

Medical Ethics and the New Science of Moral Cognition

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1. Introduction

Medical ethics is in its very nature an interdisciplinary activity involving input from both medical practitioners as well as those with experience or expertise in ethics. Since the academic study of ethics has historically been carried out within the humanities – by jurists, theologians, and philosophers – these three groups have played a significant role in shaping the ethical content and methodology of medical ethics. However, there has been a growing recognition in recent years that ethics and morality are also legitimate objects of *scientific* investigation and a corresponding convergence of interest in the study of morality within the fields of anthropology, social psychology, neuroscience, and evolu-

tionary biology. This convergence of interest has led to what Haidt calls “the new synthesis of moral psychology,” which many believe is transforming the study of morality today.¹⁾

What effects will this newly emerging science of morality have on the field of medical ethics? This question has received some discussion in the past few years but as yet there is no consensus on how to answer it. Tassej *et al.* argue that recently discovered scientific knowledge concerning ethical decision-making can improve medical ethics,²⁾ and Cushman suggests that the scientific understanding of morality may help to shape our moral thinking toward nobler ends.³⁾ On the other hand, Buller maintains that neuroscience cannot and should not be allowed to replace normative questions with

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1) Haidt J. The new synthesis in moral psychology. *Science*, 2007 May 18;316:998-1002.

2) Tassy S, Le Coz P, Wicker B. Current knowledge in moral cognition. *J Med Ethics*, 2008;34:679-682.

3) Cushman F. Morality: Don't be afraid – science can make us better. *New Scientist Mag* [Internet]. 2010 Oct [cited 2011 Jan];2782:[about 3 pages]. Available from: <http://www.newscientist.com/article/mg20827821.700-morality-dont-be-afraid-science-can-make-us-better.html>.

scientific ones,⁴⁾ and Singer insists that it is an error in reasoning, a logical fallacy, to think that scientific information about moral cognition can license normative conclusions about what one ought to think or behave.⁵⁾ In what follows I review some of the recent developments in the sciences concerned with moral cognition, sort through some of the claims that have been made concerning the implications of these developments for medical ethics, and offer my own suggestions on how these new lines of scientific research might affect the field of medical ethics.

2. Trolleyology and Universal Moral Grammar

Prior to the 1950s, the human mind was regarded within the reigning behaviorist paradigm as an impenetrable block box, and researchers in psychology and related fields paid little attention to what went on inside that box. Beginning in the 1950s, however, a cognitive revolution in the human sciences ushered in a new era in which researchers began to investigate directly the inner workings of the black box. Noam Chomsky, one of the key figures in this movement, challenged

the behaviorist idea that humans learn to speak a language one word a time and instead argued that the human mind comes equipped with an innate language faculty or universal grammar (UG) that enables and constrains each individual's acquisition and understanding of a language.⁶⁾ In a similar vein, Jean Piaget produced data in support of the view that cognitive development is a naturally occurring process that unfolds in the individual in several distinct stages,⁷⁾ and Lawrence Kohlberg later expanded on this idea to develop a theory of moral reasoning.⁸⁾ Through the 1970s and 1980s Kohlberg collected data on how individuals of varying ages and cultural backgrounds, and from both sexes, responded to specific moral dilemmas. His focus was not so much on subjects' answers, but rather on the *justifications* they gave in support of their answers. Kohlberg sought to show that moral reasoning is based on explicit rules and that normal individuals progress through a series of stages grouped into three levels (pre-conventional, conventional, and post conventional) as they pass from childhood through adolescence to adulthood. This sequence of stages was thought to be biologically determined and, hence, universal.

4) Buller T. What can neuroscience contribute to ethics? J Med Ethics. 2006;32:63-64.

5) Singer P. Morality: beyond intuition. New Scientist Mag[Internet]. 2010 Oct [cited 2011 Jan];2782:[about 2 pages.]. Available from: <http://www.newscientist.com/article/mg20827821.800-morality-beyond-intuition.html>.

6) See, for instance, Chomsky, N. Aspects of the theory of syntax. Boston: MIT Press; 1965.

7) Piaget J. The moral judgment of the child. New York: Free Press; 1965.

8) See, for instance, Kohlberg, L. Stage and sequence: The cognitive-developmental approach to socialization. In Goslin DA, editor. Handbook of socialization theory and research. Chicago: Rand McNally; 1969. p.347-480.

While Kohlberg's approach dominated moral psychology for more than a decade it did have its critics. One common criticism was that Kohlberg's model of moral reasoning overvalued abstract reasoning and justice and downplayed the values of care and community considered by some to be more representative of female and non-western modes of moral reasoning.⁹⁾ For these and other reasons Kohlberg's approach to the study of moral reasoning began to lose its appeal in the 1980s. Around the same time the human sciences underwent yet another change in direction away from the investigation of conscious, controlled cognitive processes like reasoning toward the study of the emotions and intuitive processes within the brain. However, while this "affective revolution," as it is known, displaced Kohlbergian psychology, the idea of moral universals and the experimental use of moral dilemmas did not die. Indeed they continue to be key elements in contemporary psychological research and figure prominently in the work of people like Lewis Petrinovich, John Mikhail, and Marc Hauser, each of whom uses moral dilemmas as probes to uncover what they regard as a universal moral sense or faculty of the mind.¹⁰⁾

Petrinovich was perhaps the first research-

er to apply experimental methods to a series of moral dilemmas (described below) first devised by the philosophers Philippa Foot and Judith Jarvis Thomson. Petrinovich *et al.* uncovered patterns of responses to these dilemmas that are consistent across cultures, age groups, and genders, suggesting that underlying individual moral judgments are universal decision-making processes.¹¹⁾ These experimental findings were later replicated and expanded by Mikhail.¹²⁾ Mikhail's experiments were based on a series of dilemmas each of which consisted of a brief scenario and a corresponding question. The following four are representative:

The Trolley Problem

A runaway trolley is about to run over and kill five people, but the driver can push a button that will turn the trolley onto a side track, where it will kill only one person. Is it permissible to push the button?

The Transplant Problem

Five patients are dying from organ failure, but a doctor can save all five if she cuts up a sixth patient, removes his organs and distributes them to the other five, killing one but saving five. Is it permissible to do this?

9) Gilligan, C. In a different voice: Psychological theory and women's development. Cambridge, MA: Harvard UP; 1982.

10) See, for instance, Hauser, M. Moral minds: How nature designed our universal sense of right and wrong. New York: HarperCollins: 2006.

11) Petrinovich L, O'Neill P, Jorgenson M. An empirical study of moral intuitions: toward an evolutionary ethics. *Ethology and Sociobiology*. 1993;64:467-478.

12) Mikhail, J. Universal moral grammar: Theory, evidence and the future. *Trends in Cognitive Sciences*. 2007;11:143-152.

The Bystander Problem

A runaway trolley is about to run over and kill five people, but a bystander can throw a switch that will turn the trolley onto a side track, where it will kill only one person. Is it permissible to throw the switch?

The Footbridge Problem

A runaway trolley is about to run over and kill five people, but a bystander who is standing on a footbridge can shove a man in front of the train, saving five people but killing the man. Is it permissible to shove the man?

Each of the foregoing dilemmas concerns an action that has both the morally good effect of saving five people and the morally bad effect of killing one. However, subjects' responses to these dilemmas vary significantly and systematically. The overwhelming majority of people from all demographic and cultural groups studied answer "Yes" (it is permissible) in response to the Trolley and Bystander problems and "No" (it is not permissible) in response to the Transplant and Footbridge problems. These results are laid out in <Table 1>, with the percentages of respondents that Mikhail found to answer "Yes" in each case.

<Table 1> Moral Intuitions of Trolley, Transplant, Bystander, and Footbridge Problems¹³⁾

Problem	Good Effect	Bad Effect	Judgment	Percentage answering "Yes"
Trolley	Saving 5 people	Killing 1 person	Permissible	94%
Transplant	Saving 5 people	Killing 1 person	Impermissible	8%
Bystander	Saving 5 people	Killing 1 person	Permissible	90%
Footbridge	Saving 5 people	Killing 1 person	Impermissible	10%

Mikhail collected data, not only on subjects' responses to these dilemmas, but also on the justifications subjects gave for their responses. His results show that subjects had great difficulty producing compelling justifications that would explain the observed pattern of judgments; indeed, many subjects

were surprised by the fact that they had provided radically different judgments to structurally similar dilemmas.¹⁴⁾ But in contrast to the difficulty subjects had in justifying their judgments, the judgments themselves were rapid, intuitive, and made with a high degree of confidence, indicating a

13) Adapted with modifications from Mikhail, J. Aspects of the theory of moral cognition: Investigating intuitive knowledge of the prohibition of intentional battery and the principle of double effect [unpublished], 2002 [cited 2010 Dec][about 129 pages].

14) Mikhail J. 2007; *op. cit.*

disassociation of judgment and justification.

According to Mikhail, subjects' responses to the foregoing dilemmas (as well as an indefinitely large class of similar problems) can be explained by postulating tacit knowledge of the following two legal rules or operative principles:

1. The prohibition on intentional battery, and
2. The principle of double effect.

The principle of intentional battery forbids knowingly causing harmful contact with another individual without her consent. The principle of double effect holds that an otherwise prohibited action that has both good and bad effects may be permissible if (a) the good but not the bad effect is directly intended, (b) the good outweighs the bad, and (c) no morally preferable alternative is available. Mikhail claims that the crucial difference between the permissible and impermissible dilemmas is that in the impermissible cases the agent commits an act of battery prior to and as a means of achieving his good end whereas in the permissible cases the violations are subsequent side-effects.¹⁵⁾ Mikhail's work thus suggests that concepts like battery, ends, means, cause, effect, and side-effect are not merely analytical tools of lawyers and philosophers, but are innate concepts of the ordinary human mind. These concepts, along with certain tacit rules or

principles, such as the principle of double effect, constitute what Mikhail calls a universal moral grammar (UMG), which is modeled on Chomsky's theory of a universal grammar (UG). In Mikhail's view, it is this UMG, of which individuals are largely unaware, that generates the quick, intuitive, moral judgments, which subjects find so difficult to justify.

3. The Doctrine of Double Effect

The doctrine of double effect has a long history, tracing back to Thomas Aquinas, and has been given various formulations.¹⁶⁾ The doctrine has been used in the evaluation and justification of a wide variety of actions, but within medical ethics, its principal use has been in the ethical debates over euthanasia and palliative care for terminally ill patients. Since the doctrine entails that a harmful effect of treatment, even resulting in death, is permissible if it is not intended and occurs as a side effect of a beneficial action, it has been thought by some to justify certain forms of palliative care that doctors might otherwise be reluctant to give. According to Sulmasy and Pellegrino, many American health care professionals are fearful of doing anything that hastens a patient's death, even if done as a side-effect of attempts to relieve pain and

15) Mikhail J. 2007: *op. cit.*

16) Marquis D. Four versions of double effect. *Journal of Medicine and Philosophy*, 1991;16(5):515-544.

suffering.¹⁷⁾ Since such fears may limit the treatment options available to health care professionals and compromise the treatment of terminally ill patients, Sulmasy and Pellegrino argue for the doctrine of double effect on the basis of its beneficial effects on medical practice: the doctrine provides moral reassurance to health care professionals who are morally opposed to euthanasia and assisted suicide and encourages optimal care for the dying.¹⁸⁾

The doctrine of double effect has been embraced by professional organizations such as the American Medical Association¹⁹⁾ and by a large number of health care professionals in end-of-life treatment decisions. A survey conducted by Russell *et al.*, for instance, found that the overwhelming majority of neurologists endorse the concept that sedation for the imminently dying differs morally and legally from euthanasia and that it is an acceptable therapeutic option for some but not all patients who are imminently dying of a terminal illness.²⁰⁾ Similarly, in her survey of

nurses in the UK, Dickenson found that “although double effect is originally a Catholic doctrine, UK nurses of all religions, and of no religion, accept it.²¹⁾ However, while there is broad support for the doctrine of double effect within the medical community, the doctrine is rejected by a large number of secular ethicists, including Dan Brock,²²⁾ Helga Kuhse,²³⁾ Peter Singer,²⁴⁾ and others.²⁵⁾

In the present context, rather than wading into this debate, let us consider what implications the new science of moral cognition might have for the debate. As we have already observed, the approach taken by Mikhail, Hauser, and other proponents of UMG, is to suppose that there are innate ethical principles that are responsible for the moral judgments that ordinary people give in response to moral dilemmas. In particular, Mikhail believes that each of the four dilemmas considered above (Trolley, Transplant, Bystander, and Footbridge) can be explained by supposing that rules such as the

17) Sulmasy DP, Pellegrino ED. The rule of double effect: clearing up the double talk. *Arch Intern Med*. 1999;159:545–550.

18) *Ibid.*, p.545.

19) Council on Ethical and Judicial Affairs of the American Medical Association. Decisions at the end of life. *JAMA*. 1992;267:2229–2233.

20) Russell JA, Williams MA, Drogan O. Sedation for the imminently dying: Survey results from the AAN Ethics Section. *Neurology*. 2010 Apr;74(16):1303–1309.

21) Dickenson DL. Are medical practitioners out of touch? Practitioner attitudes in the US and UK towards decisions at the end of life. *J Med Ethics* 2000;26:254–260.

22) Brock D. Medical decisions at the end of life. In Kuhse H, Singer P., editors. *A companion to bioethics*. Malden, MA: Blackwell. 1998 p.231–241.

23) Kuhse, H. Response to Ronald M Perkin and David B Resnick: The agony of trying to match sanctity of life and patient-centred medical care. *J Med Ethics* 2002; 28:270–272.

24) Singer P. *Practical Ethics*. 2nd ed. Cambridge: Cambridge UP; 1999.

25) Quill TE, Dresser R, Brock, DW. The rule of double effect—A critique of its role in end-of-life decision making. *N Engl J Med* 1997;337:1768–1771.

prohibition on intentional battery and the doctrine of double effect are, in effect, hardwired into the human brain. If this hypothesis turns out to be true, what effect, if any, would this have on the debates in medical ethics that revolve around the doctrine of double effect? If, for instance, the doctrine of double effect is indeed a property of the human brain, would this somehow legitimize its use in ethical deliberations on end-of-life care for the terminally ill?

Some ethicists and moral philosophers would respond to this last question negatively and maintain that no matter what science may reveal about how people think about moral dilemmas and why they reach the conclusions they do, such knowledge will tell us nothing about how people *should* think about those dilemmas. Peter Singer, for one, seems to take this position. Speaking on the emerging evidence in support of universal moral intuitions, Singer describes as “incautious” the scientists who regard such evidence as shedding any light on the normative questions of ethics.²⁶⁾ In support of this claim, he quotes David Hume, who pointed out long ago, “that no combination of statements about what ‘is’ the case could ever allow one to deduce what ‘ought’ to be.”²⁷⁾

This last claim is an expression of the so-called “naturalistic fallacy.” It is an important philosophical idea that is often cited but rarely if ever challenged in the medical ethics literature.²⁸⁾ However, it is in fact a contentious doctrine, which has been rejected by several prominent philosophers, including John Searle²⁹⁾ and Dan Dennett.³⁰⁾ As psychologists and cognitive scientists continue to make advances in the understanding of moral cognition, it is important to reconsider whether there is in fact an impenetrable conceptual barrier between normative ethics on the one hand and science on the other.

4. The Naturalistic Fallacy

One of the interesting developments in cognitive science in recent years has been the use of fMRI studies that examine what happens in people’s brains as they respond to moral dilemmas. For instance, Joshua Greene *et al.* have used fMRI studies to investigate what happens in the brain areas of individuals as they ponder and respond to the very dilemmas described above (Trolley, Transplant, Bystander, and Footbridge) as well as

26) Singer P. Science and morals. *New Scientist Mag* [Internet]. 2008 Jul [cited 2011 Jan];2782:[about 2 pages.]. Available from: <http://www.newscientist.com/article/dn14384-reason-special-science-and-morals.html>.

27) Singer P. 2010; *op. cit.*

28) See, for instance, Dickenson *op.cit.* and Buller *op.cit.*

29) Searle J. How to derive “ought” from “is”. *Philosophical Review*, 1964;73(1): 43–58.

30) Dennett DC. *Darwin’s dangerous idea: evolution and the meaning of life*. New York: Simon and Schuster; 1996.

several others.³¹⁾ Their findings are striking: the brain areas associated with emotion were more active while people were contemplating dilemmas such as the Transplant and Footbridge problems (which they label “moral-personal” dilemmas) than they were during contemplation of the Trolley and Bystander problems (which they label “moral-impersonal” dilemmas). They also found that those who respond affirmatively to the moral personal dilemmas had slower reaction times than those who responded negatively. These results led them to conclude that the crucial difference between reactions to the moral-personal and the moral-impersonal dilemmas consists in the degree to which the former problems engage people’s emotions.

These findings give rise to a model of moral cognition in which reasoning may play a role, but the conclusion of the reasoning process is overridden by a negative emotional reaction toward the direct killing of someone. In short, it is the emotional response people have to the thought of killing someone directly that explains why most people respond asymmetrically to the moral-personal and moral-impersonal dilemmas. This view is further corroborated by studies on patients with emotional blunting from frontotemporal dementia. These patients, who generally

maintain their cognitive abilities but have severe emotional deficits, tend to respond affirmatively to the Footbridge Problem.³²⁾

The key question here, for the purposes of this article, is whether these fMRI findings, together with the cross cultural moral surveys they are based on, have any significance for the normative question of how people *ought* to respond to those sorts of moral dilemmas. From a utilitarian point of view, there seems to be no important difference between, for instance, the Bystander and Footbridge problems; if one responds affirmatively to the former, one ought to respond affirmatively to the latter problem as well. However, Mikhail’s research shows that the vast majority of people respond asymmetrically to these problems, and Greene’s research provides an explanation for this asymmetry at the neurological level, one based on the contribution of intuitive or emotional reactions to the thought of directly killing someone. A utilitarian can dismiss the normative significance of these findings by insisting that the fact that the majority of people respond asymmetrically to these two dilemmas is irrelevant to the question of whether they *should* respond as such. On this view, if people would only think through their responses more carefully or more dispassionately, they would provide identical responses

31) Greene JD, Sommerville RB, Nystrom LE, *et al.* An fMRI investigation of emotional engagement in moral judgment. *Science*. 2001;293:2105–2108.

32) Mendez MF, Anderson E, Shapira JS. An investigation of moral judgment in frontotemporal dementia. *Cogn. Behav. Neurol.* 2005;18:193–197.

to these two dilemmas, and those who do not provide identical responses are simply not good ethical thinkers.

However, one can respond to this utilitarian perspective by pointing to the research finding that patients with emotional blunting respond to the Footbridge problem just as a utilitarian would recommend and, furthermore, that additional research shows that damage to the emotional centers of the brain increases the tendency that a patient will think along utilitarian lines.³³⁾ The point here is not that utilitarians are demented, but that different cognitive mechanisms seem to be operative in the brains of those who do, and those who do not, reach what a utilitarian would regard as the “correct” conclusion. And just as scientists think they can now provide a causal explanation at the neurological level for why patients with frontotemporal dementia tend to think along purely utilitarian lines, so too they might soon be able to provide causal explanations at the neurological level for the moral judgments of all subjects.

The idea that those who provide asymmetrical responses to the Bystander and Footbridge problems are sloppy thinkers only makes sense on the assumption that people are free to think otherwise and that they reach the “wrong” conclusions because of some carelessness on their part or perhaps because

of a poor education or some other condition which they might overcome or correct. However, this assumption may turn out to be totally unfounded. The issue here is somewhat analogous to the understanding of sexual orientation. Until scientists discovered a biological basis to sexual orientation, it was commonly thought that homosexuality represented some sort of moral failing, something that could be corrected by a change in attitude or lifestyle. But the science of human sexuality undermined the assumption that sexual orientation is something that can or should be changed. Similarly, scientists might well discover the specific causal mechanisms that generate the patterns of judgments that researchers like Mikhail and Greene have described and be able to explain why some people respond to these dilemmas one way while others respond differently. If they do uncover the precise causal mechanisms of moral judgment, scientists will have shown that the idea of a “correct” answer to moral dilemmas like the Bystander and Footbridge problems makes as little sense as the idea of a “correct” sexual orientation.

This, then, is one of the ways in which current research in cognitive psychology is highly relevant – indeed, potentially devastating – for normative ethics. And this shows why caution is needed in the understanding or application of the naturalistic

33) Koenigs M, Young L, Adolphs R, *et al.* Damage to the prefrontal cortex increases utilitarian moral judgements. *Nature* 446:2007:908–911.

fallacy. Some of the arguments that are criticized on the grounds of committing the naturalistic fallacy, such as the classic argument for social Darwinism, are indeed objectionable, but it is a mistake to suggest science can have no relevance for normative ethics. Indeed science has the potential to undermine some of the crucial assumptions on which normative ethics is based. One of these assumptions, which we have just considered, is the idea that people *can* judge moral issues different than they do. But even if this assumption turns out to be correct, there is a further assumption concerning the role of reasoning in moral thinking that is implicit in much normative ethics but is being challenged now by current psychological research. It is to this I now turn.

5. Reasoning in Ethics

Many of the major ethical issues in medicine that have attracted sustained discussion and debate involve some sort of conflict between intuitions or emotional reactions on the one hand and persuasive arguments on the other. Think, for instance, about the debates over abortion or active euthanasia. What is one to do when reason and intuition conflict? There is a long-standing tradition in philosophy, one that stretches all the way back to the ancient Greeks, of valuing reason over emotion when

the two conflict. Plato and Aristotle, for example, both believed that the well-ordered or virtuous soul is one in which reason is in firm control of the other parts. But not all philosophers have held the optimistic view of reason espoused by the ancient Greeks and other rationalist philosophers. David Hume, for instance, thought that moral beliefs and motivations come not from reason, but rather from sentiments, and he thought that when reason and emotion conflict, the former is utterly powerless against the latter. Hence Hume's famous remark "reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them."³⁴)

Contemporary psychology is now amassing a considerable amount of evidence in support of Hume's view. Jonathan Haidt, one of the leaders in the new science of moral cognition, summarizes some of the key findings in this line of research as follows: (a) people have nearly instant implicit reactions to scenes or stories of moral violations; (b) affective reactions are usually good predictors of moral judgments and behaviors; (c) manipulating emotional reactions can alter moral judgments; (d) people can sometimes be "morally dumbfounded" – they can sense intuitively that something is wrong though they cannot explain why, and (e) when people engage in everyday reasoning they generally begin by setting out to confirm their initial

34) Hume D. A treatise of human nature, London: Penguin; 1969/1739.

hypothesis and are quite good at finding evidence to support whatever they want to believe.³⁵⁾ Psychologists have also found that when people have strong moral convictions about outcomes, as they tend to have when making moral judgments, they judge as fair the procedures that lead to outcomes that support their moral mandate, and reject those same procedures when they lead to outcomes opposed to their mandate.³⁶⁾ In light of this confirmation bias and other flaws in ordinary reasoning, Mercier and Sperber, have advanced the view that the function of reasoning is not to pursue the truth, but rather to win arguments.³⁷⁾ Accordingly, moral psychologists are moving away from a position of *epistemic functionalism*, according to which the purpose of moral thinking is to improve the accuracy and completeness of moral knowledge, toward *social functionalism*, according to which moral thinking is done mainly in order to help the social agent succeed in the social order.³⁸⁾ Haidt has used these and other recent findings to develop a Social Intuitionist Model (SIM) of moral judgment in which moral intuitions have primacy over reason and in which reason is indeed the slave of the passions. He does

allow that people may occasionally reason their way to a judgment through the sheer force of logic, overriding their initial intuition, and in such cases, reasoning is playing the role that philosophers like Plato want it to play. However, Haidt insists that such cases are extremely rare and that even when they do occur, the reasoned judgment may be expressed verbally, but the opposed intuition continues to exist under the surface.³⁹⁾

Peter Singer clearly follows along in the ancient philosophical tradition of thinking that reason can and should guide our ethical decision-making and that when reason and intuition conflict so much the worse for the latter. While he takes a dim view of moral intuitions, he has an extremely optimistic view of reason. He has likened reason to an escalator, which carries us away from arbitrary subjectivism and an uncritical acceptance of the values of our community to “the point of view of the universe,” a theoretical perspective from which one’s own needs, values, or interests are no more important than those of anyone else.⁴⁰⁾ This may sound comforting, but from the viewpoint of contemporary psychology, Singer’s views on moral reasoning are an idealization,

35) Haidt J. 2007: *op.cit.*

36) Mullen E, Skitka L.J. Exploring the psychological underpinnings of the moral mandate effect: motivated reasoning, group differentiation, or anger? *Journal of Personality and Social Psychology*. 2006;90(4):629–643.

37) Mercier H, Sperber D. Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences*. Forthcoming 2011.

38) Haidt J, Kesebir S. Morality. In Fiske S, Gilbert D., editors. *Handbook of social psychology*, 5th Edition. Hoboken, NJ: Wiley. 2010.

39) Haidt J, Bjorklund F. Social intuitionists answer six questions about moral psychology. In Sinnott-Armstrong W., editor. *Moral Psychology Vol.2*. Cambridge, MA: MIT Press; 2008. p. 181–217.

40) Singer P. *How are we to live? Ethics in an age of self-interest*. Prometheus: 1995.

completely unrealistic, and unsupported by evidence. Contemporary psychological research indicates that moral reasoning tends to follow, rather than lead, intuitions and that it mainly functions, not to examine our intuitions and preferences in light of all available evidence, but rather to select what ever evidence is most useful in justifying those intuitions and preferences. Accordingly, Haidt thinks the most appropriate metaphor for understanding moral reasoning is not that of an elevator leading us towards higher levels of understanding or truth, but that of a lawyer who works, not for truth, but in the interests of the clients who employ him.⁴¹⁾ Just as a lawyer may hide or distort any inconvenient facts to weave together the most persuasive case for the jury, so too people tend to reason, not in search of the truth, but merely to justify their own intuitions, preferences, or interests.

In light of the available evidence concerning how people do in fact reason, one ought to be cautious or skeptical about the reliability of moral reasoning to delivery us to the best conclusions. This, then, is a second way in which current research in cognitive science has relevance for normative ethics in general and medical ethics in particular, for the principle methodology employed in these fields is that of argumentation. The guiding methodological assumption in normative ethics is that the right or best positions are

those that are supported by the strongest *arguments*. In science, by contrast, the best positions or hypotheses are those that are best supported by the relevant *evidence*. By revealing hoe reasoning typically functions and undermining the assumption that there is some connection between reasoning and truth, contemporary psychological research may help to reshape the guiding methodology of medical ethics.

The aim of medicine is of course to maintain and/or improve the health of patients. And while there may be different means of achieving this goal, Western medicine approaches it on the basis of scientific research into the biological basis of disease and experimental evidence concerning the outcomes of various forms of treatment. Medical practice that is not based on such scientific evidence simply has no place in Western medicine. Curiously, however, when it comes to questions of *medical ethics*, while the goal is still to provide patients with the best possible outcomes, the approaches taken are radically different than those employed in standard medical practice and often have nothing to do with scientific research. Physicians and medical researchers are encouraged to approach ethical issues philosophically, examining them from the point of view of theories, principles, and arguments that have been articulated and rationally defended by

41) Haidt J. *The happiness hypothesis: finding modern truth in ancient wisdom*, New York: Basic Books, 2008.

philosophers. This approach to medical ethics may well be fundamentally misguided, and the psychological evidence mentioned above concerning the biases of human reasoning suggests that a new approach to medical ethics may be warranted, one in which medical ethics is seen as just another part of medicine based on the same scientific methodology that governs all other branches. On this approach, a deeper understanding of the nature of medical ethical problems, as well as an understanding of which solutions to those problems lead the best outcomes, may be provided, not through philosophical reflection and argumentation, but rather by scientific investigation into the social and psychological dimensions of those problems.

6. The Foundations of Morality

A third line of research with relevance for medical ethics, to which I now turn, comes from cultural anthropology. Richard Shweder is an American psychological anthropologist whose cross-cultural research led him to the conclusion that when people think about morality their thoughts can be grouped into one of three types of ethics: an ethic of autonomy, an ethic of community, or an ethic of divinity.⁴²⁾ Haidt and colleagues expanded on this work by reviewing and analyzing

several taxonomies of moral values across cultures. They found that the moral issues, values, or virtues that recur throughout these taxonomies can be grouped into the following five categories:⁴³⁾

- 1. Harm/care:** Concerns for the suffering of others, including the virtues of caring and compassion.
- 2. Fairness/reciprocity:** Concerns about unfair treatment, cheating, and more abstract notions of justice and rights.
- 3. Ingroup/loyalty:** Concerns related to obligations of group membership, such as loyalty, self-sacrifice, and vigilance against betrayal.
- 4. Authority/respect:** Concerns related to social order and the obligations of hierarchical relationships, such as obedience, respect, and the fulfillment of role-based duties.
- 5. Purity/sanctity:** Concerns about physical and spiritual contagion, including virtues of chastity, wholesomeness, and the control of desires.

These five categories are what Haidt considers to be the five psychological foundations of morality. Cultures around the world have combined elements from each of these categories in different ways to construct their own moral communities. However, Haidt and

42) Shweder R A, Much NC, Mahapatra M, Park L. The "big three" of morality (autonomy, community, and divinity), and the "big three" explanations of suffering. In Brandt A, Rozin R, editors, *Morality and health*. New York: Routledge: 1997. p. 119-169.

43) Haidt J. 2010: *op. cit.*

colleagues also found that while social conservatives of the sort exemplified by the Religious Right in the United States use all five of these moral foundations, those who identify themselves as liberals focus only on the first two (harm/ care and justice/ reciprocity), which correspond with what Shweder called the “ethic of autonomy.”⁴⁴⁾

The fact that educated Westerners who identify themselves as political liberals tend to have a narrower conception of morality than do either Western social conservatives or non-Westerners seems to have important implications for medical ethics. Indeed, the values and virtues that western liberals tend to hold correspond perfectly with the four principles (autonomy, beneficence, non-maleficence, and justice) of principlism, one of the most influential models in medical ethics. Ethicists who advance and defend principlism, such as Beauchamp and Childress⁴⁵⁾ and Gillon,⁴⁶⁾ believe that the four principles derive from common morality and are sufficient for identifying and resolving all ethical problems that arise in medical practice. However, as Walker has recently pointed out, it is highly doubtful that the four principles of medical ethics are descriptively adequate, given Haidt’s research

which shows that the moral concerns of ordinary people outside of liberal Western culture includes far more than what is contained in this narrow “ethics of autonomy.” In short, these cross-cultural studies provide evidence suggesting that one of the dominant models in medical ethics is biased toward cultural liberals within Western society.

The tendency to prioritize autonomy over the other three principles of medical ethics has often been criticized as representing a Western bias. However, this is not the point I am making in the present context. The point being made here is that, even without the prioritizing of the principle of autonomy, there is reason to believe that principlism itself is biased in that it represents the key ethical values or concerns of only a small segment of the world’s population. While this point has been suggested previously by writers such as Gbadegesin⁴⁷⁾ and Brody,⁴⁸⁾ Haidt’s research provides empirical evidence in support of this suggestion, thus turning it into a forceful objection.

7. Conclusion

44) Graham J, Haidt J, Nosek B. Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*. 2009;96:1029–1046.

45) Beauchamp T, Childress J. *Principles of biomedical ethics*, 6th edn. New York: Oxford University Press: 2009.

46) Gillon R. Ethics needs principles – four can encompass the rest – and respect for autonomy should be “first among equals”. *J Med Ethics*. 2003;29:307–312.

47) S. Culture and bioethics. In Kuhse H, Singer P, editors. *A companion to bioethics*, 2nd edn. Oxford: Blackwell: 2009. p.24–35.

48) Brody H. Medical bioethics and cultural diversity. *Indian Journal of Pediatrics*. 1997;64(3):277–284.

In the foregoing I have described some of the key developments in the new science of moral cognition and indicated some of the significance of these developments for the field of medical ethics. Important research is being carried out on the cognitive, neurological, and cultural levels and the results of the intersecting lines of research are being combined in interesting ways. At the cognitive level, studies by Petrinovich, Mikhail, and Hauser of how people respond to moral dilemmas indicate that the vast majority of people from all demographic groups do not judge along strictly utilitarian lines and, furthermore, that people do seem to judge in accordance with principles such as the doctrine of double effect, which utilitarians such as Kuhse and Singer reject. Additional research at the neurological level provides at least the beginning of psychological models that explain these patterns of moral judgment. The models developed by Greene and Haidt indicate that moral judgment involves two different regions of the brain and two different cognitive processes: a reasoning or computational process, on the one hand, and an affect-laden intuitive process on the other, with the intuitive process being swift, automatic and having primacy over the reasoning process. When the majority of people respond negatively to moral dilemmas such as the Transplant or Footbridge problems it is apparently because the intuitive or emotional reaction against

killing someone directly overrides the utilitarian calculation that it is better to save five by killing one than to allow five to die so that one may live.

Additional research indicates that at least some of those who judge all four of the dilemmas discussed above along utilitarian lines do so because they simply lack the negative emotional response that most people have to the thought of directly harming another person. Since scientists can already provide a causal explanation, at the neurological level, for the judgments of patients with emotional deficits, it seems possible, if not likely, that they will in the future be able to provide such explanations for the judgments of all subjects. In other words, the direction of this research suggests that scientists at some point in the future may be able to provide cognitive models that would explain why utilitarians and their opponents reach different conclusions when considering the same moral dilemmas. And the very possibility of providing a neurological explanation for ethical disagreements calls into question the whole idea of their being “correct” answers to ethical questions as well as the idea that rational persuasion is an effective method for leading people to those correct positions.

We have also seen that there is a considerable and growing body of evidence on the self-confirming biases and other flaws in ordinary and moral reasoning. Current

research indicates that moral reasoning generally functions, not in search of the truth or to advance moral knowledge, but rather to win arguments and advance one's position in the social order. These findings have great significance for medical ethics since reasoning is still considered the primary methodology of medical ethics. To question the reliability of reasoning, however, is not to propose that normative ethics blindly follow intuition and emotion. The relevant contrast here is between a *philosophical* methodology, where theories or claims are accepted or rejected on the basis of the strength of the arguments used to justify them versus a *scientific* methodology, where theories and claims are accepted or rejected on the basis of empirical evidence.

Yet another line of scientific study with great significance for the field of medical ethics is the cross-cultural research examining the values, virtues, and ethical concerns of different cultural groups. Haidt's research in this area indicates that the foundations of morality are far broader than the ethic of autonomy that characterizes the mainly liberal segments of Western culture. This is relevant for medical ethics since the dominant decision-making model in medical ethics, the principlism championed by Beauchamp and Childress and others, seems to be a perfect expression of the ethics of autonomy. In other words, though the four principles of principlism are said to derive from and

represent common morality, it may well exclude much of what the majority of people outside of the liberal segments of Western culture consider to be of moral concern and hence represent an unduly restricted conception of morality. Here again, science is not only producing empirical evidence that alters our understanding of the nature of ethics and medical ethics, but is also opening up the possibility that the best way to approach and resolve ethical issues is, not through philosophical argumentation, but rather through scientific research.

The central or unifying theme in this discussion is that as contemporary research in cognitive and cultural psychology progresses and provides us with an ever more sophisticated and comprehensive understanding of the human mind, it becomes increasingly clear that normative ethics, including medical ethics, is out of touch in a number of ways with how people actually think and feel about moral issues. This is problematic in that medical ethics needs policies and practices that are compatible with the moral thoughts and feelings of ordinary people. Policies or practices that run contrary to the cognitive mechanisms and intuitions of the vast majority of people cannot stand the test of time.

Part of the explanation for this disconnect between medical ethics and common morality is that the knowledge that psychology is producing is new and time is needed for it to

penetrate into other academic areas, including medical ethics. Another part of the explanation, however, has to do with the attitudes of some ethicists toward the normative significance of the empirical evidence coming from psychological research. All too often the slogan “naturalistic fallacy” is used, not to refute genuinely specious arguments, but to insulate normative ethics from scientific evidence. This is a tendency that must be resisted and overcome. Rather than seeking to protect normative ethics and medical ethics from the advance of scientific research, the results of contemporary psychological research should be absorbed into the field of

medical ethics. Singer ends a recent discussion of the normative significance of the scientific research on moral cognition by stating that “We need more reason in ethics, not less.”⁴⁹⁾ This is questionable, given the scientific evidence mentioned above concerning the function of moral reasoning. What seems far more certain is that we need more *science* in ethics. ☺

Keywords

moral cognition, universal moral grammar, moral dilemmas, doctrine of double effect, naturalistic fallacy, medical ethics

49) Singer P. 2008: *op. cit.*

Medical Ethics and the New Science of Moral Cognition

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Abstract

This article provides a brief overview of some of the recent developments in the new science of moral cognition and examines what relevance they might have for the field of medical ethics. Included here are descriptions of Mikhail and Hauser's work on a universal moral grammar (UMG), Greene's fMRI studies of emotional engagement in moral judgment, and Haidt's cross-cultural research on the psychological foundations of morality. It is argued that recent research results in these and other areas exposes a gap between medical ethics and common morality, between some of the methodologies and results of medical ethics on the one hand and the moral judgments and values of ordinary people on the other. This disconnect is explained, in part, in terms of a misunderstanding or misuse of the naturalistic fallacy, which serves to insulate medical ethics from advances in the scientific understanding of morality.

keywords

moral cognition, universal moral grammar, moral dilemmas, doctrine of double effect, naturalistic fallacy, medical ethics

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