

Political Ideology Moderates Nonpolitical Moral Decision-Making Processes

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Abstract

Moral dilemmas pitting concerns about actions against concerns about consequences have been used by philosophers and psychologists to gauge “universal” moral intuitions. Although these dilemmas contain no overt political content, we demonstrate that liberals are more likely than conservatives to be concerned about consequences, whereas conservatives are more likely than liberals to be concerned about actions. This effect is shown in two large, heterogeneous samples and across several different moral dilemmas. In addition, manipulations of dilemma aversiveness and order of presentation suggest that this political difference is due in part to different sensitivities to emotional reactions in moral decision-making: Conservatives are more likely to “go with the gut” and let affective responses guide moral judgments, while liberals are more likely to deliberate about optimal consequences.

*Key words.* moral decision-making, ideology, affect, liberal, conservative

## Political Ideology Moderates Nonpolitical Moral Decision-Making Processes

Stephen Colbert's parody of American conservatism takes aim at right-wing claims to intuitive moral clarity about right and wrong actions, regardless of situation or consequences: "Since the beginning of my show I've led a crusade against facts. Too often, they upset the truth that's in your gut" (The Colbert Report, January 9, 2007). The mirror-image parody of liberals presents them as irresolute moral flip-floppers, changing their moral convictions to suit the situation and its likely consequences. Although political differences in *what* partisans morally care about are well-known (Feather, 1979; Feldman, 2003; Graham, Haidt, & Nosek, 2009), these parodies suggest that political ideology may influence *how* people make moral decisions, regardless of what those decisions are about. In this article, we report evidence that political differences can be found in moral decisions about issues that have no overt political content. In particular, we find that conservatives are more likely than liberals to attend to the *action* itself when deciding whether something is right or wrong, whereas liberals are more likely than conservatives to attend to the *consequences* of the action. Further, we report preliminary evidence that this is partly explained by the kernel of truth from the parodies – conservatives are more likely than liberals to "go with the gut" by using their affective responses to guide moral judgment.

Some moral dilemmas force a choice between a morally aversive (or even gut-wrenching) action and an inaction that produces even worse consequences. For instance, is it morally permissible to kill one person (action) in order to save the lives of many who would otherwise perish (consequence)? Philosophers (Foot, 1967) and legal theorists (Thompson, 1986) have employed such hypothetical dilemmas to answer these questions normatively. More recently, behavioral and cognitive scientists have used them to provide a descriptive account of the processes involved in moral decision-making. This empirical evidence suggests that when people choose inaction (i.e., they refuse to kill one person) these choices are based largely on "hot" affective reactions of aversion to the action itself, whereas consequentialist responses (i.e., kill one to save five) are reached via "cold" processes of deliberative reasoning (Cushman, Young, & Hauser, 2006; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Greene et al., 2009).

Despite having no explicit political content, there are doctrinal reasons to expect ideological differences in approaches to these dilemmas. John Stuart Mill, after all, is the father of both liberalism and utilitarianism. Conservatives often express contempt for moral relativism and situational ethics, preferring rules that are binding and eternal (Hunter, 1991; Sowell, 2002), and may thus be more likely than moderates or liberals to object to actions violating such rules. Liberals, on the other hand, may be more likely to question the justification of rules and endorse civil disobedience or other forms of morally-motivated law-breaking (Kohlberg [1969] called this a hallmark of post-conventional thinking). Also, liberals are more likely to approve efforts to fine-tune laws and traditions in order to maximize overall utility (Muller, 1997).

Given the hot/cold findings described above, however, it is possible that ideological differences in responses to these dilemmas could be due to differential use of affect in moral decision-making. For instance, conservatives may be more likely to reject consequence-optimizing actions because of their intuitive aversion to them, not because of a deliberate endorsement of deontological principles. This is predicted based on previous work showing ideological differences in tolerance of ambiguity, needs for cognition and cognitive closure, and disgust sensitivity (see Jost, Federico, & Napier, 2009, for a review). We investigated whether conservatives would be more likely to focus on actions, and liberals on consequences. We were also interested in whether any differences we found might be due to differential reliance on

affective reactions. We gave several different moral dilemmas to a large and demographically diverse sample. Each dilemma had two versions that were presented sequentially. Dilemmas varied widely in terms of settings, actions proposed, and overall aversiveness, yet each set of dilemmas had the same logical structure. One version required an aversive action to prevent negative consequences (e.g., killing one patient in a hospital and using the organs from that patient to save the lives of four others), while another version had the same costs and benefits but required a less aversive action (e.g., redirecting deadly fumes in a hospital, killing one patient to save four others). In each case, we expected that conservatives would be more likely than liberals and moderates to prioritize the action in moral judgment, rejecting the action as morally impermissible despite its utilitarian justification.

To test whether a difference in sensitivity to affective reactions is the potential mechanism for ideological differences in moral reasoning, we presented the more and less aversive versions of each dilemma together, and manipulated their presentation order. If conservative moral judgments are more sensitive to affective reactions, then the strong affective response to the more aversive action may be more likely to linger and influence subsequent judgment of the less aversive version of the same dilemma. For example, seeing the organ transplant version first should make the fumes version seem more aversive, especially for conservatives.

## Material and Methods

### Participants

Participants were 656 visitors (48% female, median age 30) to the YourMorals.org website; 473 were from the USA, 70 from the EU, 48 from Canada and 39 from other countries. Political identity was self-reported on a 10-point scale that included a 7-point liberal-conservative continuum plus 3 additional options. There were 356 liberals (three scale points, from slightly to extremely liberal), 80 moderates, and 101 conservatives (three scale points). All analyses retained the seven-point strongly liberal to strongly conservative scaling. The 54 “libertarian,” 27 “other,” and 38 “don’t know/not political” were excluded, leaving a sample of 537.

### Procedure

Participants self-selected to take a study described as “Moral Dilemmas – What is the right thing to do in difficult situations?” Instructions:

On the following pages you will be presented with 6 moral dilemmas and asked a question about the right thing to do in each case. **You will be shown two different versions of each dilemma; these will have the exact same consequences but require different actions.** Please read each dilemma carefully before answering the questions, as you will not be able to go back and change previous answers. Press the button below to begin. (bold in original)

Participants were randomly assigned to condition: either the more aversive version of each dilemma (previously called the “personal” version [Greene et al., 2001]) always came before the less aversive (“impersonal”) version, or the less aversive version always came before the more aversive version. The order of the six dilemma pairs was randomized for each participant. The dilemmas were adapted from Greene et al. (2001), and modified so that the two versions were the same except for the action required. The titles of the dilemmas – “Trolley,” “Doctor,” “Father,” “Vaccine,” “Safari,” and “Lifeboat” – and names describing the unique action (e.g., “Doctor

Dilemma – Fumes Version”) were visible to highlight the similarity within each pair. Participants answered “Is it morally appropriate for you to [do action] in order to [prevent some other danger]?” with a dichotomous Yes/No response. Then they answered “How certain are you about your answer?” with a 7-point scale from “extremely uncertain” to “extremely certain.” Full text of all dilemmas can be found in the supplements.

### Results

Data were analyzed using two-level hierarchical logistic regression models, with within-person factors (the dilemma’s aversiveness and its order, i.e., whether it was presented before or after the other version of the same dilemma) at Level 1 and between-person factors (self-reported demographics) at Level 2. The outcome measure was whether the participant deemed the action to be morally appropriate or not (Yes/No); more “Yes” responses indicated greater concerns about the consequences of inaction within the dilemmas, and more “No” responses indicated greater concerns about the actions required to attain those consequences.

*Liberals were more concerned about consequences, conservatives about actions.* To test the overall influence of political ideology, we tested a model with ideology (z-scored) as the only level-2 predictor. There was a main effect of ideology, such that conservatives were more likely than liberals to reject the action despite its prevention of worse consequences,  $B = .17$ ,  $t(417) = 3.11$ ,  $p = .002$ . Ideology remained a significant unique predictor of responses ( $B = .13$ ,  $t(413) = 2.24$ ,  $p < .05$ ) when gender (0 = male, 1 = female) as well as age, religious attendance, and education level (all z-scored) were added as level-2 predictors.<sup>1</sup> Conservatives were significantly less likely to make consequentialist decisions in four of the six dilemmas when examined separately. Relations to politics and means for each dilemma in each condition are provided in Table 1.. In a separate data collection ( $N = 4981$ ), the main effect of political ideology on responses to these moral dilemmas was replicated even when only one version of each dilemma was given to each participant (see online supplements).

*Less aversive moral dilemmas were rejected more when they followed the more aversive versions.* In a model that included Aversiveness (-1 = less aversive, 1 = more aversive), Order (-1 = first, 1 = second), and the Aversiveness X Order interaction as level-1 predictors, there were significant effects of Aversiveness,  $B = .81$ ,  $t(5535) = 24.11$ ,  $p < .001$  (people were more likely to say “No” to the more aversive dilemmas) and Order,  $B = .10$ ,  $t(5535) = 2.88$ ,  $p = .005$  (people were more likely to say “No” when the dilemma came second). There was also a significant Aversiveness X Order interaction,  $B = -.14$ ,  $t(5535) = 2.38$ ,  $p = .02$ , indicating that the effect of Order was stronger for the less aversive dilemmas than it was for the more aversive dilemmas. Running separate models for each dilemma type revealed an effect of Order for less aversive dilemmas,  $B = .23$ ,  $t(2763) = 4.16$ ,  $p < .001$ : People were more likely to reject the less aversive actions when they followed the more aversive actions. In contrast, following the less aversive versions had *no* effect on responses to the more aversive versions,  $B = -.03$ ,  $t(2772) = -.43$ ,  $p = .67$ , suggesting that the order effects found were not simply driven by consistency pressures. This replicates findings using the trolley dilemma (Lombrozo, 2009; Petrinovich & O’Neill, 1996; Schwitzgebel & Cushman, 2010), one of the six we used, in a diverse sample and across multiple dilemmas.

<sup>1</sup> Each of these covariates was also a significant predictor of responses to the moral dilemmas: being female ( $B = .50$ ,  $p < .001$ ), older ( $B = .20$ ,  $p = .001$ ), more religious ( $B = .20$ ,  $p = .001$ ) and more educated ( $B = .14$ ,  $p < .05$ ) all predicted greater rejection of the actions.

*Aversiveness lingered for conservatives, but not for liberals or moderates.* To test whether the strength of the order effect for less aversive dilemmas varied by political ideology (i.e., whether politics moderated the Aversiveness X Order interaction) we tested a model with Aversiveness, Order, and their interaction as level-1 predictors and politics as a level-2 predictor. The main effects of Aversiveness, Politics, and Order, as well as the Aversiveness X Order interaction remained significant. In addition, there was a significant Aversiveness X Order X Politics interaction,  $B = -.12$ ,  $t(5531) = 2.05$ ,  $p = .04$ . To decompose this 3-way interaction, we tested separate models for liberals, moderates, and conservatives. This allowed us to determine how the Aversiveness X Order interaction varied across the three groups. Neither liberals ( $B = -.09$ ,  $t(3688) = 1.18$ ,  $p = .24$ ) nor moderates ( $B = -.22$ ,  $t(765) = 1.20$ ,  $p = .23$ ) showed a significant Aversiveness X Order interaction, but conservatives did,  $B = -.31$ ,  $t(1074) = 2.43$ ,  $p = .02$ . We further decomposed this interaction for conservatives, testing the effect of order separately for less aversive and more aversive dilemmas. Conservatives were more likely to reject the less aversive actions when they *followed*, rather than preceded, the more aversive actions,  $B = .45$ ,  $t(534) = 3.80$ ,  $p < .001$ . Conversely, following the less aversive versions had no effect on responses to the more aversive versions,  $B = -.09$ ,  $t(540) = .63$ ,  $p = .53$ . This suggests that the negative affect induced by the more aversive dilemmas lingered and influenced the less aversive versions shown afterward, but only for conservatives.

### Discussion

Two large samples provide the first evidence that conservatives are more likely than liberals to respond to moral dilemmas based on the actions required, and liberals are more likely than conservatives to respond based on the consequences of inaction. The effect was consistent across a diverse set of dilemmas including a variety of roles, situations, actions, and tradeoffs. Interactions with this effect provided preliminary evidence that the political differences were due in part to conservatives' greater sensitivity to affect in their moral decision-making. Conservatives were more affected by the order manipulation: seeing the more aversive versions first made them more likely to also reject the less aversive actions. Seeing the less aversive version of scenarios first did not have an effect on subsequent judgments of more aversive versions, suggesting that results were not driven simply by a desire to be consistent. The gut-level reaction to an action like removing someone's organs against their will lingers, and makes a less aversive action like redirecting deadly fumes seem morally inappropriate as well – but only for conservatives.

These findings have important implications for fields including political science, moral psychology, and decision science. They call into question popular perceptions of liberals as “bleeding hearts,” more affected than conservatives by feelings in their moral and policy opinions (Farwell & Weiner, 2000). The findings also suggest that partisans may differ even in their initial approaches to novel issues, with those on the left focusing more on likely consequences and those on the right focusing more on immediate reactions about the rightness or wrongness of an action regardless of the consequences. The fact that the differences were found using non-political dilemmas suggests that moral disagreements between ideological opponents involve not only different prioritizations of moral concerns (e.g., equality vs. social order), but different processes of moral decision-making. However, because these dilemmas are quite artificial and nonrepresentative of everyday morality (Pincoffs, 1986), future work is needed to determine how well these political differences generalize to other kinds of moral judgments.

It is notable that seeing the more aversive dilemma first increased rejections of the subsequent less aversive action, but seeing the less aversive dilemma first had no effect on

responses to the subsequent more aversive version. The palpable affective reaction to aversive scenarios (e.g., removing someone's organs against their will) may just be too strong to allow for cold consequence-weighting calculations (e.g., four lives > one life), even in a subsequent decision involving a less aversive action. This asymmetry in order effects supports the idea of affective primacy in moral judgment (Haidt, 2001): the aversion remained with participants, while the rational deliberation did not. Conservatives' responses to the less aversive dilemmas in general – and following the more aversive ones in particular – support our hypothesis that conservatives' moral judgments are more sensitive to intuitive affective reactions than are liberals'. However, our inference about the role of affect is indirect. Though previous research demonstrating that more aversive dilemmas elicit stronger affective reactions (Greene et. al, 2001; 2009) supports our inference, a valuable next step would be to replicate these results while measuring affective reactions more directly (e.g., with physiological measures).

These descriptive moral decision-making differences do not necessarily imply any particular normative conclusions. Although moral consequentialism has been cast as normatively optimal in decision research (Baron & Spranca, 1997; Sunstein, 2005), this has been disputed (Bennis, Medin, & Bartels, 2010). Liberal consequentialism can be taken as a sign of wise and thoughtful deliberation in moral matters, or as irresolute flip-floppery in the face of changing circumstances. Conservatives' action-focused stands can be taken as decisiveness and strong moral character, or as arrogant ignorance of the consequences of behavior. Just as liberal and conservative moral education approaches make normative appeals to different sets of moral values (Graham, Haidt, & Rimm-Kaufman, 2008), liberals and conservatives may also differ in opinions about which approach to moral decision-making is normatively better.

The descriptive results of our study cannot normatively tell us which ideological group is more virtuous, but they do suggest that individual difference approaches can contribute to our understanding of the processes of moral judgment and decision-making. Contrary to universalist claims (Hauser, 2006), individuals do systematically vary in their responses to these abstract and hypothetical dilemmas. This systematic variation may account for why some conservatives consider themselves more virtuous, due to their moral consistency, while some liberals consider themselves more virtuous, due to their moral rationality. Further studies combining individual difference and experimental approaches will shed light on both the nature of political ideology and the mechanisms of moral decision-making. As a first step, the present findings indicate that conservatives are more likely to focus on actions (and liberals on consequences) in moral tradeoffs, and suggest that this is partially due to the stronger role that affect plays in conservative moral decision-making.

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Table 1

*Relation to political orientation and percentage of participants endorsing the required action for each moral dilemma*

<u>Dilemma</u>	<u>Relation to Politics (<i>r</i>)</u>	<u>Endorsement</u>			
		<u>More Aversive version</u>		<u>Less Aversive version</u>	
		<u>Shown First</u>	<u>Shown Second</u>	<u>Shown First</u>	<u>Shown Second</u>
Doctor	.10*	.04	.03	.77	.57
Father	.18**	.06	.09	.15	.09
Lifeboat	.07	.25	.22	.66	.60
Safari	.10*	.37	.35	.52	.41
Trolley	.11*	.12	.17	.81	.65
Vaccine	.07	.35	.39	.45	.37

*Note.* Relations to politics collapsed across aversiveness and order of presentation; positive numbers indicate liberals more likely to endorse. \* =  $p < .05$ , \*\* =  $p < .01$ .

### Online Supplement

#### *S1. Replication of main effect.*

A sample of 4,891 adult visitors (43% female, median age 29) to the YourMorals.org website self-selected to take a study based on the description “Moral Dilemmas – What is the right thing to do in difficult situations?”. Demographics were entered at registration. Included in analyses were 2700 liberals (three scale points), 560 moderates, and 635 conservatives (three scale points). Each participant received a total of six moral dilemmas; dilemmas were identical to those used in the main study with the exception of Mining, which replaced Vaccine. For each dilemma, participants randomly received only one of the two versions (more aversive or less aversive). Order of dilemmas was randomized for each participant. In this sample, political ideology again predicted answers to the dilemmas,  $\beta = -.06$ ,  $p < .001$ , such that liberals were more likely to endorse the required actions and conservatives were more likely to reject them. This effect held for both more aversive ( $\beta = -.06$ ,  $p < .01$ ) and less aversive ( $\beta = -.05$ ,  $p < .01$ ) versions of the dilemmas in aggregate, and four of the six dilemmas examined separately (Lifeboat, Father, Mining, and Safari; average  $\beta = -.06$ ).

#### *S2. Conservatives were more certain about their answers, regardless of what they answered.*

Conservatism predicted certainty, for both personal ( $\beta = .19$ ,  $p < .001$ ) and impersonal ( $\beta = .21$ ,  $p < .001$ ) dilemmas. Given the political differences in yes/no answers, it was reasonable to assume that conservatives would be more certain about “no” answers, and liberals would be more certain about “yes” answers. However, when examined separately, conservatism predicted certainty on both “no” ( $\beta = .17$ ,  $p < .001$ ) and “yes” ( $\beta = .19$ ,  $p < .001$ ) answers.

#### *S3. Text of moral dilemmas.*

(More aversive version of each is shown first, less aversive second.)

##### Doctor Dilemma – Transplant Version:

You are a doctor working in a hospital. You have four patients, each of whom is about to die due to a failing organ of some kind. You have another patient who is healthy.

The only way that you can avoid the deaths of the first four patients is to transplant four of this woman's organs (against her will) into the bodies of the other four patients. If you do this, the woman will die, but the other four patients will live.

Is it morally appropriate for you to perform this transplant in order to save four of your patients? [No/Yes]

##### Doctor Dilemma – Fumes Version:

You are a doctor working in a hospital. Due to an accident in the building next door, there are deadly fumes rising up through the hospital's ventilation system. In a certain room of the hospital are four of your patients. In another room there is one of your patients. If you do nothing the fumes will rise up into the room containing the four patients and cause their deaths.

The only way to avoid the deaths of these patients is to hit a switch that will cause the fumes to bypass the room containing the four patients. As a result of doing this the fumes will enter the room containing the single patient (against her will). If you do this, the woman will die, but the other four patients will live.

Is it morally appropriate for you to hit the switch in order to save four of your patients? [No/Yes]

Father Dilemma - Pillow Version:

You are in hospital lounge waiting to visit a sick friend. A young man sitting next to you explains that his father is very ill. The doctors believe that he has a week to live at most. He explains further that his father has a substantial life insurance policy that expires at midnight.

If his father dies before midnight, this young man will receive a very large sum of money. He says that the money would mean a great deal to him and his family, and that no good will come from his father's living a few more days. After talking with him you can tell this man is in desperate need of the money to feed his family. The man asks you to go up to his father's room and smother his father with a pillow.

Is it morally appropriate for you to kill this man's father in order to get money for the man and his family? [No/Yes]

Father Dilemma – Circuit Breaker Version:

You are in hospital lounge waiting to visit a sick friend. A young man sitting next to you explains that his father is very ill. The doctors believe that he has a week to live at most. He explains further that his father has a substantial life insurance policy that expires at midnight.

If his father dies before midnight, this young man will receive a very large sum of money. He says that the money would mean a great deal to him and his family, and that no good will come from his father's living a few more days. After talking with him you can tell this man is in desperate need of the money to feed his family. The man asks you to go to the hospital basement and pull a circuit out of the circuit breaker, shutting off his father's life support machines.

Is it appropriate for you to kill this man's father in order to get money for the man and his family? [No/Yes]

Lifeboat Dilemma - Throw Overboard Version:

You are on a cruise ship when there is a fire on board, and the ship has to be abandoned. The lifeboats are carrying many more people than they were designed to carry. The lifeboat you're in is sitting dangerously low in the water – a few inches lower and it will sink.

The seas start to get rough, and the boat begins to fill with water. It seems to you that there is only one way to stop the boat from sinking, and that is to start throwing other passengers overboard, starting with old people who are too weak to resist.

Is it morally appropriate for you to throw some of your fellow passengers overboard in order to save yourself and the other lifeboat passengers? [No/Yes]

Lifeboat Dilemma - Rope Version:

You are on a cruise ship when there is a fire on board, and the ship has to be abandoned. The lifeboats are carrying many more people than they were designed to carry. The lifeboat you're in is sitting dangerously low in the water – a few inches lower and it will sink.

The seas start to get rough, and the boat begins to fill with water. A group of old people are in the water and ask you to throw them a rope so they can come aboard the lifeboat. It seems to you that the boat will sink if it takes on any more passengers.

Is it morally appropriate for you to refuse to throw the rope in order to save yourself and the other lifeboat passengers? [No/Yes]

Safari Dilemma - Torture Version:

You are part of a group of ecologists who live in a remote stretch of jungle. The entire group, which includes eight children, has been taken hostage by a group of paramilitary terrorists. One of the terrorists takes a liking to you. He informs you that his leader intends to kill you and the rest of the hostages the following morning.

He is willing to help you and the children escape, but as an act of good faith he wants you to torture and kill one of your fellow hostages whom he does not like. If you refuse his offer all the hostages including the children and yourself will die. If you accept his offer then the others will die in the morning but you and the eight children will escape.

Is it morally appropriate for you to torture and kill one of your fellow hostages in order to escape from the terrorists and save the lives of the eight children? [No/Yes]

Safari Dilemma - Help Version:

You are part of a group of ecologists who live in a remote stretch of jungle. The entire group, which includes eight children, has been taken hostage by a group of paramilitary terrorists. One of the terrorists takes a liking to you. He informs you that his leader intends to kill you and the rest of the hostages the following morning.

He is willing to help you and the children escape, but as an act of good faith he wants you to help him kill one of your fellow hostages whom he does not like. You are to tell the man to meet you in a remote location to plan an escape, and when he goes there this terrorist will kill him. If you refuse his offer all the hostages including the children and yourself will die. If you accept his offer then the others will die in the morning but you and the eight children will escape.

Is it morally appropriate for you to help him kill one of your fellow hostages in order to escape from the terrorists and save the lives of the eight children? [No/Yes]

Trolley Dilemma – Push Version:

A runaway trolley is heading down the tracks toward five workmen who will be killed if the trolley proceeds on its present course. You are on a footbridge over the tracks, in between the approaching trolley and the five workmen. Next to you on this footbridge is a stranger who happens to be very large.

If you do nothing the trolley will proceed, causing the deaths of the five workmen. The only way to save the lives of these workmen is to push this stranger off the bridge and onto the tracks below, where his large body will stop the trolley, causing his death.

Is it morally appropriate for you to push the stranger onto the tracks in order to save the five workmen? [No/Yes]

Trolley Dilemma – Switch Version:

A runaway trolley is heading down the tracks toward five workmen who will be killed if the trolley proceeds on its present course. On the tracks extending to the right is a single railway workman. You are standing on a footbridge over the tracks, in between the approaching trolley and the five workmen. Next to you on this footbridge is a switch that can redirect the trolley.

If you do nothing the trolley will proceed, causing the deaths of the five workmen. The only way to save the lives of these workmen is to hit the switch, which will cause the trolley to proceed to the right, causing the death of the single workman.

Is it morally appropriate for you to hit the switch in order to save the five workmen? [No/Yes]

Vaccine - Self Version:

A viral epidemic has spread across the globe, killing millions of people. You work for the Bureau of Health, a government agency that has developed two substances. Your organization knows that one of them will be a useful vaccine, but you don't know which one. You also know that the other one is likely to be deadly to most people.

Once you figure out which substance is the vaccine you can use it to save millions of lives. The only way to identify the vaccine is for you yourself to secretly test the substances on a minimum of 200 patients in the Bureau of Health facilities, against their will. It is expected that approximately half of the patients will slowly and painfully die from this testing.

You will need to sneak in and personally inject the patients with the substances one by one, killing 100 of them. Once testing is complete the effects of the substances will be identified, and you will be able to start saving lives with your vaccine.

Is it morally appropriate for you to personally kill 100 patients with a deadly injection in order to identify a vaccine that will save millions of lives? [No/Yes]

Vaccine - Organization Version:

A viral epidemic has spread across the globe, killing millions of people. You work for the Bureau of Health, a government agency that has developed two substances. Your organization knows that one of them will be a useful vaccine, but you don't know which one. You also know that the other one is likely to be deadly to most people.

Once you figure out which substance is the vaccine you can use it to save millions of lives. The only way to identify the vaccine is to secretly test the substances on a minimum of 200 patients in the Bureau of Health facilities, against their will. It is expected that approximately half of the patients will slowly and painfully die from this testing.

Once testing is complete the effects of the substances will be identified, and you will be able to start saving lives with your vaccine.

Is it morally appropriate for you to direct your organization to begin this testing, killing 100 patients with a deadly injection in order to identify a vaccine that will save millions of lives? [No/Yes]

Mining – Shoot Version:

You are part of a four-person mining expedition. There is a cave-in and the four of you are trapped in the mine. A rock has crushed the legs of one of your crew members and he will die without medical attention. You've established radio contact with the rescue team and learned it will be 36 hours before the first drill can reach the space you are trapped in.

You are able to calculate that this space has just enough oxygen for three people to survive for 36 hours, but definitely not enough for four people. The only way to save the other crew members is to shoot the injured crew member so that there will be just enough oxygen for the rest of the crew to survive

Is it morally appropriate to kill the injured crew member in order to save the lives of the remaining crew members? [No/Yes]

Mining – Refuse Aid Version:

You are part of a four-person mining expedition. There is a cave-in and the four of you are trapped in the mine. A rock has crushed the legs of one of your crew members and he will die without medical attention. You've established radio contact with the rescue team and learned it will be 36 hours before the first drill can reach the space you are trapped in.

You are able to calculate that this space has just enough oxygen for three people to survive for 36 hours, but definitely not enough for four people. The only way to save the other crew members is to refuse medical aid to the injured crew member so that there will be just enough oxygen for the rest of the crew to survive.

Is it morally appropriate to allow the injured crew member to die in order to save the lives of the remaining crew members? [No/Yes]

*Note.* Vaccine dilemmas used only in main study; Mining dilemmas used only in replication study. Certainty question asked after dichotomous moral decision question.

Graham, Jesse, Brian A. Nosek, Jonathan Haidt, Ravi Iyer, Spassena Koleva, and Peter H. Ditto. 2011. "Mapping the moral domain." *Journal of Personality and Social Psychology* 101(2): 366-385. Brian C. Rathbun is an Associate Professor in the School of International Relations at the University of Southern California, Los Angeles, CA 90089. Ravi Iyer is the Chief Data Scientist for Ranker, Los Angeles CA 90048.