

Brain Enhancement Is Wrong, Right?

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SO far no one is demanding that asterisks be attached to Nobels, Pulitzers or Lasker awards. Government agents have not been raiding anthropology departments, riffling book bags, testing professors' urine. And if there are illicit trainers on campuses, shady tutors with wraparound sunglasses and ties to basement labs in Italy, no one has exposed them.

Yet an era of doping may be looming in academia, and it has ignited a debate about policy and ethics that in some ways echoes the national controversy over performance enhancement accusations against elite athletes like Barry Bonds and Roger Clemens.

In a recent commentary in the journal *Nature*, two Cambridge University researchers reported that about a dozen of their colleagues had admitted to regular use of prescription drugs like Adderall, a stimulant, and Provigil, which promotes wakefulness, to improve their academic performance. The former is approved to treat attention deficit disorder, the latter narcolepsy, and both are considered more effective, and more widely available, than the drugs circulating in dorms a generation ago.

Letters flooded the journal, and an online debate immediately bubbled up. The journal has been conducting its own, more rigorous survey, and so far at least 20 respondents have said that they used the drugs for nonmedical purposes, according to Philip Campbell, the journal's editor in chief. The debate has also caught fire on the Web site of *The Chronicle of Higher Education*, where academics and students are sniping at one another.

But is prescription tweaking to perform on exams, or prepare presentations and grants, really the same as injecting hormones to chase down a home run record, or win the Tour de France?

Some argue that such use could be worse, given the potentially deep impact on society. And the behavior of academics in particular, as intellectual leaders, could serve as an example to others.

In his book “Our Posthuman Future: Consequences of the Biotechnology Revolution,” Francis Fukuyama raises the broader issue of performance enhancement: “The original purpose of medicine is to heal the sick, not turn healthy people into gods.” He and others point out that increased use of such drugs could raise the standard of what is considered “normal” performance and widen the gap between those who have access to the medications and those who don’t — and even erode the relationship between struggle and the building of character.

“Even though stimulants and other cognitive enhancers are intended for legitimate clinical use, history predicts that greater availability will lead to an increase in diversion, misuse and abuse,” wrote Dr. Nora Volkow, director of the National Institute on Drug Abuse, and James Swanson of the University of California at Irvine, in a letter to Nature. “Among high school students, abuse of prescription medications is second only to cannabis use.”

But others insist that the ethics are not so clear, and that academic performance is different in important ways from baseball, or cycling.

“I think the analogy with sports doping is really misleading, because in sports it’s all about competition, only about who’s the

best runner or home run hitter,” said Martha Farah, director of the Center for Cognitive Neuroscience at the University of Pennsylvania. “In academics, whether you’re a student or a researcher, there is an element of competition, but it’s secondary. The main purpose is to try to learn things, to get experience, to write papers, to do experiments. So in that case if you can do it better because you’ve got some drug on board, that would on the face of things seem like a plus.”

She and other midcareer scientists interviewed said that, as far as they knew, very few of their colleagues used brain-boosting drugs regularly. Many have used Provigil for jet lag, or even to stay vertical for late events. But most agreed that the next generation of scientists, now in graduate school and college, were more likely to use the drugs as study aids and bring along those habits as they moved up the ladder.

Surveys of college students have found that from 4 percent to 16 percent say they have used stimulants or other prescription drugs to improve their academic performance — usually getting the pills from other students.

“Suppose you’re preparing for the SAT, or going for a job interview — in those situations where you have to perform on that day, these drugs will be very attractive,” said Dr. Barbara Sahakian of Cambridge, a co-author with Sharon Morein-Zamir of the recent essay in *Nature*. “The desire for cognitive enhancement is very strong, maybe stronger than for beauty, or athletic ability.”

Jeffrey White, a graduate student in cell biology who has attended several institutions, said that those numbers sounded about right. “You can usually tell who’s using them because they can be angry, testy, hyperfocused, they don’t want to be bothered,” he said.

Mr. White said he did not use the drugs himself, considering them

an artificial shortcut that could set people up for problems later on. “What happens if you’re in a fast-paced surgical situation and they’re not available?” he asked. “Will you be able to function at the same level?”

Yet such objections — and philosophical concerns — can vaporize when students and junior faculty members face other questions: What happens if I don’t make the cut? What if I’m derailed by a bad test score, or a mangled chemistry course?

One person who posted anonymously on the Chronicle of Higher Education Web site said that a daily regimen of three 20-milligram doses of Adderall transformed his career: “I’m not talking about being able to work longer hours without sleep (although that helps),” the posting said. “I’m talking about being able to take on twice the responsibility, work twice as fast, write more effectively, manage better, be more attentive, devise better and more creative strategies.”

Dr. Anjan Chatterjee, an associate professor of neurology at the University of Pennsylvania who foresaw this debate in a 2004 paper, argues that the history of cosmetic surgery — scorned initially as vain and unnatural but now mainstream as a form of self-improvement — is a guide to predicting the trajectory of cosmetic neurology, as he calls it.

“We worship at the altar of progress, and to the demigod of choice,” Dr. Chatterjee said. “Both are very strong undercurrents in the culture and the way this is likely to be framed is: ‘Look, we want smart people to be as productive as possible to make everybody’s lives better. We want people performing at the max, and if that means using these medicines, then great, then we should be free to choose what we want as long as we’re not harming someone.’ I’m not taking that position, but we have this winner-take-all culture and that is the way it is likely to go.”

People already use legal performance enhancers, he said, from high-octane cafe Americanos to the beta-blockers taken by musicians to ease stage fright, to antidepressants to improve mood. “So the question with all of these things is, Is this enhancement, or a matter of removing the cloud over our better selves?” he said.

The public backlash against brain-enhancement, if it comes, may hit home only after the practice becomes mainstream, Dr. Chatterjee suggested. “You can imagine a scenario in the future, when you’re applying for a job, and the employer says, ‘Sure, you’ve got the talent for this, but we require you to take Adderall.’ Now, maybe you do start to care about the ethical implications.”