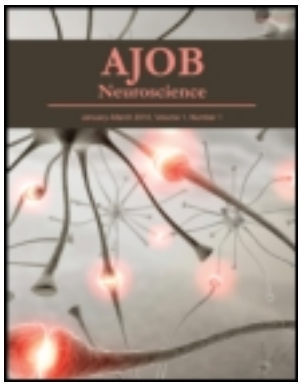

AJOB Neuroscience
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/uabn20

Can Brain Scans Prove Criminals Unaccountable?

Rebecca Roache [a]
[a] University of Oxford
Published online: 18 Mar 2014.

AJOB Neuroscience, 5(2): 35–54, 2014

ISSN: 2150-7740 print / 2150-7759 online
DOI: 10.1080/21507740.2014.884188

Open Peer Commentaries

Can Brain Scans Prove Criminals Unaccountable?

Rebecca Roache, University of Oxford

Leonard Berlin (2014) reports that neuroscientific data have been presented in court by lawyers wishing to argue that their clients have reduced or absent moral responsibility for their behaviour because their brain function is impaired. Berlin cites evidence showing that such neuroscientific data can influence judges to pass more lenient sentences, and he anticipates that advances in "the neurology of criminal behavior" may lead courts to view certain criminals as having reduced accountability for their actions. Similarly, an advisor to President Obama recently predicted a surge in the number of U.S. defendants appealing to neuroscientific data in criminal court cases in an attempt to reduce sentences and strike out confessions, and commented that this strategy has already been successful in some cases (Sample 2013).

Berlin, and those whose comments he quotes, note that the neuroscience behind criminal behavior is in its infancy. Many of the neuroimaging techniques he considers are experimental or otherwise unproven, and their results are subject to interpretation. I wish to raise the additional point that the ability to prove criminals unaccountable on the basis of neuroimaging does not depend merely on our understanding of the brain and the availability of reliable imaging techniques, but also—crucially—on answers to philosophical questions about the relationship between brain activity and free will.

I give two reasons for believing that brain scans cannot show criminals to be unaccountable, or less accountable. First, even where their brains look and function differently to the brains of normal people—in this context, healthy noncriminals—this does not itself entail that criminals are less morally responsible for their behavior than normal people. Second, since there is substantial disagreement about what neuroscience can *in general* tell us about free will, we should not expect it to tell us anything useful about criminals' free will.

CRIMINAL AND NONCRIMINAL BRAINS

Psychiatrist and lawyer Professor Nigel Eastman warns us that it is not possible to conclude from a brain scan that an individual has an abnormal brain (Sample 2013). Even setting this worry aside, however—that is, even supposing that it were possible for a brain scan of a certain criminal to show conclusively that her brain differs markedly from most people's brains—this tells us nothing about her accountability for her crime. I take criminal accountability to be the extent to which a criminal is morally responsible for her crime, and I take moral responsibility to presuppose free will. Free will, in this context, is the ability to do otherwise—in particular, the ability to refrain from criminal behavior.

Neuroscientific data showing even marked differences between the brains of criminals and those of noncriminals should be far from surprising. Criminals—at least violent ones, on whom Berlin and others writing on the topic of neuroscience in the courtroom tend to focus—differ markedly from most people in their behavior. In particular, violent criminals are disposed to behave violently in situations where most of us would not behave violently; this, of course, is why they end up in court. Since behavior arises *inter alia* from brain states, it should not surprise us if the brains of individuals disposed to behave violently differ markedly from the brains of those not so disposed. These brain differences themselves tell us nothing about the extent to which violent criminals are morally responsible for their violent behavior, and thus nothing about the extent to which they can properly be held accountable for their crimes.

To illustrate this point, consider an analogy. Given that behavior arises *inter alia* from brain states, it should not surprise us if the brains of cheerful people—that is, people disposed to behave cheerfully—turn out to differ markedly from the brains of uncheerful people, yet we would hardly take such differences themselves to provide any insight into the extent to which people in either group are morally responsible for their actions.[1]

1. My argument here is analogous to one given by Julian Savulescu (2010).

Address correspondence to Rebecca Roache, Oxford Centre for Neuroethics, Littlegate House, St. Ebbe's Street, Oxford, OX1 1PT, UK. E-mail: rebecca.roache@philosophy.ox.ac.uk

In general, in order to draw conclusions about criminal accountability from brain scans of criminals, we need a robust account of what sort of brain activity is compatible with free will and what sort undermines free will. Armed with such an account, drawing conclusions about free will from brain scans would be a relatively simple matter, provided that the data produced were sufficiently fine-grained. Formulating a philosophically uncontroversial such account according to which criminals are less free than other people, however, is far from being a simple matter. This is not to deny that there may be wider philosophical agreement about some cases than about others; philosophers might be inclined to agree, for example, about cases where there is a strong correlation between neuroscientific data and behavioral outcomes. A man whose paedophilia appeared and disappeared along with his brain tumour may be an example of such a case (Sample 2013). However, even striking neuroscientific data may have no obvious relevance to explaining behavior, as Stephen Morse (2014) cautions us in this issue. In such cases, it is far from clear that there are any uncontroversial conclusions to draw about free will. This leads us to the second reason for doubting that brain scans can show criminals to be unaccountable.

FREE WILL AND NEUROSCIENCE

Those who believe that abnormal neuroscientific data can show criminals to be less accountable depend on two controversial assumptions: that people with normal neuroscientific data have free will, and that we know what sorts of brain activity undermine free will. Both of these assumptions are contested in the scientific and philosophical literature.

Some claim that neuroscientific discoveries show that nobody has free will. The neuroscientist Benjamin Libet (1985) showed that conscious decisions to act are preceded by brain activity. He argued that this brain activity causes action: our conscious decisions (and therefore, according to him, free will) play no causal role in initiating action. Recent studies report similar results (e.g., Fried et al. 2011; Soon et al. 2008), which raises the worry that our intentions are mere rationalizations, rather than causes, of our actions (Wegner and Wheatley 1999). Many take such findings to undermine the belief that we have free will (e.g., Pinker 2002; Smith 2011). If science really has shown that nobody is free, then scanning the brains of criminals in an attempt to prove them unaccountable is a waste of time.

However, many dispute the implications of Libet's findings for free will. Daniel Dennett (2012) questions why we should take freedom to be threatened by the discovery that one's own brain activity causally influences one's actions when freedom is generally seen as compatible with certain external causal influences such as advice from others. Walter Glannon (2005) observes that freedom may not be all-or-nothing, so its absence under certain conditions—such as during an experiment—would not show that we *never* have it. And Alfred Mele (2007) argues that the pre-action brain activity Libet detected could indicate an urge rather than a decision to act; since not all urges result in action, Libet has not shown that the conscious decision to act is causally irrelevant to action. These objections demonstrate that the issue of what conclusions we can *in general* draw about free will from neuroscientific data is a highly contested issue; given this, we can hardly expect neuroscientific data about criminals to tell us anything reliable about their free will.

CONCLUSION

For practical, legal purposes there is a case for treating people as free despite the existence of disagreement between and among philosophers and neuroscientists about whether any of us are free. With this default assumption in mind, it is open to lawyers to demonstrate reduced accountability in individual cases. When such demonstrations appeal to familiar influences—such as coercion, poverty, illness, indoctrination—judges and juries, like the rest of us, have intuitions on which they can draw, sometimes with expert guidance, to assess the effect of these influences on free will. On the other hand, when such demonstrations refer to data about which ordinary people have no reliable intuitions, and which require expert scientific interpretation, and when that expert scientific interpretation makes unjustified philosophical assumptions about what those data entail about freedom, neuroscience in the courtroom is more likely to mislead than to inform.

Does this mean that neuroscience can never tell us anything useful about criminal accountability? No. What it means is that in order for neuroscience to provide insight into the extent to which criminals act freely, and therefore the extent to which they are morally responsible and accountable for their actions, what is required is not merely more sophisticated scanning techniques and a better understanding of brain function. These scientific advances must go hand-in-hand with improved philosophical insight into, and consensus about, the link between brain activity and free will.

REFERENCES

Berlin, L. 2014. Neuroimaging, expert witnesses, and ethics: Convergence and conflict in the courtroom. *AJOB Neuroscience* 5(2): 3–8.

Dennett, D. 2012. Erasmus: Sometimes a spin doctor is right. Praemium Erasmianum Essay. Available at: http://ase.tufts.edu/cogstud/papers/spindoctor.pdf

Fried, I., R. Mukamel, and G. Kreiman. 2011. Internally generated preactivation of single neurons in human medial frontal cortex predicts volition. *Neuron* 69(3): 548–562.

Glannon, W. 2005. Neurobiology, neuroimaging, and free will. *Midwest Studies in Philosophy* 29(1): 68–82.

Libet, B. 1985. Unconscious cerebral initiative and the role of conscious will in voluntary action. *Behavioral and Brain Sciences* 8: 529–566.

Mele, A. 2007. Decisions, intentions, urges, and free will: Why Libet has not shown what he says he has. In Campbell, J.K., O'Rourke, M. and Silverstein, H.S. (eds.) *Causation and explanation*, ed. J. K. Campbell, M. O'Rourke, and H. S. Silverstein, 241–264. Cambridge, MA: MIT Press.

Morse, S. J. 2014. Brain imaging in the courtroom: The quest for legal relevance. *AJOB Neuroscience* 5(2): 24–27.

Pinker, S. 2002. *The blank slate*. New York, NY: Viking.

Sample, I. 2013. US courts see rise in defendants blaming their brains for criminal acts. *Guardian*, November 10. Available at: http://www.theguardian.com/world/2013/nov/10/us-rise-defendants-blame-brains-crimes-neuroscience

Savulescu, J. 2010. Is low libido a brain disorder? *Julian Savulescu's Blog*, October 26. Available at: http://juliansavulescu.typepad.com/blog/2010/10/is-low-libido-a-brain-disorder.html

Smith, K. 2011. Neuroscience vs philosophy: Taking aim at free will. *Nature* 477: 23–25.

Soon, C. S., M. Brass, H.-J. Heinze, and J. D. Haynes. 2008. Unconscious determinants of free decisions in the human brain. *Nature Neuroscience* 11: 543–545.

Wegner, D. M., and T. Wheatley. 1999. Apparent mental causation: s5ources of the experience of will. *American Psychologist* 54/7: 480–492.

Neuroimaging in the Courtroom: Normative Frameworks and Consensual Practices

Dorothee Horstkötter, Maastricht University
Carla van El, VU University Medical Center
Maaike Kempes, Netherlands Institute for Forensic Psychiatry and Psychology
Jos Egger, Radboud University Nijmegen, Vincent van Gogh Institute for Psychiatry, and Pompe Institute for Forensic Psychiatry
Thomas Rinne, Netherlands Institute for Forensic Psychiatry and Psychology
Toine Pieters, VU University Medical Center and Utrecht University
Guido de Wert, Maastricht University

Neuroimaging is increasingly playing a role in courtrooms where judges take into account representations of the suspect's brain as evidence to determine their accountability and the sentence. Berlin (2014) presents an intriguing and timely overview of relevant developments and challenges in this regard. Focusing on issues related to criminal behaviour and criminal prosecution, we, however, have a twofold concern with his arguments.

First, after having pointed out current controversies concerning the use of neuroimaging techniques, Berlin concludes that future scientific discoveries will solve current conflicts. In our opinion, however, the mere accumulation of scientific findings will not suffice. A normative framework that guides decision making is needed.

Second, Berlin assumes that in the upcoming decades "the neurobiological and legal communities will continue to struggle with issues bearing on accountability and punishment" (5). Unfortunately, it remains open how this struggle might evolve and under what circumstances it could lead to more satisfactory applications. Addressing this challenge, we present a plan to structure and approach this struggle.

NORMATIVE GUIDANCE OF SCIENTIFIC APPLICATIONS

The past decades have been characterized by an overwhelming interest in the biomedical foundations of criminal behavior in general and the genetic, neurobiological, and neurophysiologic aspects of juvenile delinquency and youth violence in particular (van Goozen et al. 2007). It has been shown that groups of offenders differ from nonoffenders regarding genetic polymorphisms, structure and function of the brain, psychophysiological response to stress, and in gene–brain–environment interactions. Even though much is still unknown and scientific evidence is far from conclusive, these developments trigger high hopes and expectations concerning the development of more accurate methods both for early detection of children at-risk and for more effective forms of early prevention and treatment. Consequently, these methods are thought to lead to more accurate risk estimations and accountability assessments of suspects and thereby, ultimately, to the increased well-being of juveniles and defendants, as well as improved public safety. At the same time, however, biomedical approaches

Address correspondence to Dorothee Horstkötter, Maastricht University, CAPHRI; Health. Ethics & Society, PO Box 616, Maastricht, 6200 MD, Netherlands. E-mail: d.horstkoetter@maastrichtuniversity.nl