Moral Flexibility: Insights From Neuroscience

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ABSTRACT

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Classical models of antisocial behavior propose that violence arises out of a failure of lateral prefrontal cortex (LPFC) to “put the brakes” on aggressive impulses originating in subcortical regions such as the amygdala and striatum. A new, alternative model proposes that LPFC does not directly inhibit aggressive impulses, but instead flexibly modulates the value of aggressive acts via corticostriatal circuits.

I will present the first empirical evidence directly supporting the alternative model. In a series of behavioral, pharmacological and neuroimaging experiments we observed healthy adults as they decided whether to anonymously inflict pain on themselves or strangers in exchange for money. We find that most people would rather harm themselves than others for profit. This moral preference correlated with neural responses to profit, where participants with stronger moral

preferences had lower dorsal striatal responses to profit gained from harming others. LPFC encoded profits gained from harming others, but not self, and tracked the blameworthiness of harmful choices. Moral decisions modulated functional connectivity between LPFC and the profit-sensitive region of dorsal striatum. Increasing central dopamine levels with the dopamine precursor levodopa eliminated moral preferences. The findings suggest moral behavior is linked to a neural devaluation of reward realized by a prefrontal modulation of striatal value representations.

This mechanism implies that the moral value of actions is flexibly guided by neural representations of social norms. If norms change, so then do the values that guide actions. Supporting this view, re-framing decisions to harm others as being in service of a noble cause eliminated moral preferences. The flexibility of value representations in the brain may hold the key to understanding why people with good intentions can sometimes do terrible things.

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