

Are we on the cusp of a future where we can just take a pill to work longer, learn faster and achieve more, and is that a world where we want to live?

● By Sonya Collins

THE ETHICS OF NEUROENHANCEMENT

● Illustration by Mario Wagner



**A Philosophical Approach**

**ACCORDING TO THE** National Institutes of Health, up to 30 percent of college students take stimulants not prescribed to them. Students who buy the pills pay about \$5 to \$10 a pop. Most students say they use the medications as a study aid. Some people find the drugs helpful. Some feel no effect at all.

Forget for just a moment that many of these students are taking a prescription that wasn't intended for them. Let's imagine any hardworking student or professional who wants to study all night or pull a double shift can buy a bottle of Vyvanse, Ritalin or Adderall off the shelf at a drugstore.

Is that the kind of society that we'd like to live in? asks **Nicole Vincent**, associate professor of philosophy and an associate faculty member in the Neuroscience Institute.

Vincent asks us to consider this question before we get too excited about a pill's potential to help us work more, harder, better. Do we want to live in a world where we can just take a pill to work longer hours? It may sound like a great way to power through the occasional, inevitable all nighter, but if these drugs were available to everyone, could the work habits they create become the new normal? And if they did, would everyone then be forced by societal or workplace pressure to take these drugs just to keep up?

Our society is well equipped to consider the medical side effects of a medication or technology before it hits the market, Vincent says, but what about the social side effects?

A philosopher interested in neuroethics—the ethics of neuro-

**GEORGIA STATE PRE-MED STUDENT** Jason holds leadership roles in several clubs, has conducted research with doctors at a local hospital and still makes time for his girlfriend, who's also a college student. And most recently, Jason has taken a weekend restaurant job to help pay his rent.

I used to use weekends to catch up on my school work, but I don't have that anymore, he says.

But these activities haven't prevented Jason from taking a full load every semester. He recently learned he'll graduate in the fall, a semester early. But how has he managed to study?

Jason clears entire days to hunker down and hit the books, and on those days, he takes a Vyvanse. The central nervous system stimulant, a type of amphetamine prescribed to people with attention deficit hyperactivity disorder (ADHD), can improve focus and concentration. It can also reduce hyperactive, impulsive behaviors, such as the impulse to check Facebook 12 times before you finish reading a single paragraph of your textbook. In some people, these effects improve learning, recall and working memory, the ability to temporarily hold information, such as a phone number, in your head.

It gives you a hardcore motivation to sit down and study the most mundane topics for a really long time, Jason says.

You can do work that you would otherwise procrastinate on. Procrastination is a serious issue in college.

When Jason told his longtime family doctor that he couldn't focus in school, the doctor skipped the standard ADHD testing and said, You seem like a really motivated student, and I've been in your shoes before, Jason recalls. Then the doctor wrote him a prescription for Vyvanse.

But many more pre-meds take ADHD medications than just those who have a prescription, Jason admits.

Quite frankly, he says, they go around like candy. If you don't have a friend who has it, you'll have a friend who knows someone who has it.

science Vincent says, We need to start taking responsibility for the technologies that we produce and for the fact that they do change the moral, social and the legal landscape. Take control of the technology before it takes control of you.

An international organization, the World Anti Doping Agency, regulates drug use among athletes. In fact, on game days, athletes can't take the same stimulants students take to pull all nighters.

We discuss how the game should be played in sports, but we don't talk about how the game of life should be played. So much more is at stake, Vincent says.

These questions drive Vincent's work at Georgia State. She joined the faculty in 2013 as part of the university's Second Century Initiative (2CI). The program is in the final year of a five-year push to add 100 faculty positions to the university to strengthen research and improve the university's overall quality, interdisciplinary richness and competitiveness.

**The Time Is Now**

**A WORLD IN WHICH** we power through our work on pills is not the stuff of Orwellian fantasies or sci-fi flicks. The Presidential Commission for the Study of Bioethical Issues released a 150-page report last March called *Gray Matters: Topics at the Intersection of Neuroscience, Ethics and Society*. The report offers the President formal recommendations on future neuroscience research. One chapter examines neural modification, which includes the use of prescription medications to improve cognitive function within and beyond typical or statistically normal ranges.

While the report lists some ethical concerns of cognitive enhancing drugs, the authors write that if research proves the drugs bring cognitive benefits without harmful medical side effects, we will have a responsibility to make sure everyone has equal access to them so that the drugs



don't widen the divide between the rich and the poor. They add that cognitive enhancing drugs might, in fact, help close this gap.

Medications that help people do their jobs are already common in some professions. A 2008 poll of 14,000 readers of *Nature*—a research journal read predominantly by scientists—found that one in five respondents took Ritalin, modafinil or beta blockers for non-medical purposes. Modafinil keeps narcoleptics awake. Beta blockers, a blood pressure lowering medication, can reduce anxiety. At least one in three classical musicians uses them to relieve jitters before auditions or concerts. In a small study of about 200 poker players from around the world, including recreational, amateur, semi-pro and pro players, 60 percent used stimulants such as Adderall to improve their game.

It's not that hard to get a prescription no matter what your profession. A 2009 statement from the American Academy of Neurology tells neurologists it's neither illegal nor unethical to prescribe neuroenhancement medications to adults who ask for them.

Athletes aren't allowed to use steroids to build muscle and speed, but physicians, lawyers and business men are allowed to use stimulants to boost their brain, says Jose Rey, a professor of pharmacy practice at Nova Southeastern University in Fort Lauderdale, Fla., and a co-author of the poker player study.

The drugs haven't gone mainstream yet, says Vincent, only because they bring a risk of potentially serious side effects, including heart palpitations, high blood pressure, insomnia and addiction.

Once cognitive enhancement no longer has medical side effects, and you can legally get it, everyone's going to expect you to use it, she says.

With progress in science, technology and medicine, Vincent explains, we can expect these pharmaceuticals to keep

getting safer. And normally medications with fewer or less pronounced side effects would be viewed as a good thing. But Vincent points out that, somewhat paradoxically, this is only likely to intensify the social problems.

### Legal Obligations

VINCENT SUGGESTS that pilots and surgeons who are in professions in which passenger and patient safety depend on focused, alert workers, might be among the first professionals expected to take the drugs.

You're performing a job that many people's lives depend on, she says. If you mess up and people die when you could've just taken this pill, people will see that as negligence.

The Presidential Commission's report also points to aviation and medicine as professions that would benefit from education and guidance on neural modification.

The medical profession may already be laying the groundwork to recommend that surgeons use modafinil to stay awake through long shifts. Queensland Health, an Australian medical regulatory agency, suggested surgeons take in up to 400 milligrams of caffeine per day—that's ve to six cups of coffee—to fight fatigue because compared with other psychoactive drugs (for example, modafinil), caffeine is more readily available and less expensive.

Given that the report explicitly cites modafinil, and that it only cites availability and cost as considerations that favor the use of caffeine over modafinil, Vincent and her colleagues argued in a 2014 article, we think it is perfectly conceivable that a future report may recommend such drugs.

Whether or not your employer expects you to enhance your performance, you may one day expect it of yourself. If the drugs are available to everyone, Vincent

## Fit to Die?

MEDICATING THE MENTALLY INSANE FOR EXECUTION

In 2004, the state of Arkansas executed Charles Laverne Singleton even though he was considered legally sane only when treated with medication.

Without the drugs, Singleton, a convicted murderer diagnosed with schizophrenia, could not be put to death under the 8th Amendment, which prohibits cruel and unusual punishment including the execution of the insane.

For Vincent, the ethical decision to administer drugs to make an inmate competent enough to execute is troubling.

"These medications are meant to bring them back to us for just long enough so that they can be punished," she says.

Vincent says there's a range of reasons cited to support the practice of medicating people to make them competent for execution, but the core idea is the inherent requirement for retribution in the American justice system.

"The person being punished has to understand that this is punishment for what they did

and a consequence of what they did," she says.

But Vincent says there are concerns about whether the medications that are administered work sufficiently enough for an inmate to understand he is being punished for his crimes.

"After all, if we had medications that could cure mental illness, then psychiatrists would be prescribing them to mentally ill people," she says. "Here, proponents of this practice reply that we don't need to make people totally well, but only 'well enough.'"

suggests, and your coworker gets all the promotions because she puts in longer hours than you do with the help of a stimulant, you're likely to feel the pressure to take it, too. The last holdouts against the drug will eventually feel they don't have a choice, just like late adopters of answering machines and cell phones.

Because the standard has shifted, Vincent says, you have a new normal.

### Chemical Elimination of Social Disparities

NEUROENHANCING DRUGS might not only close gaps between coworkers and peers. The Presidential Commission's report suggests more widespread enhancement might help to close some gaps in opportunity that are related to neural function, such as educational attainment or employment.

But who will be the one to say that people missed the opportunity to get an education or a job because of their neural function and not because of the poor neighborhood and school system they grew up in?

**Sonya Collins** is an Atlanta-based independent journalist who covers health, health policy and scientific research. She is a regular contributor to WebMD Magazine, Pharmacy Today, Yale Medicine and Georgia Health News.

Here in Atlanta, the poorest neighborhoods are where you find staggering rates of students with prescriptions for Ritalin and modafinil and other ADHD medications, Vincent says. Now will society respond not by saying, Let's funnel money into better teaching, but Let's funnel insurance money to drug companies to give these families drugs for their children?

Meanwhile, families of greater means might use these drugs to give their kids a competitive edge.

Even parents, unfortunately, have rationalized that it's okay to study on Adderall because you're competing against other kids, trying to get into college and trying to get into medical school, Rey says.

### Taking Liberties

ONCE CHILDREN START enhancing, when does it end? Does it end once pre-meds get into medical school?

No, says Rey, because you have to be the best med student to get into the best residency, and you have to be the best resident to get the best fellowship.

Rey describes a future in which today's pre-meds may no longer feel free to quit the drugs that got them so far.

Before we all have the freedom to take these drugs, researchers will have to prove to the Federal Drug Administration the drugs bring little risk of unwanted medical side effects. But new drugs and technology can just as easily affect our social well-being. Over the counter painkillers mean a headache is no reason to miss work. Smart phones mean being out of the office is no reason to miss an email. In what ways will smart drugs raise demands on us even further? What freedoms will they take away?

Liberty, Vincent says. The very thing that we seem to think we care about. We'll lose the liberty to take it. We'll also lose the liberty to shape the future society that we wish to live in.

**If the drugs are available to everyone, Vincent suggests, and your coworker gets all the promotions because she puts in longer hours than you do with the help of a stimulant, you're likely to feel the pressure to take it, too.**

**LEAVE A LEGACY...  
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At Georgia State's Neuroscience Institute, Ph.D. student Kate McCann is drilling down to the molecular level to find out how outside stress causes certain behaviors and what can be done to counteract it. Her own stress level has been lowered by alums Kenneth and Georganne Honeycutt, who've provided not only financial support — through the graduate fellowship that bears their name — but also the encouragement that fuels McCann's drive to keep exploring.



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# THE NEW NORMAL

THE ETHICS OF NEUROENHANCEMENT

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