

Ethical Implications of Pharmacological Enhancement of Mood and Cognition

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Abstract

With advances in the molecular biology of neuroscience, there is an increased understanding of neurotransmitter systems and the biological basis of memory and mood. This has led to the research and development of highly selective drugs that serve to alter the brain for treatment and enhancement. Many ethical concerns arise about the use of pharmacological agents to alter the brain solely for enhancement. Safety, alteration of personhood, distributive justice, and the medicalization of the human condition will be discussed. However, the potential to increase one's memory and efficiency in the workplace, to eliminate socially undesirable behaviors, and to strengthen the military provides a strong argument in favor of pharmacological enhancement. In conjunction with the ethical concerns, this paper explores recent research and current and developing drugs, ultimately arguing that pharmacological enhancement is acceptable as long as certain policies are implemented.

Most of us have, at some point in time, attempted to control or alter our mood or cognitive functioning. Whether it be sipping coffee in the morning to wake up, devouring chocolate as a pick-me-up, or drinking alcohol to become relaxed and sociable, humans constantly introduce foreign substances into their bodies to achieve a desired state of mind or level of performance. In the past, society relied on chance for the development of these substances (Farah & Wolpe, 2004, p. 40). For example, an antihistamine drug candidate happened to calm schizophrenics and an antipsychotic drug candidate happened to be a better antidepressant (Farah & Wolpe, p. 40). However, molecular neuroscience has increased our understanding of neurotransmitter systems as well as the biological basis of memory and mood, which has led to the creation of drugs that are highly selective and

created for a specific purpose (Farah & Wolpe, p. 41). Currently, many promising drugs have been created for the specific treatment of Alzheimer's disease (AD), Schizophrenia and middle-age / elderly cognitive decline, yet many of these drugs also improve cognitive functioning and mood of non-afflicted individuals (Wolpe, 2002, p. 388). Thus, one must consider that psychopharmacology could be used to enhance the brain of individuals who are not clinically ill. Since the brain is the biological foundation of who we are, many ethical concerns arise regarding the use of drugs to alter the brain solely for enhancement (Farah & Wolpe, p. 35; Farah, Illes, Cook-Deegan, Gardner, Kandel, King, Parens, Sahakian, Wolpe, 2004, p. 423). Concerns about safety and personhood arise, in addition to concerns about coercion, distributive justice, and the medicalization of the human condition. On the other hand, imagine the potential to eliminate socially undesirable behaviors, increase efficiency in the workplace, and increase one's memory. Moreover, in our society one must not overlook the personal freedom to choose to utilize, or not utilize, the latest technology. By familiarizing ourselves with recent research and current and developing products, and examining the ethical reasons in support for pharmacological enhancement, personal and societal objections to it, and respective counter-arguments to the objections, pharmacological enhancement becomes more apparently ethical and should be allowed, given that vigilant policies are implemented. However, some questions must be addressed and definitions presented in order to fully understand this debate.

For clarification, ethicist Paul R. Wolpe asks: How does one differentiate between the terms "treatment" and "enhancement (Wolpe, p. 388)?" It could be said that treatments remedy the sick, those below average, the subnormal. Enhancement is then the improvement of individuals who are not sick, those who are average, normal (Wolpe, p. 388-90). One could argue that no individual is "normal" and thus pharmacological intervention can be considered treatment, potentially eliminating the controversy of enhancement. As one can imagine, a deep philosophical discussion could pursue because one would then need to define "normal" and "average" in order to differentiate these terms (Wolpe, p. 388). Furthermore, who is responsible for formulating the definitions? For example, in most Western societies, traits that are deemed

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valuable, such as happiness, are normal, well, and accepted and any increase in such a trait would be considered enhancement. Traits that people want to do away with, such as criminality or depression, are usually characterized as illnesses or subnormal and can be “treated (Wolpe, p. 388).” Any definition of “normal” will fail to be universal because it is the result of compromised values which are culturally derived and influenced by particular societies (Wolpe, p. 390). Thus, for this discussion, enhancement shall be defined as improving the psychological functions of individuals who are not clinically ill, as defined by medical specialists. Furthermore, cognition shall be defined as thinking skills that include perception, memory, awareness, reasoning, judgment, intellect, and imagination. Mood shall be defined as a psychological state of feeling. Exploring the present state of research gives the context needed for further understanding the debate.

Current research targets enhancers for mood, memory and executive functions, sleep, libido, and appetite (Farah et al, p. 421). Although military and private research for cognitive and mood enhancing drugs is ongoing, “smart pills are not around the corner (Hall, 2003, p. 56).” They are years away from government approval but several are in clinical testing or are under development (Hall, p. 57). In fact, several drugs that target other cognitive functions are currently available including Dexamphetamine for wakefulness, Adderall and Ritalin for increased attention and working memory, and Modafinil for wakefulness, increased attention, and alertness (Hall, p. 60-2; Turner, Robbins, Clark, Aron, Dowson, Sahakian, 2002). Also, Donepezil, Rivastigmine, and Galantamine have been shown to prevent cognitive deterioration and slow memory loss in AD patients and show neuroprotective effects over the long term (Hall, p. 56). Moreover, drugs like Selective Serotonin Reuptake Inhibitors (SSRI), such as Prozac, exist to reduce negative moods and increase affiliation behavior without serious short-term side-effects (that cannot be treated with other drugs) (Farah & Wolpe, p. 41). And with the help of molecular biology in understanding and identifying neurological processes, novel approaches are being implemented to create new drugs for treating diseases and enhancement (Farah & Wolpe, p. 41). Drugs are being developed to target the initial cascade for memory by utilizing ampakines to initiate long-term potentiation which is implicated in memory formation (Farah & Wolpe, p. 42). In addition, MEM1414, a CREB enhancer, targets the CREB gene with the intent of enhancing memories (Farah et al., p. 422; Hall, p. 62, 64-5). Benzodiazepines and CREB suppressors are under development to repress traumatic memories (Farah & Wolpe, p. 42; Hall, p. 62, 64). With additional research, drugs are becoming increasingly selective and risk-averse (Farah & Wolpe, p. 41). Thus, current drugs that exhibit effective treatment

of clinical ailments and developing drugs that show promise are becoming increasingly suitable for enhancement.

Aside from solely understanding the promising laboratory tested effects of current drugs, there are numerous ethical reasons in support of pharmacological enhancement. Living in an increasingly skill-driven and socially interactive society, one must be focused and have an efficient memory to be successful (Rose, 2002, p. 975). Ritalin and Adderall are two drugs that enhance attention and improve performance in problem-solving and other tasks requiring the executive function use (Farah & Wolpe, p. 42). Those who are average or below average for certain memory tasks may find these drugs helpful in advancing careers, making a better living, or surmounting career-threatening circumstances. Furthermore, drugs, like Donepezil, could be used as a prophylactic (Farah & Wolpe, p. 41). Donepezil slows memory loss in AD patients and could be used to slow age-related gradual cognitive decline that ultimately affects everyone, thus improving the quality of life as one matures (Hall, p. 63). In addition, several careers could benefit from enhancement—society could have safer flights, safer medical encounters, and a stronger military (Wolpe, p. 392; Hall, p. 57, 60).

Society could further benefit from pharmacological enhancement if it is implemented in the criminal justice system (Farah, 2002, p. 1125). For instance, although controversial in its own right, convicts could potentially be sentenced to take enhancement medications in order to suppress further devious, criminal behavior. Some may object to forced medication, but anti-androgen drugs are already used to treat convicted aggressive persons (Farah, p. 1125-6). Allowing convicts the choice of either medication or jail time may be as effective and less controversial. In addition, enhancement could serve as an equalizing force in society (Farah et al., p. 423). It has the potential to eliminate inequalities accumulated in other sectors of society. For example, in a cognitive test, a poor education could be augmented with brain enhancing medication.

Understanding the objections to pharmacological enhancement of cognition and mood is important in this debate and further enables one to formulate counter-arguments to these objections. These objections and counter-arguments can be separated into issues users face and issues society face. Issues that individuals face include the concept of personhood; many believe that it is unnatural to modify the brain. Furthermore, it is argued that people are characterized by their cognitive abilities and by altering the brain one alters the person's values, moods, and perspectives and ultimately that person becomes unrecognizable to others (Farah & Wolpe, p. 36, 43; Farah et al., p. 423-4). Although valid, this argument is not sound and as Arthur Caplan explains, people who

make this argument have modified themselves in some other way, using eye-glasses, artificial hips, electricity, and automobiles (Caplan, 2003, p. 105). Also, do people not drink alcohol and caffeine, take Ritalin and Prozac, and use nicotine or even marijuana to alter their cognitive states (Wolpe, p. 388)? Enhancement via “drugs” is already a part of life (Farah & Wolpe, p. 41). There is already a general acceptance of other enhancement techniques like cosmetic surgery in addition to non-neuroscientific cognitive interventions like meditation and psychotherapy. Could using pharmacological enhancers help individuals attain self-actualization rather than assuming that the individual is being altered?

Another moral issue is the belief that people should earn their achievements, the colloquial “no pain, no gain” argument. Leon Kass, a member of President Bush’s Bioethics Panel, states that achievements via drugs are equivalent to cheating (Hall, p. 57). It is further argued that accomplishments are meaningful because of the effort put forth and that reducing effort will reduce meaning (Farah & Wolpe, p. 43). But who says that taking cognitive enhancing drugs reduces effort? Individuals still need to take time to learn information, although the effort may be more concentrated, efficient, and less time consuming. In addition, is the meaning of the experience of walking a few miles lost just because someone drives to work everyday and never walked such a distance? That person still understands the meaning of walking and can imagine how difficult it would be to walk such a distance everyday.

Although common to bioethical debates, an individual’s safety is an important issue here as well. When manipulating very complex systems like the brain, there is great risk of serious and unanticipated side-effects, especially in the long-term (Farah et al., p. 423; Farah, p. 1125). Perhaps taking memory enhancers will lead to unforeseen premature cognitive decline (Farah et al., p. 423). Additionally, enhancers may affect the selectivity of neurological processes, enhancing traumatic memories and unimportant details that are supposed to be forgotten. When one process is targeted, other processes may be affected and unexpected linkages may arise (Wolpe, p. 393). For example, an enhancer may increase memory but negatively impact mood and attention. In an experiment in which mice were given a memory-enhancing drug, they experienced increased sensitivity to pain in addition to better memory (Wolpe, p. 393). There are many risks and unknowns that seem frightening. However, continual improvement has yielded newer, increasingly specific and safer drugs with fewer side-effects (Farah & Wolpe, p. 41). For example, SSRIs used as antidepressants are specific to mood (Farah & Wolpe, p. 41). They have very good safety records and even exhibit neuroprotective effects over the long term (Farah & Wolpe, p. 43). Although some may have side effects, like Prozac causing

Erectile Dysfunction (ED), other specific drugs used in conjunction can treat the side effects, like supplementing Prozac with Viagra to treat ED (Farah & Wolpe, p. 41). So long as research continues to reduce risk and Phase Trials prove promising, enhancement will be increasingly tolerable and acceptable.

Implicit coercion is another concern regarding enhancement. Since enhancement could increase the quality of executive functions, employers may be enticed to hire individuals with greater skills and increased efficiency while those who are not enhanced will be at a disadvantage (Farah et al., 422; Farah, p. 1125). Thus, there may be a feeling that if everyone else is enhancing their brain, others will be left behind if they fail to do so. Although decision-making should be free from coercion, one should realize that self-improvement is commendable in Western society and many religions even preach that it is a person’s moral obligation to improve one’s self and one’s children (Caplan, p. 105). Thus, there should be policies created that minimize implicit coercion so that individuals can exercise their freedom to choose based on their values, free from coercion.

Although issues individuals face are important to consider, so too are issues that society faces. Explicit coercion may arise in the workplace or in the academic arena. For example, employers could require employees to enhance their efficiency through pharmacological means in order to maintain their jobs; competitive preparatory schools and universities may require their students to enhance their cognitive functions so as to be the most competitive institutions (Caplan, p. 104-5). Although one can argue that the market-driven society is competitive and promotes improvement, accepting the possibility of explicit coercion is turning a blind eye to ethics and acquiesces to the pressures contributing to inequality (Caplan, p. 105; Dees, 2004, p. 952). Yet, one cannot simply outlaw pharmacological enhancement without infringing on personal freedoms and equality since these same drugs used for enhancement would be allowed for treatment (Farah et al., p. 423). Instead, it is important to have laws and regulations extended to guarantee individuals the right not to enhance themselves without being discriminated in the social and economic sectors of society. With proper laws and regulations to manage this rising technology, society can help guarantee free choice and fair access. This, too, is true when considering distributive justice. Because access to drugs has a clear economic factor, there tends to be an unequal distribution of drugs among different socioeconomic classes (Farah et al., p. 423; Farah, p. 1125). The cost barriers compound the disadvantages of the lower class by restricting access. We already live with inequalities in society where the upper and middle classes can afford the latest advancements in health, yet the government does not restrict access because

of inequity (Farah et al., p. 423). Once again, society must not deny enhancement because it is not equally accessible, but rather address the gross inequalities of society due to other factors and in turn grant fair access for all classes.

When considering how enhancement drugs affect society, one must examine the possibility of creating more lifestyle drugs. Pharmacological enhancement could potentially raise the standards of being “normal” and variants of human behavior could be medicalized (Flower, p. 183). For example, if most people enhance their mood by taking Prozac, then “happy” becomes “normal.” Thus those who do not take Prozac and are not perfectly “happy” are considered subnormal and medically “sick.” In medicalizing human behavior, society changes the “complaints of the healthy to the conditions of the sick” and in doing so, alters the definitions of competence, illness, mental health, and death, ultimately changing the moral and legal understanding of accountability and responsibility (Flower, p. 183). Imagine the impact this would have on the criminal justice system. If committing crimes are abnormal and this behavior is eliminated in individuals who enhance, such behavior could potentially be perceived as sickness and consequently, criminals may not be held accountable for their actions. Although valid, I contend that lifestyle drugs already exist (Ritalin in academics and Viagra enhancing libido) as evident in a \$20 billion market (Hall, p. 65; Flower, 2004, p. 182). Medicalization has already occurred with mild depression and social anxiety. In fact, with medical advancement, research for therapies leads to inevitable enhancement and medicalization. Society welcomes advancement in technology in which individuals are capable of adjusting in such a dynamic society without terrible consequences. Based on this, society will likely adjust accordingly in the future when new pharmacological agents are introduced as evidenced currently with Viagra and Ritalin.

Neuroscience and molecular biology are amazing fields of study that hold great promise for future pharmacological treatments. Ethical concerns about morals, safety, personhood, coercion, distributive justice, and the medicalization of the human condition are all noteworthy and invaluable in this bioethical debate. However, with the potential benefits of future and developing drugs, the increasing selectivity that they exhibit, the decreasing potential risk they pose, and the consideration that we live in a competitive market-driven

society, enhancement is increasingly acceptable and will likely be greeted with open arms—but not without some skepticism. Furthermore, it is imperative to create advisory and regulatory panels to devise regulations on the ethical use of enhancement drugs and to decide which ones are acceptable. Additionally, it is important to have legislatures create laws that would limit any injustices or coercion that might transpire. Furthermore, the criminal justice system should continue to use pharmacological enhancement with novel drugs but only on a voluntary basis and as an alternative or supplement to incarceration.

Obviously, many additional questions arise in this debate. For instance, what will be each party’s role (Farah et al., p. 424)? Will physicians still act as gatekeepers? Will parental consent uphold? How will employers and educators be affected? Ultimately, further discussion is necessary to answer these and other questions that arise in this debate. 🐾

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