Valerie Racine's Commentary on "Big Data & Neuroscience"

Commentary On
Case: Big Data & Neuroscience

Current discussions concerning recently launched large-scale data collection projects in neuroscience, such as the US's BRAIN Initiative and the EU's Human Brain Project, raise both epistemological and ethical questions. Concerning the former type of questions, many have asked what, if anything, can "bottom-up" strategies of large-scale collection of data about the brain really tell us about the human mind, consciousness and behaviour. Those sorts of concerns (e.g. about faulty inferences, false positives, etc.) often steer the ethical questions about the implications that the collection of brainwave data may have on our notions of personal identity, privacy, property, the capacity for consent, and the control of behaviour. Additionally, the novel uses of neurotechnologies raise some of the typically issues in the ethics of emerging technologies, such as dual-use dilemmas and governance.

First, the issues of personal identity, privacy, and property in big data neuroscience projects are similar to those that have emerged in the context of genetics and genomics (Choudhury et al. 2014; Illes & Lombera 2008). If data from EEGs, for example, can be used as a biometric signature that can identify individuals, then the identifying data may include sensitive information about the mental health or capacities of individuals. That kind of sensitive information must be protected to avoid its misuse and the potential profiling of individuals (Rodenburg 2014). So, safeguards must be taken to protect the confidentiality of research participants. But, researchers also have a duty to research participants to be clear about the purpose of data collection, its use, accessibility, and purposes.

Also similar to the context of genomics databases, researchers and scientists think it is important to safeguard individuals' mental privacy in a way that does not impede scientific and technological developments (Choudhury et al. 2014; Illes & Lombera 2008; Rose 2014). In this sense, there is a tension in whether to prioritize the principle of autonomy in research involving human subjects, or whether the principles of beneficence and justice ought to become more important in guiding the moral duties and responsibilities of researchers.

With respect to neuromarketing, many have questioned whether the appeal to consumers’ unconscious brain signals might be an invasion of privacy or an unethical manipulation of our affective states. Others have proposed that perhaps the field is exploiting useful medical equipment for frivolous and shallow purposes (Ulman et al. 2015). In light of these sorts of concerns, France has recently revised its 2004 rules on bioethics in 2011 to include a section on the appropriate use of brain-imaging technologies. It states: “Brain-imaging methods can be used only for medical and scientific research purposes or in the context of court expertise” (Oullier 2012; Ulman et al. 2015). With this revision, the commercial use of brainwave technologies is currently banned in France.

Ethicists have also noted that using these data to sell goods and services might lead to exploitation of vulnerable groups (e.g. children) who cannot understand or consent to the practices of neuromarketing. As with other research with human subjects, ethicists have argued vulnerable groups should be protected (Ulman et al. 2015).

Lastly, some fear that the potential manipulation of our cognitive and affective states for profit in commercial contexts might spill over to the political realm, where individuals can be manipulated to vote one way or another. Here again there is concern over whether the use of data gathered from neurotechnologies might interfere with our capacity for consent (Rodenburg 2014; Gutmann 2015).