

Recent Developments in Neuroscience and Moral Objectivity

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A discussion by a neuroscience student

In this short paper I would like to propose the following: human judgments of morality are not, and can not be objective given unavoidable aspects of human neural anatomy. They can be influenced by brain damage, your genetics, or even switched up and down in intensity at will using methods like Transcranial Magnetic Stimulation (TMS), which I shall later discuss. Therefore any sense of an ability to make objective morality judgments is an illusion. Consider, for example one realist moral philosopher in his room making his decisions in normal circumstances, and another who is trapped by a mad scientist manipulating his mental states without him even realizing. Is there really a difference between these cases? We will first explore the evidence for thinking there may not be, then return to our captive moral philosopher strapped to a TMS device.

While there are multiple ways to both investigate and alter a person's judgment of morality this paper will focus primarily on the 'ultimatum game' as a method of measuring morality judgments and the right dorsolateral prefrontal cortex (DLPFC) as the part of your brain making the call as to what is moral and what is not. The ultimatum game developed by Güth, Werner, Schmittberger, and Schwarze in 1982 is a stylized representation of negotiation often used when exploring game theory and models of economics though more recently it has been used as a measure of fairness judgments both by anthropologists in cross-cultural studies and psychologists/neuroscientists. In it one player is given an amount of money and has to offer a portion of it to a second player. If the second player rejects the amount of money offered then neither player is allowed to keep any of the money but if the second player accepts the proposal, the money is divided along the lines suggested by the first player and kept by the two players. The two players interact anonymously and only once so reciprocation is not an issue. 50/50 splits are almost always accepted but splits of 20% or less are often rejected being deemed as "unfair" (*Oosterbeek et al. 2004; Henrich et al. 2004*). "Humans appear willing to forego material payoffs to punish unfair behavior," (*Wallace et al. 2007*). As a side note this behavior of judging fairness and then punishing unfair behavior seems unique to humans and is not observable in chimpanzees (*Jenson et al 2007*).

The judgment of fairness of different proportional splits of money can be influenced by external variables beyond the decider's control. Studies in which identical and fraternal twins separated at birth were measured to find the point at which they made the judgment that an offer was unfair have shown that "additive genetic effects account for 42% of the observed variation in (the) responder" (*Jenson et al 2007*.) and "we estimate that >40% of the variation in subjects' rejection behavior is explained by additive genetic effects." (*Wallace 2007*)

Studies on the effects of hormones on one judgment of fairness found that "High-testosterone men reject low ultimatum game offers" (*Burnham 2007*) and that manipulating a person's serotonin (5-HT) levels will effect their judgments of offers as fair or unfair (*Crockett et al 2008*). More dramatically than the above are the ability of TMS to virtually turn judgments of fairness up or down.

Transcranial Magnetic Stimulation (TMS) is a noninvasive process whereby neurons are excited by weak electric currents created by a device using rapidly changing magnetic fields also known as electromagnetic induction. A technique using TMS called repetitive TMS (rTMS) can actually "turn off" part of the brain for a period of time. Depending on what area of the brain it is being used on, the subject can not even tell that they have been affected, this is the case with

judgments of when to accept a fair offer. Studies have repeatedly shown that using this technique you can alter someone's perception of when it is appropriate to accept an offer (*Wouta et al 2005; Knoch et al 2006*). More specifically, “After rTMS over the right DLPFC, however, this pattern was changed, with longer reaction times for rejecting unfair offers, and a trend towards more acceptances of unfair offers” (*Wouta et al 2005*). It is worth noting that at least one study – Knoch et al 2006 – suggests that patients can still judge the offer as being unfair but has less qualms with accepting it.

We readily accept that in certain circumstances our judgments, including moral ones, are influenced and could lead us to make bad judgments and decisions. For instance, a person may commit actions they would usually deem as immoral if coerced, or drunk or in some variety of high stress situation. In these circumstances, however, it seems that there is some alteration in the first-hand experiences of the agent. In the case of TMS, however, an agent can be entirely unaware that they are being effected by certain psychological factors.

The fact that a philosopher's judgments of morality or at the very least how they act on those judgments can be so easily influenced leads to a number of interesting questions about human perspectives of morality. For example consider our philosopher held captive and strapped into a TMS device. Let's say that he is given the option of escape if he presses a button that will kill a random stranger. While the TMS is acting on him he is more willing to make the less morally hard line decision. Later, when the TMS's effects have worn off he judges his action as morally wrong. Is he at fault? It was his own line of logic that lead to him choosing to press the button after all. And if he wasn't at fault, does that mean that the judgment of morality “he made” wasn't actually made by him? If this is the case then it would mean that if you have a neurochemical state that is causing you to make one moral choice over the other and that state is out of your control then you are absolved of your choice, but we are all influenced in the same way by both our genes and hormone levels. So are no moral choices really our own? In this paper I will not address the questions this has brought up, but perhaps it will give you something to think about, particularly next time you make a moral decision...

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