Research Report

Are Morally Motivated Decision Makers Insensitive to the Consequences of Their Choices?

Daniel M. Bartels and Douglas L. Medin

Northwestern University

ABSTRACT—*Is morally motivated decision making different from other kinds of decision making? There is evidence that when people have sacred or protected values (PVs), they reject trade-offs for secular values (e.g., "You can't put a price on a human life") and tend to employ deontological rather than consequentialist decision principles. People motivated by PVs appear to show* quantity insensitivity. *That is, in trade-off situations, they are less sensitive to the consequences of their choices than are people without PVs. The current study examined the relation between PVs and quantity insensitivity using two methods of preference assessment: In one design, previous results were replicated; in a second, PVs were related to* increased *quantity sensitivity. These and other findings call into question important presumed properties of PVs, suggesting that how PVs affect willingness to make trade-offs depends on where attention is focused, a factor that varies substantially across contexts.*

If one wants to comprehend people's commonplace and extraordinary actions, one must understand the values that inspire them. "Extreme" actions (e.g., selfless heroism, suicide terrorism) show that strong values may motivate behavior, and some researchers suggest that "all attitudinal and behavioral decisions should be traceable to personal value priorities" (Rohan, 2000, p. 270). Recently, researchers have begun to examine morally motivated decision making, and it appears to have a number of distinctive properties.

Our focus is on decisions involving protected values (PVs). According to the PV framework developed by Baron and his colleagues (Baron & Spranca, 1997), people are more likely to use nonconsequentialist, deontological choice strategies for problems entailing the exchange of a cherished resource (a PV) than for some less morally charged problems. Deontological reasoning is focused on means—some acts are wrong in themselves and are morally unacceptable means to any ends (Davis, 1993). In contrast, consequentialist reasoning is focused on outcomes, and means are irrelevant; whatever values are adopted, this perspective mandates bringing about the best outcomes (Pettit, 1993). Contemporary ethics treats deontology and consequentialism as distinct modes of ethical reasoning.

PVs are thought to be associated with deontological rules—rules that concern actions (e.g., "do no harm"; Baron, 1996), but not the overall consequences of those actions. This perspective gives rise to a number of testable hypotheses about the properties of PVs. First, by definition, PVs are associated with trade-off avoidance. For example, when offered a secular value (something that can be purchased or sold) in exchange for a PV (e.g., auctioning body parts or selling futures that bet on the likelihood of acts of terrorism; Medin, Schwartz, Blok, & Birnbaum, 1999; Tetlock, 2002), people refuse trade-offs on moral grounds (Tetlock, Kristel, Elson, Green, & Lerner, 2000).

Two additional properties of PVs are *omission bias* and *quantity insensitivity* (Baron & Spranca, 1997). Omission bias is a preference for indirect harm caused by omissions (i.e., failures to act) over equal or lesser harm caused by acts (Spranca, Minsk, & Baron, 1991). Baron and his colleagues have amassed evidence that PVs are associated with a large omission bias (Baron & Greene, 1996; Ritov & Baron, 1990, 1999). Their paradigm typically involves presenting participants with problems like the following (Ritov & Baron, 1999):

> As a result of a dam on a river, 20 species of fish are threatened with extinction. By opening the dam for a month each year, you can save these species, but 2 species downstream will become extinct because of the changing water level.

Address correspondence to Daniel M. Bartels, Department of Psychology, Northwestern University, 2029 Sheridan Rd., Evanston, IL 60208, e-mail: d-bartels@northwestern.edu.

Would you open the dam? Yes/No

What is the largest number of species made extinct by the opening at which you would open the dam?_____

In this situation, some participants would not open the dam, saying that they would not want to cause the loss of a single species (even though not opening the dam would lead to the loss of all 20 species); this response is called a *zero threshold*. The value that participants supply to the final question is divided by the risk associated with omission (in this case, 20), yielding an index ranging from zero to one. The smaller this *threshold value*, the less quantity sensitive a participant is judged to be. Low thresholds are interpreted as reflecting relative insensitivity to the consequences of one's choices.

Later, participants are presented with statements concerning the acceptability of trade-offs for the values associated with the scenarios presented earlier (e.g., fish species). These probes assess whether participants hold PVs for the resources in question, as in the following example:

Causing the extinction of fish species.

a) I do not object to this.

b) This is acceptable if it leads to some sort of benefits (money or something else) that are great enough.

c) This is not acceptable no matter how great the benefits.

This dichotomous measure classifies participants as having a PV for the resource if they respond "c" (Baron & Spranca, 1997). Participants with PVs provide lower threshold values than participants without PVs, which indicates that participants with PVs are less sensitive to quantity (Ritov & Baron, 1999).

PVs are an important construct in the study of decision making because this field has adopted utility theory (Savage, 1954; von Neumann & Morgenstern, 1947) as a normative model and consequentialist theories as descriptive models (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). These theories assume quantity sensitivity: More of a good thing is preferable to less of a good thing, ceteris paribus. The properties of PVs discussed so far may violate the assumptions of quantity sensitivity associated with consequentialism.

AN ALTERNATIVE PARADIGM

Recently, Connolly and Reb (2003) examined the effects of modest changes to the omission-bias paradigm. In their Study 2, they varied the risks associated with acts and omissions in a repeated measures design. Consider an adapted version of the previous scenario:

As a result of a dam on a river, 20 species of fish are threatened with extinction. By opening the dam for a month each year, you can save these species, but some species downstream will become extinct because of the changing water level.

Would you open the dam if it would kill 2 species of fish downstream as a result? Yes/No

Would you open the dam if it would kill 6 species of fish downstream as a result? Yes/No

Would you open the dam if it would kill 10 species of fish downstream as a result? Yes/No

Would you open the dam if it would kill 14 species of fish downstream as a result? Yes/No

Would you open the dam if it would kill 18 species of fish downstream as a result? Yes/No

Note that this item gives a range of options rather than asking participants to generate a threshold. It also does not begin with an anchor. Using this alternative paradigm, Connolly and Reb examined decisions concerning whether or not to vaccinate (the vaccine sometimes had bad side effects) and found no evidence for omission bias. Although there has been debate concerning the relative complexity and merits of Ritov and Baron's procedure (1999) and Connolly and Reb's procedure (Baron & Ritov, 2004; Connolly & Reb, 2004), we employed both methods as a means of clarifying the nature of PVs and their role in decision making.

THE CURRENT STUDY

The theoretical notion guiding our study is that PVs involve attentional processes and that the two procedures may influence attention differently. Specifically, Ritov and Baron's (1999) procedure may direct attention to the question of whether one should act. In contrast, in Connolly and Reb's (2003) procedure, participants are asked the same question at different levels of risk entailed by the action, which may shift their focus to balancing risks and consequences. An attentional-bias account of the anticipated attentional differences is compatible with conversational pragmatics (Grice, 1975); Connolly and Reb's format may be more likely to convey the presupposition that some trade-off is expected.

Connolly and Reb (2003) did not assess PVs, so it is unclear how people with PVs would respond in their paradigm. We predicted, however, that people with PVs would show less quantity sensitivity than people without PVs in Ritov and Baron's (1999) procedure but *greater* quantity sensitivity than people without PVs in Connolly and Reb's procedure: If people who endorse PVs care more than other people about the resource at risk (fish, in this example), one might expect they would give

greater consideration to consequences (and demonstrate more quantity sensitivity); that is, indifferent participants should care less about the consequences entailed in the scenario.

There has been enough research on PVs and decision making to establish that this domain is theoretically and practically rich, but there has been too little research aimed at establishing generality across paradigms and social contexts. At a minimum, our study contributes to the literature by examining the generality of results across two closely related procedures. Our study assessed the relation between PVs and quantity sensitivity for three scenarios, using a replication of Ritov and Baron's (1999) procedure with some participants and a procedure inspired by Connolly and Reb's (2003) study with others.

In addition to examining response formats and quantity sensitivity, we assessed whether PVs exert domain-general or domain-specific influences by collecting responses for three additional, unrelated PVs. If quantity sensitivity or insensitivity is predicted by endorsing many PVs then the relation between PVs and quantity sensitivity may reflect individual differences in generalized deontology, rather than use of different reasoning processes depending on whether cherished or uncherished resources are at risk.

METHOD

Participants

Seventy-four undergraduates (44 women, 30 men) participated for course credit, each completing the questionnaire at his or her own pace. They were tested individually but in a small-group setting (typically, 1 to 4 participants per session).

Materials and Design

After reading the instructions, participants were asked to read and respond to three scenarios from Ritov and Baron (1999): River Diversion (given earlier), Starvation, and Cutting Forests. The latter two scenarios were worded as follows:

> Starvation. A convoy of food trucks is on its way to a refugee camp during a famine in Africa. (Airplanes cannot be used.) You find that a second camp has even more refugees. If you tell the convoy to go to the second camp instead of the first, you will save 1,000 people from death, but 100 people in the first camp will die as a result.

> Cutting Forests. A logging company has the rights to 1,000 square miles of old-growth forest. The company is willing to trade this land for 100 square miles of similar land, now part of a national park. You can give the smaller area to the company and make the larger area into a national park. The trees and scenery in the two areas are much the same. The logging company will cut all the trees in whichever area it owns.

The three scenarios were included in random order within a packet. Two versions of the questionnaire were constructed. Half our sample received the "RB" version, which used the items and procedure from Ritov and Baron (1999). The other half received the "CR" version (modeled after Connolly & Reb, 2003), in which participants were not asked for a threshold value, but instead were asked whether or not they would act if acting entailed 10%, 30%, 50%, 70%, and 90% of the risk entailed by the omission.

After responding to the three scenarios, participants' PVs for six items from Baron and Spranca (1997)—three corresponding to the scenarios and three unrelated items—were assessed. The additional actions participants judged as acceptable or unacceptable were the following: "Selling products for profit made by strike breakers," "Putting people in jail for expressing nonviolent political views," and "Aborting normal fetuses in the last three months of pregnancy."

RESULTS

For the RB procedure, each threshold value was converted to a proportion by dividing this value by the harm caused by omission. This proportion is taken to reflect quantity sensitivity: the higher the value, the more sensitive to quantity (i.e., consequentialist) participants appear to be; the lower the value,

TABLE 1

Proportion of Participants Endorsing Protected Values (PVs) and Differences in Threshold Values for Participants With and Without PVs, as Assessed by Ritov and Baron's (1999) Procedure and Connolly and Reb's (2003) Procedure

	Procedure												
	Ritov and Baron							Connolly and Reb					
		Threshold							Threshold				
Item	Proportion With PV	No PV	PV	t	p_{rep}	η_p^2	$1 - \beta$	Proportion With PV	No PV	PV	t	p_{rep}	η_p^2	$1 - \beta$
Starvation	.78	.75	.57	1.14	.67	.04	.20	.78	.58	.65	0.57	.45	.01	.09
Cutting Forests	.41	.58	.32	2.31*	.91	.13	.61	.46	.55	.75	2.08*	.89	.11	.52
River Diversion	.35	.60	.34	2.22*	.90	.12	.58	.41	.47	.66	2.04*	.88	.11	.51

*$p < .05$.

TABLE 2

Frequencies of Zero Thresholds by Item and Presence/Absence of Protected Value (PV)

	Procedure					
	Ritov and Baron (1999)			Connolly and Reb (2003)		
Item	Zero	Nonzero	Chi-square test	Zero	Nonzero	Chi-square test
Starvation						
No PV	0	8	$\chi^2(1, N = 37) = 1.01$,	0	8	$\chi^2(1, N = 37) = 1.53$,
PV	2	27	$p_{rep} = .63$	3	26	$p_{rep} = .71$
Cutting Forests						
No PV	0	22	$\chi^2(1, N = 37) = 1.85$,	0	20	$\chi^2(1, N = 37) = 3.25^{\dagger}$,
PV	1	14	$p_{rep} = .75$	2	15	$p_{rep} = .85$
River Diversion						
No PV	1	21	$\chi^2(1, N = 34) = 1.34$,	1	21	$\chi^2(1, N = 37) = 1.06$,
PV	2	10	$p_{rep} = .68$	0	15	$p_{rep} = .65$

$^{\dagger}p < .10$.

the less sensitive to quantity participants appear to be. For the CR procedure, quantity sensitivity was indexed as the highest level of harm caused by action that each participant endorsed for each item (values ranged from 0 to .9). If a participant circled no "Yes" responses, the item was coded as 0. Levels of quantity sensitivity and their relation to PVs were compared across the two paradigms. Additionally, because Baron (J. Baron, personal communication, February 11, 2006) noted that thresholds of zero and .9 may reflect strong preferences for omission and action, respectively, we report analyses of these responses.

The threshold results in the RB procedure replicated those of Ritov and Baron (1999). Participants with PVs showed less quantity sensitivity than participants without PVs, providing lower threshold values (see Table 1). This difference was evident for each of the three items used, but reliable for only two. The analyses for the Starvation item had a lack of power (because so many people had a PV for this item).

Strikingly, but as predicted, the pattern reversed in the CR condition. Participants with PVs demonstrated greater quantity sensitivity than participants without PVs, providing higher thresholds (see Table 1). Again, this difference was evident for each item, but not reliable for the Starvation item.

A second set of analyses examined the relation between the number of PVs endorsed (i.e., one, two, or three of the three relevant and three irrelevant items) and the average level of quantity sensitivity exhibited across all three items for each participant. Analyses for the three relevant items mirrored the by-item analyses just summarized: The more PVs participants endorsed in the RB version, the less sensitive they were to quantity, $r(35) = -.57$, $p_{rep} = .99$, $\eta_p^2 = .33$; conversely, the more PVs participants endorsed in the CR version, the *more* sensitive they were to quantity, $r(35) = .38$, $p_{rep} = .93$, $\eta_p^2 = .15$. Endorsement of the three irrelevant items correlated only moderately with quantity sensitivity, $rs(35) = .22$ and .23, n.s. Although these data do not rule out domain-general influences, they suggest that the observed effects were more a function of domain-specific PVs than of general differences in reasoning tendencies.

Table 2 presents frequencies of zero thresholds. Although such responses were rare, participants with PVs were slightly more likely to give zero thresholds than participants without PVs. This relationship approached significance for only one of the six cases. Table 3 reports the correlations between the number of PVs endorsed and thresholds of zero or .9+. Endorsing related PVs predicted thresholds of .9+; PVs were related to fewer thresholds of .9+ in the RB paradigm and more thresholds of .9+ in the CR paradigm.

TABLE 3

Correlations Between Number of Related or Unrelated Protected Values (PVs) and Percentage of Thresholds of Zero or .9+

	Procedure			
	Ritov and Baron (1999)		Connolly and Reb (2003)	
PVs	Zero threshold	.9+ threshold	Zero threshold	.9+ threshold
Related	$.27^{\dagger}$	$-.48^{**}$	.15	$.48^{**}$
Unrelated	$-.29^{\dagger}$	$.28^{\dagger}$	.10	.27

$^{\dagger}p < .10$. $^{**}p < .01$.

DISCUSSION

The two paradigms we used yielded diametrically opposing results. As assessed by the RB paradigm, people endorsing PVs looked less quantity sensitive than people not endorsing PVs, but as assessed by the CR paradigm, they looked more quantity sensitive than people not endorsing PVs.[1] It is tempting to in-

[1]Baron (2006) has pursued the present results by running a study using different methods and has found different patterns. The methodological differences are extensive enough that we hesitate to speculate about the critical factors.

terpret these results as yet another piece of evidence of people's inconsistencies across contexts, reflecting the instability of moral beliefs. An alternative stance is to presume that one set of results is "real" and the other an experimental artifact.

We propose a third perspective. Just as prospect theory assumes a single value function susceptible to editing and framing processes that produce different choices or responses, we think that PVs may be associated with a consistent underlying value function subject to attentional processes and other processing principles that yield different patterns of performance in different contexts. The RB procedure appears to direct attention to the lower part of some value function where the distinction between "no harm caused" and "some harm caused" is salient. We suggest that the CR procedure directs attention more toward net benefits. The CR procedure may effectively lead participants to assume that a trade-off is appropriate, whereas the RB procedure may more directly target the acceptability or unacceptability of the trade-off. By analogy, although one may be reluctant to sell an heirloom at any price, if one decides to sell it, the same respect for the heirloom now may demand that one get the best price possible.[2] To rescue this description from circularity, in future studies we will seek independent evidence of these presumed processes.

These context effects suggest a need for a close examination of the processes that PVs motivate. A better understanding of morally motivated choice must entail more fleshing out of its cognitive underpinnings and better theorizing about how this machinery operates in sociocultural context (Fiske & Tetlock, 1997; Shweder, Much, Mahapahtra, & Park, 1997).

Acknowledgments—This work was supported by Air Force Office of Scientific Research–Multidisciplinary University Research Initiative Award 57110001864 and National Science Foundation–Human and Social Dynamics Award 0527396. We thank Jon Baron, Terry Connolly, Danny Kahneman, and the Morally-Motivated Choice group at Northwestern University for helpful comments and discussion.

REFERENCES

Baron, J. (1996). Do no harm. In D.M. Messick & A.E. Tenbrunsel (Eds.), *Codes of conduct: Behavioral research into business ethics* (pp. 197–213). New York: Russell Sage Foundation.

Baron, J. (2006). *Protected values for acts and omissions*. Retrieved December 15, 2006, from http://www.psych.upenn.edu/~baron/crrb.pdf

Baron, J., & Greene, J. (1996). Determinants of insensitivity to quantity in valuation of public goods: Contribution, warm glow, budget constraints, availability, and prominence. *Journal of Experimental Psychology: Applied*, *2*, 107–125.

Baron, J., & Ritov, I. (2004). Omission bias, individual differences, and normality. *Organizational Behavior and Human Decision Processes*, *94*, 74–85.

Baron, J., & Spranca, M. (1997). Protected values. *Organizational Behavior and Human Decision Processes*, *70*, 1–16.

Connolly, T., & Reb, J. (2003). Omission bias in vaccination decisions: Where's the "omission"? Where's the "bias"? *Organizational Behavior and Human Decision Processes*, *91*, 186–202.

Connolly, T., & Reb, J. (2004). *Omission bias in vaccination decisions: Still searching for evidence*. Unpublished manuscript, University of Arizona, Tucson.

Davis, N. (1993). Contemporary deontology. In P. Singer (Ed.), *A companion to ethics* (pp. 205–218). Malden, MA: Blackwell.

Fiske, A.P., & Tetlock, P.E. (1997). Taboo trade-offs: Reactions to transactions that transgress the spheres of justice. *Political Psychology*, *18*, 255–297.

Grice, H.P. (1975). Logic and conversation. In P. Cole & J. Morgan (Eds.), *Syntax and semantics: Vol. 3. Speech acts* (pp. 43–58). New York: Academic Press.

Kahneman, D., & Tversky, A. (1979). Prospect theory: Analysis of decision under risk. *Econometrica*, *47*, 263–291.

Medin, D.L., Schwartz, H.C., Blok, S.V., & Birnbaum, L.A. (1999). The semantic side of decision making. *Psychonomic Bulletin & Review*, *6*, 562–569.

Pettit, P. (1993). Consequentialism. In P. Singer (Ed.), *A companion to ethics* (pp. 230–240). Malden, MA: Blackwell.

Ritov, I., & Baron, J. (1990). Reluctance to vaccinate: Omission bias and ambiguity. *Journal of Behavioral Decision Making*, *54*, 263–277.

Ritov, I., & Baron, J. (1999). Protected values and omission bias. *Organizational Behavior and Human Decision Processes*, *79*, 79–94.

Rohan, M.J. (2000). A rose by any name? The values construct. *Personality and Social Psychology Review*, *4*, 255–277.

Savage, L.J. (1954). *The foundations of statistics*. New York: John Wiley.

Shweder, R.A., Much, N.C., Mahapahtra, M., & Park, L. (1997). The "big three" of morality (autonomy, community, divinity) and the "big three" explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119–169). Stanford, CA: Stanford University Press.

Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology*, *27*, 76–105.

Tetlock, P.E. (2002). Social functionalist frameworks for judgment and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, *109*, 451–471.

Tetlock, P.E., Kristel, O.V., Elson, S.B., Green, M.C., & Lerner, J.S. (2000). The psychology of the unthinkable: Taboo trade-offs, forbidden base rates, and heretical counterfactuals. *Journal of Personality and Social Psychology*, *78*, 853–870.

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, *5*, 297–323.

von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behavior* (2nd ed.). Princeton, NJ: Princeton University Press.

(RECEIVED 2/17/06; REVISION ACCEPTED 8/8/06; FINAL MATERIALS RECEIVED 8/8/06)

[2]We thank Danny Kahneman for this example.