

THE MODERN DEBATE OVER COGNITIVE ENHANCEMENT

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Cognitive enhancement is the use of technology to improve normal cognitive function. There has been substantial debate in the past decade over the propriety of widespread acceptance of cognitive enhancement, with some taking the position that we have a moral obligation to enhance^[1-2], others suggesting that cognitive enhancement is the first step down a slippery slope to cosmetic neuropharmacology^[3], and still others staking out a middle ground of cautious acceptance^[4]. Thus, cognitive enhancement has emerged as a well-trod issue of modern biopolitical discourse.

Why the controversy? One source of concern centers around what is commonly known as the treatment-enhancement distinction which suggests that the proper role of medicine is to treat illness rather than to improve normal function^[5]. In this view, the use of medical technology to enhance individuals beyond normal is outside of the scope of medicine; in an era of constrained resources and expensive medical care, the treatment-enhancement distinction calls upon us to reserve medical technology to those for whom the need is substantial. The treatment-enhancement distinction highlights the fact that the use of cognitive enhancers may have implications not just for the subject who uses them, but for society as well. It is for this reason that cognitive enhancement has become such a hot-button issue in the new field of neuroethics. Four cardinal concerns dominate when neuroethicists discuss cognitive enhancement^[6], and I shall briefly review them in the paragraphs that follow.

The first and most challenging of the cardinal concerns for many is safety – whether the risk of

using of technology to improve cognitive function is worth the benefit^[7]. But what, exactly, is the benefit afforded by cognitive enhancers and how do people view the value that such benefit affords? One way of thinking about this question draws attention to the distinction that I have made between enhancement and restoration^[8], a concept consistent with Daniels’ normal function model^[5]. In such an account, enhancement is the use of technology to improve cognitive function in persons who have no measurable deficit, while restoration is the use of cognitive enhancers in an attempt to return function to some previously attained level. Many feel that the benefit of restoration is greater than that of enhancement^[4,6,9]; consistent with this view is our finding that physicians are significantly more comfortable prescribing cognitive enhancers to older than younger individuals^[10]. Irrespective of age, physicians report substantial worry about the safety of the use of both existing and future pharmacological agents for the purpose of cognitive enhancement^[10].

The second cardinal concern relates to principles of fairness, a worry that is usually termed the distributive justice argument: that allowing people to use cognitive enhancers will further increase the gap between the ‘haves’ and the ‘have-nots’ People tend to view inequities as acceptable when they involve differences in effort, in which case they endorse meritocratic perspectives on the unequal distribution of goods, while they tend to have mixed feelings about inequities that involve luck, often characterizing such disparities as unfair^[11-12]. In this context, the use of cognitive enhancement is considered a form of cheating, a shortcut to suc-

cess, and debate rages about whether we should heap opprobrium upon the practice for this reason^[9, 13-15].

The third cardinal concern is that peer pressure to enhance is an unwanted consequence of the introduction of cognitive enhancers. Peer pressure is a social mechanism for enforcing norms^[16-17]. Some norms are perceived of as being benign and may even be construed as welcome guidelines for one's actions, whereas others chafe at our sensibilities and may be disquieting. Given the ubiquity of societal norms pertaining to self-improvement and competition, the key question for us is not whether people feel peer pressure to enhance: we can be fairly confident that they will. Rather, the unresolved question that our current experiments are exploring is whether the public view peer pressure to enhance as a bothersome norm.

The fourth cardinal concern relates to whether the success that individuals achieve when using cognitive enhancers will be viewed as authentic, either to themselves or to others^[18-20]. The authenticity concern is largely an outgrowth of the widely held sentiment that valorizes hard work and frowns upon shortcuts to achieve personal growth. We have adapted the term pharmacological Calvinism, originally used to describe a point of view which suggested that the non-therapeutic use of drugs is morally bankrupt^[21] to describe this ethical stance with respect to drugs. In North America, pharmacological Calvinism is an important societal value that dates back to Weber's introduction of the Protestant work ethic^[22], and I would suggest that pharmacological Calvinism is an important contributor to the authenticity debate regarding cognitive enhancement. Because there is intrinsic value to hard work (building character, a sense of achievement, etc.), the use of outside agents to enhance one's cognitive abilities has been suggested to cause individuals to feel that they have lost something of inestimable value^[15]. At the same time, easy means to ends are common in the modern world: witness the proliferation of microwave meals available in minutes, no-iron laundry, and cars as convenient means of travel. The tension that pharmacological Calvinism highlights is that between the quick

fix and the well-earned reward. Less religious value than attitudinal construct, viewing the debate over cognitive enhancement through the lens of the work ethic puts the authenticity debate in context. The debate over the propriety of cognitive enhancement is unlikely to abate anytime soon, but to date the discussion has largely been academic with its focus on extant drugs such as Adderall that are only moderately effective^[23] and the hypothetical cognitive enhancers of the future^[24]. The discussion takes on added urgency as relatively inexpensive means of modifying human brain activity such as transcranial direct current stimulation move from the laboratory to the mainstream^[25-26]. The prospect of a device that is cheap (probably), safe (maybe), and effective (time will tell) is something akin to the holy grail of cognitive enhancement, and if the initial claims for these devices endure further scrutiny, they may have an impact the practice of enhancement in the relatively near term. As such, the urgency with which the neuroethics community must think through the relevant ethical issues has never been more urgent.

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REFERENCES

- [1] Harris J (2010) Enhancements are a moral obligation. *Wellcome Science* 1: 16-17.
- [2] Savulescu J and Kahane G (2009) The moral obligation to create children with the best chance of the best life. *Bioethics* 23(5): 274-290.
- [3] Chatterjee A (2004) Cosmetic neurology: the controversy over enhancing movement, mentation, and mood. *Neurology* 63(6): 968-974.
- [4] Greely HT *et al.* (2008) Towards responsible use of cognitive-enhancing drugs by the healthy. *Nature* 456(7223): 702-705.
- [5] Daniels N (2000) Normal functioning and the treatment-enhancement distinction. *Cambridge Quarterly of Healthcare Ethics* 9(3): 309-322.
- [6] Farah MJ *et al.* (2004). Neurocognitive enhance-

ment: what can we do and what should we do? *Nature Reviews Neuroscience* 5(5): 421-425.

[7] Hyman SE (2011) Cognitive enhancement: promises and perils. *Neuron* 69(4): 595-598.

[8] Reiner PB (2010) Distinguishing between restoration and enhancement in neuropharmacology. *Virtual Mentor* 12(11): 885-888.

[9] Schermer M (2008a) On the argument that enhancement is "cheating." *Journal of Medical Ethics* 34(2): 85-88.

[10] Banjo OC, Nadler RC and Reiner PB (2010) Physician attitudes towards pharmacological cognitive enhancement: safety concerns are paramount. *PLoS ONE* 5(12): e14322.

[11] Almas I, Cappelen A, Sorensen E and Tungodden B (2010) Fairness and the development of inequality acceptance. *Science* 328: 1176-1178.

[12] Cappelen AW, Sørensen EØ and Tungodden B (2010) Responsibility for what? Fairness and individual responsibility. *European Economic Review* 54(3): 429-441.

[13] Bostrom N and Roache R (2011) Smart policy: cognitive enhancement and the public interest. pp 1-14 In J Savulescu, RT Meulen and G Kahane (eds.) *Enhancing Human Capacities*. Wiley Blackwell, Oxford (UK).

[14] Savulescu J (2006) Justice, fairness, and enhancement. *Annals of the New York Academy of Sciences* 1093: 321-338.

[15] Schermer M (2008b) Enhancements, easy shortcuts, and the richness of human activities. *Bioethics* 22(7): 355-363.

[16] Coggans N and McKellar S (1994) Drug use amongst peers: peer pressure or peer preference?

Drugs: Education, Prevention, and Policy 1(1): 15-26.

[17] Hansen W and Graham J (1991) Preventing alcohol, marijuana, and cigarette use among adolescents: peer pressure resistance training versus establishing conservative norms. *Preventive Medicine* 20(3): 414-430.

[18] Elliott C (2011) Enhancement technologies and the modern self. *Journal of Medicine and Philosophy* 36(4): 364-374.

[19] Erler A (2010) Does memory modification threaten our authenticity? *Neuroethics* 4(3): 235-249.

[20] Levy N (2011) Enhancing authenticity. *Journal of Applied Philosophy* 28(3): 308-318.

[21] Klerman G (1972) Psychotropic hedonism vs. pharmacological calvinism. *The Hastings Center Report* 2(4):1:3.

[22] Weber M (1959) *The protestant ethic and the spirit of capitalism* (p. 320). Scribners.

[23] Smith ME and Farah MJ (2011) Are prescription stimulants "smart pills?" The epidemiology and cognitive neuroscience of prescription stimulant use by normal healthy individuals. *Psychological Bulletin* 137(5): 717-741.

[24] Lynch G, Palmer LC and Gall CM (2011) The likelihood of cognitive enhancement. *Pharmacology, biochemistry, and behavior* 99(2): 116-29.

[25] Hamilton R, Messing S and Chatterjee A (2011) Rethinking the thinking cap: ethics of neural enhancement using noninvasive brain stimulation. *Neurology* 76(2): 187-193.

[26] Kadosh RC, Levy N, O'Shea J, Shea N and Savulescu J (2012) The neuroethics of non-invasive brain stimulation. *Current Biology* 22(4): 108-111.