

# Cognitive Enhancement and Personal Identity

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## ABSTRACT

Enhancing cognition is a complex activity, for the sake of which humanity has developed a rich array of techniques and skills. We can distinguish between three categories: a) cognitive supports and education; b) neural cognitive enhancers: drugs and other ways to improve the functionality of cognitive neural networks; c) technological cognitive enhancers: implants, extended minds and technological supports variously integrated in the neural cognitive networks. Applying a version of the Parity Principle, I argue that there is no morally relevant difference in the three categories. What we want to preserve while using these techniques is not the biological status quo of the mind of persons, but rather personal identities. In this perspective, there can be no general objection to cognitive enhancement. Every technique, even very traditional ones, have their drawbacks, especially when they threaten to reduce the autonomy of agents in moulding their own personal identity.

## Introduction

In this paper, I would like to propose a rather general argument in favour of cognitive enhancement. Yet, at the same time, I suggest that we should consider cognitive enhancement as a part of a more general issue, i.e. personal identity (or, as I would rather say, individual personality) as the result of a set of practices, actions and choices by which we define who we are through our practices. These practices and their connection with our personal identity offer a criterion for evaluating particular enhancing techniques.

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What is cognitive enhancement? It is rather difficult to give a straightforward definition, since cognition is an activity which involves a vast array of practices, means and social systems. In the history of the debate, quite narrow definitions of cognitive enhancement were initially given:

Interestingly, the term ‘cognitive enhancement’ was originally used to describe the treatment of disease-associated cognitive impairment, such as in dementia and schizophrenia, and involved using various strategies to boost cognitive functions. The meaning of the term was subsequently broadened to encompass the use of interventions for mild cognitive impairment (MCI), currently defined as cognitive deficits that do not overtly impair function. Nowadays ‘cognitive enhancement’ is often applied exclusively to interventions in normal ageing processes and in ‘healthy’ people for non-medical purposes. (Ferrari, Coenen, Grunwald 2012, p. 220)

It is now common usage to understand cognitive enhancement in a wider perspective, and particularly not only in relation to health or illness. The process of cognition is extremely complex, and it must be stimulated if it is to be efficient according to our needs in the context we find ourselves in. Conceptually, we have good reasons to consider as “cognitive enhancement” *any activity that fosters our basic cognitive abilities.*

Cognition is not just a simple act performed by an individual: this would be a rather reductive view of the matter. Cognition is a process whereby information is acquired, selected, memorized and put to use in the pertinent setting. A complex interplay of abilities and means are involved in this process and it can be said that this is at the same time an individual and a social activity: a reasonable validation of one’s cognitive acts often requires some kind of validation from other agents, just like when, in front of a strange phenomenon, I wonder: “Should I believe what I see?”. In a case like this, I usually look for other agents to confirm or disconfirm my impression, and although it can happen that we are all deluded, still we consider visual testimony as a sufficient proof of real events in our everyday life.

Gathering information has always been a social activity, where direct personal experience is always exposed to limits and where I do need to trust, at least minimally, the information given to me by other people (that’s why the virtues of Accuracy and Sincerity are so important, as Bernard Williams has warned us; see Williams 2002). Thus, even if single acts of cognition are the works of individuals, cognition in general is a socially embedded activity, especially as we move away from a very basic condition of elementary knowledge.

To put it shortly, *cognition may be conceived of as an individual activity in a social environment*. Exchanging information is one of the main ways to get to know something, which is the first step of cognition. In comparison with other species, human beings have developed the ability of non-genetic learning, which has detached information from the body and made it quickly available to other individuals through communication and education. This is the main way by which human knowledge has improved since the raising of the Homo Sapiens (Williams, 2002).

So what does it mean to enhance cognition? In the first place, it should mean to enhance the ability of individuals in a social context to acquire, select, memorize and make use of information. Therefore, cognitive enhancement can be understood as the increment of our ability as individuals to acquire, select, store and use knowledge.

Basically, this is an activity in which we as a species are involved since our appearance on earth. At the individual level, our ability of acquiring and storing information for present or future use is enhanced by a number of possible means, from memorization techniques to biotechnological implants: before asking the moral question about cognitive enhancement, it can be useful to distinguish some categories of means that we employ for this goal.

### 1. Three Categories In Cognitive Enhancement

For the sake of the argument that I want to develop here, we might recognize three categories of cognitive enhancers.

*Cognitive Supports and Education*: There are traditional means for developing (enhancing) cognitive abilities: books, schools, higher education, courses, meetings, libraries, archives, and today databases, Internet encyclopedias, google and other search engines, and even forums and social networks. None of these is an enhancement *per se*: if you do not use them appropriately, your cognitive abilities remain just the same as before. A book does not enhance cognition if you do not read it; and sometimes even when you do, especially if it is a book of philosophy.

These means need an effort by the individual, usually in connection with a socially established training practice. Therefore, they are more appropriately defined as cognitive supports utilized within activities related to education and training. Furthermore, these means are in quite a clear sense *external* to the individual: they enhance cognition as the result of the training of a

natural endowment. Yet, we should be aware that these means do enhance cognition only if methods and information are in an important sense *internalized*, i.e. made part of the individual. We usually call this rather artificial endowment “culture” or education (in the sense of some special training) or “being well read”.

These means of cognition are widely supported and valued worldwide. It is deemed noble to improve one’s knowledge and it is considered debatable not to cultivate one’s cognitive talents. Apart from the education of kids, who need to develop basic cognitive abilities and for whom it has been a long and still unfinished fight to ensure a fair access to schooling, even the most traditional means of cognitive enhancement are unevenly distributed and used to be very elitist. Criticism against restricted access to higher education were raised only in a relatively recent time and had a burst out in the 1970s, while they seem to fade more recently. Nowadays, it seems that access to universities has been made less easy, also in economic terms. Apart from this, cognitive competition has been traditionally valued as an enhancer for students. In general, we tend nowadays to speak about lifelong education, meaning that we still think that to improve one’s knowledge is a lifelong duty and an opportunity. As for issues of justice, it is not cognitive equality which is looked for by general educational programs, but rather fairness of access to the means of cognitive improvement offered by higher education.

There have been critiques to highly specialized training, even in science: an excessively restricted scope of interest in an area of knowledge is said to make persons rather blind to general issues and, in terms of personal identity, rather prone to give up other moral and psychological features in their character for the sake of science.

In this sense, even traditional supports to cognitive abilities have been subject to criticism. To sum up, these means of enhancing cognition show pros and cons.

Pros: schooling, learning and specialized training are easy to share, they can enter into public programs and be fairly distributed among the population. They are based on methods and contents and enter into the constitution of the individual as tools for the construction of one’s personality. They are based on human relationships such as that of teacher and student, or expert and trainee.

Cons: these means require extensive and expensive public programs in order to be effective on a large scale. The rate of failure of the process depends on many factors: the effort of the students, the ability of teachers, the validity of

the methods. Books and science are not always accurate as they should. The individual is often put under a very heavy stress in order to enter the competitive world of knowledge. A personality entirely devoted to scientific knowledge is not necessarily a flourishing one.

*Neural Cognitive Enhancers:* A second category of enhancers can be called “Neural Cognitive Enhancers”: I enclose here various ways to improve the functionality of cognitive neural networks in their biological status. They are mainly drugs used therapeutically to treat syndromes which influence the ability to pay attention and stay alert, such as ADHD and narcolepsy. The drugs are mainly methylphenidate and modafinil; in some cases, beta blockers are used as well. In these cases, these drugs have proven effective in ameliorating the cognitive functions of patients. There is some evidence (though its meaning is disputed) that these drugs are used without medical prescription by university students in order to enhance their cognitive abilities (Rabiner et al., 2009). The percentage of students taking these drugs is not very high and it seems it is fading in recent years. Furthermore, there is no convincing evidence that they work as enhancers of the performance of students, who seem to be motivated by the goal of obtaining higher scores. Yet, it is disputable whether any kind of real enhancement is going on here or not: many of the students using these drugs were reported as showing signs of an undiagnosed attention deficit disorder or other cognitive problems. Using these drugs they do perform better than they used to, but they do not perform better than the most brilliant students, who do not seem to make use of these drugs. So it seems that the motivation is rather a struggle for equality rather than enhancement. So, it has been noted that if such motivations are indicative of self-treatment we could expect the baseline of academic success of students taking cognitive enhancers to be below average due to their undiagnosed cognitive deficits by comparison to the average student body. Indeed, this expectation, although tentative, has been suggested by Rabiner et al. (2009) who found that students engaging in cognitive enhancement did indeed have lower than average academic scores and were thus struggling academically in comparison to the main student body. (Outram, 2012, p. 177)

Therefore, it may be suggested either that we revise the expectation that such non-medical use of stimulants for academic purposes is necessarily cognitive enhancement on the basis of being undertaken by truly healthy individuals, or we reflect upon the difficulty of separating self-treatment from enhancement. (Outram 2012, p. 177)

It can therefore be argued that «it should not be assumed that all forms of nonmedical stimulant use are necessarily forms of cognitive enhancement» (Outram 2012, p. 180). If we accept a more restricted definition of cognitive enhancement (in this category) as «the use of drugs and other interventions to modify brain processes with the aim of enhancing memory, mood and attention in people who are not impaired by illness or disorder» (Hall, W. 2004. Feeling 'better than well'. *EMBO Reports* 5 (12): 1105–1109) we might question that so far we have a convincing evidence that healthy students use cognitive enhancement drugs and that, even if they do, that it is effective in enhancing their cognitive abilities. (Perhaps the really smart ones do not need enhancers or they do not want to use them).

Of course, these drugs do not substitute for personal efforts and hard work in gathering, selecting, storing and using information: traditional ways of gaining knowledge are simply made somewhat easier. In short terms, a more focused attention naturally ends up in better memorized data. The real challenge is to integrate these information in a *body of knowledge* available to the individual in the circumstances where it is needed. There is no evidence that this happens, since even the performance of a student is measured rather on single tasks (examinations) than on a lifelong competence.

An objection that is quickly raised against the use of these drugs, especially in students (but in scholars as well), might be more of a psychological rather than of a moral kind: if the environment is highly competitive, I will need to be always at my more-than-best in order to survive and win competitions. Now, if I believe that my performance depends on stimulants (and maybe not only cognitive ones), it is very likely that I will develop a dependence on them. Or, at least, I will be inclined to believe that I am not adequate to my environment unless I take these enhancers. There is little evidence on side effects of these drugs, but this kind of dependence is not of the organic kind.

This objection must be clearly distinguished from the so-called objection of “inauthenticity”, i.e. that the drugs make me somewhat “different from what I am” – as it is sometimes said of antidepressants (e.g. Prozac) used off-label as mood stimulants. Now, to be clear on this point: there is no “original self” under threat here, since in the (Kantian) perspective I am assuming the self is an ongoing construction, not a given and not anything which precedes action. The objection is rather that building one’s personal identity relying heavily on stimulants or enhancers may offer good results in single performances but has the drawback of projecting my self-image as that of a less-than-adequate person

when enhancers are not available. (It is like when super-heroes lose their powers: they immediately fall prey of a dire identity crisis).

So, we can sum up pros and cons like follows:

Pros: there is no convincing evidence, but students using these drugs do report increased attention and memory. It is to be seen whether this improves creativity and the ability to trace connections between pieces of information, so that what is learned is turned into a reasonably stable body of knowledge. In this case, it is certainly a form of cognitive enhancement, which per se cannot be but good. The data are missing, though.

Cons: The risk of psychological dependence and underestimation of oneself in the absence of enhancers should not be dismissed too easily. After all, we look for improved cognition in order to be better persons (see below). The effects of these enhancers seem to be short-termed, and still an effort on the part of the individual is required. Concentration is enhanced, but it is not clear that knowledge is in the end incremented. We do not know what the real effects of long-term use are, in terms of physical effects, psychological dependence and efficacy in extending the knowledge available to the individual.

*(Bio-)Technological Cognitive Enhancers:* Drugs seem to be able to alter the functionality of neurons without altering the biological status of the brain. Some other procedures are more invasive. I am thinking here of technological supports which can be variously integrated in the autonomous functioning of neural cognitive networks. Among these we can further distinguish two subcategories: a) devices which simply directly stimulate the brain (deep brain stimulation, transmagnetic stimulation, genetically modified neural cells); b) one can imagine of neural implants, microchips, extended minds and any kind of hardware added to the brain as an extension of memory or a further PCU. There is a lot of speculation when we enter this third category of enhancers.

With respect to deep brain stimulation and transmagnetic stimulation, we have little or no empirical evidence of anything that could be called a widespread use of these technologies by members of the public wanting to enhance their abilities. Indeed, the British Medical Association report on cognitive enhancement has highlighted, such technology is largely experimental and it is “highly questionable whether healthy people would want, or should be encouraged to want, to have invasive brain surgery, with all its attendant risks, in order to enhance their cognitive ability”. In a similar vein, concerning transmagnetic stimulation, the report declares that “[a]lthough

research has identified some small, short-lived, task specific improvements in a laboratory setting, this is very different from the significant, long-term, useful improvements that would be required to justify its use in real-life settings and on a population basis”. (quoted in Outram 2012, pp. 174-175)

Biomedical cognitive techniques include the administration of drugs, implants of genetically engineered or stem-cell-grown neural tissue, transcranial magnetic stimulation, computer/brain interfacing (already used to simulate vision and enable movement in people with severe neurological damage), and (perhaps someday) the application of genetic engineering and/or synthetic biology methods to human embryos or gametes. (Buchanan, 2011, p. 146).

The border between this kind of enhancers and other devices that we normally use today (e.g. smartphones) and will probably use even more in the future is difficult to trace clearly. Basically, the difference is in that these biotech enhancers are integrated in the “normal functioning” of the brain, while present devices still seem to be detached from our body. I do not want to enter here the issue of extended minds and the self, but it is clear that if we consider cognitive enhancement in a sufficiently wide perspective, we have to consider the following issue: to what extent do we consider ourselves as defined by our degree of knowledge as individuals?

In terms of common sense psychology, our cognitive endowment is as large as the information available to us in a reasonably short time (on the analogy of working with our existing memory and associative abilities). But it is becoming more and more common for us to consider the memories of our external devices as (easily reachable) parts of our memory.

Taking the famous example of Otto and Inga, most of us are more or less in the middle: we do remember a lot of things about ourselves and our town, but who is not using googlemaps when she does not remember exactly how to reach the Metropolitan Museum or when she is looking for the nearest affordable restaurant (“yes, I’ve visited one not far from here a couple of months ago, but where it was precisely and how was it called?”)?

Biotech implants, although only imagined so far, are thought of as internal to the individual, integrated in the normal functioning of the brain. This is why they are not subject to the objection of dependence: if we imagine them as technological devices which, one day, might take from the body itself the energy they need to work, there is no dependence here, apart from failures which are analogous to illnesses. Expanding our memory is certainly a

cognitive enhancement, and if this can be done without impairing other brain functions there seems to be no reason to object to it.

## 2. A Parity Principle Between Traditional And Non-Traditional Means

The strong version of the Ethical Parity Principle (sEPP) introduced by Neil Levy says that «alterations of external props used for thinking are (*ceteris paribus*) ethically on a par with alterations of the brain» (Levy, 2007). The formulation is a bit strange, since we are likely to use the Principle in order to judge which alterations of the brain are acceptable on the basis of the acceptability of the alterations of the external props and not vice-versa. The weak version of the Principle (wEPP) makes this almost explicit when it says that «Alterations of external props are (*ceteris paribus*) ethically on a par with alterations of the brain, to the precise extent to which our reasons for finding alterations of the brain problematic are transferable to alterations of the environment in which it is embedded». The emphasis on reasons points to the fact that what we think ought to be protected while altering our cognitive abilities is not so much the fact that alterations take place inside or outside the brain. The reasons for refusing an alteration of the brain are connected to the fact that we value cognition as a part of a more general and hierarchically superior value, i.e. the value of the person. If we could obtain outstanding results in cognitive processes at the price of devastating other functions of the brain which are essential to the normal functioning of the person, we would probably object to it. And the reason to object would bear some similarity to the Kantian principle that persons are always to be considered as ends and not as mere means.

We do think that cognition is an important part of our personality, and many of us do ground our self-esteem on the basis of the knowledge we can display exactly when needed. Nonetheless, we still tend to refuse a total identification of ourselves with our knowledge: we are not willing to pay any price for it.

Now, drawing on this analogy and on the reported differences, I would suggest, as a principle for evaluating cognitive enhancement techniques, the following Cognitive (Weak) Parity Principle:

Cognitive (Weak) Parity Principle: alterations of the cognitive processes which take place inside the brain are ethically on a par with alterations of cognitive processes taking place outside the brain, in so far as the whole person is not

damaged in her other functions and in the construction of her personality (personal identity).

Since our cognition, as I said before, is a widely social activity, we have grounds for objections against those activities which, destroying parts of our cognitive endowment and our educational system outside the brain, make it difficult for individuals to improve their cognitive abilities through traditional means. Insofar as these processes are internalized and made easier through pharmacological and biotechnological means, there seems to be no objection in principle against this, provided that:

1) The (enhanced) cognitive processes are capable of being integrated in the body of knowledge that the individual can use when needed and in the framing of her personal identity.

2) The processes themselves do not pose threats, in the enhanced status, to the ability of the person of developing an autonomous sense of herself and an adequate self-image. This might happen, for example, if the enhanced cognitive processes imply some reduction or distortion of, e.g., the normal emotional or relational abilities of persons

### Conclusion

As a conclusion, we may consider a general point: the discussion on cognitive enhancement should probably be set against the background of the meaning of knowledge and cognitive abilities for the life of individuals and for the value we as a society assign to those abilities. For example, we are not so keen on cognition that we would plainly accept the use of pharmacological cognitive enhancers if they have important side effects and are not very effective.

Those who argue in favour of liberalising pharmaceutical cognitive enhancers, for example, would do better to ask whether we as a society are ready to accept the consumption of pharmaceutical substances whose effects have not been fully tested (and, if so, why we are prepared to accept lower safety standards for enhancers in healthy subjects than in established standards for therapeutic uses on patients), rather than whether banning these enhancers is compatible with our respect for autonomy (cf. [19]). (Ferrari, Coenen, Grunwald 2012, p. 227).

Yet, autonomy is indeed a value and, provided that the standards of efficacy and safety are respected, we generally give value to autonomous decisions. The point is that it is not only autonomous decision that we value: we look for a

shape of ourselves that reflects our complexity and keeps it in a somewhat harmonic unity. The fundamental criterion for evaluating cognitive enhancement is its relation to our striving for personal flourishing, which is something different from just acting autonomously or being free to use whatever means in order to do what we want. We look for those goods, cognition among others, which make our identity a construction to which we can give a meaning for us and for others. The real obstacle to the whole debate is the idea that the issue is whether cognitive enhancements threaten some hypothetical “natural” or “original” self, hidden somewhere in the status quo of our abilities. As Allen Buchanan has written,

Given a plausible understanding of molecular-developmental and evolutionary biology, the cognitive potential that human beings typically have is not unalterable and not likely to be optimal. Pursuing the goals of education may require changing what we have hitherto regarded as the individual’s ‘natural’ potential, even in the case of normal individuals, and this, in turn, may require recourse to Biomedical Cognitive Enhancement. (Buchanan, 2011, p. 147)

What we really care for is the possibility of innervating our abilities with a sense of personal presence, the adherence of our dynamic capacity for realizing good things to the complex of our forces, energies, innate abilities (whatever they are) and acquired capacities. And we want that our attempt is in principle understandable by any other and, hopefully, even approved of, or even appreciated, praised.

So, enhanced cognitive abilities can of course be valued and appreciated. They are, when they are developed through traditional means. And if newer, effective and safe means offer the possibility of integrating those empowered abilities into our comprehensive self, as autonomous agents committed to the construction of a recognizable identity, then the moral point of view should not be hostile to them.

#### REFERENCES

- British Medical Association (2007). Boosting your Brainpower: Ethical Aspects of Cognitive Enhancement. available from [http://www.bma.org.uk/-images/Boosting\\_brainpower\\_tcm41-147266.pdf](http://www.bma.org.uk/-images/Boosting_brainpower_tcm41-147266.pdf), [accessed 21 February 2011].

- Buchanan, A. (2011). Cognitive enhancement and education. *Theory and Research in Education* 9(2), 145-162.
- Ferrari, A., Coenen, C., Grunwald, A. (2012). Visions and Ethics in Current Discourse on Human Enhancement. *Nanoethics* 6, 215–229.
- Hall, W. (2004). Feeling 'better than well'. *EMBO Reports* 5(12), 1105–1109.
- Levy, N. (2007). *Neuroethics. Challenges for the 21st Century*, Cambridge, MA: Cambridge University Press
- Outram, S.M. (2012). Ethical Considerations in the Framing of the Cognitive Enhancement Debate. *Neuroethics* 5, 173–184.
- Rabiner, D.L., A.D. Anastopoulos, E. Jane Costello, R.H.Hoyle, S.E. McCabe, and H. Scott Swartzwelder (2009). Motives and perceived consequences of nonmedical ADHD medication use by college students. *Journal of Attention Disorders* 13(3), 259–270.
- Williams, B. (2002). *Truth and Truthfulness: An Essay in Genealogy*. Princeton: Princeton University Press.