

Is it acceptable for people to take methylphenidate to enhance performance?

A drug that can improve your exam results may sound tempting, and **John Harris** believes that we should embrace its possibilities. **Anjan Chatterjee**, however, argues that the dangers have been underplayed

John Harris Lord Alliance professor of bioethics and director, Institute for Science, Ethics and Innovation, University of Manchester, Manchester M13 9PL
john.harris@manchester.ac.uk

YES Many healthy students are thought to use methylphenidate (Ritalin) and other chemical cognitive enhancers to improve academic performance.¹ The arguments against their being permitted so to do have not been persuasive.² The crucial ethical question is whether this is a matter for regret or celebration.

Ethical dimension

Suppose a university were to set out deliberately to improve the mental capacities of its students; suppose its stated aims were to ensure that students left the university more intelligent and learned than when they arrived. Suppose they further claimed that not only could they achieve this but that their students would be more intelligent and mentally alert than any students in history. What should our reaction be?

We might be sceptical, but if the claims could be sustained, should we be pleased? Would we welcome such a breakthrough and want our children to

go to such a university? We ought to want this. It is, after all, part of what education is supposed to be for. And if the gains in cognitive functioning were significant and the costs commensurate we would probably want them for our children and want to see them more widely adopted in education.

Now suppose, as indeed has already happened, several drugs had been shown to improve cognitive performance and had been proved to be safe for use in children. What should our reaction be? Would it be unethical to use these drugs in healthy people to enhance performance? Would it be ethical not to do so?²

Risks and benefits

Methylphenidate and several other so called chemical cognitive enhancers have been shown to significantly improve cognitive functioning and have proved safe in clinical contexts.³ Safe always means safe enough, and since no drugs are free of side effects, that always means that the consumer has judged the risks of adverse effects worth taking, given the probable benefits. Methylphenidate has been judged safe enough to be widely used in children and young people with



Anjan Chatterjee professor, Department of Neurology and Center for Cognitive Neuroscience, University of Pennsylvania, 3 West Gates, 3400 Spruce Street, Philadelphia PA 19104, USA. anjan@mail.med.upenn.edu

NO Why would anyone object to someone choosing to be smarter, better focused, and more productive? Surely cognitive enhancement has much to offer individuals and society, and legal dispensers of methylphenidate (Ritalin) should not object. Unfortunately, the case for healthy people taking this drug is not so straightforward. Doctors routinely decide whether to intervene based on a calculation of relative risks and benefits. Here, the risks outweigh the benefits.

Some doctors might reflexively think that the answer to the target question is an obvious “no.” After all, doctors are in the business of treating disease and not enhancing normal abilities. On scrutiny, this distinction proves to be unreliable, particularly when conditions lack clear categorical boundaries. For example, if individuals of short stature can be “treated” with growth hormone,¹ does it matter if they are short because of a growth hormone deficiency or because of other rea-

sons?² Furthermore, the widespread use of cosmetic surgery to enhance normal physical attributes shows that many doctors, given the right incentives and cultural framework,³ become comfortable with non-therapeutic interventions.⁴

Questionable benefit

The most obvious reason to object to using methylphenidate for healthy enhancements is that the cognitive benefits are minimal⁵ and the medical risks are not. In the United States, the Food and Drug Administration gave methylphenidate a “black box,” the most alarming of possible warnings, because of its high potential for abuse and dependence and its risks of sudden death and serious cardiovascular adverse events.⁶ Furthermore, the incidence of serious cardiac arrhythmias is likely to be higher in older people with incipient cardiovascular disease, one group that is likely to use the drugs to enhance performance. Non-physicians calling for responsible use of methylphenidate by healthy people⁷ underappreciate this risk.⁸

Besides medical side effects, there are also possible cognitive trade-offs. For example,

WHERE DO YOU STAND ON THE ISSUE?
Tell us on bmj.com
Vote in the poll on bmj.com

The drug's significant advantages include enhanced executive functioning, enhanced study skills, and improvement in the focusing of attention and in the manipulation of information²

attention deficit hyperactivity disorder (ADHD) over a long period. Since the disorder is not usually life threatening and the beneficial therapeutic effects largely depend on the same properties that make the drug an enhancing intervention, those same benefits will also justify its use from the safety perspective in healthy adults, who (presumably) value those effects as much as do those with ADHD. Moreover, methylphenidate has proved safe enough to be ethical to use in research with healthy subjects to test cognitive effects, where the use is clearly elective rather than therapeutic.

The drug's significant advantages include enhanced executive functioning, enhanced study skills, and improvement in the focusing of attention and in the manipulation of information.² As Farah and colleagues have noted: "Our regulatory agencies determine what

constitutes a sufficiently careful search for side effects and what side effects are acceptable in view of a drug's benefits . . . we see no reason why the same approach cannot be applied [in the case of neurocognitive enhancement]".⁴ This would be one reasonable approach to safety. However, here I am interested in the question of whether there are any principled ethical objections to the use of chemical cognitive enhancers in healthy individuals, not with the definition of safety.

Human nature

Clear thinking on the issue of human enhancement has been bedevilled by the issue of doping in sport. Sport, however, is not a matter of life and death, even though some might agree with the football manager Bill Shankly that it is "far more important than that." The wrong of performance enhancers in sport, if there is one, is that such substances are almost universally banned by the rules of competition; using them is therefore cheating. But absent the ban, absent the cheating.

It is not rational to be against human enhancement; humans are creatures that

result from an enhancement process called evolution (mixed as its benefits are) and moreover are inveterate self improvers in every conceivable way.

Synthetic sunshine (firelight, lamplight, and electric light) is just one accepted example of a valuable enhancement technology which, like such others as written language, education, physical exercise, and diet, creates problems of justice as well as the side effects of use and overuse. And beneficial neural changes have been reported for reading,⁵ education,⁶ physical exercise,⁷ and diet.⁸ How then are drugs ethically distinct? Before synthetic sunshine people slept when it was dark and worked in the light of day. With the advent of synthetic sunshine work and social life could continue into and through the night, creating competitive pressures and incentives for those able or willing to use it to their advantage. The solution, however, was not to outlaw synthetic sunshine but to regulate working hours and improve access. The same is, or will be, true of chemical cognitive enhancers.

Competing interests: None declared.

Cite this as: *BMJ* 2009;338:b1955

greater focus from long term use of methylphenidate could plausibly produce a loss in creativity, which generally requires a loosening of mental boundaries.⁹ Such trade-offs are rarely considered or investigated.

In considering benefits, we might postulate that being smart is good for the world. Many smart people would like to believe that products of smartness confer clear benefits to society. Perhaps the brightest getting brighter would produce trickle down enhancements into our communities. But the fact that very smart people generating complicated models to distribute financial risk contributed to the current global economic crisis should at least give us pause. Being smarter does not mean being wiser. Furthermore, this dubious benefit is counterbalanced by two other risks. These are risks of expanding social inequities and inviting coercion.¹⁰

Equity and choice

Drug enhancements will be available disproportionately to those with financial means. If enhancements are helpful in getting ahead in a competitive world, then the haves would avail themselves of yet another advantage over the have nots. Clearly, many inequities

in education, material goods, and social class, not to mention more fundamental inequities in health care, nutrition, shelter, and safety, already give the socioeconomically lucky disproportionate advantages. However, acknowledging the existence of disturbing inequities does not justify blithely adding more.

Matters of choice can evolve into forces of coercion. Implicit pressures to better one's position in some perceived social order would find a natural conduit in cognitive enhancements. Such pressures increase in "winner take all" environments, in which more people compete for fewer and bigger prizes.¹¹ Professionals in the US work 60, 80, or more than 100 hours a week to the detriment of health and hearth. Children at high end preparatory schools take methylphenidate and its analogues in epidemic proportions.¹² This trend is growing among students¹³ and even among professors.¹⁴ To not take advantage of

In the United States, the Food and Drug Administration gave methylphenidate a "black box," the most alarming of possible warnings

enhancements might mean being left behind. Coercion can also become explicit, as might occur in the military,¹⁵ if superior performance by a few is deemed necessary for the greater good. Pilots and police might face similar pressures. Closer to *BMJ* readers, residents might be forced to take enhancements after being on call to mitigate cognitive deficits brought on by sleep deprivation. Perhaps doctors older than 50 would be required to pharmacologically stave off their fraying cognitive edges.

Endorsing the legal non-therapeutic use of methylphenidate or other cognitive enhancers now is premature. The efficacy and risk of enhancers in healthy people needs to be researched adequately. This information needs to be disseminated broadly. Doctors, educators, and regulators need to articulate professional normative positions on the issue. Enforceable policies to minimise disparities and protect individuals need to be established. Until such preparations are made, it is not acceptable to recommend that healthy people take drugs to enhance performance.

Competing interests: None declared.

Cite this as: *BMJ* 2009;338:b1955

All references are in the version on bmj.com