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## Responses

# A call for data to inform discussion on cognitive enhancement

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*BioSocieties* (2010) **5**, 481–482. doi:10.1057/biosoc.2010.30

In his review of *Neuro-Enhancement: Ethik vor neuen Herausforderungen*, Quednow (2010) argues that the debate over neuro-enhancement amounts to a tempest in a teapot. We sympathize with his point that the current crop of so-called cognitive enhancers appear not to be so effective as to raise substantive ethical concerns. Nonetheless, we differ from Quednow on several points. To begin with, we do not share his certainty that neuroscience will be unable to produce psychopharmacological cognitive enhancers within our lifetimes; despite early failures, ongoing research in developing compounds that are safe and effective modulators of key molecular pathways involved in cognition remains robust (Burgin *et al*, 2009, to cite but one prominent example), and clinical trials aimed at treating age-associated memory impairment are ongoing (Amarin Corporation, 2008; Helicon Therapeutics, 2008). We are also skeptical that any warranted conclusions may yet be drawn about the presence or absence of an ‘epidemic’ of pharmacological neuro-enhancement. Quednow cites rather general figures that may not bear on the particular phenomena of interest. The most responsible pronouncement on this topic remains ‘we don’t know.’

To some extent, we share Quednow’s doubts that *debate* is what the field – or the public – needs. We feel that the controversy over cognitive enhancement has largely generated more heat than light. However there is, in our view, most certainly a need for *data*. Neuroethicists would be well served to actually understand what it is that people really do think about cognitive enhancers. What values influence their attitudes? What worries them? What are their factual beliefs about the practice, and are there any misconceptions among them? What interests underwrite the most widespread opinions? What is the *folk* view, in all its nuance or simplicity, of right and wrong, ethical and unethical, when it comes to human enhancement? And will any of their objections yield when given many practical solutions?

Of course, after enough fact-finding, such data will naturally invite *discussion* and *deliberation*. Even if cognitive enhancement never materializes in the form envisioned by its most enthusiastic boosters, we view data-driven discussion as salutary because the topic is ultimately an implement that helps us dig at subtler ethical issues arising at the interface between science and society. Although the topic may be something of a kludge for this purpose, it nonetheless promises that if we ask the right questions, we can learn much about how people understand themselves, their projects, and their values in relation to technologies

that alter the self as opposed to the myriad technologies that alter the world around us (Nowotny, 2008). In a broader sense, it is hard to deny that the twenty-first century will see us build on the ability to technologically transform ourselves, and that is an ethically fraught prospect, one that will lay bare numerous divergences in society's values. The more we know before the broader discussion reaches a fever pitch, the better.

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# Weak evidence for large claims contribute to the phantom debate

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*BioSocieties* (2010) **5**, 482–483. doi:10.1057/biosoc.2010.31

We agree with Quednow that the extent of cognitive enhancer abuse has been exaggerated (Quednow, 2010). We have found that exaggerated estimates of the rising prevalence of neuro-enhancement use come from three types of poor quality evidence.

First, there is a reliance on anecdotal evidence from individual cases, acquaintances or convenience samples. An online poll of 1400 *Nature* readers (Maher, 2008) is often cited as finding that one in five had used drugs to stimulate their focus, concentration or memory. An