Popping Pills to Study: 
Neuroethics in Education

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“This college,” said Professor Wogglebug, complacently, “is a great success. Its educational value is undisputed, and we are turning out many great and valuable citizens every year.”

“But when do they study?” asked Dorothy.

“Study?” said the Wogglebug, looking perplexed at the question. “Yes; when do they get their ‘rithmetic, and jogerfy, and such things?”

“Oh, they take doses of those every night and morning,” was the reply.

“What do you mean by doses?” Dorothy inquired, wonderingly.

“Why, we use the newly invented School Pills, made by your friend the Wizard…These are the Algebra Pills,” said the Professor, taking down one of the bottles. “One at night, on retiring, is equal to four hours of study.”

—from The Emerald City of Oz by L. Frank Baum

The past fifty years have witnessed many advances in brain science, especially in psychopharmacology. However, with the development of psychoactive medications that improve cognitive performance, how will students, teachers and institutions deal with the issues that come from the use and abuse of such stimulants? These issues have already given us terms like neuroenhancement and neuroethics. Cognitive stimulants for studying are what steroids are for sports—a form of pharmacological cheating, and as such, should be banned.

Medication that affects behavior has helped many who suffer from psychiatric disorders, especially for Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents. ADHD is a developmental disorder characterized by severe inattentiveness and impulsivity. It starts in early childhood and occurs in about 5% to 8% of school-aged children. Although the exact cause of ADHD is still not known, scientists know that the frontal lobes, temporal gray matter, caudate nucleus and cerebellum are all regions implicated in ADHD through research by the National Institute of Mental Health (NIMH). The two most popular medications for ADHD are methylphenidate and amphetamine, also known as Ritalin and Adderall. When untreated, ADHD is a debilitating disorder and causes much stress on those who suffer from it and the people who care for them.

In recent years, however, there has been a dramatic increase in ADHD medication use and with it, fears of over-prescription in the United States. The United States holds 83% to 90% of the total market share of ADHD medications, as shown in a study of global market spending on these drugs from 1993 to 2003. But according to the same report, global diagnoses of ADHD across countries and cultures appear at the same rate to that of the United States, implying that American schoolchildren are not any more hyperactive than their international peers. The authors of this study also created a model of predicted and actual usage of ADHD medication of various countries by income. They found that the United States is a clear outlier, using such medications “four times higher than would be predicted by income alone”.

Such an analysis raises concerns of over-prescription in the United States. The authors speculate, “Changes in the federal special education law (the Individuals with Disabilities Education Act [IDEA]) enacted in 1991 opened up special education services for children with ADHD, prompting greater diagnosis.” Many of these children who were diagnosed with ADHD in the early 1990s are now in college, bringing their medication with them.

Because of the widespread prescription of these medications, there are also concerns about its illicit use as cognitive enhancers. Stimulants taken by those not diagnosed with this disorder can improve cognitive performance. When used illicitly, Adderall, or amphetamine, has another name—speed. The US Drug Enforcement Administration classifies methylphenidate as having “a high potential for abuse and produces many of the same effects as cocaine or the amphetamines.” According to Wikipedia, street names for Ritalin, or methylphenidate, include “kiddie coke,” “poor man’s cocaine,” and, most tellingly, “study buddies.”

Credit: http://en.wikipedia.org/wiki/Adderall
A national survey of U.S. college students conducted by McCabe, Knight, Teter & Wechsler in 2005 found that the non-medical use of prescription stimulants like Adderall and Ritalin ranged from 2.1% (usage in the past month) to 6.9% (usage throughout lifetime). Non-medical use of these drugs was as high as 25% at individual colleges. The authors also found that usage rates were higher in “college students who were male, white, members of fraternities and sororities and earned lower grade point averages,” and that “rates were higher at colleges located in the north-eastern region of the U.S. and colleges with more competitive admission standards.” Hall et al.’s 2005 study revealed that students obtain Adderall and Ritalin sold or given by other classmates who were prescribed with ADHD.

But why are so many college students abusing these medications? Another study by Hall et al. was conducted to determine the reasons for illicit drug use and what factors predicted usage. Through a survey they distributed at a mid-western university, they found that students cited “pressure from time commitments and indicated that sleepiness and fatigue made it difficult for them to study.” Stimulants boost concentration, so some students may take them not to get high, but to study. Caroline Corbitt, a junior at Harvard University, said:

“At Harvard, students take Adderall and Ritalin—I would guess it’s more popular than pot. They take it right before a big paper is due, or if they have to cram for a final. There is academic pressure, but most of that pressure is self-inflicted—students procrastinate and need something to allow them to still get a good grade.”

Academic pressure, especially in highly competitive schools, may compel students to take advantage of the cognitive benefits of abusing prescription drugs. Dr. Carl Feinstein, Director of Child and Adolescent Psychiatry at the Stanford School of Medicine, researches learning disorders and is familiar with the controversies regarding enhancement with ADHD medications. In an interview, he said, “I am confident that there are many students at Stanford, the same as all major universities, who use stimulant meds. In my own practice, I do hear college students talking about this.” This kind of pressure to perform competitively is not unlike that faced by professional athletes. How far will students be willing to go to do well in school? Like sports players who take steroids to help develop muscles, some students turn to psychopharmacology to force their brains to concentrate.

Although Adderall and Ritalin are relatively safe, the US Food and Drug Administration classifies them as having high abuse potential, meaning that students who regularly take these drugs can become addicted. Furthermore, there are no studies that examine the long-term lifetime effect of taking these medications. This raises concerns on how these medications could affect the adult brain as the brain develops through childhood and adolescence. There is still much to learn about the long-term effects of psychoactive medications.

Even with biological addiction aside, the ethics of using neuroenhancing drugs remains contentious because such use could negatively impact people on a psychological level. Occasional users may eventually feel they cannot study or perform as well without taking stimulants. “It doesn’t make you smarter,” said Dr. Feinstein, referring to Adderall and Ritalin. “They just make you a little more alert, and focused, so you can study harder.” This is the danger of using drugs that improve cognitive performance. Students’ self esteem and cognitive drive (the motivation to learn) could decrease if they believed that their academic performance depended on whether or not they popped a pill to help them concentrate. Moreover, a student may think “Well, I know classmates who are taking Adderall to help them study—why shouldn’t I?” Students who do not procrastinate and otherwise would not use stimulants as a study aid could feel compelled to use them.

Trying to regulate off label use of stimulants would also prove very difficult. Hall et al.’s study revealed that students obtain Adderall and Ritalin sold or given by other classmates who were prescribed with ADHD. Advising doctors to prescribe stimulant medication with much caution is not the only precaution that needs to be taken: once the pills are in the hands of a patient, they could end up in the mouths of others.

As illicit drug use occurs on college campuses around the country, what can school administrators do? Teachers can require students to write disclaimers at the end of papers, disclosing use of neuroenhancing drugs, and could grade students differently based on their usage or not. This could raise an even bigger issue for regular users, such that there could be separate classrooms for neuroenhanced students. But that would only serve to separate society between the “have enhancements” and “have-nots.” Even if right of access was not an issue, and everyone had access to neuroenhancement drugs, there
will be those who choose not to use them, based on personal beliefs or attitudes. But would it be fair for those who choose not to use these drugs to be at a cognitive disadvantage compared to their pill-popping peers? The fairest alternative would be to ban such use altogether (which is already the standard for most, if not all universities) and to enforce that by screening students for drug-induced neuroenhancement before taking finals, like tests for steroids in sports.

Most importantly, a stimulant-taking student is cheating herself. Yes, there is a lot of pressure in high school and college to do well academically. But what will happen to grace under pressure? Sheridan, Zinchenko & Gardner discuss in their chapter, “Neuroethics in education,” in Neuroethics: Defining the Issues in Theory, Practice, and Policy, how “education is above all a value-laden profession, with its values in perpetual dispute.” What will happen now to the values of perseverance, hard work and self-motivation? Students may think they gain time by taking “study pills” but what they may lose is something far more precious than time—the love of learning. Taking a pill that enhances concentration or memory transfers the academic performance away from you to your altered brain state. In other words, instead of feeling proud of yourself, you may think “Well, of course I should get a 100% on this test—I took a pill that helped me memorize everything I needed to know.” Athletes who take steroids to perform better in sports are stigmatized for their illicit drug use—so should students with stimulants.

The ends do not justify the means. We need to ask ourselves if it is really necessary to illegally take drugs to help us study. Treating higher education as a series of tests to pass, which may lead to the compelled use of neuroenhancers, may produce students who view learning as a medical condition—not an end in itself.

“We live in an age of progress,” announced Professor Wogglebug, pompously. “It is easier to swallow knowledge than to acquire it laboriously from books. Is it not so, my friends?” “Some folks can swallow anything,” said Aunt Em, “but to me this seems too much like taking medicine.” – from L. Frank Baum’s The Emerald City of Oz

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Disclaimer

The author is proud to state that there was no use of any kind of stimulant while writing this article. Unless you count trace amounts of caffeine and theobromine found in dark chocolate.

References