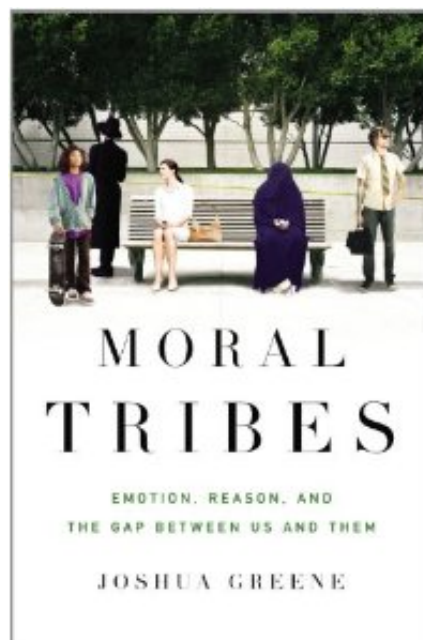




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[Moral Tribes](#)

[Emotion, Reason, and the Gap Between Us and Them](#)

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For more information about my research and collaborators, please visit the [Moral Cognition Lab](#) webpage.

Research and Background

My lab studies moral judgment and decision-making, primarily using behavioral experiments and functional neuroimaging (fMRI). The goal of our research is to understand how moral judgments are shaped by automatic processes (such as emotional “gut reactions”) and controlled cognitive processes (such as reasoning and self-control). Much of our work is aimed at understanding these automatic and controlled processes in more detailed functional terms. Recent work examines related phenomena such as cooperation, punishment, and belief in God.

Our research indicates that there is no dedicated “moral sense” or “moral faculty.” Instead, moral judgment depends on the functional integration of multiple cognitive systems, none of which appears to be specifically dedicated to moral judgment. In light of this, our research strategy is not to isolate and characterize the moral parts of the brain, but rather to understand how moral judgments arise from the coordinated interaction of various domain-general cognitive systems. These include systems that enable reasoning and cognitive control, the representation of value and the motivation of its pursuit, the simulation of distal events using sensory imagery, and the representation of structured thoughts.

Much of our research is motivated by normative philosophical questions and practical questions about how we can solve the moral problems that divide us. My forthcoming book ([Moral Tribes: Emotion, Reason, and the Gap Between Us and Them](#)) addresses these issues, applying the lessons of this new science to old philosophical questions and current social problems.

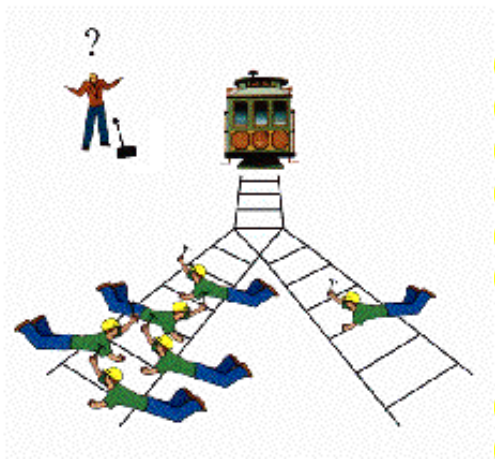
Emotion and Reason in Moral Judgment

Rationalist philosophers such as Plato and Kant conceived of mature moral judgment as a rational enterprise, as a matter of appreciating abstract reasons that in themselves provide direction and motivation. In contrast to these philosophers, “sentimentalist” philosophers such as David Hume and Adam Smith argued that emotions are the primary basis for moral judgment. I believe that emotion and reason both play critical roles in moral judgment and that their respective influences have been widely misunderstood.

More specifically, I have proposed a “dual-process” theory of moral judgment according to which characteristically deontological moral judgments (judgments associated with concerns for “rights” and “duties”) are driven by automatic emotional responses, while characteristically utilitarian or consequentialist moral judgments (judgments aimed at promoting the “greater good”) are driven by more controlled cognitive processes. If I’m right, the tension between deontological and consequentialist moral philosophies reflects an underlying tension between dissociable systems in the brain. Many of my experiments employ moral dilemmas, adapted from the philosophical literature, that are designed to exploit this tension and reveal its psychological and neural underpinnings.

Moral Dilemmas and the "Trolley Problem"

My main line of experimental research began as an attempt to understand the "Trolley Problem," which was originally posed by the philosophers Philippa Foot and Judith Jarvis Thomson.



First, we have the *switch* dilemma: A runaway trolley is hurtling down the tracks toward five people who will be killed if it proceeds on its present course. You can save these five people by diverting the trolley onto a different set of tracks, one that has only one person on it, but if you do this that person will be killed. Is it morally permissible to turn the trolley and thus prevent five deaths at the cost of one? Most people say "Yes."

Then we have the *footbridge* dilemma: Once again, the trolley is headed for five people. You are standing next to a large man on a footbridge spanning the tracks. The only way to save the five people is to push this man off the footbridge and into the path of the trolley. Is that morally permissible? Most people say "No."

These two cases create a puzzle for moral philosophers: What makes it okay to sacrifice one person to save five others in the *switch* case but not in the *footbridge* case? There is also a psychological puzzle here: How does everyone know (or "know") that it's okay to turn the trolley but not okay to push the man off the footbridge?

According to my dual-process theory of moral judgment, our differing responses to these two dilemmas reflect the operations of at least two distinct psychological/neural systems. On the one hand, there is a system that tends to think about both of these problems in utilitarian terms: Better to save as many lives as possible. The operations of this system are more controlled, perhaps more reasoned, and tend to be relatively unemotional. This system appears to depend on the dorsolateral prefrontal cortex, a part of the brain associated with "cognitive control" and reasoning.

On the other hand, there is a different neural system that responds very differently to these two dilemmas. This system typically responds with a relatively strong, negative emotional response to the action in the *footbridge* dilemma, but not to the action in the *switch* dilemma. When this more emotional system is engaged, its responses tend to dominate people's judgments, explaining why people tend to make utilitarian judgments in response to the *switch* dilemma, but not in response to the *footbridge* dilemma.



If you make the utilitarian judgment sufficiently attractive, you can elicit a prolonged competition between these two systems. Consider the *crying baby* dilemma: It's war time, and you are hiding in a basement with several other people. The enemy soldiers are outside. Your baby starts to cry loudly, and if nothing is done the soldiers will find you and kill you, your baby, and everyone else in the basement. The only way to prevent this from happening is to cover your baby's mouth, but if you do this the baby will smother to death. Is it morally permissible to do this?

According to the dual-process theory, this dilemma is difficult because it, like the *footbridge* dilemma elicits

a strong negative emotional response ("Don't kill the baby!"), while at the same time eliciting a comparably compelling utilitarian response from the other system ("But if you don't kill the baby, everyone dies.") Difficult dilemmas like this one tend to elicit increased activity in the anterior cingulate cortex, a brain region associated with "response conflict." And when people make utilitarian judgments in response to these difficult dilemmas, they exhibit increased activity in anterior regions of the dorsolateral prefrontal cortex.

Book

Greene, J. (2013). [*Moral Tribes: Emotion, Reason, and the Gap Between Us and Them*](#), Penguin Press.

Journal Articles

*indicates equal contributions

Frankland, S.M., Greene, J.D. (submitted) 'Man bites dog' versus 'dog bites man': The representation of structured thoughts in left-mid superior temporal cortex.

Abe, N., Greene, J.D. (submitted) Response to anticipated reward in the nucleus accumbens predicts behavior in an independent test of honesty.

Killingsworth, M.A., Stewart, L.E., Greene, J.D. (submitted) Is life worth living?: Measuring net happiness and its misperception.

Shariff, A.F., Greene, J.D., Karremans, J.C., Luguri, J., Clark, C.J., Schooler, J.W., Baumeister, R.F., Vohs, K.D. (in press) Free will and punishment: A mechanistic view of human nature reduces retribution. *Psychological Science*. [PDF](#)

Greene, J.D. (in press) Beyond point-and-shoot morality: Why cognitive (neuro)science matters for ethics. *Ethics*. [PDF](#)

Shenhav, A., Greene, J.D. (2014) Integrative moral judgment: Dissociating the roles of the amygdala and the ventromedial prefrontal cortex. *Journal of Neuroscience*. 34(13), 4741-4749 [PDF](#)

*Rand, D.G., *Peysakhovich, A., Kraft-Todd, G.T., Newman, G.E., Wurzbacher, O., Nowak, M.A., Greene, J.D. (2014) Social heuristics shape intuitive cooperation. *Nature Communications*. Doi: 10.1038/ncomms4677 [PDF](#)

Paxton, J.M., Bruni, T., Greene, J.D. (2013 ePub) Are "counter-intuitive" deontological judgments really counter-intuitive?: An empirical reply to Kahane et al. (2012). *Social, Cognitive, and Affective Neuroscience*. [PDF](#)

Rand, D.G., *Greene, J.D., *Nowak, M.A. (2012) Spontaneous giving and calculated greed. *Nature*, 489, 427-430. [PDF](#)

Amit, E., and Greene, J.D. (2012) You see, the ends don't justify the means: Visual imagery and moral

judgment. *Psychological Science*, 23(8), 861-868. [PDF](#)

Baron, J., Ritov, I., and Greene, J.D. (2011 ePub, 2013) The duty to support nationalistic policies. *Journal of Behavioral Decision Making*, 26(2) 128-138. [PDF](#)

Cushman, F.A., Murray, D., Gordon-McKeon, S., Wharton, S., Greene, J.D. (2011 ePub, 2012) Judgment before principle: Engagement of the frontoparietal control network in condemning harms of omission. *Social, Cognitive, and Affective Neuroscience*, 7(8) 888-895. [PDF](#)

Cushman, F.A. and Greene, J.D. (2012) Finding faults: How moral dilemmas illuminate cognitive structure. *Social Neuroscience*, 7(3-4), 269-279. [PDF](#)

*Shenhav, A.S., *Rand, D.G., Greene, J.D. (2011 ePub, 2012) Divine intuition: Cognitive style influences belief in God. *Journal of Experimental Psychology: General*, 141(3) 423-8. [PDF](#)

Paxton, J.M., Ungar, L., Greene, J.D., (2011 ePub, 2012) Reflection and reasoning in moral judgment. *Cognitive Science*, 36(1) 163-177. [PDF](#)

Shen, F.X., Hoffman, M.B., Jones, O.D., Greene, J.D., Marois, R. (2011) Sorting guilty minds. *New York University Law Review*, Vol. 80. [PDF at SSRN](#)

Greene, J.D. (2011) Morality and emotion: A tasting menu. *Emotion Review*, 3(3) 1-3. (Editor's introduction to special issue) [PDF](#)

Shenhav, A.S., Greene, J.D. (2010). Moral judgments recruit domain-general valuation mechanisms to integrate representations of probability and magnitude. *Neuron*, 67, 667-677. [PDF](#)

Bazerman, M.H. and Greene, J.D. (2010). In favor of clear thinking: Incorporating moral rules into wise cost-benefit analysis. *Perspectives on Psychological Science*, 5(2), 209-212. [PDF](#)

Paxton, J.M., Greene, J.D., (2010) Moral reasoning: Hints and allegations. *Topics in Cognitive Science*, 2(3), 511-527. [PDF](#)

Greene, J.D., Paxton, J.M. (2009) Patterns of neural activity associated with honest and dishonest moral decisions. *Proceedings of the National Academy of Sciences USA*, Vol. 106, No. 30, 12506-12511. [PDF](#)

Paharia, N., Kassam, K.S., Greene, J.D., Bazerman, M.H. (2009) Dirty work, clean hands: the moral psychology of indirect agency. *Organizational Behavior and Human Decision Processes*, 109, 134-141. [PDF](#)

Greene, J.D., Cushman, F.A., Stewart, L.E., Lowenberg, K., Nystrom, L.E., and Cohen, J.D. (2009) Pushing moral buttons: The interaction between personal force and intention in moral judgment. *Cognition*, Vol. 111 (3), 364-371. [PDF](#) [Supplementary Materials](#)

Greene, J.D. (2009) Dual-process morality and the personal/impersonal distinction: A reply to McGuire, Langdon, Coltheart, and Mackenzie. *Journal of Experimental Social Psychology*, Vol. 45 (3), 581-584. [PDF](#)

Greene, J.D., Morelli, S.A., Lowenberg, K., Nystrom, L.E., Cohen, J.D. (2008) Cognitive load selectively interferes with utilitarian moral judgment. *Cognition*, Vol. 107, 1144-1154. [PDF Supplementary Materials](#)

Greene, J.D. (2007) Why are VMPFC patients more utilitarian?: A dual-process theory of moral judgment explains. *Trends in Cognitive Sciences*. Vol 11, No. 8, 322-323. [PDF](#)

Greene, J. D. , Cohen J. D. (2004) For the law, neuroscience changes nothing and everything. *Philosophical Transactions of the Royal Society of London B*, (Special Issue on Law and the Brain), 359, 1775-17785. [PDF](#)

Greene, J.D., Nystrom, L.E., Engell, A.D., Darley, J.M., Cohen, J.D. (2004) The neural bases of cognitive conflict and control in moral judgment. *Neuron*, Vol. 44, 389-400. [PDF](#)

Greene, J.D. (2003) From neural "is" to moral "ought": what are the moral implications of neuroscientific moral psychology? *Nature Reviews Neuroscience*, Vol. 4, 847-850. [PDF](#)

Greene, J. and Haidt, J. (2002) How (and where) does moral judgment work? *Trends in Cognitive Sciences*, 6(12), 517-523. [PDF](#)

Greene, J.D., Sommerville, R.B., Nystrom, L.E., Darley, J.M., & Cohen, J.D. (2001). An fMRI investigation of emotional engagement in moral Judgment. *Science*, Vol. 293, 2105-2108. [PDF](#)

Greene, J.D., Baron, J. (2001). Intuitions about declining marginal utility. *Journal of Behavioral Decision Making*, 14, 243-255. [PDF](#)

Baron, J., Greene, J.D. (1996). Determinants of insensitivity to quantity in valuation of public goods. *Journal of Experimental Psychology: Applied*, 2, 107-125. [PDF](#)

Book Chapters

Greene, J.D. (in press) The cognitive neuroscience of moral judgment and decision-making, in *The Cognitive Neurosciences V*, M.S. Gazzaniga, Ed. MIT Press, Cambridge, MA.

Amit, E., Gottlieb, S., Greene, J.D., (in press). Visual vs. verbal thinking and dual-process moral cognition, in *Dual-process Theories of the Social Mind*, J. Sherman, B. Gawronski, Y. Trope, Eds. Guilford Press.

Cushman, F.A., and Greene, J.D. (2012) The philosopher in the theater, in *The Social psychology of morality: Exploring the causes of good and evil*, M. Mikulincer, P.R. Shaver, Eds. APA Press. [PDF](#)

Greene, J. D. (2011) Social neuroscience and the soul's last stand, in *Social Neuroscience: Toward Understanding the Underpinnings of the Social Mind*, A. Todorov, S. Fiske, and D. Prentice, Eds. Oxford University Press, New York. [PDF](#)

Cushman, F., Young, L., Greene, J.D. (2010) Our mutli-system moral psychology: Towards a consensus view, in *The Oxford Handbook of Moral Psychology*, J. Doris, G. Harman, S. Nichols, J. Prinz, W.

Sinnott-Armstrong, S. Stich, Eds. Oxford University Press. [PDF](#)

Greene, J.D. (2009) The cognitive neuroscience of moral judgment, in *The Cognitive Neurosciences IV*, M.S. Gazzaniga, Ed. MIT Press, Cambridge, MA. [PDF](#)

Greene, J.D. (2009) Fruit flies of the moral mind, in *What's Next: Dispatches from the Future of Science*, M. Brockman, Ed., Vintage, New York.

Greene, J. D. (2007). The secret joke of Kant's soul, in *Moral Psychology, Vol. 3: The Neuroscience of Morality: Emotion, Disease, and Development*, W. Sinnott-Armstrong, Ed., MIT Press, Cambridge, MA. [PDF](#)

McClure, S.M., Botvinick, M.M., Yeung, N., Greene, J.D., Cohen, J.D. (2007). Conflict monitoring in conflict-emotion competition, in *Handbook of Emotion Regulation*, J.J. Gross Ed., Guilford Press, New York.

Greene, J. D. , Cohen J. D. (2006), For the law, neuroscience changes nothing and everything, in *Law and the Brain*, S. Zeki and O. Goodenough, Eds., Oxford University Press, New York. [PDF](#) (journal version)

Greene, J. (2005). Emotion and cognition in moral judgment: evidence from neuroimaging, in *Neurobiology of Human Values*, J.P. Changeux, A.R. Damasio, W. Singer, and Y. Christen, Eds., Springer-Verlag, Berlin.

Greene, J. (2005). Cognitive neuroscience and the structure of the moral mind, in *The Innate Mind: Structure and Contents*, S. Laurence, P. Carruthers,. and S. Stich. Eds., Oxford University Press, New York. [PDF](#)

Miscellaneous

My doctoral thesis: Greene, J. D. (2002). The Terrible, Horrible, No Good, Very Bad Truth About Morality and What To Do About It. Department of Philosophy, Princeton University. (advised by David Lewis and Gilbert Harman) [PDF](#)

Notes on Berker [PDF](#)