillers should be monitored similarly; the distribution and consumption of painkillers are strictly supervised by pharmacies and the doctors who prescribe them to prevent misuse due to high rates of dependency/abuse (MD Week, 2016). As discussed by Lamonica & Boeri (2012, p. 169), due to prescription stimulants being legal, the ability to obtain the drugs is easier than trying to obtain illegal, non-pharmaceutically prescribed drugs like meth. When a drug is legal and easily accessible, the risk of misuse increases. This risk of misuse is increasingly high among young adults because they’re less financially stable and prescription stimulants are sold illegally for roughly \$3-\$15 per pill (Sussman et al., 2006, p. 1). Therefore, some young adults who are stimulant prescription holders are selling their prescriptions for profit, increasing accessibility and dependency among the population.

A study conducted by Jardin, Looby, and Earleywine (2011) examined characteristics of college students who had ADD/ADHD and misuse(d) their prescription stimulants, specifically Adderall or Ritalin. Researchers conducted interviews and also provided questionnaires, which the 43 participating college students answered. Cross analysis of students who did not misuse their prescription stimulants and those who did was conducted, revealing prescription stimulant misusers reported higher numbers of illegal substance use, including consumption of nicotine, cocaine, marijuana, opiates, and hallucinogens (2011, p. 376). This reported use of other substances was from within the past year of the study, leading researchers to believe college age

students who misuse their prescription stimulants are more likely than those who don't misuse their prescription stimulants to engage in other illegal, dangerous substance abuse/misuse.

Prescription stimulant misuse/non-medical use in itself is a risk due to high rates of dependency. Knowing it increases the likelihood of misuse of other legal and illegal drugs is an additional serious public health concern. As discussed by Chen et al. (2014, p. 830), the illegal drug Methamphetamine is a schedule II drug, like prescription stimulants due to highly addictive quality, and is similar to amphetamines (e.g. Adderall) in make-up. Both drugs are central nervous system stimulants and psychologically yield similar effects. In fact, the 2012 study by Lamonica & Boeri explored the relationship between Methamphetamine, illegal, and prescription drugs, specifically Adderall and Ritalin. Through in-depth interviews of active and inactive Methamphetamine users, concerning public health information emerged; study participants reported using Adderall or Ritalin when Methamphetamine was not available to them or out of preference due to similar effects between the two, a "cleaner" high, and accessibility (Lamonica & Boeri, 2012, p. 168). One participant said in his opinion, Methamphetamine has the exact same effect as Adderall but without the risks of consuming meth, such as sexually transmitted disease and psychiatric/behavioral problems.

While the correlation of Methamphetamine is concerning, the concurrent misuse of prescription stimulants with alcohol and/or marijuana are more common. A study of college-age students who misused prescription stimulants, both prescribed and not prescribed prescription, found 64.3% used in combination with alcohol, and 52.3% in combination with marijuana (Prosek et al., 2018, p.2). Another study by Garnier-Dykstra et al. (2012, p.1) explored trends of non-medical prescription stimulant use of students throughout college. Researchers found that alcohol and marijuana misuse was consistently associated with non-medical use of prescription

stimulants, further validating prescription stimulant misuse, whether prescribed or not prescribed, increases the likelihood one will engage in risky behavior/other drug use.

Alberman (2017, p. 2) spoke on how the brain responds to prescription stimulants Adderall, Ritalin and Concerta stating, “They can cause severe and dangerous addiction that can lead to sudden death, toxic psychosis, anxiety, sleep disturbances, and cardiac issues.”. Therefore, not only do prescription stimulants increase risk of dependency, misuse, and illegal activity of those who misuse them, but they also increase risk of severe health concerns. As reported by MD Week (2016, p. 1), emergency room visits related to prescription stimulants misuse, Adderall specifically, have greatly increased among young adults. According to 2006 U.S. national statistics on 10,146 stimulant medication related emergency room visits by young adults, 47% of visits were the result of non-prescription/non-medical use, 35% negative side effects, 11% accidental use, and 7% suicide attempt (Prosek et al., 2018, p. 2).

III. Critical Analysis of Education Administration Drug Programs

Drug use during college is a growing public health concern (Dennhardt & Murphy, 2013). Prescription stimulants and their high rates of misuse among the college age students is particularly problematic (Sussman, et al., 2006). Prescription stimulant awareness, specifically Adderall awareness, in higher education institutions and research on it is lacking; prescription stimulant awareness in this paper refers to drug programs/awareness campaigns aimed at informing college students and their administrators about the dangers of prescription stimulant misuse. Therefore, it is critical current higher education institution drug programs be analyzed and compared to determine whether or not the programs, or certain program elements, are effective. From this analysis and determination of effectivity, components for an ideal prescription stimulant awareness program in higher education institutions will be developed and discussed below.

To determine the effective elements of education institution drug programs for college age students, secondary and comparative analysis of research on drug prevention and drug intervention programs used in educational institutions across the world will be conducted. It is important to note the difference between a drug intervention program and a drug prevention program; prevention programs emphasize education, and interventions emphasize treatment/response. The programs analyzed in this paper will address one or multiple drugs commonly misused by students, including alcohol, marijuana, opioids, stimulants, and so forth. The focus will not be the type of drug(s) the program addresses, but rather what elements of the program made it successful and/or not successful.

Program #1: Smart Moves, Smart Choices

In 2007, the National Association of School Nurses, also referred to as NASN, began creating what they later termed “Smart Moves, Smart Choices” (Schachter, 2012). “Smart Moves, Smart Choices” is a program made available to schools for purchase, aimed to educate and prevent teen prescription drug abuse. In the fall of 2011, the program began distribution, featuring various video segments. The video segments discuss important topics related to the issue, including the definition of addiction, why teens abuse drugs, how teens can help peers abusing prescription drugs, who to go to in the community if experiencing a prescription substances abuse issue, and so forth (Schachter, p. 44, 2012). What sets the program apart from others implemented in schools across America is its ability to reach its intended audience, teens, and also educate other key players, such as the educators and guardians. The popular public figure and addiction medication specialist Drew Pinsky, also known as Dr. Drew, commonly seen on reality television shows like MTV’s Teen Mom, is featured in the video segments portion of “Smart Moves, Smart Choices”. This tactic engages students via similar interest.

NASN’s “Smart Moves, Smart Choices” initiative required a funder; pharmaceutical company Janssen Pharmaceuticals filled this role (Schachter, p.46, 2012). One might be surprised to learn a pharmaceutical company, the ones who manufacture prescription drugs, fund such programs. However, as death rates among teens continued to rise from prescription drug abuse, it became a public health crisis (Schachter, p.41, 2012); the pharmaceutical companies responsible for the creation of the drugs wished to demonstrate due diligence to the public through counteractive measures. As NASN recognized, teens are a vulnerable population because their level of maturity is not fully developed. Consequently, the ability to comprehend that a prescription drug, a drug legally prescribed by a doctor, can be addictive and deadly if not

used as intended (Schachter, p. 41-42, 2012). Therefore, funding of programs that intervene for the age group is significant.

Mountain Trail Middle School in Phoenix, Arizona was one of the firsts to purchase “Smart Moves, Smart Choices”. How the school implements the program is up to their discretion, however Mountain Trail’s school nurse decided to hold separate assemblies for students, administration, and parents, along with having video segments shown during the school’s morning video announcements (Schachter, p. 44, 2012). As she discussed, not many programs she had previously come across for drug prevention mentioned prescription drug abuse, until “Smart Moves, Smart Choices”.

Program #2: Levels of Prevention Model

According to some researchers, a comprehensive, multilevel prevention approach is essential to effectively fight prescription drug abuse (Daniels-Witt, Thompson, Glassman, Federman, & Bott, 2017). Therefore, various college campuses across the U.S. have implemented what’s referred to as the Levels of Prevention theoretical model. The model consists of primary, secondary, and third-level intervention strategies (Daniels-Witt, et al., p.518, 2017). The three levels approach provide prevention planning for both education, needed resources, and treatment (Daniels-Witt et al., 2012). For example, as explained by Daniels-Witt et al. (p. 519, 2017) level one would include education to students regarding prescription drug abuse, level two would include on-campus screening days to detect at-risk students, and level three would include implementation of a 24-hour help line for students.

While in this paper addresses prescription stimulant abuse among college age youth, the Levels of Prevention theoretical model can be used to address other drugs as well (e.g alcohol, heroin, opiates, so forth). As discussed in the study by Daniels-Witt et al. (p.521, 2012), a

Midwestern university experiencing a Heroin epidemic implemented the model. In the third-level, the level focused on treatment solutions, they passed a policy which allowed for the distribution of Naloxone Hydrochloride (Narcan) to staff, students & faculty; administration training accompanied the distribution. The initiative raised awareness in the community and allowed students suffering addiction to Heroin to access resources potentially vital to their survival without legal repercussions. Furthermore, the likelihood of students obtaining treatment when in need and the university creating a conducive environment for discussion around substance abuse improved. This example with the Midwestern university suggests the Levels of Prevention model can lead to beneficial policy change on campuses across America that protect students in need of help and would otherwise have avoided assistance in fear of repercussions.

Program #3: WE CAN Works

Western Washington University, located in Bellingham, Washington, addressed high rates of campus alcohol misuse via a multi- strategy, social norms focused model they created called WE CAN Works. The idea behind the model was that social norms on both campus and in the community would be used to create an effective drug prevention program that connected with the intended audience (campus students), making them part of the solution versus the problem (U.S. Department of Education, p.40, 2008). The first strategy encompassed the creation and implementation of a mass media campaign emphasizing alcohol/drinking norms on campus. This was achieved through community advertisements, radio broadcasts, on-campus bulletins, and so forth. The creators of the program checked in with students a year after the mass media campaign's initiation and noted a 20 percent drop in students engaging in risky alcohol consumption (U.S. Department of Education, p.40, 2008).

The second strategy the university implemented with a social norms focused approach was the implementation of a social-norms risk reduction program. The university engaged students who had a record with the university as having previously violated campus policy as the result of heavy drinking. Consequently, these students were contacted and required to attend the social-norms risk reduction program. As stated in an overview of the program, “62 percent reported reducing their typical number of drinks by one or two drinks per occasion.” (U.S. Department of Education, p.40, 2008).

The third and final strategy of the project was to provide important campus officials and key community leaders with an improved perception of the students; those in charge of the project aimed to shed light on positive student contributions and behaviors (U.S. Department of Education, p.40, 2012). This in turn allowed the important leaders to see the students as a player in reducing the risky, high rates of drinking on campus versus solely the problem. Those who initiated the program believed if they could shift the social belief of community/campus leaders that students were the problem, effective solutions that reduced the real problem, substance abuse, would result versus sometimes ineffective legal citations.

Project #4: BASICS

BASICS, an acronym for Brief Alcohol and Screening Intervention for College Students, is a prevention intervention model designed for college students age 18 to 24 who engage heavily with alcohol or at high risk of alcohol misuse due to mitigating circumstances (National Institute of Justice, p.1, 2011). As explained by the National Institute of Justice (p.1, 2011), scenarios that would place a college student in the high-risk category of potential alcohol misuse include poor attendance, academic probation, violence, sexual assault, and so forth. BASICS takes a harm-reduction approach to prevention, aiming to reduce excessive consumption and

unfavorable effects, endorse better lifestyle choices, and offer essential information and coping tactics that reduce risk of excessive drinking. This is done so through interventions that encourage students to reflect on the way in which they drink in alcohol related situations (National Institute of Justice, 2011).

A 2012 study aimed to evaluate the effectiveness of BASICS (DiFulvio, Linowski, Mazziotti, & Puleo, 2012). Participants included a random selection of high-risk college drinkers (comparison group; not involved in BASICS), and a mandated group of college students (intervention group; involved in BASICS). Data was gathered throughout the course of 2 years, with 6-month follow-up surveys conducted. For the mandated group of students, both males and females involved showed significant decrease in alcohol consumption; in the comparison group, females showed decrease consumption and males showed increase in consumption (DiFilvivo et al., p. 278-279, 2012). Therefore, one could conclude BASICS intervention model effective for college students at higher risk of alcohol misuse.

The BASICS intervention model addresses misuse of the drug alcohol, however similar models could be implemented for other drugs on college campuses. Various universities across the U.S. have implemented BASICS in the drug prevention programs, including the University of Arizona, Auburn University, Gonzaga University, Massachusetts Institute of Technology, and Ohio State University (U.S. Department of Education, 2008).

Project #5: The University of Arizona 3-Tier Model

The University of Arizona, located in Tucson, Arizona, created a 3-tier drug abuse prevention model aimed at alcohol misuse, the most commonly misused drug on their campus (U.S. Department of Education, p.30, 2008). The program was unique in that it targeted fraternities and sororities, the social groups the university believed to be at the root of alcohol

misuse issues on campus. The university believed through their 3-tier drug prevention model they could change the environment and high-risk drinking culture of fraternities/sororities.

The first tier of the 3-tier model involved use of BASICS (Brief Alcohol and Screening Intervention for College Students), a prevention model designed for college age students who misused alcohol or were at high-risk of alcohol misuse. The second tier of the University of Arizona's 3-tier model was a social norms mass media campaign focused on correcting sorority misunderstandings related to alcohol/drug abuse and "normal" behavior. The third and final tier of the university's 3-tier model was increased community prevention tactics, including underage drinking initiatives, alcohol accessibility limitations, and so forth (U.S. Department of Education, 2008).

The University of Arizona wanted to ensure their model effective, therefore they incorporated programs that were already developed and proved effective, such as BASICS and social norm media campaigns, into their 3-tiers model. The university required participants of their model engage in a survey when they began as well as the 3-month mark. As stated, "Decreases were found in average times per week students drank, average drinks consumed per week, average blood alcohol concentration and problem behaviors such as driving under the influence, and missing class (U.S. Department of Education, p.30, 2008).

Project #6: Single-Session Motivational Interviewing

Motivational interviewing is an intervention technique, which encourages those being intervened to reflect on the behavior(s) at hand and the potential consequences of the behavior(s) on life (McCambridge & Strang, 2004). Researchers McCambridge & Strang (2004) conducted a single-session motivational interview study, using ten further education institutes in London and

their students; students ranged from 16 years of age to 20 years of age. The purpose of the study was to determine whether or not single-session motivational interviews were effective in curbing rates of drug consumption and the misconceptions of drug use risk/harm among the young population.

McCambridge & Strang recruited students who had recently, within the past 3 months, used illegal drugs, including Marijuana, stimulants, or “other illegal drugs” (p.41, 2004). Of the 200 students, 105 were randomly assigned to the single-session motivational interview group, and 95 were randomly assigned to the control group, the group that received no intervention. All 200 participating students were administered a survey upon agreeing to participation to obtain drug use/frequency information. The next step was conducting the single-session motivational interviews, which were done individually with the all 105 students in the group. The motivational interviews consisted of one 1 hour in person discussion with the trained peer motivator, who used the intervention format designed by McCambridge & Strang (2004) based on relevant literature.

The survey was administered to both the interview group & the control group 3 months post the initial survey, which researchers compared to the initial survey answers. What they found was the group subjected to single-session motivational interviews showed lowered rates of drug use versus the control group who did not receive the single-session motivational interviews. Of those interviewed, reduced risk of Marijuana was particularly lower among those categorized as high-risk based on their initial survey answers (McCambridge & Survey, p.47-49, 2004).

Project #7: Project Culture Change

Washington State University, located in Pullman, Washington, created Project Culture Change- Greek System after noticing high rates of drug abuse in specific campus populations;

fraternities and sororities were the high-risk populations in this case. The small-group interventions focused on challenging social norms to address risky consumption behaviors and cultivate change. Specifically, those conducting the small-group interventions aimed to clarify misconceptions related to drug use. The university felt the small-group interventions would be more effective if led by the sorority or fraternity presidents; therefore, chapter presidents were trained by university administration to conduct the group sessions. The leaders were provided specific data compiled by the university on rates of drug use and student perceptions of drug use. After they presented this information to the small-group, they were to provoke conversation related to the issue on campus and answer questions that developed (U.S. Department of Education, p.39, 2008).

Surveys were presented to the participants before and after the small-group interventions. From the surveys, the university was able to derive pivotal data that proved the small-group interventions led by trained chapter presidents effective. After 8 years of program implementation, the university noted students reporting consumption of 5 or more drinks per event decreased 23.9% from 58.7%, when the program was first implemented, to 34.8%. They additionally noted an increase in rates of moderate drug use, versus previously high rate of frequent drug use (U.S. Department of education, p.39, 2008).

IV. Key Components of an Ideal Prescription Stimulant Awareness Program for College Age Students

Higher education institutions have the necessary resources to implement drug programs; and while many of these institutions do so for alcohol misuse, the number of institutions with methodical programs for “other” drug misuse (e.g. Marijuana, prescription drugs, so forth) are lacking (Dennhardt & Murphy, p.2611, 2013). Recent research has deemed prescription stimulant misuse among college age students a “serious problem in the United States and abroad” (Weyandt et al., p.400, 2016). Therefore, it is important higher education institutions either implement effective prescription stimulant awareness programs.

After analysis of several drug programs implemented in higher education institutions both within the United States and abroad, a recommendation will be made of key components for an ideal prescription stimulant awareness program for college age students. The below recommended components are drawn from the education institution drug programs and studies summarized in the prior section of the paper.

Key Component #1: Understanding Student Motivations and High- Risk Behaviors

Research indicates understanding student motives for prescription stimulant misuse key in creating change (Garnier-Dysktra et al., 2012). Therefore, higher education institutions designing a prescription stimulant awareness program should be well versed in the motives of their student’s prescription stimulant drug misuse, which includes the motives of students with a stimulant drug prescription misusing the drug and the motives of students without a stimulant drug prescription misusing the drug. Misuse refers to “using stimulant medication beyond prescribed dosage, using the medication without prescription, and/or using beyond the intended medical purpose” (Prosek et al., p. 10, 2018).

The study Prevalence and Correlates of Stimulant Medication Misuse Among the Collegiate Population (Prosek et al., 2018) surveyed 3,038 undergraduate students at a university. Of this sample, they located 74 students misusing their stimulant prescription, and 356 misusing without a prescription. From this smaller sample, they analyzed characteristics of misuse, which are revealed the table below. From this study, one can see it's important to understand A) which students are misusing at higher rates (non-prescribed students), and B) why they're misusing in order to implement an prescription drug model that addresses the root of the issue and produces change.

<i>Motivations for Misuse</i>	<i>Non-Prescribed Misusers (356)</i>	<i>Prescribed Misusers (74)</i>
<i>Curiosity</i>	31.7%	10.8%
<i>To Get High</i>	14.9%	14.9%
<i>Weight Loss</i>	17.4%	46.0%
<i>Use w/ Other Substances</i>	10.4%	14.9%
<i>Increased Awareness</i>	77.0%	86.4%
<i>Study Enhancer</i>	84.0%	85.1%

Understanding motivations for misuse additionally provides insight as to when students misusing prescription stimulants are more likely to engage in the risky behavior. The study Tweeting and Tweeting: Exploring Twitter for Nonmedical Use of a Psychostimulant Drug (Adderall) Among College Students found higher rates of tweets related to stimulant misuse around the time of finals (Hanson et al., 2013). This aligns with the previous study data, which shows motivations for stimulant misuse highest for desired increased awareness and quality of studying. Moore et al (p.987, 2014) additionally discussed the internal and external demands

placed on college age students, which creates pressure to achieve excellence and requires significant amounts time and focus. Therefore, an ideal prescription stimulant drug program for college age youth would increase prescription stimulant awareness during these times.

This leads into an additional area of importance, which is understanding high-risk behaviors for prescription stimulant misuse. In order to implement an effective prescription stimulant drug model for college age youth, the ability to identify high-risk behaviors that could lead to the misuse is key in targeting the correct audience. As discussed by researcher Abelman (p.3, 2017), many students are motivated to use prescription stimulants because they believe it will improve their alertness and quality of studying; in turn they believe their GPA's will improve, which increases their risk of using the drugs. However, research suggests non-prescription stimulant misuse does not improve grades, which further suggests students with low GPA's are at higher risk of misusing prescription stimulants.

An additional study by Jardin et al (2011) interviewed 43 undergraduate students, finding those who misused prescription stimulants also had greater reported use of other drugs (e.g. alcohol, Marijuana, Cocaine, etc.) than those who did not misuse prescription stimulants. This information suggests students who engage in deviant activities are at higher risk of prescription stimulant misuse, which Chen et al (2014) confirms true. In fact, research suggests fraternities and sororities are at higher risk of prescription stimulant misuse due to their frequent misuse of alcohol and other deviant behaviors (Garner- Dykstra et al., 2012). There are existing drug prevention and drug intervention programs on further education campuses, which were discussed in the prior section of the paper, that target fraternities and sororities because of their tendency of deviant behavior, and in turn high rates of substance abuse/misuse. The *University of Arizona 3-Tier Model* (U.S. Department of Education, 2008) and Washington State University's *Project*

Culture Change program targeted sororities and fraternities after deeming them the root of high-risk behaviors related to drug use/misuse on campus.

Key Component #2: Multi-Level Model

The second key component of an ideal prescription stimulant awareness program for college age youth is a multi-level design. Including both a prevention and intervention component appears to be most effective in generating improved rates of abuse/misuse in students based off evidence from existing drug programs. As discussed by Prosek et al (2018), there is a “care free” attitude among the collegiate population in regard to drug abuse/misuse. Therefore, having both a prevention/education element and an intervention/treatment element targets student drug misconceptions and rates of misuse. It is also beneficial to have a third level that focuses on improving campus/community resources and/or policy for students who abuse/misuse drugs.

The prevention aspect of a drug awareness program is where education is provided, and incorrect beliefs/perceptions of drug use are clarified. For example, Western Washington University’s *WE CAN Works* model was an effective drug prevention program. One element of the program was the implementation of a mass media campaign, which broadcasted information about alcohol misuse/abuse and tendencies of high-risk consumption on campus (U.S. Department of Education, 2008). Another education administration prevention program called *Smart Moves, Smart Choices* educated students via the series of video clips; the video segments discussed important topics related to the issue, including the definition of addiction, why teens abuse drugs, how teens can help peers abusing prescription drugs, who to go to in the community if experiencing a prescription substances abuse issue, and so forth (Schachter, p. 44, 2012).

The intervention aspect of an ideal prescription stimulant awareness program is where a direct connection is made with the students at high-risk of substance abuse/misuse or who already are engaging in the abuse/misuse. Researcher McCambridge & Strang (2004), who conducted single-session motivational interviews as an intervention approach, were effective in lowering rates of drug use, particularly among students deemed “high-risk”; this goes back to the importance of understanding high-risk behaviors and knowing the population of students in most need of the program. However, not all intervention programs offer personalized feedback, which has been proven to increase rates of effectiveness in the intervention aspect (Dennhardt & Murphy, 2013).

In either the prevention or intervention aspect of an ideal prescription stimulant drug program, it would tie into social norms and social influence. *Project Culture Change, WE CAN Works and the University of Arizona 3-Tier Model* (U.S. Department of Education, 2008) all aimed to address social norms by challenging them through correction of misconceptions and/or discussion with about why they engage in certain behavior and reflect on personal high-risk drug consumption patterns. The most common source for obtaining a prescription stimulant is a friend (Garnier-Dykstra et al., 2012), which is further reason to emphasize the social norms and social influence in either the prevention or intervention aspect of the multi-level drug program.

The last important aspect of an ideal prescription stimulant awareness program is improvement of campus/community resources and/or policy for students who abuse/misuse drugs. As discussed in the *Levels of Prevention Model* (U.S. Department of Education, 2008), what this would look like is the implementation of a 24-hour help line for students or policy implementations on campus that provide students with treatment options or education versus citations if found abusing/misusing illegal drugs (Sussman et al., 2006). Another way this could

look, as the University of Arizona did in their 3-tier model, is through an increase in community prevention tactics, including underage drinking initiatives, alcohol accessibility limitations, and so forth (U.S. Department of Education, 2008).

Key Component #3: Student Focused Approach

The third key component of an ideal prescription stimulant awareness program for college age youth is recognition by education administrations that the problem is prevalent; therefore, a student focused approach is necessary. If the program is not designed to connect with the college age population, further education institutions risk ineffectively addressing the health crisis and wasted school resources. One may ask what a student focused approach looks like? A program designed with a student focused approach will include prevention and intervention implementation via strategies that resonate with a younger crowd. The program will additionally be designed with the intention of cultivating a “safe space” for students to discuss prescription stimulant misuse/abuse.

Strategies that connect with a younger crowd in regard to implementation of an ideal, effective drug program include assigning program leaders the students know/know of and that have a positive rapport with college age youth. For example, the program *Smart Moves, Smart Choices* hired reality tv host, Dr. Drew, often associated with the young adult television network MTV to record the programs video clips. The program consisted of these video clips, which challenged discussion on substance abuse/misuse; the program was available for purchase by education institutions. By using Dr. Drew as the individual delivering the program message, students were more likely to engage in the program efforts, as Dr. Drew was of interest to them (Schachter, 2012). *Project Culture Change*, which targeted the high-risk fraternities and sororities on campus, used a similar yet different approach. With this drug prevention program,

education administration trained fraternity and sorority chapter leaders to conduct the drug intervention program sessions. It was the university's belief that having peers teach other peers would more effectively engage the high-risk population, which program results deemed true (U.S. Department of Justice, 2008).

The tactic by *Project Culture Change* additionally cultivated what the high-risk population of students deemed a "safe space" (U.S. Department of Justice, 2008). As mentioned in a study that analyzed prescription stimulant misuse trends during college (Garnier-Dysktra et al., 2008), rates of reported use by surveyed students were low, which further indicted the need for a "safe space" vital in generating change. Western Washington University's *WE CAN Works* program created a "safe space" by intentionally working to change the negative perception important campus officials and key community leaders had of students who misused/abused drugs. By emphasizing the positive contributions and behaviors of campus students, they shifted negative perceptions and were able to generate change in campus drug policies, programs, and so forth that made students part of the solution instead of the problem, further creating a "safe space" for students to seek help (U.S. Department of Justice, 2008).

V. Conclusion & Summary

Prescription stimulants, specifically Adderall, are commonly misused by college age students. While prescription stimulants are considered safe for treating Attention Deficit Hyperactivity Disorder, misusing a prescription stimulant can have negative health effects (Weyandt, White, Gudmundsdottir, Nitenson, Rathkey, De Leon, & Bjorn, 2016) and increase the likelihood of further drug abuse. Due to college age students misusing at highest rates, higher education institutions must address prescription stimulant misuse and their dangers. However, most current drug programs within these institutions fail to address prescription stimulant misuse. To effectively combat the public health crisis, higher education institutions must implement a prescription stimulant awareness program. Based on secondary analysis of research and existing education institution drug programs, an ideal prescription stimulant awareness program would be composed of three parts. First, programs must address students' underlying factors of misuse (Abelman, 2017). Next, they should consist of multiple levels, including intervention and prevention elements. Lastly, ideal prescription stimulant awareness programs need to embody a student-focused approach that makes students part of the solution versus the problem. Prescription stimulant awareness programs designed with these three key components are likely to be successful in deterring college age student prescription stimulant misuse more than an awareness program designed with one of the above key components in mind.

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