Available online at www.sciencedirect.com

ScienceDirect

Current Opinion in Behavioral Sciences

# From moral concern to moral constraint

Fiery Cushman

Current research into the neural basis of moral decision-making endorses a common theme: The mechanisms we use to make value-guided decisions concerning each other are remarkably similar to those we use to make value-guided decisions for ourselves. In other words, moral decisions are just another kind of ordinary decision. Yet, there is something unsettling about this conclusion: We often feel as if morality places an absolute constraint on our behavior, in a way unlike ordinary personal concerns. What is the neural and psychological basis of this feeling of moral constraint? Several models are considered and outstanding questions highlighted.

**Addresses**
Department of Psychology, Harvard University, United States

Corresponding author: Cushman, Fiery (cushman@fas.harvard.edu)

**Current Opinion in Behavioral Sciences** 2015, **3**:58–62

This review comes from a themed issue on **Social behavior/ neuroscience**

Edited by **Molly Crockett** and **Amy Cuddy**

doi:10.1016/j.cobeha.2015.01.006



Moral decisions are hard to make and fun to study. Suppose a woman notices $20 laying by the shoes of a stranger at the front of a checkout line. Her eyes linger on the orphaned bill. Will she point out the money to the customer who may have dropped it, or wait a moment until it can be discreetly pocketed? Watching this moment of uncertainty imparts a vicarious thrill because, to varying degrees, her competing motives are shared by us all.

Psychology and neuroscience have much to say about her motive to keep the money. In fact, the integration of computational, neurobiological and psychological models to explain value-guided learning and choice stands out as one of the foremost accomplishments of contemporary behavioral research [1]. Remarkable efforts have also been made to understand the competing moral value: her desire to return the money. The basic upshot is that the value we place on moral behavior is much like the value we place on $20 [2•]. It is encoded in similar neural structures [3], and integrated into decisions using basically similar processes [4,5••].

Yet this conclusion sits uncomfortably alongside philosophical theorizing, psychological evidence, and ordinary experience. Moral values appear to differ in some very fundamental ways from the prudential value of money, food, companionship, and so forth. Our moral values feel more important, universal, and inviolable [6] — we have the sense that you just *have* to return to the $20, but not that you just *have* to keep it for yourself. Are these differences real? Are they reflected in the neural mechanisms that support moral decision-making? And if so, then how?

## What is morality?

Attempts to define morality typically focus on two candidate features. The first is concern for others' welfare, which is emphasized in utilitarian or consequentialist philosophical theories. The second key feature is the concept of an absolute constraint, rule or law. This approach finds its philosophical apogee in the work of Kant.

Following the lead of some philosophers, we could seek to refine a single and exact definition of the moral domain. This is a promising avenue if we wish to spend centuries gridlocked in intractable and often arcane debate. Recently, however, psychologists have charted a different course by arguing that moral cognition comprises multiple distinct but interrelated mechanisms [7,8]. On the one hand, we can and do make flexible tradeoffs between our concern for others and for ourselves; In fact, tradeoffs between ourselves and others exhibit such consistency that the 'welfare tradeoff ratio' is championed by some as the computational core of the moral domain [10]. On the other hand, many acts that do not involve obvious welfare considerations at all are nevertheless widely considered immoral (for instance, consensual sibling incest) [9].

Thus, research into the neuroscience of morality faces at least two big questions. First, what mechanisms acquire and encode moral concern: the value of others' welfare, ultimately allowing us to make decisions that flexibly trade off between interests when they collide? Second, what mechanisms acquire and encode the sense of moral constraint: the representation and value of a moral rule, or law? We have an impressive grip on the first issue, but are startling empty-handed on the second.

## Moral concern

There are two principle literatures on the neuroscience of other-oriented concern. One interrogates the neural substrates of the perception of pain or reward in others — that is, the basis of empathy. The second interrogates the

neural substrates of decision-making on behalf of others. Both of these literatures converge on a common conclusion: The mechanisms we use to encode value and make decisions for ourselves are largely overlapping with those we use for others.

The affective experience of pain or otherwise unpleasant experience activates a characteristic network of brain regions including anterior cingulate cortex and anterior insula, along with brainstem and regions of the cerebellum. Numerous studies show a similar network of activation (although not perfectly identical) when people observe pain in others [11••]. Similarly, much evidence suggests that people experience vicarious reward when they see others experience positive outcomes. Regions throughout the dopamine reward network, widely observed to respond to the experience of surprising personal rewards, are also activated when individuals see others experience rewarding outcomes, especially for socially close targets [12••,13]. Finally, researchers have investigated the neural mechanisms involved in making choices for others [14–17], including in situations where this generosity carries a personal cost [4,18,19]. Here, again, the typical finding is that people use similar neural mechanisms when making value-guided decisions for others as they do when making value-guided decisions for themselves [16,20,21].

## Moral constraint

In contrast to the well-developed literature on welfare concerns, we know little about how the brain represents moral rules as absolute constraints on behavior. Current research does, however, offer two promising approaches. One possibility is that our sense of inviolable moral rules comes from a unique kind of value representation principally designed to guide our own decision-making. Another possibility is that moral rules are grounded in psychological mechanisms principally designed to judge the actions of others.

### Model-free moral values

A dominant theme of research in the last decade is that our sense of moral constraint derives from a unique kind of value representation — that strong rules are grounded in strong feelings. According to one early and influential proposal, the dual process model, controlled cognitive processes are responsible for utilitarian-like assignment of value to welfare while affective processes are responsible for the sense of inviolable constraint on 'up-close and personal' harms [7]. Although certain elements of this model are contested on conceptual [22] and empirical [23] grounds, a wealth of data favors the broad distinction between psychological mechanisms that deliver competing responses in dilemmas pitting general welfare against direct harm [24].

Two recent proposals attempt to translate this insight into the language of contemporary computational cognitive models of decision-making [25,26]. They leverage one of the oldest distinctions in the history of psychology, between goal-directed and habitual action [27]. Goal-directed actions require a working model of the world. You pick a desirable outcome, and then form a plan to bring it about. Thus, they correspond to the class of model-based reinforcement learning algorithms. In contrast, habits are reactive stimulus-response pairings that are strengthened when followed by reward. Executing a habit does not require planning toward a valued outcome, and thus correspond to the alternative class of model-free algorithms.

A key test for model-based versus model-free control is to assess whether a person continues to value an action even when it's connection to reward has been broken. A model-based system immediately devalues the action because it plays no productive role in maximizing expected outcomes, whereas a model-free learning system continues to assign value to the action based on its prior history of reward. In this sense, model-free algorithms assign value directly to actions, whereas model-based algorithms assign value to outcomes and then derive action values via online planning.

Many moral norms exhibit this signature property of model-free valuation. For instance, some American travelers feel compelled to tip foreign waiters 20% even when there is no such local norm. Presumably this does not reflect an underlying concern for the relevant outcome (well-funded foreign waitstaffs), but rather the habit-like internalization of an action-based value: Good service requires a tip. Indeed, evidence suggests that such altruistic actions are supported by internalized norms deployed automatically [28]. Likewise, in the trolley problem an outcome-based assessment favors doing direct harm to a focal individual, but people find it difficult to endorse such harm. This can be understood as the consequence of negative value assigned intrinsically to an action: direct, physical harm [29].

Research on habit learning has centered largely on the computational role of dopaminergic targets in the basal ganglia. Current neuropsychological research provides little association, however, between abnormal moral behavior and insult to the basal ganglia. Moreover, motor habits triggered by the basal ganglia are typically not accompanied by the subjective experience of value in the way that morals are: Tying your shoes feels automatic, but not desperately important. A more likely candidate for the encoding of action-based moral values is the ventromedial prefrontal cortex (vmPFC) [30–32]. As such, a key area for future research is to assess the role of model-free value representation in vmPFC [33•], especially in the moral domain. Also, while some moral values include

sensorimotor content (e.g., do not push people in front of trains), others are far more abstract (e.g., tip waiters). A second key area for future research involves the assignment of model-free value to abstract conceptual representations [34,35].

The application of reinforcement learning principles to the moral domain dovetails with the literature described above on the 'moral concern' we feel for others. Given that we value the welfare of others, as well as their social feedback, we must make adaptive decisions that maximize these sources of reward. Naïvely, we might have assumed that such decisions proceed by careful reasoning about expected outcomes — i.e., in a model-based fashion. Surely, much of the time, they do. But, we also appear to assign intrinsic value to certain actions and, more abstractly, the application of certain moral rules, based on their historical association with reward and punishment.

There is, however, one major shortcoming of using model-free value assignment as basis for understanding our sense of 'moral constraint' as inviolable or absolute: These values are designed precisely in order to trade off against each other. Put colloquially, the application of reinforcement learning principles to the moral domain can help us to understand why murder always feels highly undesirable, but it is challenged to explain why murder would ever feel strictly forbidden (for instance, when the alternative is associated with an even less desirable model-free value).

There are three ways out of this dilemma. One is to insist that the value assignments to moral concerns are simply very, very strong — so strong that they feel like inviolable constraints. The second is to suppose that a moral rule ('murder is wrong') feels inviolable not because the value assigned to it is extremely great, but rather because the content of the rule takes a law-like form. The third possibility is that our sense of inviolability comes from somewhere else entirely. These possibilities are not strictly exclusive of each other, and each deserves further research.

### Third-party evaluation

One of the reasons that moral rules might feel inviolable is because we apply them universally — not just to ourselves, but to others. A rich tradition of psychological research maps the criteria we use to decide whether others have acted rightly or wrongly. Two particular criteria play a foundational role: Who did what (i.e., the *causal role* that a person plays in bring about harm), and whether they meant to (i.e., their *intent or foresight* of that harm)[36,37]. These criteria do not provide a complete description of our moral sense [38], but they capture a strikingly large proportion of the variance.

Intent-based moral judgment depends on a network of brain regions that have long been implicated in mental state reasoning, including medial prefrontal cortex (MPFC), posterior cingulate and right and left temporoparietal junction (TPJ) [39]. These areas are reliably recruited during moral judgment, and variance in their response magnitude predicts the influence of intent information on moral judgment [40]. Moreover, the multivariate activation pattern in TPJ encodes information about a harmdoer's intent [41•], and transient disruption to TPJ via transcranial magnetic stimulation produces predictable changes in moral judgment [42]. Some evidence also indicates a causal role for MPFC in the application of intent-based criteria in moral judgment [43].

In contrast, research into the neural basis of the 'harm/causation' criterion is underdeveloped. At least two studies suggest that the amygdala may play a key role in encoding the negative value associated with harmful outcomes [5••,44]. It is less clear what neural substrates contribute to the perception of moral responsibility: The causal link between an agent and a harm that supports our sense of condemnation and revenge. Some evidence indicates a role for the frontoparietal control network, and especially the dorsolateral prefrontal cortex [45,46].

Still less certain is how these processes of judging third parties relate to one's own choice of moral action — in other words, the relationship between 'he shouldn't' and 'I won't'. In some cases we seem to infer whether other's have acted wrongly by assessing our own intuitive aversion to performing the same actions [47]. Do we also perform the reverse computation, using standards of third-party moral evaluation to impose moral constraints on our own action? At least one source of evidence speaks against such a view: Psychopaths make moral judgments that are surprisingly similar to non-psychopaths' [48], given their grossly aberrant behavior.

A distinct line of research, however, provides some support for the application of common mechanisms to third-party judgment and first-person decision-making. In addition to condemning harmful action, people also condemn actions that are unfair. Studies of responder behavior in the ultimatum game find that the anterior insula (AI) responds more to unfair offers than to fair offers, and that responses of a greater magnitude are associated with an increased likelihood of spiteful punishment [49–52]. Does this activation reflect the personal frustration at getting a low payoff, or a more impartial interest in fairness? At least two recent studies favor the latter view, demonstrating the involvement of the AI in participants' willingness to pay in order to rectify inequality experienced by others [53••,54].

## Moral rules

Our sense of moral constraint comprises two dimensions [55]. First, there is an affective dimension: We assign

intrinsic value to the action, rule or norm in question. The logic of model-free value representation provides an appealing model for this dimension. Second, there is a dimension of objectivity — the sense that moral rules apply to all persons, at all times, in a manner that is inviolable. Elements of this dimension are better captured by the logic of third-party moral evaluation. A central challenge for future research in the neuroscience of morality is to assess how these dimensions combine into a single, coherent entity: A moral rule.

Behavioral research in moral psychology indicates we construct and endorse explicit moral rules, or norms, that embody both value and a sense of objectivity and inviolability. This is not surprising; moral rules can satisfy two important demands. The first is self-understanding. One of the most central themes of the last fifty years of research in social psychology is that humans continually attempt to construct consistent models of their own attitudes, beliefs and behavior [56]. Similarly, moral rules codify our own moral intuitions — the ones generated by the automatic operation of the neural systems described above [57]. The second demand is social coordination. Moral rules serve as social objects; we use them not only to guide our own behavior, but also to express and coordinate normative expectations within social groups. In order to communicate a moral value it helps to make it explicit. In order to apply it clearly and consistently it helps to treat it as inviolable.

How can cognitive neuroscience address the origin and application of moral rules? As this review attests, we have made great progress by treating non-moral cognition as a blueprint that exhaustively details the constituent mechanisms available to moral cognition. But, we may need to think of non-moral cognition not as a complete blueprint, but instead as an underlying scaffold: A framework of common elements that supports a structure of more unique design. What kind of structure are we looking for? We have tended to take as our object of study the moral decision: A determination of what to do, whom to trust, what is wrong, and so forth. Perhaps it is an apt moment to introduce an additional object of study: moral rules. This would position us to understand morality not only as the collection of concerns, but also a source of constraint.

## Conflict of interest

Nothing declared.

## Acknowledgements

Thanks to Ryan Miller, Josiah Nunziato and Molly Crockett for valuable feedback. This research was supported by grant N00014-14-1-0800 from the Office of Naval Research, as well as through the support of a grant through the Experience Project from the John Templeton Foundation. The opinions expressed in this publication are those of the author's and do not necessarily reflect the views of the Office of Naval Research or of the John Templeton Foundation.

## References and recommended reading

Papers of particular interest, published within the period of review,

have been highlighted as:

- • of special interest
- •• of outstanding interest

1. Rangel A, Camerer C, Montague PR: **A framework for studying the neurobiology of value-based decision making**. *Nat Rev Neurosci* 2008, **9**:545-556.

2. • Ruff CC, Fehr E: **The neurobiology of rewards and values in social decision making**. *Nat Rev Neurosci* 2014, **15**:549-562.
A comprehensive review of current research on moral decision-making. Considers the possibility of domain-specific mechanisms, but provisionally favors the view that moral decision-making relies fundamentally on computations of a domain-general kind.

3. Shenhav A, Greene JD: **Moral judgments recruit domain-general valuation mechanisms to integrate representations of probability and magnitude**. *Neuron* 2010, **67**:667-677.

4. Zaki J, López G, Mitchell JP: **Activity in ventromedial prefrontal cortex covaries with revealed social preferences: evidence for person-invariant value**. *Soc Cogn Affect Neurosci* 2013, **9**:464-469.

5. •• Shenhav A, Greene JD: **Integrative moral judgment: dissociating the roles of the amygdala and ventromedial prefrontal cortex**. *J Neurosci* 2014, **34(13)**:4741-4749.
Demonstrates dissociable contributions of the amygdala and ventromedial prefrontal cortex to moral decisionmaking. Amygdala appears to encode the affective value of harm, while ventromedial prefrontal cortex integrates this value into an all-things-considered moral judgment.

6. Turiel E: *The Development of Social Knowledge: Morality and Convention*. New York, NY: Cambridge University Press; 1983.

7. Greene JD: In *Moral Psychology*, vol 3. Edited by Sinnott-Armstrong W. Cambridge, MA: MIT Press; 2008.

8. Young L, Dungan J: **Where in the brain is morality? Everywhere and maybe nowhere**. *Soc Neurosci* 2012, **7**:1-10.

9. Graham J *et al.*: **Mapping the moral domain**. *J Pers Soc Psychol* 2011, **101**:366.

10. Tooby J, Cosmides L, Sell A, Lieberman D, Sznycer D: **15 internal regulatory variables and the design of human motivation: a computational and evolutionary approach.Handbook of Approach and Avoidance Motivation**. Mahwah, NJ: Lawrence Erlbaum; 2008.

11. •• Lamm C, Decety J, Singer T: **Meta-analytic evidence for common and distinct neural networks associated with directly experienced pain and empathy for pain**. *Neuroimage* 2011, **54**:2492-2502.
Synthesizes the findings of 42 studies of empathy and pain to show that partially overlapping brain regions process one's own experience of pain and the appreciation of pain in others.

12. •• Mobbs D *et al.*: **A key role for similarity in vicarious reward**. *Science* 2009, **324**:900.
Shows that neural signatures of personally experineced reward overlap with those of observed reward, especially for individuals who are socially close.

13. Braams BR *et al.*: **Reward-related neural responses are dependent on the beneficiary**. *Soc Cogn Affect Neurosci* 2013, **9**:1030-1037.

14. Shenhav A, Greene J: **Moral judgments recruit domain-general valuation mechanisms to integrate representations of probability and magnitude**. *Neuron* 2010, **67**:667-677.

15. Harbaugh WT, Mayr U, Burghart DR: **Neural responses to taxation and voluntary giving reveal motives for charitable donations**. *Science* 2007, **316**:1622-1625.

16. Cooper JC, Kreps TA, Wiebe T, Pirkl T, Knutson B: **When giving is good: ventromedial prefrontal cortex activation for others' intentions**. *Neuron* 2010, **67**:511-521.

17. Hsu M, Anen C, Quartz SR: **The right and the good: distributive justice and neural encoding of equity and efficiency**. *Science* 2008, **320**:1092-1095.

18. Zaki J, Mitchell JP: **Equitable decision making is associated with neural markers of intrinsic value**. *Proc Natl Acad Sci* 2011, **108**:19761-19766.

19. Hare TA, Camerer CF, Knoepfle DT, O'Doherty JP, Rangel A: **Value computations in ventral medial prefrontal cortex during charitable decision making incorporate input from regions involved in social cognition**. *J Neurosci* 2010, **30**:583-590.

20. Janowski V, Camerer C, Rangel A: **Empathic choice involves vmPFC value signals that are modulated by social processing implemented in IPL**. *Soc Cogn Affect Neurosci* 2013, **8**:201-208.

21. Nicolle A *et al.*: **An agent independent axis for executed and modeled choice in medial prefrontal cortex**. *Neuron* 2012, **75**:1114-1121.

22. Frank MJ, Cohen MX, Sanfey AG: **Multiple systems in decision making**. *Curr Dir Psychol Sci* 2009, **18**:73.

23. Kahane G *et al.*: **The neural basis of intuitive and counterintuitive moral judgment**. *Soc Cogn Affect Neurosci* 2011, **7**:393-402.

24. Greene J: *Moral Tribes: Emotion, Reason and the Gap Between Us and Them*. New York: The Penguin Press; 2013.

25. Cushman F: **Action, outcome, and value: a dual-system framework for morality**. *Pers Soc Psychol Rev* 2013, **17**:273-292 http://dx.doi.org/10.1177/1088868313495594.

26. Crockett MJ: **Models of morality**. *Trends Cogn Sci* 2013, **17**: 363-366.

27. Dolan RJ, Dayan P: **Goals and habits in the brain**. *Neuron* 2013, **80**:312-325.

28. Rand DG *et al.*: **Social heuristics shape intuitive cooperation**. *Nat communicat* 2014, **5** Article number 3677.

29. Cushman F, Young L, Hauser M: **The role of conscious reasoning and intuition in moral judgment: testing three principles of harm**. *Psychol Sci* 2006, **17**:1082-1089 http://dx.doi.org/10.1111/J.1467-9280.2006.01834.X.

30. Koenigs M *et al.*: **Damage to the prefrontal cortex increases utilitarian moral judgements**. *Nat Mater* 2007, **446**:908-911 http://dx.doi.org/10.1038/nature05631.

31. Anderson S, Bechara A, Damasio H: **Impairment of social and moral behavior related to early damage in human prefrontal cortex**. *Nature Neuroscience* 1999, **2**:1032-1037.

32. Taber-Thomas BC *et al.*: **Arrested development: early prefrontal lesions impair the maturation of moral judgement**. *Brain* 2014, **137**:1254-1261.

33. • Fitzgerald TH, Friston KJ, Dolan RJ: **Action-specific value signals in reward-related regions of the human brain**. *J Neurosci* 2012, **32(46)**:16417-16423.
Provides evidence for action-specific value representation in ventromedial prefrontal cortex, a potential signature of model-free value representation.

34. Graybiel AM: **Habits, rituals, and the evaluative brain**. *Annu Rev Neurosci* 2008, **31**:359-387.

35. Badre D, Frank MJ: **Mechanisms of hierarchical reinforcement learning in Cortico – Striatal Circuits 2: Evidence from fMRI**. *Cereb Cortex* 2012, **22**:527-536.

36. Cushman F: **Crime and punishment: distinguishing the roles of causal and intentional analyses in moral judgment**. *Cognition* 2008, **108**:353-380 http://dx.doi.org/10.1016/j.cognition.2008.03.006.

37. Alicke M: **Culpable control and the psychology of blame**. *Psychol Bull* 2000, **126**:556-574.

38. Malle BF, Guglielmo S, Monroe AE: **A theory of blame**. *Psychol Inq* 2014, **25**:147-186.

39. Koster-Hale J, Saxe R: **Functional neuroimaging of theory of mind**. *Understanding Other Minds: Perspectives From Developmental Social Neuroscience*. Oxford University Press; 2013: 132-163.

40. Young L, Saxe R: **Innocent intentions: a correlation between forgiveness for accidental harm and neural activity**. *Neuropsychologia* 2009, **47(10)**:2065-2072.

41. • Koster-Hale J, Saxe R, Dungan J, Young LL: **Decoding moral judgments from neural representations of intentions**. *Proc Natl Acad Sci* 2013, **110**:5648-5653.
Uses MVPA to map the feature space of mental state represetnations in right temporoparietal junction, with application to moral judgment processes.

42. Young L, Camprodon JA, Hauser M, Pascual-Leone A, Saxe R: **Disruption of the right temporoparietal junction with transcranial magnetic stimulation reduces the role of beliefs in moral judgments**. *Proc Natl Acad Sci* 2010, **107**:6753.

43. Young L *et al.*: **Damage to ventromedial prefrontal cortex impairs judgment of harmful intent**. *Neuron* 2010, **65**:845-851.

44. Buckholtz JW *et al.*: **The neural correlates of third-party punishment**. *Neuron* 2008, **60**:930-935.

45. Cushman FA, Murray D, Gordon-McKeon S, Wharton S, Greene JD: **Judgment before principle: engagement of the frontoparietal control network in condemning harms of omission**. *Soc Cogn Affect Neurosci* 2011, **7**:888-895.

46. Buckholtz J *et al.*: **The neural correlates of third-party punishment**. *Neuron* 2008, **60**:930-940.

47. Miller R, Cushman FA: **Aversive for me, wrong for you: first-person behavioral aversions underlie the moral condemnation of harm**. *Soc Pers Psychol Compass* 2013, **7**:707-718.

48. Tassy S, Deruelle C, Mancini J, Leistedt S, Wicker B: **High levels of psychopathic traits alters moral choice but not moral judgment**. *Front Hum Neurosci* 2013, **7**:229.

49. Sanfey AG, Rilling JK, Aronson JA, Nystrom LE, Cohen JD: **The neural basis of economic decision-making in the ultimatum game**. *Science* 2003, **300**:1755-1758.

50. Tabibnia G, Satpute AB, Lieberman MD: **The sunny side of fairness preference for fairness activates reward circuitry (and disregarding unfairness activates self-control circuitry)**. *Psychol Sci* 2008, **19**:339-347.

51. Guo X *et al.*: **Increased neural responses to unfairness in a loss context**. *Neuroimage* 2013, **77**:246-253.

52. White SF, Brislin SJ, Sinclair S, Blair JR: **Punishing unfairness: rewarding or the organization of a reactively aggressive response?** *Hum Brain Mapp* 2014, **35**:2137-2147.

53. •• Dawes CT *et al.*: **Neural basis of egalitarian behavior**. *Proc Natl Acad Sci* 2012, **109**:6479-6483.
Provides evidence that the response of the anterior insula to unfair monetary allocations does not depend on the individual being the target of the unfair allocation.

54. Corradi-Dell'Acqua C, Civai C, Rumiati RI, Fink GR: **Disentangling self-and fairness-related neural mechanisms involved in the ultimatum game: an fMRI study**. *Soc Cogn Affect Neurosci* 2013, **8**:424-431.

55. Nichols S: **Norms with feeling: toward a psychological account of moral judgment**. *Cognition* 2002, **84**:221-236.

56. Nisbett RE, Wilson TD: **Telling more than we can know: verbal reports on mental processes**. *Psychol Rev* 1977, **84**:231-259.

57. Cushman FA, Greene JD: In *The Social Psychology of Morality: Exploring the Causes of Good and Evil.* Edited by Mikulincer M, Shaver PR. New York: APA Press; 2011:401-412.