

Research Report

With a Clean Conscience

Cleanliness Reduces the Severity of Moral Judgments

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ABSTRACT—*Theories of moral judgment have long emphasized reasoning and conscious thought while downplaying the role of intuitive and contextual influences. However, recent research has demonstrated that incidental feelings of disgust can influence moral judgments and make them more severe. This study involved two experiments demonstrating that the reverse effect can occur when the notion of physical purity is made salient, thus making moral judgments less severe. After having the cognitive concept of cleanliness activated (Experiment 1) or after physically cleansing themselves after experiencing disgust (Experiment 2), participants found certain moral actions to be less wrong than did participants who had not been exposed to a cleanliness manipulation. The findings support the idea that moral judgment can be driven by intuitive processes, rather than deliberate reasoning. One of those intuitions appears to be physical purity, because it has a strong connection to moral purity.*

Many cultures equate physical cleanliness with moral and spiritual purity. For example, many religious practices require that one first engage in physical cleansing, such as washing parts of one's body. Haidt and colleagues (e.g., Haidt & Joseph, 2008) have proposed that the notion of purity constitutes a basic moral intuition that developed from the need to safeguard oneself from potentially harmful substances. According to this approach, disgust evolved as an emotion to protect the body from germs, parasites, and spoiled food, but it was then extended to social and moral domains (Rozin, Haidt, & McCauley, 2000). As a consequence, people often report finding immoral acts disgusting. Indeed, similar neural structures appear to be involved in the experience of physical and moral disgust (Moll et al., 2005).

Recent studies have demonstrated that experimentally induced feelings of disgust can attach themselves to moral judgments, leading the person to conclude that a particular moral action is quite wrong (Schnall, Haidt, Clore, & Jordan, 2008; see

also Wheatley & Haidt, 2005). Physical disgust was induced by exposure to a bad smell, working in a disgusting room, recalling a physically disgusting experience, or a video induction. In each case, the results showed that disgust can increase the severity of moral judgments in comparison with those made in control conditions, and this effect applied irrespective of whether the action to be judged was itself physically disgusting or not. In contrast to disgust, induced sadness did not influence moral judgments. These studies showed that moral judgments can be based on intuitive emotional feelings rather than on rational reasoning processes (Haidt, 2001; Prinz, 2006), even when the feeling of disgust was irrelevant to the moral action under consideration.

On the flip side of disgust, the association between physical and moral purity in Western cultures was recently demonstrated by Zhong and Liljenquist (2006). After recalling a moral transgression from their own lives, participants were more likely to think of cleansing-related words, and they showed a desire to engage in cleansing behavior. The two experiments reported in this article investigated the reverse relationship: If cleansing behavior can “wash away one's sins,” as Zhong and Liljenquist (2006) demonstrated, then the feeling of cleanliness should reduce the perceived seriousness of moral transgressions and also “wash away other people's sins.” Following research showing that concepts of cleanliness can be primed in subtle ways (Holland, Hendriks, & Aarts, 2005), the first experiment activated concepts of cleanliness and asked participants to rate how wrong certain moral actions were. Because the sense of purity from the priming should be misattributed to the moral judgments, it was expected that priming with cleanliness words would reduce the severity of moral judgments more so than would priming with neutral control words.

EXPERIMENT 1**Method***Participants*

Forty University of Plymouth undergraduate students (30 female, 10 male; mean age = 20.00 years, $SD = 1.85$ years) participated as part of a course requirement.

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Procedure

Participants, in individual sessions, first completed a scrambled-sentences task (adapted from Costin, 1969) involving 40 sets of four words each. By underlining any three words in a set, a sentence could be formed. For the **neutral condition**, the task contained 40 sets of scrambled neutral words. For the **cleanliness condition**, half of the sets contained words related to the theme of cleanliness and purity (e.g., *pure, washed, clean, immaculate, pristine*), and the other sets contained only neutral words.

Immediately after the priming task, **participants rated six moral dilemmas** (as used by Schnall et al., 2008): “Dog” (eating one’s dead dog), “Trolley” (switching the tracks of a trolley to kill one workman instead of five), “Wallet” (keeping money inside a found wallet), “Plane Crash” (killing a terminally ill plane crash survivor to avoid starvation), “Résumé” (putting false information on a résumé), and “Kitten” (using a kitten for sexual arousal). **Participants rated how wrong each action was from 0 (perfectly OK) to 9 (extremely wrong)**. Participants subsequently indicated their feelings at the moment for the items *relaxed, angry, happy, sad, afraid, depressed, disgusted, upset, and confused*, using a 10.5-cm visual analog scale labeled “Don’t feel at all” at one end and “Feel very strongly” at the other. All scales were scored by measuring in half centimeters from the “Don’t feel at all” end, yielding raw scores ranging from 0 to 21.

Results and Discussion

Emotion Ratings

To test whether the priming had an effect on the emotion ratings as assessed at the end of the experiment, ratings were analyzed by individual one-way analyses of variance (ANOVAs) with priming (cleanliness vs. neutral) as a factor. No group differences were found on any of the emotion ratings (all $p_{\text{reps}} < .86$). Thus, it appears that the cleanliness priming did not induce any specific mood.

Moral Judgments

The mean composite of all six moral vignettes was computed. To test whether priming the participants with cleanliness reduced the severity of moral judgments, **we conducted a one-way ANOVA on the composites with priming (cleanliness vs. neutral) as a factor**. As predicted, participants gave lower ratings after the cleanliness priming ($M = 4.98, SD = 1.26$) than they did

after the neutral priming ($M = 5.81, SD = 1.47$), $F(1, 38) = 3.63$, $p_{\text{rep}} = .90$, $\eta_p^2 = .09$. When analyzed individually, all six moral vignettes showed the same pattern (see Table 1), with a significant difference between conditions for the “Kitten” vignette, $F(1, 38) = 5.71$, $p_{\text{rep}} = .95$, $\eta_p^2 = .13$.

The first experiment demonstrated that participants found moral transgressions to be less bad after concepts of cleanliness were cognitively activated. This finding indicates the connection between cognitive and moral purity and shows that intuitive concepts can have an influence on moral judgments independently of deliberate reasoning processes (Haidt, 2001).

EXPERIMENT 2

The first experiment showed that surreptitiously activated cognitive concepts related to purity can influence moral decisions. However, in addition to cognitive components, a central component of purity is the physical behavior of cleansing one’s body from experienced contaminants (Rozin et al., 2000). Indeed, disgust, the feeling indicating the absence of physical purity, might be an especially embodied emotion because of its strong connection to nausea and the physical process of expelling contaminants (Haidt, Rozin, McCauley, & Imada, 1997; Schnall et al., 2008). Thus, if there is a strong connection between physical cleansing and moral purity, then cleansing behavior might eliminate the effect of an already-present feeling of disgust on moral judgments. As noted earlier, several studies demonstrated that feelings of disgust can make moral judgments more severe (Schnall et al., 2008; Wheatley & Haidt, 2005). The aim of the second study was to test whether this effect could be reduced when participants were given an opportunity to physically cleanse themselves after experiencing disgust. **All participants watched a physically disgusting scene from a film, and half of the participants were asked to wash their hands with soap and water before completing the moral vignettes**. We predicted that those participants who engaged in hand washing would make less severe judgments for the moral dilemmas than would the participants who did not wash their hands after the disgusting film clip.

Method

Participants

Forty-four University of Plymouth undergraduate students (32 female, 12 male; mean age = 22.18 years, $SD = 4.89$ years)

TABLE 1
Mean Ratings for Moral Vignettes in Experiment 1

Condition	Dog	Trolley	Wallet	Plane Crash	Résumé	Kitten
Cleanliness priming ($n = 20$)	5.70 (2.39)	1.85 (1.50)	4.95 (2.35)	6.05 (2.39)	4.65 (2.28)	6.70 (2.49)
Neutral priming ($n = 20$)	6.55 (2.52)	2.75 (2.38)	5.45 (2.86)	6.45 (2.56)	5.40 (2.26)	8.25 (1.48)

Note. Response scales ranged from 0 (*perfectly OK*) to 9 (*extremely wrong*). Standard deviations are given in parentheses.

TABLE 2
Mean Ratings for Moral Vignettes in Experiment 2

Condition	Dog	Trolley	Wallet	Plane Crash	Résumé	Kitten
Hand washing ($n = 21$)	5.33 (1.88)	2.81 (1.08)	4.62 (1.53)	5.38 (1.80)	4.24 (1.67)	6.00 (1.18)
No hand washing ($n = 22$)	5.73 (0.98)	3.64 (1.05)	5.73 (1.28)	6.05 (1.21)	5.09 (1.15)	6.36 (1.00)

Note. Response scales ranged from 1 (*nothing wrong at all*) to 7 (*extremely wrong*). Standard deviations are given in parentheses.

participated as part of a course requirement. One participant's data were excluded from analysis because she declined to wash her hands when asked to do so.

Procedure

Participants were tested individually. Two laboratory rooms were used: We showed the film clip in the first room and administered the moral dilemmas in the second. Participants first watched a 3-min clip from the film *Trainspotting* that was previously shown to elicit strong disgust (Lerner, Small, & Loewenstein, 2004; Schnall et al., 2008). Participants were then taken to a different room, ostensibly because the next participant would soon be arriving to watch the film. Participants in the hand-washing condition were additionally told that the second room was a staff room and that they would be required to wash their hands when going into it, because the room needed to be kept as clean and tidy as possible. The staff room was equipped with a sink, antibacterial soap in a pump dispenser, and paper towels. To make the cover story about the room plausible, the table was covered with a tablecloth, and a vase with artificial flowers was placed on it to create the sense of its being a tidy staff room. Participants sat down at the table and completed the same six vignettes used in Experiment 1.¹ To ensure that the film induced comparable levels of disgust in both conditions, participants were then asked to think back of how they had felt immediately after watching the film and indicate their feelings at the time using the same emotion rating scales as in Experiment 1.

Results and Discussion

Emotion Ratings

To test whether participants in both conditions experienced more disgust than any other emotion following the film clip, a repeated-measures ANOVA was carried out with all nine emotion ratings. No overall difference was found for condition, $F(1, 41) = 0.24, p_{\text{rep}} = .63$, and there was no interaction of condition and emotions, $F(8, 328) = 0.82, p_{\text{rep}} = .65$. Looking specifically at disgust, simple contrasts showed that the disgust ratings were significantly higher than each of the other mood ratings (all $p_{\text{rep}}\text{s} < .99$). Means indicated that participants felt disgust more strongly ($M = 14.26, SD = 6.09$) than any other emotion, particularly other

negative emotions such as anger ($M = 2.84, SD = 3.39$) and sadness ($M = 5.72, SD = 5.06$). Participants in both conditions felt equally disgusted immediately after watching the film, as indicated by a nonsignificant effect between condition for the rating of disgust, $F(1, 41) = 1.04, p_{\text{rep}} = .76$. Thus, all participants reported feeling strong disgust before the hand-washing manipulation.

Moral Judgments

We computed the mean composite of all six moral vignettes and predicted that participants who washed their hands following the disgusting film clip would make less severe judgments than would participants who did not wash their hands. Indeed, a one-way ANOVA with condition (hand washing vs. no hand washing) as a factor found a significant difference between the conditions on the composite rating, $F(1, 41) = 7.81, p_{\text{rep}} = .97, \eta_p^2 = .16$. Further analyses showed that participants in the hand-washing condition made less severe judgments for each moral dilemma than did participants in the no-hand-washing condition, with statistically significant differences between conditions for "Trolley," $F(1, 41) = 6.50, p_{\text{rep}} = .96, \eta_p^2 = .14$, and "Wallet," $F(1, 41) = 6.65, p_{\text{rep}} = .96, \eta_p^2 = .14$, and a marginal effect for "Résumé," $F(1, 41) = 3.83, p_{\text{rep}} = .91, \eta_p^2 = .09$ (see Table 2 for means).

The findings from Experiment 2 indicate that participants who washed their hands after watching a disgusting film clip made less severe moral judgments than did participants who did not wash their hands. Emotion ratings suggested that participants in both conditions experienced strong disgust immediately after watching the film clip, which is consistent with earlier research using the same clip (Lerner et al., 2004; Schnall et al., 2008). Because of the danger of making the cleansing manipulation salient, we did not obtain additional disgust ratings after the hand-washing procedure. However, given our conceptual framework and the magnitude of the effect across conditions, we presume that the hand washing reduced feelings of disgust, which in turn reduced the severity of the moral judgments.

The study protocol involved the experimenter verbally referring to the room as needing to be "clean" and "tidy." Thus, it is conceivable that these instructions, rather than the hand washing alone, might have primed the cognitive construct of cleanliness. Indeed, perhaps the combination of the cognitive priming and the cleansing behavior amplified the effect. The magnitude of the effect was greater in Experiment 2 ($\eta_p^2 = .16$)

¹In contrast to Experiment 1, the scale for Experiment 2 ranged from 1 (*nothing wrong at all*) to 7 (*extremely wrong*).

than it was in Experiment 1 ($\eta_p^2 = .09$), which is consistent with that possibility. Thus, although it is not clear whether the hand washing itself was the only reason for the reduction in moral condemnation, it appears to have contributed over and above the priming of cleanliness concepts.

GENERAL DISCUSSION

Two experiments provided evidence that activating intuitions about cleanliness can reduce the severity of moral judgments. Participants who had cognitive concepts of cleanliness activated (Experiment 1) or who had physically cleansed themselves after experiencing disgust (Experiment 2) made less severe moral judgments relative to participants who were not exposed to cleanliness manipulations. In both experiments, the effect of the rather subtle manipulations was substantial, with medium to large effect sizes (Cohen, 1988).

Our findings support the notion that purity can serve as a basic intuition when judging the moral quality of an action: People appear to have intuitions about moral transgressions that go beyond principles of harm or fairness. Thus, our findings support Haidt's (2001) social intuitionist model that proposes that people use intuitions when making judgments about right and wrong, even when these intuitions are incidental and irrelevant to the object or situation being judged. Whereas Zhong and Liljenquist's (2006) studies indicated that activating cleansing-related concepts alleviated concerns about one's own morality, the cleanliness manipulations in the two studies reported in this article influenced how morally wrong participants considered hypothetical actions that were not immediately pertinent to themselves.

Although discussion of Haidt's (2001) model has predominantly focused on emotional processes (Pizarro & Bloom, 2003), strictly speaking, it does not pit emotional against rational processes; rather, it emphasizes the quick and automatic nature of both affective and cognitive processes that take place largely outside of conscious awareness. In fact, we agree with Monin, Pizarro, and Beer's (2007) observation that the polarizing debate of the roles of reason and/or emotion in making moral judgments might artificially limit the study of moral psychology. Intuitive processes might not always need to involve emotional processes (cf. Hauser, 2006). Indeed, in our two studies, we found that intuitive processes and contextual factors unrelated to specific emotions influenced moral judgments. Intuitions were provided by activating concepts relating to purity (Experiment 1) and by having participants engage in cleansing behaviors that reestablished physical purity after experiencing physical disgust (Experiment 2).

In conclusion, the current studies provide evidence that, in the context of morality, purity is not just a metaphor. Presumably because human beings aim to distinguish themselves from other animals, they attempt to place themselves close to higher spiritual beings by being physically and morally pure (Haidt, Koller,

& Dias, 1993; Rozin et al., 2000). Because of its potential to lead people to regard moral actions as pure and good, cleanliness might indeed feel as if it were next to godliness.

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