

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? **Not knowingly** Please describe your experience. **n/a**

2. If you have not used a technology that intervenes in the brain before, would you do so if you were ill? **Possibly, but the term 'ill' is problematic – for example there are circumstances where quality of life issues in relation to social care are equally if not more significant than 'illness'** Why / why not? **Yes, if there were sufficient known about benefits & risks which transcended a purely medical or other scientific model of understanding, and that development, monitoring and regulation attached sufficient priority to social as well as health well-being. The two are substantially indivisible in some instances, whilst in others either health or social well-being may take precedence.**

3. Would you use a technology that intervenes in the brain for non-medical purposes, such as gaming or improving your cognitive skills? **No,** Why / why not? **Because I would see it as an unnecessary intervention which raises fundamental questions of ethical behaviour, for example purchasing advantage or raising false expectations of human endeavour / achievement. However I could foresee the possibility of the boundaries between acceptable and unacceptable intervention becoming blurred over time.**

4. What are the most important ethical challenges raised by novel neurotechnologies that intervene in the brain? **See 2. & 3. above; the unknown long-term effects; the potential for manufacturing an elite of 'super-performers'; an associated possible erosion or re-definition of social beneficence and social justice for the benefit of the few; their potential conscious use in applications which are against the interests of society – all to be weighed against the possible benefits to individuals and society.**

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. **Their development is sufficiently covered by existing regulatory processes, ie research ethics approval, professional codes of conduct, voluntary informed consent of participants, etc. When it comes to marketing and wider availability there should be strict regulation to establish boundaries of ethically acceptable intervention, especially in the early stages. And there should be careful ongoing licensing and monitoring. Regulatory representation should be heavily weighted in**

favour of non-medical, non-scientist opinion in order to ensure that proposals are socially acceptable as well as scientifically safe and, in the case of health interventions, continuing efficacy.