Short Report

Manipulations of Emotional Context Shape Moral Judgment

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Recent work in psychology and neuroscience has revealed that moral judgments are often mediated by two classes of brain processes (Greene, Nystrom, Engell, Darley, & Cohen, 2004; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Haidt, 2001). One class, probably reflecting earlier evolutionary development, consists of processes that automatically alter hedonic states in response to specific types of socially relevant stimuli. A second class consists of more domain-general, effortful processes that underlie abilities for abstract reasoning, simulation, and cognitive control. Often, these intuitive and deliberative processes work in unison to foster decisions in accord with the goals of both; goals that are socially adaptive are often congruent with more abstract moral principles. Certain classes of ethical dilemmas, however, require decisions in which the competition between these two systems becomes evident (Greene et al., 2001, 2004).

The structure of such dilemmas often requires endorsing a personal moral violation in order to uphold a utilitarian principle. The well-known footbridge dilemma is illustrative. In it, the lives of five people can be saved through sacrificing another. However, the sacrifice involves pushing a rather large man off a footbridge to stop a runaway trolley before it kills the other five. The vast majority of individuals believe it wrong to push him, even though not pushing him will result in a greater number of deaths (Greene et al., 2004; Thomson, 1986). The reason for this seemingly illogical response stems from competition between the emotionally intuitive and deliberative systems. Neuroimaging has revealed that such dilemmas produce increased activation in emotion-related brain centers, as well as in centers normally used for deliberative reasoning; considering personal moral violations, such as inflicting direct harm, elicits prepotent negative reactions that appear designed to inhibit amoral acts (Greene et al., 2001). The infrequent selection of the logically appropriate option in such dilemmas is associated with heightened activation of deliberative centers aimed at cognitive control, suggesting that the automatic negative reaction must be disregarded if a utilitarian judgment is to be made (Greene et al., 2004).

Given these findings, one might expect that the ultimate arbiter of ethical choice for such dilemmas would reside in individuals' abilities and motivations to engage in controlled analysis. However, the proposed dual-process model of moral judgment suggests another unexamined route by which choice might be influenced: contextual sensitivity of affect. Affective states stand as momentary informational signals regarding the environment and are multiply determined (Schwarz & Clore, 1996). Consequently, environmental factors separate from any potential moral violations might influence affect at the time of judgment. A close temporal contiguity of such affectively stochastic events and the stable negative emotion stemming from a dilemma might unhinge the direct relation between a dilemma-specific prepotent emotional response and choice. Simply put, environment-induced feelings of positivity at the time of judgment might reduce the perceived negativity, or aversion "signal," of any potential moral violation and, thereby, increase utilitarian responding.

METHOD

We examined this hypothesis using a paradigm in which 79 participants received a positive or neutral affect induction and immediately afterward were presented with the footbridge and trolley dilemmas embedded in a small set of nonmoral distractors.[1] The trolley dilemma is logically equivalent to the footbridge dilemma, but does not require consideration of an emotion-evoking personal violation to reach a utilitarian outcome; consequently, the vast majority of individuals select the utilitarian option for this dilemma.[2] We included the trolley dilemma for two reasons. First, it provided an opportunity to replicate previous work comparing canonical responses to the two dilemmas and, thereby, to validate the current paradigm. Second, it provided an appropriate control condition; given the

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[1]Given that repeated consideration of dilemmas describing moral violations would rapidly reduce positive mood, we utilized responses to the matched set of the footbridge and trolley dilemmas as the primary dependent variable.

[2]Precise wording of the dilemmas can be found in Thomson (1986) or obtained from the authors.

TABLE 1

Frequencies of Appropriate and Inappropriate Responses to the Footbridge Dilemma as a Function of Affective State

	Response	
Affective state	Appropriate	Inappropriate
Control	3	35
Positive	10	31

lack of a negative prepotent emotional response in the trolley dilemma, we expected that heightened positive affect would not influence responses to it.

To induce positive affect, we showed participants a 5-min comedy clip taken from "Saturday Night Live." The neutral clip consisted of a 5-min segment taken from a documentary on a small Spanish village. Positive affect was assessed as the mean response to a four-item feeling-descriptor measure consisting of the following items rated on 7-point scales: happy, content, pleasant, good (Cronbach's $\alpha = .92$). After the affect induction, individual dilemmas were presented in random order on a computer monitor. Each dilemma was presented through a series of three screens, the first two explaining the dilemma and the last asking the participant to indicate whether a described course of action would be "appropriate" or "inappropriate." Each screen was visible for a maximum of 15 s (cf. Greene et al., 2001).

RESULTS AND DISCUSSION

As expected, participants who viewed the positive clip reported a more positive affective state ($M = 4.57$) than did those who viewed the neutral clip ($M = 2.77$), $t(77) = 7.47$, $p_{rep} = .99$. More important, heightened positivity increased the odds of selecting the appropriate (i.e., utilitarian) response to the footbridge dilemma by a factor of 3.8, $\chi^2(1, N = 79) = 3.90$, $p_{rep} = .89$, thereby confirming our central prediction (see Table 1). As expected, affect did not influence responses to the trolley dilemma.[3] Replicating previous findings, logistic regressions revealed that longer decision times increased the odds of selecting the appropriate response for the footbridge dilemma (Wald $\chi^2 = 7.50$, $p_{rep} = .95$), but not the trolley dilemma (cf. Greene et al., 2001). As predicted, affective state did not moderate the relation between response time and choice in the footbridge dilemma, and including affective state in the analysis did not produce a relation between response time and choice in the trolley dilemma.

These findings demonstrate that the causal efficacy of emotion in guiding moral judgment does not reside solely in responses evoked by the considered dilemma, but also resides in the affective characteristics of the environment. Whether such an influence optimizes or biases the resulting decision depends on the relevance of the extraneous affective cues to the dilemma at hand. What is clear, however, is that a skilled manipulation of individuals' affective states can shape their moral judgments.

[3]As usual, large majorities selected the appropriate option (38 of 40 and 33 of 37 in the control and positive-affect conditions, respectively).

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