Academic “Doping”

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The word “dope” originates from a Dutch word used to describe a cheap brandy that was given to racing dogs and horses in South Africa in order to slow them down (Hart 383). In athletics, the term “doping” refers to the use of illicit substances, typically stimulant drugs or steroids, in order to gain a competitive edge over other athletes. In the academic world, the rising prevalence of students using psycho-stimulants to gain a competitive edge against their fellow students has instigated a new craze: “academic doping.” Stimulants are the specific drugs that block the body’s feelings of tiredness and fatigue and keep the body going - both mentally and physically - for extended periods of time. This particular branch of drugs encompasses a wide array of substances from the readily available drugs such as caffeine and nicotine, to the prescription stimulants used to treat narcolepsy, depression and ADHD, to illicit substances such as cocaine and methamphetamines. The category of drugs that will be the key focus of this paper is prescription stimulants. This paper argues against the nonmedical use of prescription stimulants because not only are they ineffective for studying, they are harmful to the body.

Background: Science of Stimulant Drugs and Mechanisms of Action

To better understand the concerns raised by academic “doping,” it is important to first understand the action of prescription stimulants on the body and mind. Prescribed stimulants are used to treat depression, narcolepsy, and ADHD (Hart 144-145). Modafinil (Provigil), treats narcolepsy by stimulating awakeness in patients (Turner 260). Methylphenidate (MPH), generally known as Ritalin or Concerta, and dextroamphetamine (d-AMP), known by the generic name Adderall, are used to treat attention deficit hyperactivity disorder (ADHD). Stimulant drugs
act on the catecholamine neurotransmitters of the brain, specifically the dopamine and norepinephrine receptors of the brain’s cortical and subcortical systems, to control attention and the ability to focus (Smith and Farah 3; Hart 143-144). They also stimulate the body’s adrenal glands to secrete excessive amounts of epinephrine and norepinephrine, which causes the body to enter into the fight or flight response. The senses are heightened and more oxygen is absorbed, causing induced euphoria and feelings of increased energy (Hart 143-144). People have found the effects of stimulants to be especially helpful while completing prolonged tasks that require intense mental focus and physical energy.

**History of Stimulant Use and Current Public Opinion**

Centuries ago, an herb discovered by the Chinese, which they called *ma huang*, was used in medicinal teas and remedies. Scientists later isolated the active ingredient responsible for these “medicinal effects” as ephedrine, which they used to dilate bronchial passageways in patients with asthma (Hart 139). In 1932, a synthesized drug with similar molecular components as ephedrine was patented and named Amphetamine (Hart 140). Amphetamine was first used as a substitute for ephedrine in asthma patients; however, the psychological effects of the drugs were noticed almost immediately (Hart 140). Patients taking amphetamines felt more awake and found that they could focus on tasks for longer periods of time (Hart 140). In just two decades, amphetamines became the choice drug for athletes and military personnel because they allowed users to go for extensive periods of physical endurance and mental concentration without wearing out (Hart 140; Smith and Farah 718).

Following its success into the military and athletic arena, amphetamines made their way to the rest of society and became recreationally used in the 1960s as the drug called “speed”
Amphetamine’s ability to allow the user to stay awake and concentrate for long periods of time is the reason that stimulants became popular in the college setting in the 1990s (Smith and Farah 717). Not only were illicit substances abused, healthy students began taking Ritalin or Adderall to stay awake for longer periods of time while studying for an exam or completing a project. Prescription stimulants became widely known in college settings as study aids, “smart pills” or “SAT steroids” (Hart 145). In 2005, it was estimated that 20% of individuals aged twelve years and older have used prescription stimulants at least once in their lives (Arria 1046).

Due to drug dependency and abusive tendencies, amphetamines are classified under the Schedule II Controlled Substances list, meaning that they must be prescribed by a doctor and cannot be sold over the counter (Smith and Farah 718). Yet in 2006, it was reported that 54% of college students who have been prescribed a stimulant have been asked to sell, exchange, or give their medication to a non-prescribed peer (Smith and Farah 723). Students have even faked symptoms of ADHD to obtain a prescription (Moore 124). Unfortunately, the use of prescription medication by non-prescribed students has been condoned by faculty, teachers, parents, and private tutors (Greely 703). In 2008, a survey sent out by the National Survey on Drug Use and Health (NSDUH) showed that 8.5% of the population twelve years and older have reported the use of prescription stimulants for nonmedical purposes, with 12.3% being in the 21-25 age range (Smith and Farah 718). Primary motives for the nonmedical use of prescription stimulants were to fight fatigue and promote alertness and concentration while studying. Other motives were for drug experimentation and to stay up for long periods of time while partying (Arria 1048; Smith and Farah 724; Teter 1).
The increasing popularity of stimulants as “study drugs” or “smart pills” has given rise to considerable debate regarding the health and morality behind the use of these prescription stimulants as cognitive enhancers. Despite the fact that the use of prescription stimulants by non-prescribed individuals is against the law, a surprising number of people find the behavior acceptable. In 2008, Nature magazine conducted a poll for its readers regarding their opinion about the use of prescription drugs as cognitive enhancers. One-fifth of the readers (college faculty and other professionals) that responded claimed that they had used prescription stimulants for nonmedical purposes in the past year (Smith and Farah 718).

In the same year, an opinion article written by Henry Greely that was published in Nature argued for the legalization and marketing of prescription stimulants for all, referring to them instead as “cognitive enhancing drugs” (Greely). The article praises the effects of prescription Adderall and Ritalin in memory improvement and cognitive enhancement (Greely 702). The article then asserts that society today has become heavily reliant on knowledge and innovation: the human race is evolving into a more complex species that is dependent on the intelligence and new innovation to keep society moving (Greely 702-703). The author then claims that stimulant drugs allow the brain to work to its full potential, resisting fatigue (Greely 702). Following the beneficial uses, the article then seeks to dispute the claims made against the use of prescription drugs for cognition by stating that it is no different than taking supplements to improve physical health (Greely 704).

Despite the proposed benefits of using prescription medication for cognitive enhancement, and some surprising public support, there are still substantially more drawbacks to the recreational use of prescription stimulants. Stimulant drugs should not be used for cognitive enhancement because the negative effects outweigh the positive ones. The remainder of this
paper will discuss the negative effects compared to the “benefits" of prescription stimulant drug use by healthy individuals, particularly their detriment to the health of individuals, the safety of society, and the integrity of academics in higher education.

\textit{Prescription Stimulants Are Ineffective in Enhancing Cognitive Function}

It has been determined through scientific experimentation that although prescription stimulants generate energy production in the body and brain, they do not improve cognition. Research shows that low oral doses of MPH reduce fatigue along with the mood swings that come with fatigue (Hart 147). A study conducted by Kirkpatrick, Metcalfe, Greene, and Hart revealed that individuals showed improved performance on simple mechanical tasks that required repetitive action, but showed no signs of improvement on cognitive tasks and even a decline in performance with increased doses (Kirkpatrick et al 137-144). Furthermore, Farah and colleagues conducted an experiment to test whether Adderall was effective in enhancing creativity. To test creativity, sixteen individuals between the ages of twenty-one and thirty were given a series of four tasks. Two were based on divergent thought, which consisted of spontaneous thinking and creative thought. And two were on convergent thought, which is the systematic grouping or organization of ideas and thoughts. Participants who were administered Adderall showed slight improvements in divergent thought, but displayed no significant signs of enhanced creativity compared to those who were on the placebo (Farah 544). Through these experiments, it is evident that although stimulant drugs improve alertness while performing simple motor tasks, they do not improve creative thinking and cognition.

\textit{Prescription Stimulants Pose Dangerous Health Effects}
Not only are stimulant drugs such as Adderall and Ritalin ineffective as cognitive enhancers when used by healthy individuals, stimulant drugs also present severe and dangerous health effects when acute toxicity is reached. Chronic use can lead to permanent adverse effects. Hundreds of deaths every year in the United States are amphetamine-induced deaths, one-third of which are caused by amphetamine overdose (Iverson 135). In a college survey conducted in 2006, 33.9% of healthy students who had used prescription stimulants reported using them two to three times per month and 15.5% reported using them two to three times per week (Smith and Farah 723). Due to their high reinforcing and rewarding nature, stimulants have a high capacity for overdose. Symptoms of overdose include shock, paralysis, chest pains, loss of speech, coma, convulsions, loss of body fluids, and high fever (Iverson 79). A sudden surge of Adderall can also lead to myocardial infarction even for prescribed users (Gandhi 1494). In a particular case, a 15-year-old male was rushed to the emergency room after taking two prescribed 20mg tablets of Adderall after four weeks of discontinued medication. A few hours after ingestion, the boy claimed to experience chest pains, a stiff neck, and numbness and tingling in the left arm, all of which are symptoms leading to a heart attack (Gandhi 1495).

Individuals who are not prescribed Adderall and are not in the habit of taking it can experience similar reactions. Recreational users who do not take prescription stimulants on a regular basis may experience the same symptoms as the boy who abruptly resumed his medication after a four-week period. Chronic users who are not on a prescription regimen may have even more severe repercussions. Since the use of amphetamines activates the body’s “fight or flight” response, chronic misuse causes the sympathetic system to remain permanently in the “fight or flight” state. Other adverse effects from chronic use include permanently elevated metabolism, profuse sweating, hypertension, psychosis, and nervousness (Moore 174). Not only
does chronic use affect the body, chronic use does permanent damage to dopamine receptors in
the brain, reducing an individual’s learning abilities and memory capacity (Iversen 137). A study
comparing the chronic effects of cocaine users to prescription amphetamine users found that
amphetamine users displayed a higher deficit in verbal learning and memory capacity than
cocaine users (Reske 4). With the adverse effects of stimulant drugs delineated, one may see that
the negative effects outweigh the positive effects of prescription stimulants.

Prescription Stimulants Act as “Gateway Drugs”

Not only are stimulant drugs harmful to the body, they are also highly addictive and
prone to abuse. Amphetamines act on the reward pathway of the brain, stimulating neurons to
send out pleasant sensations throughout the body; this mechanism is called positive
reinforcement (Hart et al 35). Positive reinforcement heightens the senses and encourages the
individual to take increasingly large amounts of the drug, often leading to acute toxicity. Positive
reinforcement also leads to drug dependence, which is when the body adapts to the effects of the
drug and develops withdrawal symptoms if drug levels are not met. These withdrawal effects
often cause individuals who have become dependent on prescription medication to seek other
forms of illicit stimulants to obtain the same effects.

Furthermore, Dr. Amelia M. Arria, director of the Center on Young Adult Health and
Development at the University of Maryland, discovered that energy drink consumption correlates
with increased use and abuse of prescription and illicit drug use. Arria conducted three annual
surveys on 1,060 undergraduates from a large public university, beginning with their first year of
college. She found that 22.6% of the students habitually consumed energy drinks by their second
year and 36.5% by their third year of college. Second-year students who identified themselves as
habitual energy drink consumers became heavily involved in abuse of prescription stimulants and analgesics their third year of college (Arria et al 2010, 5). The chain effect from energy drink consumption (also a form of stimulant drug) to prescription medication use shows that “legal” or socially accepted stimulants such as energy drinks can pave the way to the illicit use of prescription stimulants. The outcomes of these studies disprove the argument that by legalizing the nonmedical use of prescription stimulants, students will be less likely to engage in illegal activities. Individuals who have become dependent on stimulant drugs will seek other cheaper and more potent forms of stimulants to satisfy their needs, and the most potent forms of stimulants are typically illicit.

Research has also shown that there is a link between prescription stimulant use and low grade point averages (GPAs) (Arria et al 2008, 1046). Although there is not enough evidence to point out if the use of prescription medication actually causes lowered grades, it is a viable theory. From earlier on in the paper, it has already been established that the use of prescription medication by healthy individuals decreases their brain’s ability to absorb and recall information. This decreased ability could very well be a factor explaining the lowered grades among users. Another possibility could be that students assume prescription stimulants make the user “smarter” and will over-rely on the medication, rather than putting more effort into studying. In the same study, personal interviews were conducted on 1,253 college students to assess the nonmedical use of prescription stimulants in a large public university. Users tended to skip classes more often (16% of classes) than nonusers (9.4% of classes) and spent more time socializing and less time studying (Arria et al 2008, 1055). Although people may argue that prescription stimulants enhance cognition, an overreliance on their effects may cause students to adopt unhealthy student behavior, thus resulting in poor academic performance.
Future Implications for the Nonmedical Use of Prescription Stimulants

The fact that people are taking prescription medication without proper knowledge of how it is affecting their health is extremely risky and hazardous behavior. Dr. Flaskerud, from the School of Nursing at the University of California at Los Angeles, points out that pharmaceutical companies have not even tested the effects of prescription drugs on healthy individuals (Flaskerud). Fatigue and distractions are natural human characteristics that every human being is subject to, but they can be minimized with time management and proper study habits. They are not disorders or abnormalities that can be corrected or prevented with pills.

Moreover, not only is the use of prescription medication for cognitive enhancement unnatural and dangerous, it is also morally dishonest. Using an external substance rather than relying on natural and learned abilities to compete against others is cheating, regardless of the questionable effectiveness of the pills. Just like athletic doping is prohibited in athletic associations, so should academic doping be prohibited in the academic world. With the rising trend in “smart pills,” students prioritize achieving good grades over the process of learning. Greg Anderson, American best-selling author and founder of the American Wellness Project said, “Joy is not found in finishing an activity, but in doing it” (“Greg Anderson Quotes”).

As leaders of the academic world, professors, teachers, and scholars should act as role models for students to discourage the use of prescription medication for cognitive enhancement while promoting the process of learning over performance. Leaders should communicate the dangers of using prescription stimulants by healthy individuals and also inform them of its ineffectiveness in studying. Action needs to be taken to regulate the selling, buying, and trading of Adderall and Ritalin on college campuses. Pharmacies and doctors also need to be more
restrictive when prescribing these medications. With effective regulation, education of the dangers of prescription stimulants, and promotion of effective study habits and good time management, abuse of prescription medication can be eradicated and the integrity of education can be preserved.

Works Cited


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