Cognitive Enhancement and Fairness

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0. Introduction

If there is one thing that characterises mankind throughout history, it must be an endless craving for progress. The critical gaze from man on his surroundings, combined with his exceptional creativity has unrecognisably transformed the earth and made man his superior. From the first settlements on, we have realised improvement after improvement, creating megacities that are still growing today. Besides our restlessness in altering the planet, we have also directed our perfecting gaze towards ourselves. We must be stronger, wealthier, and healthier than before. But above all, we aspire to be smarter. To achieve this, we have established institutions such as schools and universities. Developments such as literacy and the internet also contribute to our intelligence. Science, including all its branches, is an endlessly growing enterprise that collects our knowledge. However, as one can imagine, to keep discovering new material or to surpass past achievements is getting increasingly difficult. The pressure on students and professors to reach the high standard and go beyond it is historically high.[1] This may have contributed to a recent development. When hard work and natural talent are not enough, people tend to start looking for alternative methods to improve themselves. It has not gone unnoticed that healthy students, and professors, have started to turn to cognitive stimulants, initially designed for people with concentration problems or dementia. Various research articles indeed report that off-label use of drugs like methylphenidate, modafinil, and amphetamine, is present in the academic world.[2]

This discovery has raised multiple concerns. Some people feel strongly that the use of these Cognition Enhancing Drugs (CEDs) is wrong because it constitutes cheating and is therefore unfair. This relates to the broader philosophical debate concerning human enhancement. Several objections have been voiced, that enhancing ourselves is unnatural or makes us lose appreciation for the giftedness of life. Ethical questions arise considering distributive justice, fairness and equality. Another concern is that when minor enhancements are permitted, there is no end to it and peer-pressure to keep up will stagnate. In this field, there is a group of philosophers that is characterized by being cautious or

[1] Tamarinde L. Haven et al., "Perceived publication pressure in Amsterdam: Survey of all disciplinary fields and academic ranks," *PLoS ONE* 14, no. 6 (June 2019): e0217931.

[2] Also in Quinton Babcock and Tom Byrne, "Student Perceptions of Methylphenidate Abuse at a Public Liberal Arts College," *Journal of American College Health* 49 (2000): 143-145. And in C. Ian Ragan, Imre Bard and Ilina Singh, "What should we do about student use of cognitive enhancers? An analysis of current evidence," *Neuropharmacology* 64 (2013): 588-595. And in M. Elizabeth Smith and Martha J. Farah, "Are Prescription Stimulants "Smart Pills"?: The Epidemiology and Cognitive Neuroscience of Prescription Stimulant Use by Normal Healthy Individuals," *Psychological Bulletin Journal* 137, no. 5 (September 2011): 717-741. And Veljko Dubljević, Sebastian Sattler, and Éric Racine, "Cognitive Enhancement and Academic Misconduct: A Study Exploring Their Frequency and Relationship," *Ethics and Behavior* 24, no.5 (2014): 408-420.

even hostile towards human enhancements. They are often referred to as bioconservatives and emphasize the negative effects and harms of such technologies. But the other side of the table is represented by the transhumanists. This group offers an account of the limitless advantages that human enhancement can deliver. Often the argument is made that if we have the resources at our disposal to enhance ourselves, or very literally improve ourselves, that it would be nonsensical not to use them. Besides, it would also be incoherent to our past attitude towards innovations, as John Harris eloquently explains: "Imagine if someone had said (and been heeded) that we should not invest in books and in literacy and education because it was expensive and elitist and could not be provided for all, or that we should not do so until it could be provided for all."[3]

The relevance of this dispute is increasing with the rise of new technological innovations. The CEDs used now are relatively safe, as they have been tested elaborately in clinical trials. But as medical technology develops, more means will come available and when they are not legitimised for healthy individuals, safety cannot be insured. More importantly, there must be a consensus concerning ethical problems before regulation can even be considered.

In this thesis, from the various and diverse objections against enhancement, the ethical problem of fairness is selected and investigated. This choice of subject is of course not comprehensive of the complete enhancement debate, but it addresses a wide account of societal objections and is therefore able to indicate the value of different policies towards cognitive enhancement. After a thorough analysis, the case will be made that in the current situation, large-scale use of cognitive enhancement does not raise fairness issues large enough to stand in the way of universal permission. To construct this ambitious stance, this paper makes use of five chapters, all investigating a different subject or problem concerning fairness. Firstly, the definition of enhancement, as opposed to treatment, will be explored. Secondly, the use of cognitive enhancers as a mode of cheating is debated. The third chapter is about the societal consequences and the possible advantages CE can deliver. Forth is an account of equality and whether this is necessary for fairness. Lastly, the use of cognitive enhancement is inquired in the light of freedom and democratic right. Then, the thesis will be recapitulated and discussed to be concluded.

[3] John Harris, *Enhancing Evolution* (Princeton: Princeton University Press, 2007), 14.

1. The Treatment-Enhancement Distinction

To get a grip on the human enhancement debate, it is important to know what it is exactly, that all the discussion is about. When the notion 'human enhancement' is coined, the most futuristic and dramatic scenes come to mind. Images of cyborgs, brains that can be connected to computers, bionic limbs, or exoskeletons. At first sight, there seems to be a clear distinction between such technological applications and the medical interventions that are employed daily. Medical institutions are engaged in the treatment of diseases by helping the vulnerable. The ideals of transhumanists are completely different, can be assumed. This distinction, between treatment and enhancement, may also be helpful to discern the moral from the immoral. As bioconservative Michael Sandel formulates: "The moral quandary arises when people use such therapy not to cure a disease but to reach beyond health, to enhance their physical or cognitive capacities, to lift themselves above the norm."[4] It is however argued that this treatment-enhancement distinction is not as clear as it is sometimes postulated. Definitions of both terms vary and sometimes overlap, creating inconsistencies in the debate.

A theory that is quite intuitive and often referred to is that of Norman Daniels. He defines treatment as "services or interventions meant to prevent or cure (…) conditions that we view as diseases or disabilities."[5] In contrast, an enhancement is meant to "improve a condition that we view as a normal function or feature of members of our species."[6] To understand what Daniels means with this 'normal function', we have to look into the influential biostatistical theory of health, developed by Christopher Boorse.[7] In his line of thinking, disease is a state that is inconsistent with health. Health is (biologically) normal functioning, which is statistically determined in comparison to a reference class. Thus, according to Daniels, to determine whether an intervention is a treatment or an enhancement, we have to find out if it is meant to restore someone's functioning, as compared to his reference class, or if it is meant to lift someone's functioning above it. For example, for a patient suffering for dementia, memory enhancing drugs are clearly a treatment, as they re-install normal functioning. In contrast, a person with perfectly average concentration, using Ritalin to help him focus even better, classifies as an enhancement. While this seems like a plausible solution, some problems arise on further inspection.

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[4] Michael J. Sandel, "The Case Against Perfection," *The Atlantic Monthly*, April, 2004.

[5] Norman Daniels, "Normal Functioning and the Treatment-Enhancement Distinction," *Cambridge Quarterly of Healthcare Ethics* 9, no. 3 (Summer 2000): 309.

[6] Daniels, "Normal Functioning and the Treatment-Enhancement Distinction," 309.

[7] Christopher Boorse, "Health as a Theoretical Concept," *Philosophy of Science* 44, no. 4 (1977): 542-573.

Nick Bostrom and Rebecca Roache elaborate on various inconsistencies.[8] Firstly, they argue, standard contemporary medicine includes various practices that do not aim to prevent or cure diseases, such as palliative care, cosmetic surgery, and contraceptives. Still, these applications do not satisfy the criteria for treatment, according to Daniels. Secondly, interventions that reduce the probability of disease or death are problematic to classify, following the definitions of Daniels. While they prevent disease, they also improve a normal condition, namely the immune system or lifespan. These instances pass both the criteria for treatment and enhancement simultaneously. Another strong argument is the following: the conception of a normal healthy state is questionable. This proposed state varies greatly among individuals. Suppose there is a drug that increases one's IQ by 15 points. When this substance is used on a patient with mental retardation (IQ under 70), the intervention will be classified as treatment. Still, after the application, the patient will barely reach the mean IQ of the population and can therefore still be called 'diseased'. If this imaginary drug is used on a highly intelligent person, it seems indisputable that the intervention must be an enhancement. Hereby, some dubious consequences of the treatment-enhancement distinction are demonstrated. John Harris has made a similar point. He emphasizes that what may be a therapy for some, might be an enhancement for others.[9] The conclusion is therefore clear: "The boundaries between treatment and enhancement, between therapy and enhancement, are not precise and often nonexistent, nor are these categories mutually exclusive as Daniels seems to think they must be."[10]

Righteously, Harris also comes with an alternative definition for enhancement. He proposes to adopt a much broader conception of this term. According to Harris, "an enhancement is clearly anything that makes a change, a difference for the better."[11] Another account that follows this trend is more specific, defining enhancements as "technologies that improve or augment some core cognitive, physical, perceptual, or psychological human capacity, or enable some novel capacity not standardly among human capacities."[12] The most important difference between the definition of Daniels and these more inclusive ones is that in the latter some human capacity is improved. *Period.* This improvement is not measured in comparison.

Now, we need to return to the subject of this thesis, cognitive enhancement in specific. A definition that is frequently used and follows the broad manner

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[8] Nick Bostrom and Rebecca Roache, "Ethical Issues in Human Enhancement," In *New Waves in Applied Ethics*, ed. Jesper Ryberg, Thomas Petersen and Clark Wolf (Palgrave Macmillan, 2008), 120-122.

[9] Harris, *Enhancing Evolution*, 44-45.

[10] Harris, *Enhancing Evolution*, 57.

[11] Harris, *Enhancing Evolution*, 36.

[12] Tamara Garcia and Ronald Sandler, "Enhancing Justice?" *NanoEthics* 2 (2008): 277.

comes from Anders Sandberg and Nick Bostrom. They define cognitive enhancement as "the amplification or extension of core capacities of the mind through improvement or augmentation of internal or external information processing systems."[13] Important to note, is that in this definition it is not specified by what means the amplifications are realised. The improvements can be made through biomedical technology, but also by changes in a person's lifestyle. As other authors have also emphasized that more subtle instances of cognitive enhancement are already widespread in our society. For example caffeine, that improves attentiveness and concentration.[14] But also yoga and meditation to reduce stress and increase creativity.[15] Another highly influential cognitive enhancement is literacy, since it allows us to perform numerous tasks that illiterates cannot.[16] The most impactful cognitive enhancement of them all must be education. A child that proceeds all steps of the educational system is rewarded with greatly amplified mental capacities. Since the instalment of education as a basic right, the cognitive capacities of the population have expanded enormously. Still, there may be some hesitation calling education the greatest cognitive enhancement of our history. Allen Buchanan stresses that this doubt is unfounded, since education also has a great impact on the biology of our brain on a genetic level, that is certainly not inferior to most common CEDs.[17]

An important lesson that follows from these diverse definitions concerns moral permissibility. When we can recognise that cognitive enhancement is already ubiquitous in our society, we can revise its moral status. It is clear, by the high status of education, that for something to be an enhancement, it does not necessarily follow that it is immoral. By this, the treatment-enhancement distinction loses great relevance. Without it, we can look at the use of CEDs less biased and drop some of its controversial character. When we compare the use of CEDs to the use of education, the risk of forsaking them becomes clear. As Bostrom and Roache describe the attitude towards enhancements: "some – notably the acquisition of language, and education – are considered so central to living even a minimally successful life that to deny our children adequate access

[13] Anders Sandberg and Nick Bostrom, "Converging Cognitive Enhancements," *Annals New York Academy of Science* 1093 (2006): 201. And literally in Nick Bostrom and Anders Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," *Science and Engineering Ethics* 15 (June 2009): 311. And in Nick Bostrom and Rebecca Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," In *Enhancing Human Capacities*, ed. Julian Savulescu, Ruud ter Meulen, and Guy Kahane (Oxford: Wiley-Blackwell, 2009), 138.

[14] Maxwell Mehlman, "Cognition-Enhancing Drugs," *The Milbank Quarterly* 82, no. 3 (2004): 484.

[15] Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 2.

[16] Allen Buchanan, *Beyond Humanity?* (Oxford: Oxford University Press, 2011), 24.

[17] Buchanan, *Beyond Humanity?,* 40-41.

to them would be deemed seriously negligent."[18] If we are aware of the evident benefits of CEDs, it appears to be unreasonable not to grant them to ourselves and others.

The treatment-enhancement distinction has proven to be reasonably complex. However, it can be concluded that the definition is not all that important to determine the moral status of an intervention. The classification has no direct influence on its morality after all. One must be attentive not to be overly aversive towards enhancements, just as one must not be overly permissive towards treatments. What is leading in the moral debate around cognitive enhancement, must not be its definition, but its consequences. Whether the uses of technologies or drugs are good or bad is of utmost interest. As Julian Savulescu illustrates: "It is not asthma (or disease) which is important, but its impact on a life in ways that matter which is important. People often trade length of life for non-health related well-being. Non-disease genes may prevent us from leading the best life."[19]

[18] Bostrom and Roache, "Ethical Issues in Human Enhancement," 14.

[19] Julian Savulescu, "Procreative Beneficence: why we should select the best children," *Bioethics* 15, no. 5/6 (2001): 419.

2. Cognitive Enhancement as a way of 'cheating'

A form of human enhancement that is commonly disapproved of and notorious for being a 'bad use' of technology is the use of Performance Enhancing Drugs (PEDs) in sports. When a sportsman admits to using doping, he immediately falls out of grace. He loses the respect of the public. In sports, it is clear that the use of such enhancements is morally objectionable. The reason for this, is that the illegitimate use of PEDs constitutes cheating. For the use of CEDs however, the verdict is less certain. Some claim that the use of methylphenidate, or Ritalin, to focus is not that different from the use of aspirin to cure a headache. In the previous chapter, we have seen that this attitude may come from the initial medical purpose of Ritalin. But still, there is also a group that is strongly against the use of these drugs. They want to install strict legislation against it, or even want to test students before exams on substance use. In this chapter, we will investigate the claim that the use of CEDs denotes cheating.

2.1 Cheating the game

To constitute whether CED use is a form of cheating, a definition of 'cheating' must be established. In a very exhaustive paper, Stuart Green demonstrates that the definition of cheating must contain two elements. Firstly, the act in question includes (deliberate) rule-breaking. Secondly, the intention of the act must be to obtain an unfair advantage.[20] Other authors also adopt this interpretation in their analyses.[21]

In sports, the use of doping clearly satisfies the first criterion. The World Anti-Doping Code is quite unambiguous in the prohibition of PEDs. But for CEDs, no code or regulation forbids the use. The examination regulations of schools and universities do not include rules on drug use. It might be argued that these regulations lack such rules and that they should be instated immediately. However, the feeling that an act is a form of cheating is not enough to forbid it. That is reasoning backwards. We must discover the origin of this intuition, to know whether a ban is in order.

The second criterion elucidates some of this perspective. It can be argued that the use of CEDs creates an unfair advantage over the others that study without stimulants. Especially in competitive settings such as job interviews or university admissions this feeling is strong. Nonetheless, it must be noted that the playing field is inherently unfair. Students start off with unfair 'natural' advantages when they are born with unusually high intelligence. Others might

[20] Stuart P. Green, "Cheating." *Law and Philosophy* 23 (2004): 137-185.

[21] For example Maartje Schermer, "On the argument that enhancement is "cheating"," *Journal of Medical Ethics* 34, no.2 (February 2008a): 85. And Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 4.

obtain some advantage through the help of professional private tutors, enabled only by having wealthy parents.[22] Importantly, schools and universities do not prohibit the use of private tutors, and neither do they ban the use of caffeine, another cognitive stimulant. Equal opportunities may not be as important, or feasible for that matter, to universities as critics sometimes claim. But above all, a ban on CEDs will doubtlessly increase inequality, for they will only be accessible for those with permissive doctors or appropriate connections. When CEDs are universally available, some of the unfairness will be eliminated. These equality-promoting effects will be elaborately explored in chapter 4.

Accordingly, the use of CEDs does not constitute cheating, at least not in greater extent than the use of private tutors or caffeine. Maybe the feeling of cheating does not so much relate to the rules of the game. There is however another form of cheating that is less profound. 'Cheating' can also refer to the personal process, that one sidesteps by using stimulants.

2.2 Cheating oneself

The deeper interpretation of cheating is not one that refers to rule-breaking, but one that addresses the value of the personal process. The President's Council on Bioethics, a conservative party that opposes stimulant use, explains:

> [I]n those areas of human life in which excellence has until now been achieved only by discipline and effort, the attainment of similar results by means of drugs, genetic engineering, or implanted devices looks to many people to be "cheating" or "cheap." Many people believe that each person should work hard for his achievements.[23]

The opinion that the Council carries out, is that the use of CEDs is an easy shortcut, and therefore diminishes the praiseworthiness of accomplishments. Respect is earned by hard work, so when someone uses a cognitive stimulant, the claim to respect is illegitimate and can therefore be called 'cheating'. Maartje Schermer agrees with this interpretation and points out that besides outcome, praise is rewarded for effort and endurance. A student may deserve abundant praise for the same achievement for which a brilliant student gets none.[24] Elsewhere, Schermer explains that the use of CEDs are seen as an easy shortcut, which is problematic because it does not build character.[25]

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[22] Rebecca Roache, "Enhancement and Cheating," *Expositions* 2, no. 2 (2008): 155.

[23] President's Council on Bioethics, *Beyond Therapy*, Washington DC, October 2008, 289. Also literally stated in the work of councilmember Leon R Kass, "Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection," *The New Atlantis* 1 (Spring 2003): 21.

[24] Schermer, "On the argument that enhancement is "cheating"," 87.

[25] Maartje Schermer, "Enhancements, easy Shortcuts and the Richness of Human Activities," *Bioethics* 22, no. 7 (2008b): 356.

As Sandel accurately observes, the respect that diminishes from the CED user is sometimes transferred to the drug developer: "as the role of enhancement increases, our admiration for the achievement fades – or rather, our admiration for the achievement shifts from the player to his pharmacist."[26] Interestingly, this can also be determined semantically. When we speak of being 'under influence' of drugs, we indirectly declare that they contribute to our performances, making achievements not solely our own. "When an author acknowledges influences, he or she is sharing credit."[27] This elucidates the reduction of respect for the CED user.

Then again, there are several strong counterarguments to consider. First, when an agent uses stimulants, he is still in control of what tasks he chooses to undertake. The decision to devote time and energy to science is an honourable one, and therefore still praiseworthy. In line with this, a second argument is that users of CEDs still have to put in effort for academic achievements. A CED is not a quick cheat, but students still must study and invest time.[28] This point is also made by Schermer.[29] Lastly, we also reward achievements that are the result of talent. Maybe not as often as hard work, but we also admire luck and the display of careless success.

An essential distinction that clarifies the difference between cases, is the separation between process goods and outcome goods, as reported by Goodman.[30] A similar inference is made by Schermer, who refers to it as internal goods and external goods.[31] The difference is, that in some cases the process is more important than the outcome, like for climbing a mountain. This activity can easily be cheated by taking a car or helicopter, but for most alpinists, that destroys the activity completely. The importance is not in reaching the top, but in the way towards it. Similarly, in a game of chess. The game does not create anything useful as outcome, but instead, the process of playing it is valuable. Accordingly, examples for the other kind can also be stated when the outcomes are most relevant. Instances like pharmacological research. Scientists may learn things in the process, but what really matters is whether medicines are produced that can cure diseases. Or additionally dieting. For most people, the process of losing weight is quite tough and not amusable. The outcome, however, makes it worthwhile. Hence, the use of stimulants can in some of the cases be determined

[26] Sandel, "The Case Against Perfection."

[27] Rob Goodman, "Cognitive Enhancement, Cheating, and Accomplishment," *Kennedy Institute of Ethics Journal* 20, no.2 (2010): 156.

[28] Maxwell Mehlman, "Cognition-Enhancing Drugs," *The Milbank Quarterly* 82, no. 3 (2004): 492-493.

[29] Schermer, "Enhancements, easy Shortcuts and the Richness of Human Activities," 359.

[30] Goodman, "Cognitive Enhancement, Cheating, and Accomplishment," 153-154.

[31] Schermer, "Enhancements, easy Shortcuts and the Richness of Human Activities," 360.

to be a form of cheating. But importantly, there is a whole other category of activities for which CEDs can provide advantages without the feeling of cheating. As Goodman explains: "CEDs create a tradeoff: forgoing CEDs might make the activity richer for the person performing it, but doing so would also impose a cost on all those who are counting on the activity's outcome."[32] The trade-off can be made by looking into the goals that one has for the activity, accordingly the use of stimulants can be evaluated. Because clearly, no one would convict researchers of cheating, when they have found the cure for cancer while using CEDs.[33] No one would call the Beatles 'cheaters' for making great new music while using psychedelic drugs.[34]

Lastly, to round up the discussion, the use of CEDs is compared to the use of enhancements in sports. The process of enhancing oneself is only natural: "In sports, novel forms of performance enhancing equipment and training are routinely introduced as athletic technology and expertise evolve."[35] Very often, technological innovations increase the performances of athletes, while they are not condemned. Sometimes, equal distribution is assured, for example with the "FastSkin" swimsuits in the Olympics. The point is that, while innovations may cause significant advantages in competitive settings, it is not always necessary to immediately instate full prohibition. In some instances, it might make the process more meaningful.

In conclusion, the use of CEDs cannot be called 'cheating' in the literal sense of the word. It can even be argued that forbidding CEDs worsens the unfair advantage that is already present. There can be made a distinction in cases where stimulant use can instead be called 'cheating' of oneself or the process. This can be explained with the notions process goods and outcome goods. Whether either gets priority depends on the tradeoff that varies per situation. In some cases, the use of CEDs is condemnable, but then again also pointless. In other cases, where the outcome is important, the argument that CED use constitutes cheating does not hold. The permission even has the potential to confer great advantages and must therefore be considered.

[32] Goodman, "Cognitive Enhancement, Cheating, and Accomplishment," 154.

[33] Mehlman, "Cognition-Enhancing Drugs," 493.

[34] Goodman, "Cognitive Enhancement, Cheating, and Accomplishment," 145-146.

[35] Eric Juengst and Daniel Moseley, "Human Enhancement," *The Stanford Encyclopedia of Philosophy* (Summer 2019 Edition), Edward N. Zalta (ed.) https://plato.stanford.edu/archives/sum2019/entries/enhancement/

3. Societal Consequences of Cognitive Enhancement

Often, the use of Cognition Enhancing Drugs (CEDs) is praised by proponents for their large-scale advantages. Also in this thesis is referred to such benefits. While few persons do not want to be a little smarter, the advantageous effects on society as a whole are not as straightforward. To accurately quantify these possible societal benefits, we must rule out the possibility that CEDs only confer positional goods. For an argument of opponents is that the universal use of cognitive stimulants will deliver no net benefit if everyone increases their IQ by the same amount of points. If so, the advantage could be self-defeating. If this reasoning is true, the concern arises that all the time and money spent on CEDs is a very bad investment. In this chapter, the large-scale consequences of cognitive enhancement on society will therefore be investigated thoroughly.

3.1 Cognitive capacities as positional goods

The objection that the resources allocated to CEDs are wasted comes from the conviction that cognitive capacities are positional goods. That concept can be defined as follows: "Positional goods (…) are goods the absolute value of which, to their possessors, depends on those possessors' place in the distribution of the good—on their relative standing with respect to the good in question."[36] This means that the value of one's capacities is measured by comparing it to the capacities of others. A very evident example is that of height. You can measure the absolute length of a person in meters. But the value thereof is determined by comparison to others. We tend to call someone tall, not by his absolute length, but if he is taller than other people we see. A person can be tall in Nepal and at the same time be short in the Netherlands. Height is definitely a positional good. For cognitive capacities, this would imply that for someone to be smart, it would mean that he is relatively smarter than others. And one loses intelligence, simply if others around him gain intelligence. Therefore, positional goods have a strong competitive character.

As mentioned before, the adversity towards positional goods comes from the fact that every resource spent on it is idle. It serves no end and delivers no benefit, while it only absorbs time and money. Sandel expresses this concern, terming it an endless arms-race, where people spend capital trying to keep up, leaving everyone worse off.[37] While everyone is striving to be above-average, all

[36] Harry Brighouse and Adam Swift, "Equality, Priority, and Positional Goods," *Ethics* 116, no. 3 (April 2006): 474. Identical definitions in Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 328. Also Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 6. And Bostrom and Roache, "Ethical Issues in Human Enhancement," 10.

[37] Sandel, "The Case Against Perfection."

effort is wasted. Clearly, positional goods are bad expenditure. This self-defeating aspect is often referred to as being a zero-sum undertaking.

For the case of cognitive stimulants, this portrayal is inadequate. Cognitive capacities also have instrumental value, they are valuable in its own right, independent of whether others possess similar qualities. This instrumental or intrinsic value addresses both the individual and society as a whole. If a person is smarter, he has more possibilities of constructing his life as he wants. Greater cognitive capacities reduce the effort that must be made to achieve goals, as intellectual hindrances are easier to pass. People with higher intelligence tend to be happier, healthier, and more autonomous.[38] Therefore, obtaining a cognitive enhancement is not only useful to gain an advantage over others, but it is worthwhile in itself.

As we have seen, the value of cognitive capacities is not merely positional. Besides the positional aspect, it also yields intrinsic value to the individual. Therefore, spending resources on CEDs has the potential of being a good investment. However, it remains unclear how the benefit will manifest and if the societal benefits will be worthwhile. Investing purely on individual desires will not ameliorate our position. This needs to be determined before the concerns can be settled.

3.2 Network effects of Cognitive Enhancement

As Leon Kass explains, spending money on the personal prosperity of some is unfair or even unethical: "The case can be made yet more powerful to the extent that we regard the expenditure of money and energy on such niceties as a misallocation of limited resources in a world in which the basic health needs of millions go unaddressed."[39] Improving the position of individuals might seem preferable, but on closer inspection this entails flawed prioritizing. For resources to be well-spent, we need to account for more than only personal gain. Such investments must yield large-scale, social benefits to be fully justified.

As briefly referred to before, such social gain can be defended. Besides personal profit, the population as a whole could potentially improve from CEDs, if the enhanced individuals would contribute to the greater good: "An enhancement that enables an individual to solve some of society's problems would produce a positive externality: in addition to benefits for the enhanced individual, there would be spillover benefits for other members of society."[40] Citizens who are smarter, more creative, and work more efficiently have a higher capacity to contribute to solutions for global warming or world hunger. This point

[38] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 328.

[39] Kass, "Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection," 15.

[40] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 328.

is quite straightforward and requires not too much imagination. However, we must be cautious of confusing cognitive enhancement with moral enhancement. If people have the qualifications and capabilities to solve world problems, it does not necessarily follow that they will also use them for this end. This is an important argument against universal enhancement. We need more certainty before we can claim that cognitive enhancement will change the world for the better.

Allen Buchanan delivers such a demonstration in his book *Beyond Humanity?* where he argues in favour of state-regulated legalisation of enhancement. To defend that society will benefit from the enhancement of individuals, he analyses human development in history and compares it to our current situation. Buchanan starts with the statement that development is largely dependent on productivity, which he defines as "how good we are at using existing resources to create things we value."[41] While productivity is important, it does not directly guarantee well-being. More accurately, increased productivity often creates potential for higher prosperity. In history, we can see that productivity often functioned as a precondition for great boosts of well-being. These increases in productivity have usually resulted from developments of technologies and institutions that expanded our capabilities – enhancements. Buchanan states that "the empirical link between the enhancement of human capabilities and increases in well-being is strong."[42] He also provides examples through which this prosperity is established: economic development leads to less mental illness, less disease, less disability, less premature death, and less violence and discrimination against women. Citizens often have more opportunities to develop their talents and make autonomous choices. Amongst examples of enhancements that could potentially have such wonderful effects, Buchanan mentions enhancements of our cognitive capabilities: "other things being equal, with enhanced cognitive abilities we will be able to do what we do now more quickly and efficiently, and we also may be able to do some new things we will value."[43] He compares its possible influence strikingly to the impact of the right amount of nutrients and vitamins, that have also enabled us to function better in history. Cognitive enhancement increases our well-being because it allows us to do the things we value. Besides more time, increased productivity also leads to lower-priced goods (and hence broader access), and larger surplus for natural disasters or economic downturns. When this is all considered, the state clearly has many reasons to invest in cognitive enhancement.

There is another factor, why cognitive enhancement on a population-scale is so lucrative. The reason is the anticipation that the value of high intelligence increases as more individuals have it. For instance, higher intelligence could lead

[41] Buchanan, *Beyond Humanity?,* 44.

[42] Buchanan, *Beyond Humanity?,* 45.

[43] Buchanan, *Beyond Humanity?,* 45.

to more cooperation, and this increases productivity even more. Such developments are referred to as 'network effects'.[44] In case of network effects, the investment in enhancement is most certainly not zero-sum. If it is true that the value of enhancements increases as more people have them, everybody has an interest in enhancing as many people as possible. The competitive aspect vanishes. For cognitive enhancement, the network effects can be demonstrated. It is for example apparent that a large group of smart people can achieve a lot more than one smart person alone could. Higher intelligence combined with cooperation is a very powerful means. Humans are by nature cooperative and can learn faster together than alone. If a group of knowledgeable persons work together, new connections can be found to solve pressing problems. This argument for universal enhancement has similarly been made by other authors, disguised in other definitions such as collective intelligence[45], collective cognition[46], and collective enhancement[47]. All these kinds of notions entail to the same fact: the more people that are intelligent, the more powerful and advantageous the system becomes.

From this inquiry, it has become clear that cognitive enhancements not only contain a positional aspect. Besides the competitive, relative improvement, intelligence also has instrumental or intrinsic value. Especially when cognitive enhancements are implemented on a large scale, the advantages are promising because of probable network effects. Cognitive enhancements increase in value, as they are shared among more individuals. Besides, by an expected increase in productivity, the state has considerable reasons to invest in CEDs. The spent resources will not be misallocated, because the whole enforcement will be positive-sum.

[44] Buchanan, *Beyond Humanity?,* 48-49.

[45] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 321-322.

[46] Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 2.

[47] Anders Sandberg and Nick Bostrom, "Converging Cognitive Enhancements," *Annals New York Academy of Science* 1093 (2006): 213-214.

4. Cognitive Enhancement and Equality

In the previous chapter, the case has been made that besides personal benefits, the position of the population as a whole will also advance as a consequence of cognitive enhancement. While large-scale benefits are credible, the concern remains that this analysis is too consequentialist. It might still be the case that the extensive advantages come from a small part of the population, while others fall to the bottom of the community. Such concerns can be referred to as the fear for the rise of an 'enhancement elite' that has exclusive access to technologies and will thereby gain vast advantages over others. In that case, the group will become so powerful that it cannot be overthrown and the gap between enhanced and non-enhanced will grow dramatically. Thereby, massive interpersonal inequalities could arise. In this chapter, the influence of cognitive enhancement on the question of equality is investigated.

4.1 Equality-depriving effects of prohibiting Cognitive Enhancement

The enhancement-elite argument is one of the most important against cognitive enhancement and therefore needs to be analysed thoroughly. In this scenario, the small group that is enhanced is not only smarter but as a result, they will also perform better at work and earn more money. Therefore, this enhancement-elite could gain very much social power, if the rest of the population remain unenhanced.[48] This scenario clearly needs to be avoided. From this perspective, the stance that cognitive enhancements should be banned entirely is comprehensible. If no one can employ cognitive enhancement, the rise of an enhancement-elite will be prevented altogether. However, on closer inspection, this reasoning proves to be flawed. A prohibition will definitely make the use of cognitive stimulants more difficult, but it is naïve to assume that they will never again be used. Instead, underground networks will be established, just like the ones for other illegal drugs and goods. Also, students will try to convince their doctors that they suffer from concentration problems for which they need CEDs.[49] As Buchanan illustrates: "Where enhancement is not recognised as legitimate, those with the money to pay black-market prices or the social connections and education to persuade physicians to prescribe Ritalin or other drugs "off label" will have access; others will not."[50] More importantly, the honourable and honest students will be excluded from the advantages of enhancement and will be kept from the opportunity to improve themselves on the scale that others do. This

[48] Bostrom and Roache, "Ethical Issues in Human Enhancement," 15.

[49] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 331.

[50] Buchanan, *Beyond Humanity?,* 19.

situation is clearly a case of inequity in access and is therefore indisputably unfair.

Another point that Buchanan addresses in the previous citation is that of medicalisation or pathologization. These terms refer to the negative consequences of only distributing CEDs to individuals that are labelled as diseased. This point has been confirmed multiple times by various authors, stressing the fact that it is absurd that for someone to be able to obtain benefits of such stimulants, they have to be categorized as suffering from a disease.[51] It is evidently unfair to require people to go through such lengths to fulfil their wishes, or to keep up with the majority.

For these reasons, it will prove to be a bad policy to prohibit the use of CEDs to warrant equality. Such regulations will only exacerbate the problem of inequity in access. As an alternative, it might be worthwhile to investigate the possible consequences of legalising the use of CEDs, so the regulation of use is enabled. The case can be made that effects of legalisation can indeed prove to be promoting universal accessibility and therefore equality.

4.2 Equality-promoting effects of permitting Cognitive Enhancement

In the previous section, we have seen that forbidding the use of CEDs will expectedly not have the intended effects. In the scenario of the enhancement-elite, the crucial factor that creates these injustices is accessibility. An enhancement-elite can only emerge where inequities in access are present. Most probably, these inequities will be the result of limited monetary resources, in case of permissive legislation. To consider a policy in which cognitive stimulants are permitted, differences in access must be minimised.

For a good indication of how the accessibility of cognitive stimulants by legalisation will develop, we can look at examples of other innovative goods. It is a common occurrence that new goods that enter the market need some time to develop into products that are universally used and widespread. An important factor that contributes to this process is that if the use of cognitive stimulants is legalised, the research and development will also stagnate. Bostrom and Sandberg remark that "legal enhancement would promote development and use, in the long run leading to cheaper and safer enhancements."[52] In the current situation, the development of cognitive enhancements is constrained by legislation that requires them to cure diseases. The most frequently used CEDs, Ritalin and Modafinil, were both initially developed as medicines to cure attention-deficit hyperactivity disorder (ADHD) and narcolepsy respectively. If pharmacological research groups would work directly on the demanded effects,

[51] Bostrom and Roache, "Ethical Issues in Human Enhancement," 18. Also in Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 331. And in Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 7.

[52] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 333.

the development would be much more efficient. As Bostrom, Roache and Sandberg point out:

> It seems likely that progress in developing biomedical enhancements would be accelerated if pharmaceutical corporations could focus directly on developing nootropics for use in non-diseased populations rather than having to work indirectly by demonstrating that the drugs are efficacious in treating some recognised disease.[53]

The CEDs that prove to bring benefits now, are only coincidental results of their research. When all time and energy could be focussed on development of CEDs, the process would be more efficient and would bring down the prices of these stimulants, making them available for a wider public. The legalisation and use of cognitive stimulants will therefore make them more accessible. As Harris notes: "No one can be ignorant of the fact that procedures which start expensive, rare (even elitist), and risky often become widely available, if not universal, cheap, relatively safe (safe enough given the balance of risk and benefit), and widely accessible."[54]

A second reason regarding the accessibility of enhancement is remarked by Garcia and Sandler as the 'Argument from Marginal Enhancement'.[55] This point amounts to the fact that it is not as problematic as it may seem that low-income consumers are not able to afford the newest technologies. As is often the case with the latest versions of high-tech gadgets, producers tend to release new renditions of their products occasionally. These newest devices are often exorbitantly expensive, but importantly, they seem to contain only minor improvements over the functioning to previous versions for the extra money they are worth. This can be demonstrated by comparing it to the developments of the newest iPhone models manufactured by Apple. The newest and most high-end release, the iPhone 11 Pro Max is incredibly expensive and only available for the wealthier consumers. If this model is compared to an older version, the iPhone 7 for example, one will find that there are only marginal differences in functionality. Admittedly, for someone that is really into technology and gadgets, the devices might seem incomparable, but if we strictly look at the functionalities that improve the position of the user, the differences are negligible. With both devices, the user can call, text, take photographs and access the internet. This is exactly the reason that it is not so problematic for low-income consumers to only have access to earlier models. The same evaluation can be made for cognitive enhancements. The newest developments will likely come at a high price, but as

[53] Bostrom and Roache, "Smart Policy: Cognitive Enhancement and the Public Interest," 7. And literally in Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 331.

[54] Harris, *Enhancing Evolution*, 31.

[55] Tamara Garcia and Ronald Sandler, "Enhancing Justice?," *NanoEthics* 2 (2008): 11-13.

the development proceeds, earlier stimulants will become affordable, while they only contain marginal differences in functionality. Therefore, the gap between the consumers that can buy the newest innovations and the consumers that are only able to buy lower-cost versions, will not be as immense as sometimes suggested and feared.

Lastly, the situation will be analysed in which a small group still can not afford even the cheapest forms of cognitive enhancement. A possible case that will balance the position of minorities comes from the interest of employers. For companies, the productiveness of their operation is very important. To maximize this, managers often spend time trying to create a productive environment for their employees, by arranging quiet workspaces and installing coffee machines. Additionally, companies often provide training courses for their staff, to increase the competence of the team. Identically, if the effects of cognitive enhancements prove to be strongly beneficial, companies would also be prone to consider paying for them for their employees, if they can substitute expensive, time-consuming training courses. A second possibility through which low-income consumers can obtain the benefits of cognitive enhancements is through taking up a loan. Although this proposition might sound irresponsible, the investment in cognitive performances is a very good one and also ubiquitous in society. Every year, countless students take up loans to pay for their tuition, especially for college. If cognitive stimulants have proven to increase work performance and thereby career perspective and wage, the investment will pay itself back quickly and improve the position of the investor.[56]

Now, we have seen several prospects through which the accessibility of cognitive enhancement will be increased by a permissive policy. While these examples are various, they still do not guarantee the absolute, universal distribution of stimulants. Situations in which some benefit more of developments than others seem to be inevitable in society. Next, it will be evaluated whether these cases, of discontinuous equality, are still fair.

4.3 Fairness without (absolute) Equality

Importantly, it must be noted that despite all these previously mentioned prospects, it will be inevitable that (minor) inequities in access remain, and a small group in society will profit most. In this case, the argument can still be made that unequal access is not enough grounds for a forbiddance of cognitive enhancers. Fairness is not identical to total equality. Besides, inequalities are always present in life. Opportunities are determined by the country you are born in, the genes you inherit, the people you meet and so on. Also mentioned before,

[56] Walter Veit, "Cognitive Enhancement and the Threat of Inequality," *Journal of Cognitive Enhancement* 2 (2018): 407.

other modes of enhancement such as private tutors and caffeine are also widely accepted, just as cosmetic surgery.[57]

John Harris demonstrates that it is really inadequate to try to secure fairness by rejecting enhancement to some, because they cannot be provided for all.[58] Logically, we want to grant advantages to a few, without ensuring that each and every individual also shares them. This perspective is strongly intuitive with respect to parents: "we feel it is right to encourage people to provide goods for their children and wrong to deny them these goods even if not all can obtain them."[59] This is exactly what the earlier example of expensive private tutoring amounts to. It is nonsensical to forbid wealthy parents to spend money on the welfare of their children because not everybody can provide the same. Another convincing example refers to development of states. Clearly, no one would plea to halt the economic development of India, until the economy of Ethiopia can catch up.[60] The state of Ethiopia deserves our help and effort to try to ameliorate their position, but this is certainly never attempted by trying to disrupt the development of others. Lastly, an example from the medical practice. It is clearly not morally wrong for a doctor to save the life of one patient, while he is unable to save the lives of all patients in the hospital. Our moral instinct is resolute in these cases. It is wrong to deny benefits to some when we can grant them to everyone.

Finally, it is worthwhile to mention the results of some pharmacological research into the effects of CEDs. It is a false assumption that CEDs work as straightforward as adding a number of points to the IQ of the user. Mostly, these stimulants increase attentiveness or concentration, which indirectly lead to higher mental performance. But the influence of CEDs has also proven to vary greatly under different users. Most interestingly, the evidence from medical research points out that CEDs like Modafinil seem to have a higher positive impact on persons with lower IQ.[61] If this is true, the prospect of one superior group of enhanced individuals is too prompt. When CEDs improve the cognitive performance of the less smart and leave the most intelligent unaffected, the

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[57] Martha J. Farah et al., "Neurocognitive Enhancement: what can we do and what should we do?" *Nature Reviews Neuroscience* 5, no.5 (May 2004): 421-425.

[58] Harris, *Enhancing Evolution*, 27-30.

[59] Harris, *Enhancing Evolution*, 27.

[60] Buchanan, *Beyond Humanity?,* 53.

[61] Delia C. Randall, John M. Shneerson, and Sandra E. File, "Cognitive effects of modafinil in student volunteers may depend on IQ," *Pharmacology, Biochemistry and Behavior* 82 (September 2005): 133-139. But also Ulrich Müller et al., "Effects of modafinil on working memory processes in humans," *Psychopharmacology* 177 (June 2004): 161-169. And in Daniel Y. Kimberg, Mark D'Esposito, and Martha J. Farah, "Effects of bromocriptine on human subjects depend on working memory capacity," *NeuroReport* 8, no.10 (November 1997): 3581-3585.

influence of CEDs will in fact be equality-promoting, as they will narrow the gap between the naturally smart and the less intelligent individuals.

From this elaborate account, we can conclude that the prohibition of the use of CEDs is not a good method to ensure equality. Probably, a ban on the use will create an impulse on underground networks, by which the unequal access is exacerbated. In contrast, legalising CEDs has instead the potential to promote equality through various processes, such as legally supported research and development. Also, absolute equality does not necessarily create fairness. When advantages are withheld to create equality, fairness diminishes, and moral problems arise.

5. Cognitive Enhancement and Freedom

Previously, it has been argued that the prohibition of cognitive enhancement will not have the intended equality-promoting effects. Instead, a permissive policy is proposed to preserve equality and stimulate fairness. Nonetheless, this position might be quite drastic and there may be some hesitation towards fully legalising the use of cognitive enhancement. An important reason is that when cognitive enhancements are commonly used, the bar is raised and other individuals will feel pressured to engage in using CEDs to keep up. This peer pressure will restrict freedom of the population to make an autonomous choice about CED use. This situation is clearly problematic and should be prevented. This chapter is devoted to the problems concerning freedom around permission of cognitive enhancement.

The importance of freedom is in many countries apparent by the form of government that is enforced. A liberal democracy illustrates that freedom is of utmost importance to its citizens. The presupposition is that competent citizens enjoy high individual freedom to make autonomous choices. This comes at the trade-off that individuals are also allowed to make choices, even if a group does not agree with them or even find them repulsive. The norm is freedom, and it can only be restricted for compelling reasons. John Harris defends this freedom and claims that it should naturally also extend to enhancement: "One of the presumptions of liberal democracies is that the freedom of citizens should not be interfered with unless good and sufficient justification can be produced for so doing."[62] Individuals should therefore be free to use cognitive enhancement, for as long as there is no convincing reason against. The burden of justification is on the group that wants to restrict liberty. The previously mentioned argument from peer-pressure potentially makes a good candidate for such a justification.

The argument of peer-pressure follows from predictions on the development and integration of cognitive enhancements. If these stimulants are universally available and used, and deliver large benefits to the user, individuals that choose not to use enhancements might grow to be the exception. These persons will take more time to finish their tasks and have more trouble staying focussed. This will not go unnoticed by employers or academic colleagues. It might even follow that employers prefer workers that use enhancements, for they work more efficiently. Additionally, students working in group projects might object to group members that prefer to work 'naturally' for the argument that they contribute less to the process and outcome. It is very clear that in these situations, the freedom surrounding the choice to enhance is severely compromised. If these expectations prove to become reality, a worthy justification against the freedom to enhance might be provided.

[62] Harris, *Enhancing Evolution*, 72-73.

This condemnation of implicit coercion to produce more productively is in line with a very prominent theory in ethics, namely with the categorical imperative of Kant. Katharina Bauer displays this special perspective on cognitive enhancement as a Kantian duty.[63] When someone is pushed to use cognitive stimulants to work more efficiently, the person is used merely as means and not as end in itself. This illustrates the problem with peer-pressure insightfully. When the focus is on the output or the product that a person potentially delivers, the use of enhancement is morally wrong. But Kant's theory has a more elaborate relevance to the enhancement discussion, Bauer argues. The use of cognitive enhancement is not intrinsically condemnable. In case the individual consents freely to enhancement, he is not used by others as means, and can therefore be morally permitted to, as long as he also does not use himself merely as means for group efficiency. A moral agent, according to Kant, has a duty to himself to promote his own moral perfection. The agent must rationally, autonomously decide what ends he will adopt. Because this duty of perfection is strictly to oneself and not to others, only the individual can set ends for herself. In rational end-setting, the individual is free to decide which capacities she deems necessary to develop and importantly, by which means. If a person conceives the development of her cognitive capacities in accord with her conception of her duty, she must be free to do so. If he concludes that this must be done using CEDs, it is not up to others to condemn this. The one crucial condition is that the right reasons or maxims are employed. The use of CEDs must contribute to the end of one's self-perfection, so the agent acts in accordance with the categorical imperative, using himself as an end in itself and not merely as means. On these grounds, Kant objects to the use of CEDs if they are attributed for the wrong ends. However, if an individual rationally decides that she wills to develop her cognitive capacities as a duty to herself, this should not be condemned by others. Instead, such restrictions to autonomy undermine humanity as such.

While the Kantian ethics are quite complicated and maybe inaccessible, there are more common-sense arguments against the restriction of autonomy to prevent social pressure. It is claimed that prohibiting cognitive enhancement to eliminate negative consequences, is indeed in itself also coercive, for it denies people the freedom to practice safe means of self-improvement.[64] It is in fact quite contradictory to attempt to preserve the freedom of some, by denying the freedom of others. Such policies are clearly objectionable. Besides, this is not in line with public opinion in history. Comparing again more recent cognitive enhancements to literacy, there has seldom been hesitation towards allowing individuals to learn how to read. It cannot be denied that literacy was once elitist and later on,

[63] Katharina Bauer, "Cognitive self-enhancement as a duty to oneself: A Kantian perspective," *The Southern Journal of Philosophy* 56, no. 1 (March 2018): 36-58.

[64] Martha J. Farah et al., "Neurocognitive Enhancement: what can we do and what should we do?," 421-425.

as larger proportions of the population learned to read, the peer pressure to the illiterate stagnated.[65] In the current society, the illiterate are somewhat excluded and the pressure for children to learn how to read is especially high. Still, few would argue that the integration of the written word should have been prevented, due to these negative side-effects.

Harris makes a very valuable observation, in light of new developments such as innovative technological enhancements. In a chapter on reproductive freedom, he states that "liberty must extend to the use of technology and methods of reproduction not envisaged by Adam and Eve."[66] He contemplates that human rights should expand along with the development of previously unknown means. Basic modes of freedom evolve, as our position evolves. Freedom of movement was initially only intended to include walking and travelling within the range that was available. When humanity developed trains and airplanes, freedom of movement developed accordingly, allowing individuals to travel around the world. For cognitive improvements, we can apply the same line of reasoning. Before, we were only able to improve our cognitive capacities through educational institutions, now we have developed the possibility to improve ourselves by using other means. The freedom of self-improvement that is always supported, remains unchanged.

In conclusion, in a liberal democracy, the presumption is in favour of liberty. Only if sufficient justification is provided, this freedom can be restricted. The prospects on social coercion have such potential because they restrict the free choice of individuals to abstain from using CEDs. When they are pushed to do so to produce better outcomes, they are used merely as means, which is morally wrong according to Kantian ethics. While the situation of peer pressure is clearly problematic, the prohibition would be more of the same fallacy. To limit a rational agent's autonomous choice to pursue cognitive enhancement is also morally questionable. The policy to preserve freedom of some, by limiting the possibilities of the population is objectionable. As we have seen in history, basic rights and freedom should develop accordingly with technological innovations.

[65] Bostrom and Sandberg, "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges," 328-329.

[66] Harris, *Enhancing Evolution*, 76.

6. Discussion and Conclusion

In this thesis, multiple aspects concerning the fairness problem of cognitive enhancement have been studied. We have seen that a definition of enhancement proves to be problematic and does not help towards solutions. Good uses and consequences of such technologies must be identified, to help us in the ethical debate. A straightforward case of 'bad use' is when CEDs are used to cheat. Nevertheless, this statement is in need of some nuance. In various cases, where the focus is on the outcome, to refer to the use of stimulants as cheating is inaccurate. Furthermore, forsaking the use of enhancement by prohibition destroys all possible benefit. Such benefits promise to be extensive, especially when CED use is widespread. Due to network effects, productivity will increase and spent resources will deliver profit. On an individual scale however, the threat of inequality is lurking. Various processes have been revealed that protect the permissive situation from inequality. Anyway, prohibiting CEDs will not promote equality. The most important concern is probably diminished freedom due to peer pressure. But still, it is objectionable to preserve the freedom of some, by limiting the possibilities of others, for example by forbidding CEDs.

On the whole, it can be concluded that the benefits of permitting cognitive enhancement are numerous. Most important hesitations come from inequality problems and the concern of social coercion. Although these objections cannot factually be refuted, since these scenarios are merely predictive, this paper has compared CEDs to similar innovations. These analyses have shown that, while slight caution is in place, these objections are not sufficient to abstain from cognitive stimulant use altogether.

The results as obtained in this paper are to be interpreted carefully. In order to capture the consequences on fairness, subjects like safety and efficacy fall outside the scope of this thesis. Thorough medical research is absolutely necessary to guarantee safety and effectivity in cognitive stimulants. Inevitably, this research and development will also create forms of cognitive enhancement that stretch beyond our current imagination. This analysis has possibly overlooked some effects, because they are simply not predictable at this point. It is however of utmost importance to take a stance towards cognitive enhancement right now, to learn and be prepared for the future. It is crucial to keep the debate ongoing, in order to evaluate the developments in this domain. As technology advances, we also have to ask ourselves how far we want to go. Is our perfecting gaze insatiable, and is this acceptable? But before speculations of futuristic appliances of enhancement are part of our reality, we have to stick to the current situation. As we can tell from the available information today, as of right now, large-scale use of cognitive enhancement does not raise fairness problems that stand in the way of legalising its use. Because of benefits and freedom towards the population, universal permission of CEDs can and should be installed. An eye must be kept on social coercion that might increase due to innovations that grow beyond wat is possible today, to preserve its moral acceptability in the future.

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