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Popping Smart Pills: The Case for Cognitive Enhancement

By Maia Szalavitz

A 40-year-old high-level e-commerce executive in the Pacific Northwest — we'll call him Bob — felt he was losing his edge. Although his colleagues saw him as a star, he feared he wouldn't be able to continue the lightning pace and constant multitasking his job required. So he saw his doctor. Now Bob takes Adderall, a prescription amphetamine ordinarily used to treat attention-deficit/hyperactivity disorder (ADHD).

"It gives me clarity of thinking and focus," says Bob. He credits the drug with improving both his career and his personal relationships. "I am still getting accolades," he says. He was initially wary of taking any substance with a so-called black-box warning, he says, but after nine months of using Adderall under close supervision by his doctor, he has not developed an addiction, required a dose increase or had any other adverse effects.

Welcome to the brave new world of "cognitive enhancement," a term that typically refers to the use of attention- or memory-boosting prescription drugs, such as Adderall, Ritalin and modafinil (Provigil), along with other performance-raising medications, to improve productivity. College kids have been doing it for years. About 7% of U.S. university students report having taken stimulants "nonmedically" at least once, according to a 2005 study of nearly 11,000 students. On some campuses — primarily private, élite schools — a full quarter of students admit to nonmedical drug use in the past year, mainly in an attempt to improve grades.

Smart drugs are used widely off-campus as well: fighter pilots take stimulants to enhance alertness and cognition on critical missions; in the civilian world, executives take beta-blockers to calm nerves, while some time-pressed writers use wakefulness drugs, like modafinil, to meet deadlines. It's become commonplace enough that a group of seven leading bioethicists and neuroscientists published an editorial in the science journal *Nature* last month advocating the use of performance-boosting drugs. "Cognitive enhancement has much to offer individuals and society," the authors wrote, "and a proper societal response will involve making enhancements available while managing their risks."

Indeed, it would be hard to argue against promoting the use of an intelligence enhancer if it were risk-free and available to everyone. Imagine a legion of cancer researchers on smart drugs, racing toward a cure. Or how

about a better class of Wall Street executives, blessed with improved thinking and wiser judgment? Considering the torrent of negative public responses to the *Nature* editorial, however, many Americans appear to regard enhancement as cheating, unnatural or a rationalization of drug abuse. But ask these bioethicists, and they'll say it's not cheating at all — as long as everyone has fair and free access.

One problem, of course, is that access is neither fair nor free. Businessmen like Bob get stimulant prescriptions from their doctors. (Whether those prescriptions are legal is another matter; state laws determine the nature of a "legitimate medical purpose" for controlled drugs and could choose to interpret cognitive enhancement as "medical.") Students usually get stimulants from friends or family who have legitimate prescriptions, which is illegal. In any case, one can't access the drugs without some amount of expendable cash, which raises the concern that they are available only to the wealthy.

Another worry is that societal acceptance will turn into coercion, particularly in a cutthroat, winner-take-all environment. Jessie Klein, an assistant professor of sociology at Adelphi University, says she believes students give in to the pressure to take drugs just to keep up. "It makes more sense to me to transform this pernicious culture rather than discuss whether students should be able to legally take drugs to compete," she says, adding that when minority students take drugs, people call for get-tough policies and crackdowns, but when wealthy, white Ivy Leaguers do it, the discussion shifts to reducing the legal consequences.

As for the health risks, researchers are only beginning to discover both the possible benefits and the real hazards of prescription stimulants. The effects of chronic, high doses of amphetamine are toxic; it can cause psychosis, depression and cognitive deficits, which are sometimes irreversible. That's why the street drug methamphetamine rightly has a terrible reputation. But lasting problems don't usually emerge from the therapeutic use of prescription stimulants — while the drugs do carry a risk of increased blood pressure, which raises the chance of heart attack and stroke, close medical monitoring reduces that risk.

Although recreational stimulant use can be addictive — about 10% to 20% of people who use amphetamines to get high (particularly if they snort, smoke or inject) will continue to use, despite negative consequences — addiction rates are much lower when drugs like Ritalin and Adderall are prescribed for ADHD. It's not clear whether the pattern of addiction under medical supervision for enhancement would follow the former or the latter — or whether it would even meet the bar for addiction. Medically speaking, without the element of harm, regular drug use — or even dependence — alone doesn't qualify as addiction.

"One has to distinguish between all kinds of issues here," says Michael Gazzaniga, director of the Sage Center for the Study of Mind at the University of California at Santa Barbara and an author of the *Nature* editorial. "Habits are not addictions, necessarily." Nonetheless, because addicts tend to rationalize their use and because stimulants can engender overconfidence, using drugs as enhancement can be problematic for the minority of users who may develop a true addiction.

"If it were possible to call for a moratorium on cognitive enhancement until the risks are better understood, that

would obviously be the best thing to do," says Martha Farah, director of the Center for Cognitive Neuroscience at the University of Pennsylvania and another *Nature* author, "but the genie is already out of the bottle."

The benefits of enhancement include increased alertness and focus and improvement in some types of memory. Research shows that in normal people, stimulants consistently and significantly improve learning of material that must be recalled days later — exactly what you want from a drug when you are prepping for exams. The drugs even seem to improve certain aspects of judgment. One study of 36 normal women and men found that they were more likely to choose to delay gratification and receive a larger monetary reward when given amphetamines than settle for a smaller amount of money immediately. Improvements in memory and cognitive control have been reported in multiple studies, mainly using Ritalin and amphetamines.

Interestingly, those who have the least ability in a particular area are likely to see the greatest drug-related improvement. In fact, on some tests of cognition, the smartest people actually showed performance reductions, a result that may address some of the concerns over "cheating": on tasks involving working memory and impulsivity, stimulants had a leveling effect, allowing below-average performers to catch up to their peers, not dominate them. According to Farah, the typical student user is actually not the overachieving brainiac but a "white male frat brother with a B average."

Anecdotes from the work world, however, suggest that it's the overachievers who tend to seek further enhancement. Dr. Gaby Cora, a psychiatrist and life coach from Florida, says her patients are like Bob. "They are extremely smart and very successful. We're not talking about someone struggling to perform. I do organization, planning and prioritizing — and lifestyle changes like exercise, relaxation, better sleep, nutrition — with patients first. But when I need to prescribe, I do. My issue with all of this is that society pushes so much to maximize production and performance that enhancement becomes normal."

That is perhaps the bioethicist's greatest concern — that cognitive enhancement may be wrong not because it is physically risky or because it creates an unlevel playing field but because it redefines the nature of human achievement itself. As Leon Kass wrote for the President's Council on Bioethics in a 2003 report on enhancement, "We must live, or try to live, as true men and women, accepting our finite limits, cultivating our given gifts, and performing in ways that are humanly excellent. To do otherwise is to achieve our most desired results at the ultimate cost: getting what we seek or think we seek by no longer being ourselves." That is, we cheat ourselves out of ownership of our own success and damage our sense of self.

Says Farah: "When my colleagues and I called for a more open mind and rational debate on cognitive enhancement, we were not saying, 'Yeah, let's everybody take these [controlled] substances.' What we are saying is that these drugs are being used and it's very important for physicians to talk to their patients and give them the information and supervision they deserve and for more research to be done."

*a pseudonym

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