

This response was submitted to the consultation held by the Nuffield Council on Bioethics on *Novel neurotechnologies: intervening in the brain* between 1 March 2012 and 23 April 2012. The views expressed are solely those of the respondent(s) and not those of the Council.

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General questions

1. Have you ever used a technology that intervenes in the brain, and with what consequences? Please describe your experience.
2. If you have not used a technology that intervenes in the brain before, would you do so if you were ill? Why / why not?
3. Would you use a technology that intervenes in the brain for non-medical purposes, such as gaming or improving your cognitive skills? Why / why not?
4. What are the most important ethical challenges raised by novel neurotechnologies that intervene in the brain?
5. In what ways, if at all, should the development and use of these technologies be promoted, restricted and/or regulated? Please explain your reasons.

2. I would use brain intervening technology if I was ill and there was no other effective treatments available or I have had tried other treatments and they did not help me. Even if there was very slight chance for me to get better and contribute to further research I would go for it especially if I was to die anyway there would not be much at stake in using whatever technology. I am not sure though if under those circumstances my informed consent could be really considered well informed and valid taking into account my vulnerable state. However, since technology that intervenes brain could change personality traits I am not sure it would leave me the same person and whatever the result I might not be able or willing to identify with it. This puts me back a bit. So, if my disease was not life threatening I would not rush letting interventions to my brain.

3. I never had high interest in gaming, so definitely no to using technology interventions for me personally. I would not object other people using it if they are well informed what they are doing. But since I personally know people who have 'addictions' to computer games which ruin their relationships and even has implications on their social and physical wellbeing with distracted sleep, eating and working regimes I see it as difficult case. They are far away from being cognitively incapable legally to take decisions of their own and maybe they identify more with virtual reality game then their work or family commitments but I just do not see how this can be beneficial for society. Lack of movement, sleep and eating disorders, less attention to work and family duties will eventually come with a cost to a society paying for treatment, social counselling, even crime prevention if children of people addicted to gaming abandon attention and loving care to their offspring who get their own

entertainment on the street. I would not like to pose such a burden to the society myself nor am I willing to pay such costs with my tax money. Enhancing cognitive skills is a slippery slope. What are we enhancing it for? To become top class surgeon – of course but if one possesses intelligence to perform the most complicated surgery he or she also has a free will and right to choose how to use these skills. It does not have to be as radical as becoming sophisticated criminal in financial markets or performing life saving surgeries with illegally smuggled organs. If I could exercise free choice then deciding if to enhance cognitive capacities I would like to be free deciding what to do with my enhanced traits and I think this could often interfere with interest of society. If I was promising researcher but after enhancing my cognitive capacities dropped it to become top poker player, who would have a power to stop me? There are opinions that as long as person identifies with even unforeseen result this person are still autonomous and authentic. All above I would consider if interventions were safe to use. Currently I would not go for it mainly because possible side effects and I am also quite happy with my cognitive abilities for now.

4. I see the following ethical challenges in using neurotechnologies that intervene the brain:

- presenting valid risk/benefit ratio to the consumer if such neurotechnologies were for sale. There are no absolutely safe and effective medicines up to date. All come with side effects: antibiotics could cause headaches, nausea and digestion problems, cold medicines like decongestant pseudoephedrine result in insomnia, even the use of paracetamol could lead to death.
- authenticity and sameness of the person using brain intervening technologies would be questioned. Enhanced traits change our lifestyle choices, self-esteem, even the environment we are likely to hang around.
- autonomy of the person in choosing to use or not to use it. There might be pressure from parents to use it on children, teachers on students, employers on employees; in military it might become obligatory if it enhances performance. Even for professions where human factor mistakes are undesirable like pilots, traffic controllers, public transport drivers, medical staff might be forced by the society to be cognitively enhanced for the sake of everybody.
- unknown long term effects which will never be known if not researched for which it has to be used by somebody.

5. I do not think it can be promoted yet because we do not know what we are promoting. Idea is fine but it is mainly justified by expectations not well researched facts. We also lack facts for restriction, so the best what can be done is to regulate it in order to protect those who chose to go for it as research subjects. If we have cognitive capacities already which allow us to make it better or alter it the way we desire. I do not see why it would be going against nature because humans are part of nature themselves. I do not think the right to find out if we can develop some brain intervention technologies for one or another use should be restricted. Nearly all human inventions can be used for commonly recognised positive or negative purposes. I do not believe that just

simply not inventing something would help to avoid dangers that invention brings. If we are not busy with researching neurointerventions there will be something else; if it is not us doing this research there will be somebody else finding the ways to explore this field sooner or later.