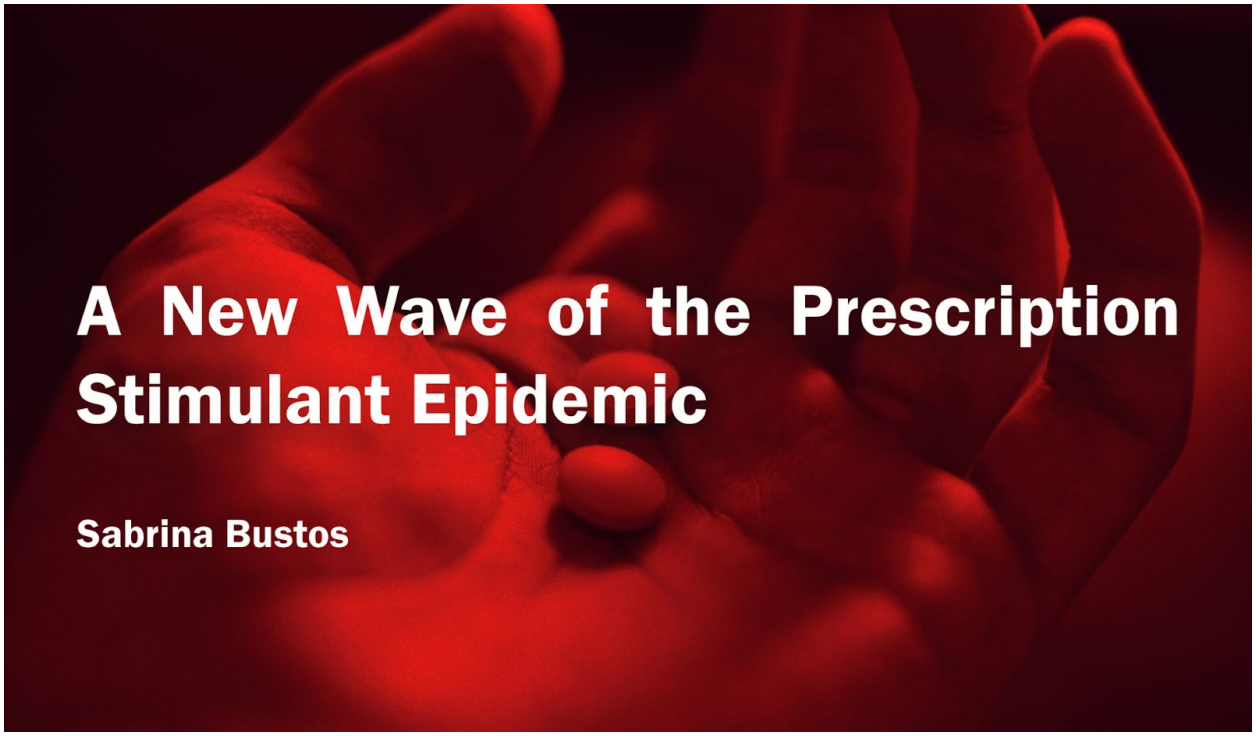


A New Wave of the Prescription Stimulant Epidemic

It's that time of the semester when finals creep around the corner, haunting every student on campus. Every table and cubicle is either occupied by students, or "occupied" by their belongings. You decide to take a quick break from studying for your exam. As you take your headphones out, you overhear a conversation in the cubicle next to you, "I am so stressed out. I have three exams next week that I've barely studied for, and I have a research paper due tomorrow that I haven't even started," one girl frantically says while staring at her blank word document displayed on her laptop. As her friend tries to calm her down and strategize with her, she interrupts her and says, "Well, maybe if I just take an Adderall, I can stay up all night and get my paper done and start studying for my exams!" Running out of time to study for your next exam? The caffeine in your coffee isn't enough to keep you going? No problem, just take a "smart pill"!

Now, fast forward in time to about a couple months after college graduation. This new investment banking job is pressing for 16 hours of work, some days even more. At the bottom of the totem pole, there is no time to fall back on work, and you cannot have others thinking that

you are not qualified for this job. You're surrounded by co-workers in the exact same position and wonder how they are able to get through it all. You walk past the cubicle of one of your co-workers and overhear one of them saying, "I just called my sister who's a senior in college to ask if she has any Adderall I can buy from her so I can get all this work done, but apparently since it's finals season, she needs her last one, and no one is selling. There's no way I can get my work done without it." Is your work piling up? Are you running out of time? No problem, just take a "smart pill". Individuals face everyday challenges that can feel overwhelming at times. Whether it be from academics, work, or even social life, we are constantly being pushed to reach higher towards improvement. The presence of endless pressure from school and work have driven people to do whatever it takes to keep going. One common method is the misuse of stimulant drugs.

The term "misuse" is defined as using such stimulants without a prescription (Weyandt et al.). Stimulant drugs are a pharmacological method aimed at improving attention to enhance performance. These medications are used to treat learning and attention disorders such as Attention Deficit Hyperactivity Disorder (ADHD). However, in the wrong hands, people may take advantage of the benefits of this drug to gain an upper hand and keep up with the pressures of everyday life. This drug that was synthesized with the intent of helping those who are suffering from a chronic condition, is being widely used for others' own personal gain, which can ultimately negatively impact their physical and psychological health.

This, however, is not the first time that there has been an upsurge in the use of prescription stimulants. The first stimulant epidemic occurred in the mid-to-late 1900s. The key difference between then and now is that in the previous widespread use of prescription stimulants no one was aware of its negative side effects and that its usage would spread out of control. The use of prescription stimulants spun out of control as a result of uncontrolled growth in the drug market. Due to these issues in the past, research has been conducted and analyzed to bring awareness to this drugs usage. However, even though its intentions are geared towards treating learning and attention disorders, we are continuing to experience a similar epidemic in the present. This current epidemic is a result from society's shift toward this societal norm to be "perfect", which is accompanied by today's drug culture. This norm drives individuals to misuse

and take advantage of the effects of these drugs, often ignoring the negative psychological and physical consequences.

In the mid 1900s, World War II created a need for soldiers to advance performance and do whatever it takes to defend their country. Not only was this drug used on the battlefield, but also at home. At this point in medical research, individuals were struggling with issues related to weight loss, anxiety/depression, and sleep disorders as well. Scientists believed they were able to find the solution to all of these issues with one simple pill. One pill that was advertised, marketed, and distributed out of control to the point that ultimately led to the first stimulant epidemic. In 1929, Bordon Alles, a biochemist, was working to create a decongestant and bronchodilator to replace the current use of ephedrine. Coincidentally, he discovered the physiological activity of beta-phenyl-isopropylamine, which was soon to be discovered as amphetamine. By 1932, the amphetamine received a patent on its orally active salts. Meanwhile, Smith, Kline, and French (SKF) was researching the base of amphetamine and also had it patented in 1933. Soon after, SKF's Benzedrine Inhaler was released into the market as an over-the-counter medication. The inhaler was meant to treat congestion, and consisted of a capped tube containing 325mg of an oily amphetamine base. Further clinical research into the drug had led the American Medical Association (AMA) to approve the use of SKF's "Benzedine Sulfate" to treat narcolepsy, postencephalitic parkinsonism, as well as minor depression.

Fig. 1 Smith, Kline & French Co. building. (Source www.philadelphiabuildings.org/pab/app/pj_display.cfm/474286)

The drug's presence in the market further increased when a company named Clark & Clark created 10-mg Benzedrine look-alike tablets that contained 5 mg of amphetamine and metabolism-boosting thyroid hormone, which was meant to aid in weight loss. The contributions of both companies led to sales of 13 to 55 million tablets monthly in 1945. By the end of 1945, over half a million civilians were using the drug, whether it be for congestion, psychological treatment, or weight loss. As scientists found new ways to use prescription stimulants as treatments for more and more problems, pharmaceutical companies continued to further market these drugs, and physicians continued to administer them at an enormous rate. Soon, American society became dependent on prescription stimulants, not only at home but on the battlefield as well. 5-mg tablets of Benzedrine were supplied to servicemen by the U.S. military for general medical supply, emergency kits, and aviation. Although rules were established for taking these drugs, they often were not followed once servicemen realized its performance-enhancing capabilities, which led to its misuse on the battlefield (Rasmussen, Nicolas). With its uncontrolled distribution and usage, along with its dependency factor, servicemen relied on these

drugs to keep them going on the battlefield. Due to its wide usage among both civilian populations as well as servicemen for a wide variety of medical and psychological treatments, it was clear that this led to America's formation of dependence on amphetamines. Competing pharmaceutical companies were motivated to further market their drug due to its growing need and did so through advertisements.

Now imagine this: the year is 1945, and you are sitting on your couch in your living room after a long day at work, flipping through the newspaper while the television is playing in the background. You come across an advertisement in the newspaper for an amphetamine pill to treat depression. You look up from your newspaper and take a glimpse at the television and notice an advertisement for amphetamines that are meant for weight loss. You look back at your newspaper, flip the page, and see yet another advertisement for amphetamines, this time for the Benzedrine inhaler to treat congestion. With its variety of uses, pharmaceutical companies are able to target such a diverse patient population. This, along with the fact that individuals were constantly surrounded by advertisements for stimulants contributed to the drug's growing market. Figures 2, 3, and 4 are examples of advertisements from the mid-1900s that promoted the use of amphetamines. By alluding to the viewer's emotional vulnerability, they were able to tap into their wants and needs of being happy, skinny, and further allude to a sense of patriotism to invoke the need for the drug for servicemen to perform better in order to protect our country.

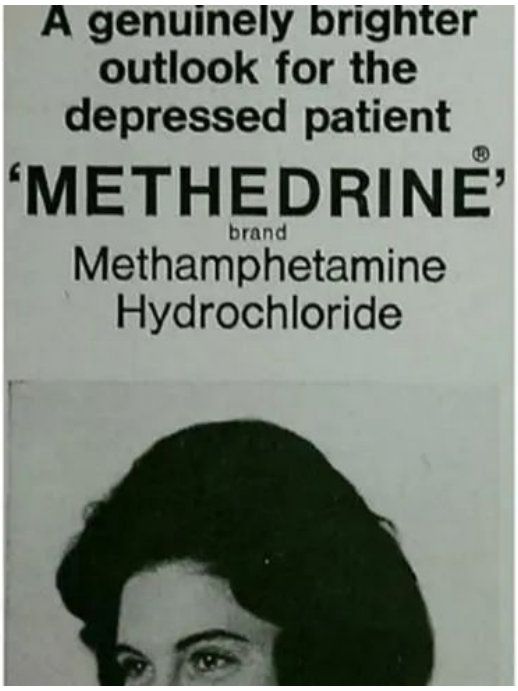


Fig. 2 Advertisement for the drug, Methedrine, to treat for depression. (Source news.com.au)

Fig. 3 Advertisement for Amphetamine pills to treat obesity. (Source new.com.au)

Fig. 4 Advertisement for the Benzedrine Inhaler and its use in U.S. aviation. (Source news.com.au)

Once individuals were convinced by these advertisements that they needed these medications to be happy, skinny, and healthy, physicians did not hesitate to administer them. Evidence of the negative effects of amphetamine, such as amphetamine psychosis as well as its addictive factor became more prevalent in the 1960s. This however, did not deter the rise of its distribution rates. It wasn't until mid-1971 when people started to notice the predicament of the stimulant epidemic and its uncontrolled growth. Finally, The Bureau of Narcotics and Dangerous Drugs (BNDD) made the decision to declare that all amphetamine products were subjected to schedule II drugs. This required that a prescription from a doctor be present to obtain the medication which decreased prescription sales of amphetamines and related drugs by 60%. Meanwhile, the FDA continued to investigate the legitimacy of the drug for obesity and psychological treatment. With the work of the BNDD and the FDA, the production rate of amphetamines dropped to a rate that was one-fifth of that of 1971 and one-tenth of that in 1969 (Rasmussen, Nicolas). The stimulant epidemic of the mid-1900s was caused by limited research on amphetamines and highly motivated pharmaceutical companies that marketed the drug for a variety of treatments

including, but not limited to, congestion, depression, and obesity. With such a diverse patient population, many individuals see these advertisements as a solution to their suffering, and with the limited research on the negative psychological effects of these drugs and its addiction factor, physicians had no reason to withdraw from treating their patients with these drugs.

Prescription stimulants are administered today to treat attention and learning disorders. However, with the knowledge of what these drugs can do, individuals may misuse them, which can lead to negative long-term physical and psychological effects. Attention Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder that includes inappropriate levels of inattention, hyperactivity, and impulsivity, which can ultimately affect one's academic, occupational, and social life. The exact mechanism behind the disorder is not completely understood, however evidence behind the imbalances in the dopaminergic and noradrenergic systems have been the targeting factor of the pharmacological treatments that exist for this disorder. Therefore, these drugs work to increase the levels of norepinephrine and dopamine present in the prefrontal cortex. Pharmacological treatment includes the use of prescription stimulants: methylphenidate and amphetamines (Shier et al.). The discovery of the use of stimulant drugs as a pharmacological method of treating symptoms of ADHD has improved and affected the lives of many individuals who struggle from inattention and hyperactivity. However, once individuals who are not prescribed this drug use it for its benefits, it contributes towards the unethical use of the drug. Although stimulant drugs are aimed to improve the signs and symptoms of Attention Deficit Hyperactivity disorder (ADHD), its chronic use and abuse can lead to adverse physical and psychological effects. Hypertension and tachycardia are the most common cardiovascular effects of the use of ADHD medication. However, even more concerning effects include myocardial infarction and sudden death, often linked to individuals who overdose on these medications (Lakhan and Kirchgessner). Another area of concern about the adverse effects of prescription stimulants is the possibility of developing a dependence or addiction to the drug. As prescription stimulant drugs are used more often, a tolerance will form, leading to the need to increase the dose to feel the effects of the drug. This causes a high risk for overdoseand such cardiovascular events that were previously described. Adderall psychosis and schizophrenia-like systems can also be present in some cases of prescription stimulant abuse.

Anxiety and panic attacks can result from withdrawal, which ties into the dependence factor of the drug (Lautieri, Amanda). Prescription stimulants and its negative effects elucidate that although beneficial intentions for the drug are known and implemented, there are also ways in which these drugs can be manipulated that negatively impact one's physical and psychological health. This thought is often blinded when one's focus is to succeed and are lightly weighted when balancing the pros and cons of taking prescription stimulants.

The U.S. Department of Health and Human Services has put together a comprehensive analysis of the prevalence of prescription stimulants among the U.S. population. Analyzed data from the 2015 and 2016 National Surveys on Drug Use and Health by the Substance Abuse and Mental Health Administration (SAMHSA) concluded that approximately 6.6% (16 million) of adults in the U.S used prescription stimulants in the preceding year. Of this 16 million, 4.5% (11 million) used prescription stimulants as prescribed, while 2.1% (5 million) used prescription stimulants for nonmedical purposes at least once (National Institute on Drug Abuse). Further, epidemiological studies concluded that methamphetamine abuse in the U.S. doubled from 1983 to 1988, doubled again between 1988 and 1992, and quintupled from 1992 to 2002. Usage surveys in 2004 concluded that 3 million Americans nonmedically consumed amphetamine-type substances, 250,000 to 350,000 of whom were addicted (Rasmussen, Nicolas). As shown in Table 1, Nonmedical amphetamine abuse, as well as dependency and addiction, are approaching rates that are similar to those from the peak of the first stimulant epidemic that took place in the 1970s. Although the total U.S. population is currently 3 million, while it was 2 million in 1970, misuse is still on the rise, and if not controlled, may lead to another epidemic.

Table I.

Comparison of the Prevalence of Amphetamine misuse and dependency between 1970 and 2002

Table 1—

Estimated Prevalence of Amphetamine Misuse and Dependency in the United States at Peak of First and in Current Epidemics, Expressed as Numbers of Individuals and Percentage of Total Population

Year	Past Year Nonmedical Amphetamine Use, Millions (%)	Physical Dependency or Addiction, Thousands (%)	Total US Population, Millions
1970	3.8[a] (1.9)	320[b] (0.16)	203[c]
2002	3.2[d] (1.1)	303[d] (0.10)	291[c]

Source. For references to footnotes, see endnote 91.

[a]Derived by taking past-6-month New York State usage prevalence figures as indicators of national past-year usage.

[b]Derived by applying upper-range medical dependency and addiction rates from early 1960s in northern Britain to total US medical and nonmedical amphetamine-using population in 1970. Note that the informal but relatively stringent "physical addiction" of the 1960s is not identical to "dependence" as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition*.

[c]From the Bureau of the Census.

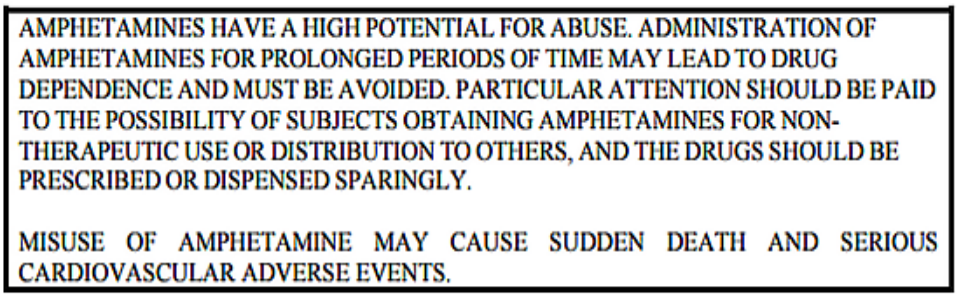
[d]Data for 2002 are consistent with more recent household drug use survey data.

Source: Rasmussen, Nicolas. "Estimated Prevalence of Amphetamine Misuse and Dependency in the United States at Peak of First and in Current Epidemics, Expressed as Numbers of Individuals and Percentage of Total Population." *American Journal of Public Health*, June 2008, www.ncbi.nlm.nih.gov/pmc/articles/PMC2377281/.

The most prevalent role of the misuse of prescription stimulants are among undergraduate institutions and in the workplace. These are both highly stressful environments that can drive some individuals to turn to drugs in order to perform better. This can create an unfair environment in the school and workplace and can also negatively impact its misusers as well as those around them, both psychologically and physically. As a current undergraduate student myself, I am surrounded by this "epidemic" and its effects. Further, as I am in my senior year, ready to enter the working world, I am also fully aware of prescription stimulant misuse that carries over from college and into the workplace.

The prevalence of the nonmedical use of prescription stimulants among undergraduate students is the result of the need for academic and performance enhancement, which, along with its easy accessibility, can lead to increasing normality. This can ultimately cause one to neglect the drug's adverse side effects, one of which is forming a dependence. Pressure from academic and social life combined can drive students to search for an outlet to relieve them from all the stress. Nonmedical users believe that in order to match the level of the "best student",

prescription stimulants are needed to enhance academic performance. Along with this mindset, the thought that these drugs will enhance academic performance leads students to think that it can be used as a way to quickly and efficiently get work done, so that they can attend to their social lives that consist of other drugs as well as drinking. Imagine yourself in a college student's shoes on a Thursday: classes until 4:00 pm, then club meetings until 6:00 pm, dinner, homework, then going out with friends by 9:30 pm until 2:00 am, and still being able to wake up for your 8:00 am class the next morning. The "best student" is able to juggle school and social life while excelling in both. Who wouldn't want a pill that makes it all easier? On the contrary, however, misusers of prescription stimulants actually have lower grade point averages than non-users. Misusers are therefore more likely than non-users to be heavy drinkers and users of other illicit drugs (Arria and DuPont). Studies have shown that among the most common forms of illicit drug use among college students, misuse of prescription stimulants is second to marijuana (Lakhan and Kirchgessner). Further, since nonmedical users most likely only use these drugs in times of need, such as studying for an exam, they negate its adverse side effects since they are not using often. The Food and Drug Administration (FDA) requires manufacturers of prescription stimulants to put a "black box" warning on the medications. Figure 5 portrays an example of these "black box" warning labels.


AMPHETAMINES HAVE A HIGH POTENTIAL FOR ABUSE. ADMINISTRATION OF AMPHETAMINES FOR PROLONGED PERIODS OF TIME MAY LEAD TO DRUG DEPENDENCE AND MUST BE AVOIDED. PARTICULAR ATTENTION SHOULD BE PAID TO THE POSSIBILITY OF SUBJECTS OBTAINING AMPHETAMINES FOR NON-THERAPEUTIC USE OR DISTRIBUTION TO OTHERS, AND THE DRUGS SHOULD BE PRESCRIBED OR DISPENSED SPARINGLY.

MISUSE OF AMPHETAMINE MAY CAUSE SUDDEN DEATH AND SERIOUS CARDIOVASCULAR ADVERSE EVENTS.

Fig. 5 "black box" warning on prescription stimulant bottles (Source https://www.accessdata.fda.gov/drugsatfda_docs/label/2007/011522s040lbl.pdf)

Such warnings inform patients that misuse could lead to "sudden death and serious cardiovascular adverse events." The warning also includes the drug as having "a high potential for abuse" (Arria and DuPont). Although efforts have been made to warn students of these possible risks, students are still so focused on being the "perfect student", that they look past all

of the warning signs. Prescription stimulants' frequent presence on college campuses is also correlated with its easy attainability. The "black box" on the pill bottles previously mentioned also includes a warning label that cautions against "the possibility of people obtaining amphetamines for non-therapeutic use or distribution to others." As stated previously, these medications are prescribed to individuals with attention and learning disorders, and many suffer tremendously without them. However, since many people are prescribed these medications for this reason, this can also create a nearby source for misusers to obtain prescription stimulants. In a study of 81 college students with ADHD, 62% diverted the medication to someone without a prescription (Arria and DuPont). "Take Your Pills", a documentary directed by Alison Klayman, exploits how prescription stimulants have become the drug of the generation, as it is used to gain an upper hand in competitive environments, such as the school and workplace. Klayman included one story of a college senior named Leigh. Leigh articulates the ease at which her fellow students are able to attain these medications:

> There is a public Facebook group, like a classified, buying and selling of anything, and people will post in there that they're selling 20 XR Adderall, and not think that they're drug dealing in a public forum (Klayman 00:04:07)

Because it is so easy to obtain these medications, this has contributed to the normalcy of its presence. Leigh also claims that she has "openly seen people in classes take out their bottle and hand off pills to someone next to them". Since this seemed so normal to her, she admits "sometimes I really forget it's illegal". Students are tied to this myth that establishes nonmedical prescription stimulant use as a harmless shortcut towards success and achievement. This leads them to negate its negative physical and psychological consequences of long-term use, since it is for their own beneficial development. Ultimately, this mindset combined with its easy accessibility has led to the normalcy of misusing prescription stimulants.

Once nonmedical prescription stimulant users begin to misuse these drugs in college, it is often carried over into the workplace. Similar to undergraduate institutions, the workplace consists of highly demanding workloads, which tempts some employees to misuse prescription stimulants to prevent from falling behind. Although there has not been much research done on

the nonmedical use of prescription stimulants in the workplace, there is still data that shows its presence and how it is increasing towards growing normality, similar to undergraduate institutions. In fact, the rates of usage have been seen to vary among different professions. In one study, 8.9% of surgeons noted either medical or nonmedical stimulant use, but when they were guaranteed anonymity, its prevalence rose to 19.9% (Leon et al.). Reports have also shown its high prevalence in the financial industry as well as in the Silicon Valley (d'Angelo et al). These career pathways come with stereotypes that elucidate that their employees "can do it all". Another story that was also included in Klayman's documentary, "Take Your Pills", was that of a financial analyst named Peter. He claims that as a financial analyst "...there is a culture that you stay up for a straight 16 hours for 7 days straight." With this outlook on him and his co-workers, there was a normalization of, and underlying peer pressure to taking prescription stimulants to keep the gears running as he claims "If the kid on your right is taking Adderall, and the kid on your left is taking Adderall, then you should be taking Adderall". Does this situation sound familiar? Pressures to perform your best? Everyone around you casually taking pills to get work done as if it was normal? Perhaps a situation you've found yourself in a few years prior, in college? As this pressure finally got to Peter, he eventually visits a doctor who was known to easily hand out prescriptions for ADHD medication and did so for many of his co-workers at his company. The doctor had no hesitation and gave Peter the prescription. He shares one experience that he had with Adderall after a particularly rough few weeks of work:

> He had another analyst like myself working around the clock and we were up for 2.5 days doing Adderall…And so the next day I go into work, keep my head down low, and the associate comes over to me. He goes "hey did you hear what happened last night, about 2 or 3 hours after you left the office? The other analyst that you had been working with had a seizure from exhaustion, and he's in the hospital right now." I immediately go and call him. He picks up the phone and I ask how he is, and he says "My parents are trying to make me quit, they think that enough is enough, but can you send me this file I'm being asked for it" (Klayman 00:55:29)

Employees, such as Peter, have a painted picture of their roles as one who does not say "no" to anything they are asked to do at their jobs. His associate experienced a threat to his own health, but did not let that stop him from conforming to this stereotype. This universal view of the

"perfect employee", and the mindset that prescription stimulants are the solution to get everything they need done, drive employees to rely on these medications to succeed. Furthermore, the increasing normalcy in the workplace environment makes this act appropriate and can lead employees to abuse this drug, to the point that they can put their own lives on the line.

The first wave of the stimulant epidemic was the result of uncontrolled marketing and distribution of prescription stimulants by pharmaceutical companies and physicians, respectively. Today, the high prevalence of the nonmedical use of prescription stimulants in the school and workplace is a result of pressures to fit into society's norms of being "perfect" accompanied by common drug culture. Students in undergraduate institutions are faced with balancing the pressures of school, social life, and any other problems they encounter in life. Some see an easy way to handle all of this through the misuse of prescription stimulants. With its high prevalence and accessibility on college campuses, it becomes easy and normal to simply purchase a pill to get through hardships, and easy to keep this habit going considering its high dependency. Similarly, pressures are also present in the workplace that drive employees to turn to prescription stimulants to relieve them from their workloads that are constantly piling up. This creates the idea that in order for people to excel and to be able to perform at the level that they should, the solution is one simple pill. The problem is not prescription stimulants themselves because these medications are effective, and life-changing for those who suffer from attention and learning disorders. In Emily Martin's paper "Anthropology and the Cultural Study of Science", she describes that once the capabilities of objects or concepts of science are brought to awareness to the public, she indicates "Once at large, these entities may be used to ways that know no limit." (Martin, Emily). This is exactly what is happening with prescription stimulants. With the knowledge of the effects of this drug, individuals get carried away, lose their boundaries, and use it for nonmedical purposes for their own benefit, ignoring all the possible negative physical and psychological consequences. With its high dependency factor, individuals can easily be conditioned to rely on prescription stimulants, at first for their needs to achieve, but can also start a slippery slope towards constant misuse.

Trends of prescription stimulant misuse are continuing to rise, which, if not controlled soon can potentially lead to another stimulant epidemic with usage rates that are similar to the first. First, over-diagnosing attention and learning disorders must be controlled. Over diagnosing leads to overprescribing, and overprescribing leads to more patients possessing these medications, resulting in greater accessibility to prescription stimulants for those not in need of them. Therefore, careful testing must be done to ensure that these drugs are necessary. This can be achieved by physicians if they increase their vigilance when listening to what parents and caregivers of children presumed to have ADHD have to say about their child's behavior. Furthermore, these drugs are imperative to those who struggle with attention and learning disorders. However, in many cases, it is possible to use other strategies to slowly steer patients away from the need to take drugs. If these are more emphasized or tried out, this can also further decrease prescribing rates. Physicians should also warn patients about the risks and consequences of diverting these drugs to their peers. By decreasing prescribing rates of prescription stimulants, along with emphasizing the risks of diverting drugs to peers, the accessibility to these drugs in undergraduate institutions and workplaces can be lessened dramatically. Second, students and employees need to be aware of the effects of the misuse of these drugs. As students, we are thoroughly educated about the risks of drug and alcohol abuse, but prescription stimulants are not emphasized as much as they should be considering its wide prevalence. Students are educated the most about these types of issues during orientation and through awareness from campus events and flyers. By targeting these prominent modes of publicizing risks of drug use, students will be more aware of the dangers of long-term nonmedical use of prescription stimulants. Hopefully, this knowledge and greater awareness can also carry on into the workplace. The workplace, however, should not be shy to also inform their employees about the risks of the nonmedical use of prescription stimulants. The power that prescription stimulants have to relieve suffering from those who struggle with attention and learning disorders is tremendous, but its ability to be manipulated by society to take the shortcut towards perfection and lead to a slippery slope towards an epidemic is even greater. America needs to take action to prevent repeating the history from the first stimulant epidemic.

Works Cited

Arria, Amelia M, and Robert L DuPont. "Nonmedical Prescription Stimulant Use among College Students: Why We Need to Do Something and What We Need to Do." *Journal of Addictive Diseases*, U.S. National Library of Medicine, Oct. 2010, www.ncbi.nlm.nih.gov/pmc/articles/PMC2951617/.

d'Angelo, L-S Camilla, et al. "BPS Publications." *British Pharmacological Society | Journals*, John Wiley & Sons, Ltd (10.1111), 12 May 2017, bpspubs.onlinelibrary.wiley.com/doi/epdf/10.1111/bph.13813.

Klayman, Alision, director. *Take Your Pills*. *Netflix Official Site*, Netflix, Inc., 16 Mar. 2018, www.netflix.com/watch/80117831?trackId=14170286&tctx=2%2C0%2C1ae556e8-7a19-44fe-ad29-4c68d87f8c50-9306967%2Ca8962208-2d5e-49e6-87be-3b17ee50f9c5_26988645X3XX1575949005870%2Ca8962208-2d5e-49e6-87be-3b17ee50f9c5_ROOT.

Lakhan, Shaheen E, and Annette Kirchgessner. "Prescription Stimulants in Individuals with and without Attention Deficit Hyperactivity Disorder: Misuse, Cognitive Impact, and Adverse Effects." *Brain and Behavior*, Blackwell Publishing Inc, Sept. 2012, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3489818/.

Lautieri, Amanda. “Long Term Effects of Adderall on Brain, Personality, and Body.” *American Addiction Centers*, American Addiction Centers, 2019, https://americanaddictioncenters.org/adderall/long-term-effects.

Leon, Matthew R., et al. “PCE Use in the Workplace: The Open Secret of Performance Enhancement - Matthew R. Leon, Peter D. Harms, Declan O. Gilmer, 2019.” *SAGE Journals*, journals.sagepub.com/doi/pdf/10.1177/1056492618790091.

Martin, Emily. “Anthropology and the Cultural Study of Science.” *Science, Technology, & Human Values*, vol. 23, no. 1, 1998, pp. 24–44. *JSTOR*, www.jstor.org/stable/689947.

National Institute on Drug Abuse. “Five Million American Adults Misusing Prescription Stimulants.” *NIDA*, 16 Apr. 2018, https://www.drugabuse.gov/news-events/news-releases/2018/04/five-million-american-adults-misusing-prescription-stimulants.

“News.com.au.” *News.com.au*, News Pty Limited, 20 Aug. 2017.

Rasmussen, Nicolas. “America's First Amphetamine Epidemic 1929-1971: a Quantitative and Qualitative Retrospective with Implications for the Present.” *American Journal of Public Health*, American Public Health Association, June 2008, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2377281/.

Rasmussen, Nicolas. “Estimated Prevalence of Amphetamine Misuse and Dependency in the United States at Peak of First and in Current Epidemics, Expressed as Numbers of Individuals and Percentage of Total Population.” *American Journal of Public Health*, June 2008, www.ncbi.nlm.nih.gov/pmc/articles/PMC2377281/.

Shier, Anna C, et al. “Pharmacological Treatment of Attention Deficit Hyperactivity Disorder in Children and Adolescents: Clinical Strategies.” *Journal of Central Nervous System*

Disease, Libertas Academica, 20 Dec. 2012, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3616598/.

Weyandt, Lisa L, et al. "Prescription Stimulant Medication Misuse: Where Are We and Where Do We Go from Here?" *Experimental and Clinical Psychopharmacology*, U.S. National Library of Medicine, Oct. 2016, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5113141/.

"Smith, Kline & French Co." *Philidelphia Architects and Buildings*, www.philadelphiabuildings.org/pab/app/pj_display.cfm/474286.

"U.S. Food and Drug Administration." *U.S. Food and Drug Administration*, 2007, www.accessdata.fda.gov/drugsatfda_docs/label/2007/011522s040lbl.pdf.