Enhancement

Mr Daniel Wood¹, Mr Edmund Naylor², Mr Sheheryar Kabraji³, Prof. Julian Savulescu⁴

¹Oxford University Medical School, The Queen's College, Oxford, E-mail: daniel.wood@medschool.ox.ac.uk, ²Oxford University Medical School, New College, Oxford, E-mail: edmund.naylor@medschool.ox.ac.uk, ³Oxford University Medical School, Merton College, Oxford, E-mail: sheheryar.kabraji@medschool.ox.ac.uk, ⁴Uehiro Centre for Practical Ethics, Oxford, E-mail: julian.savulescu@philosophy.ox.ac.uk

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Mind-altering drugs have been used for millennia, but until recent decades their use has been largely recreational. Alcohol has a history as long as civilisation and is even used by other primates, whilst the quest for opium has had a significant historical impact. Now drugs designed for medical use have begun to be used by healthy individuals to enhance experience, intellect and ability. This poses novel ethical challenges, which we outline here.

For the purposes of the following discussion, enhancement is used to define “interventions designed to improve human form or functioning beyond … good health” (1). We recognise that this is a simplification and the subject of considerable discussion (2), but is suitable for our introduction to the topic.

The latter half of the 20th century saw the beginnings of modern neuroscience and psychiatry. These fields have largely focused on developing therapies for neurological disease but many of the treatments developed also have profound effects on the healthy brain. Until recently the negative attributes of most prescribed psychotropic drugs ensured non-medical use remained limited, but newer agents are finding a wider audience as the balance between benefits and side-effects shift.

To date the popular imagination has largely been captured by fluoxetine, the prototypal Selective Serotonin Reuptake Inhibitor (SSRI) better known as Prozac. Thanks to marketing and media coverage it has become a household name and prescriptions of fluoxetine and similar SSRIs for the treatment of depression have increased massively. This is in part thanks to a safer profile than older tricyclic antidepressants but also likely due to public pressure on the prescriber. According to the UK Office of National Statistics, anti-depressant prescriptions rose from 9 to 24.3 million between 1991 and 2001 and this rise looks set to continue. As the spectrum of pathology for which these drugs are used increases, they will inexorably become prescribed for conditions previously considered ‘normal’ parts of personality and experience such as minor depression.

Antidepressants are not simple mood enhancers, however, having multiple subtle effects on the healthy mind. Several papers have shown that a short course of SSRIs in test subjects reduces the impact of anxiety and fear on the psyche whilst
potentiating the relative weighting of positive experiences (3). There is also an effect on personality, increasing social interaction and reducing aggression (4). These changes occur within days and without an appreciable change in affect.

Society must decide whether the use of antidepressants by a healthy individual is acceptable. It has long been appreciated that people are often ‘not themselves’ when intoxicated with alcohol, but this common scenario is usually brief. Few people live life in a state of intoxication and addiction in this minority makes cessation difficult. Excessive alcohol consumption is frowned upon by society due to the harmful effects to the individual and those around him. A person taking antidepressants would have an altered mind with no overt outward signs, and yet the absence of physical addiction makes this readily reversible. Non-medical use of SSRIs enables people to alter their natural personality by deciding to take a pill. This could have a profound impact on interpersonal relations: imagine trying to interact with friends or acquaintances whose personality is to an extent determined by their latest pill. With the foundations of the individual so variable we face the ‘problem of authenticity’: who is it you fall in love with? If we can find peace and happiness in a pill will we even feel the need to fall in love or turn to religion?

These changes can be wrought today with drugs designed for a medically valid purpose. As public awareness and demand grows, pharmaceutical companies may start developing agents specifically to alter aspects of personality. Whilst in the short term it will be ethically difficult to test these drugs, the future may well see the use of pharmaceutical agents not just to treat the florid psychiatric diseases of today but also to suppress undesirable tendencies and individualism. This may eventually become manifest in ‘cosmetic psychiatry’ turning us into the happy consumers of Huxley’s Brave New World. But whilst the suppression of ‘undesirable’ emotions may seem advantageous, at what point do we suppress the role these emotions play in the rich experience of being human? Without this tapestry life would be dull, and we would have difficulty identifying with the emotions of others.

Another class of prescription drugs finding a growing consumer base are stimulants such as methylphenidate (Ritalin). Commonly used to treat attention disorders in children amphetamines have also long been used recreationally. Non-medical
stimulant use is now moving into the mainstream in an effort to boost personal productivity. Studies at American universities show a small but significant proportion of students use stimulants off-label. Not surprisingly this use often correlates with other high-risk behaviour such as smoking or binge-drinking. More concerning is stimulant use nearing 25% in universities with competitive entry requirements, especially at the most prestigious schools in the North-East (5). Stimulants have also entered sanctioned military service to improve combatant performance (6). Anecdotal evidence suggests that such practices are becoming widespread in academia and medicine. The BMA recently highlighting the issue (7), especially with regard to unknown long-term health risks and this report received coverage in national press including The Guardian (8). The latter article suggests that the use of drugs such as Ritalin and Modafinil are widespread among Doctors and undergraduate education in Britain, though the authors would contest this from personal experience.

Such a situation may, at first glance, seem inherently wrong, yet as I write I am enhanced by the cup of coffee I am drinking. The use of caffeine as a stimulant in our society is widespread and common, and whilst originally occurring naturally in some products, it is now deliberately added to many drinks specifically for this effect. The use of more potent prescription stimulants is therefore difficult to reject on a logical basis, although precedent is set by the classification of illegal drugs available today based on little evidence and logic (9). Many of the abused substances are, of course, legally prescribed and ‘abused’ off-license. In general legislation tends to trail behind technological advance, and how it will adapt to these challenges is beyond the scope of this discussion.

Without drugs we are all still guilty of enhancement. Every experience alters the neural connections in our brain resulting in potentiating of some and suppression of others in what has become known as plasticity. Education is simply a way of exploiting this process to produce an enhanced end-product. As readers of the sBMJ we have all spent many years enhancing ourselves to become good doctors. If one judges a society by how it treats its lowest then pharmacology may find a legitimate role as an adjunct to education in improving society as a whole. Enhancing drugs could allow the least gifted to keep up in an accelerating world, levelling the playing field for those with a less able genotype. Such a change would likely be resisted by
the intellectual elite, though this position is hard to justify. Pharmacological enhancement at the opposite end of the intellectual spectrum is also a double edged sword. In a competitive employment market the pressure to take drugs to compete is undesirable, as in sport. Again, this must be balanced against the potential benefits to society. The impact of pharmacology on our intellectual performance is also unclear – it may be that access to high quality education and other resources remains the limiting factor for most. Designer drugs are likely to be expensive and thus unavailable to those who would benefit most.

In addition to pharmacology, microelectrode arrays linking to computers may also eventually provide enhancement, although experiments at this stage are rather basic (10). Advances will challenge the notions of ownership – what work is our own if enhanced by chemicals or computers? This problem may avoid significant debate as any change will likely be gradual and may be accepted by default. Already, cochlear implants can be wired into the brain to correct sensorineural hearing loss and thought translation devices are finding use in paralysed patients (11). Whether the use of such innovations to ameliorate pathology is true enhancement of physiological function is debateable. Computers and the internet have become increasingly central to our lives over the last decade facilitating, rather than replacing, what humans can do. As devices continue to reduce in size and increase in power the search for more efficient interfaces between man and machine becomes an increasingly important challenge. With the iPhone we have seen the first perfection of touch-screen, and voice command is becoming widespread in our cars. Is complete neural integration is the final logical step?

The rapidly advancing field of neuroscience will result in opportunities to alter and enhance our character. Some of the ethical issues have been raised here, and other dilemmas will arise that cannot be predicted. Public and medical awareness is essential so that we are prepared to overcome the challenges before they become pressing and our hand is forced to sub-standard, insufficient response.
References

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