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*Psychological Science* published online 18 March 2011

DOI: 10.1177/0956797611402514

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# Dirty Liberals! Reminders of Physical Cleanliness Influence Moral and Political Attitudes

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Psychological Science  
XX(X) 1–6  
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DOI: 10.1177/0956797611402514  
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## Abstract

Many moral codes place a special emphasis on bodily purity, and manipulations that directly target bodily purity have been shown to influence a variety of moral judgments. Across two studies, we demonstrated that reminders of physical purity influence specific moral judgments regarding behaviors in the sexual domain as well as broad political attitudes. In Study 1, individuals in a public setting who were given a reminder of physical cleansing reported being more politically conservative than did individuals who were not given such a reminder. In Study 2, individuals reminded of physical cleansing in the laboratory demonstrated harsher moral judgments toward violations of sexual purity and were more likely to report being politically conservative than control participants. Together, these experiments provide further evidence of a deep link between physical purity and moral judgment, and they offer preliminary evidence that manipulations of physical purity can influence general (and putatively stable) political attitudes.

## Keywords

morality, social cognition, priming

Received 8/23/10; Revision accepted 10/29/10

A growing body of research provides evidence for a strong link between moral judgments and bodily purity. Not only do many cultures endorse moral codes that place a heavy importance on violations of purity, but there is also increasing experimental evidence that direct bodily sensations of dirtiness or cleanliness feed into people's moral judgments. The emotion of disgust, for instance, which is reliably elicited in the presence of potential physical contaminants, appears to play a particularly important role in moral judgments regarding sexual purity (Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Knobe, & Bloom, 2009). For example, individuals who were made to feel disgust by being exposed to a foul odor, sitting at a dirty desk, or receiving a posthypnotic suggestion judged the moral transgressions of other people more harshly than control participants did (Schnall, Haidt, Clore, & Jordan, 2008; Wheatley & Haidt, 2005).

More recent evidence suggests that inducing a feeling of cleanliness may have similar effects on moral judgment. For instance, acts of physical cleansing (such as hand washing) make individuals disapprove more strongly of moral behavior centered around purity (such as viewing pornography, littering, and using drugs; Zhong, Strejcek, & Sivanathan, in press). Although there is no direct evidence, one potential explanation for why these seemingly opposing manipulations have similar effects on judgment is that disgust and physical cleanliness both

increase individuals' sensitivity to becoming contaminated. Just as disgust is commonly understood to provide a strong avoidance motivation in order to prevent contamination from noxious substances (Rozin & Fallon, 1987), so too might cleanliness encourage hypervigilance to potential sources of contamination in the environment (cf. Schaller & Duncan, 2007).

Regardless of whether it is elicited through reminders of physical cleanliness or through experienced disgust, the motivation to maintain purity may produce nuanced effects on judgment when it is generalized to the abstract domain of morality. For one thing, Borg, Lieberman, and Kiehl (2008) have provided evidence that people do not respond in the same way to all violations of purity. At the level of neuroanatomy, people's reactions to purity violations in the sexual domain appear to differ from their reactions to purity violations unrelated to sexuality. At the behavioral level, the work of Inbar, Pizarro, and Bloom (2009) has shown that disgust tends to guide people's evaluations of sexual issues (such as reactions to homosexuality and abortion) but not of other issues (such as gun control). On the basis of these findings, we suspected that when primed with reminders of cleanliness, people would become hypervigilant to

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violations of sexual purity (which are directly related to the body) but not toward nonsexual purity violations.

Following this line of reasoning, we tested the possibility that reminders of physical cleanliness would lead to harsher judgments of behaviors associated with violations of sexual purity. Moreover, because politically conservative individuals are more likely than politically liberal individuals to endorse moral codes that emphasize purity (Graham, Haidt, & Nosek, 2009) and are more likely to be easily disgusted (Inbar, Pizarro, & Bloom, 2009), we thought it possible that cleanliness reminders would influence general political attitudes, not just attitudes toward specific moral behaviors. Accordingly, we tested whether manipulations intended to remind participants of physical cleanliness would sway their general political attitudes (Studies 1 and 2) and whether these reminders would lead to harsher moral judgments regarding acts that might be regarded as violations of sexual purity (Study 2).

## Study 1: Purity and Politics in the Hallway

### Participants

Fifty-two students were approached in the hallway of a campus building and asked to complete a brief demographic questionnaire.

### Procedure

We conducted the experiment on 3 separate days during 1 week. Individuals were approached after they entered the building through a set of doors at the center of the hallway. At one end of the hallway (approximately 10 ft to the left or right of the doors) was a hand-sanitizer dispenser; at the same distance at the other end of the hallway, there was nothing of note. The placement of the hand sanitizer (left or right side of the doors) was counterbalanced across sessions.

The experimenter asked every ninth person entering the building whether he or she would be willing to complete a 1-min demographic survey, which asked participants their age and major in school, as well as their political attitudes in the moral, social, and fiscal domains on a scale ranging from 1 (*extremely conservative*) to 7 (*extremely liberal*). In the control condition, the experimenter told participants to “step over to the wall to complete the questionnaire” while gesturing toward the empty side of the hallway. In the experimental condition, the experimenter told participants to “step over to the hand-sanitizer dispenser to complete the questionnaire.” After completing the questionnaire, participants returned it to an envelope and were thanked for their participation.

On each of the 3 days of the study, both the experimental and control conditions were run once, and the order of conditions was counterbalanced across the three sessions. Manipulation checks at the end of the demographic questionnaire (using an awareness scale from 0 to 5) confirmed that participants in the control condition were unaware of the hand-sanitizer station

( $M = 0.96$ ,  $SD = 1.48$ ) and that experimental participants were aware of its presence ( $M = 2.88$ ,  $SD = 1.05$ ),  $p < .0001$ .

## Results and discussion

Participants' ratings for the three political-orientation items were positively and significantly correlated, so we averaged them into one index,  $\alpha = .65$ . As expected, participants who reported their political attitudes in the presence of the hand-sanitizer dispenser reported a less liberal political orientation ( $M = 4.30$ ) than did participants in the control condition ( $M = 4.93$ ),  $t(50) = 2.31$ ,  $p < .05$ ,  $d = 0.89$ . Moreover, the manipulation appeared to affect moral, social, and fiscal conservatism equally: Analyzing the three political items as a function of condition in a repeated measures ANOVA revealed no Condition  $\times$  Political Item interaction,  $F(2, 49) = 0.34$ ,  $p > .70$ . Despite the noisy nature of the public hallway in which we collected the data, it appears as if a simple reminder of physical purity (the presence of a hand sanitizer) was able to shift participants' responses toward the conservative end of the political spectrum.

## Study 2: Hand-Washing Reminders, Sexual Behaviors, and Political Attitudes

In Study 2, we sought to replicate the findings from Study 1 and to explore whether a purity reminder would affect people's judgments regarding moral violations in the sexual domain in a manner consistent with the shifts we observed in the political domain. After reporting their political attitudes (either following a purity reminder or not), participants evaluated a number of behaviors, some of which involved taboo sexual acts. We predicted that reminders of physical purity would again shift people's political attitudes toward conservatism and that this shift would be related to harsher moral judgments toward behaviors involving violations of sexual purity, but not toward moral violations in nonsexual domains.

To test this hypothesis, we employed two distinct physical purity primes. First, we administered the same political-orientation measure as in Study 1, but we did so in full view of a wall sign that ostensibly served as a reminder to experimenters that, in order to keep the laboratory clean, they should use hand wipes before typing at the computer. At the time, we were unaware of any studies that evoked purity-related effects using this subtle manipulation (although since that time, Zhong et al., in press, have shown that merely priming people with cleanliness words affects moral judgments); however, we suspected that a simple reminder that there may be airborne contaminants in the laboratory would be enough to increase participants' vigilance toward potential violations of purity (in much the same way that increasing perceived vulnerability to disease has been shown to affect judgment; see Duncan, Schaller, & Park, 2009).

Second, while introducing a computer-administered moral-judgment task, we asked participants, in accordance with the sign on the wall, to please use a hand wipe. Because previous

work has shown that the act of physical cleansing generalizes to a sense of moral cleanliness (Zhong & Liljenquist, 2006), we reasoned that asking participants to clean their hands might similarly heighten their motivation to maintain their cleanliness in both the moral and physical domains.

### Participants

Sixty-one undergraduates participated in this study in exchange for course credit. Participants were recruited from psychology courses throughout Cornell University for a laboratory study on the moral attitudes of university students. In order to reduce the possibility of experimental demand, we prevented the participation of students who were enrolled in an introductory social psychology course because the instructor had lectured at length on findings directly related to the current research.

### Procedure

In both the experimental and control conditions, the experimenter provided an overview of the study, but in the experimental condition, the experimenter stood in front of a sign on the wall (8 1/2 in. × 11 in.) that read, “Experimenters: Help keep the lab clean by using hand wipes!” In the control condition, this sign was removed. All participants then completed the same

demographic information questionnaire that included the three items assessing political orientation in Study 1.

Following the completion of the political-orientation measure, participants in the experimental condition received an additional cleanliness reminder: The experimenter presented a box of antiseptic hand wipes to participants, pointed to the sign on the wall, and said, “We’re asking participants to help us keep the lab clean by wiping their hands before using the computer keyboard.” Participants in the control condition did not receive this reminder.

Finally, all participants were asked to rate their moral approval of 12 behaviors (presented on a computer screen in random order) using a scale ranging from 1 (*not at all wrong*) to 7 (*totally wrong*). (See Table 1 for a full list of the behaviors.) Some of these behaviors pertained to the domain of sexuality, some were nonsexual behaviors from the purity domain, and some were not at all related to purity. In debriefing, none of our participants linked the manipulations to the moral-judgment task, and some even said that they thought hand washing before using a public computer was generally good practice.

### Results and discussion

As in Study 1, we combined the social, moral, and fiscal items into a general index of political attitudes ( $\alpha = .62$ ). Also as in Study 1, participants who received a cleanliness reminder

**Table 1.** Behaviors Rated in the Moral-Judgment Task of Study 2

#### Sexual purity items

- While house sitting for his grandmother, a man and his girlfriend have sex on his grandmother’s bed.
- After a late-term miscarriage, a woman asks her doctors to take a picture of her cradling the miscarried fetus.
- A woman enjoys masturbating while cuddling with her favorite teddy bear.
- After they have been sexually active for over a year, a woman and her boyfriend discover that they have the same father—they are actually half brother and sister, but were raised in separate families from the time they were born. They decide that the new information doesn’t matter, and continue their sexual relationship. The couple is careful to use protection.

#### Nonsexual purity items

- As a practical joke, a man unwraps his office mate’s lunch and places it in a sterilized bed pan.
- A family’s dog was killed by a car in front of their house. They cremate the dog, and sprinkle the remains in the sandbox where the neighborhood children play.
- A man leaves work, unwrapping a sandwich for lunch. As he is about to bite into the sandwich, he notices that part of the bread is moldy. Rather than eating it, he gives the sandwich to a homeless man who is asking for spare change.

#### Nonpurity items

- A man and his son are acting in a skit at the local community center. As part of the skit, the director calls on the son to slap his father in the face. The son complies with this request.
- A woman was dying, and on her deathbed she asked her son to promise that he would visit her grave every week. The son loved his mother very much, so he promised to visit her grave every week. But after the mother died, the son didn’t keep his promise because he was very busy.
- Last year at tax time, a small business owner in a local town found that he could not afford his tax burden due to unexpected medical costs that had gone toward a surgery for his mother. He therefore carefully reported only the income for which he could pay taxes, leaving several thousand dollars unaccounted for.
- One day, while organizing his closet, a man finds a nice sweater that he had bought for his ex-girlfriend, but had never given her. Several weeks later, as he approaches his six-month anniversary with his current girlfriend, he realizes he cannot afford a gift for her. Instead, he wraps up the sweater that he had bought for his ex, and gives it to his girlfriend.
- In order to increase her chances of getting a job at a prestigious firm, a college graduate writes a reference letter that honestly details her strengths, but signs it with the name of a former boss (who she knew liked her).

reported less liberal political attitudes ( $M = 4.33$ ) than did participants in the control condition ( $M = 5.01$ ),  $t(59) = 3.09$ ,  $p < .01$ ,  $d = 0.80$ .

In order to test our prediction that reminding participants of physical cleanliness would influence their moral judgments of sexual behaviors but not behaviors involving nonsexual purity or behaviors unrelated to purity, we constructed three separate moral-judgment indices by averaging and then standardizing the items in each category (these three factors were confirmed by a factor analysis). We then submitted these three indices to a 2 (condition: experimental, control)  $\times$  3 (scenario type: sexual purity, nonsexual purity, nonpurity) mixed-design ANOVA. There was no significant main effect of condition,  $F(2, 58) = 2.55$ ,  $p < .11$ , or scenario type,  $F(2, 58) < 1$ , but the predicted Condition  $\times$  Scenario Type interaction was significant,  $F(2, 58) = 3.89$ ,  $p < .05$  (see Fig. 1). As Figure 1 shows, the cleanliness reminder affected participants' judgments of behaviors regarding sexual purity,  $t(59) = 3.04$ ,  $p < .01$ ,  $d = 0.78$ , but not their judgments of the other two behaviors,  $t(59) < .90$ ,  $ps > .30$ . Supporting our hypothesis that increasing concerns for purity would prompt vigilance for possible moral contaminants, findings showed that participants reminded of cleanliness rendered harsher judgments of sexual acts than did participants in the control condition.

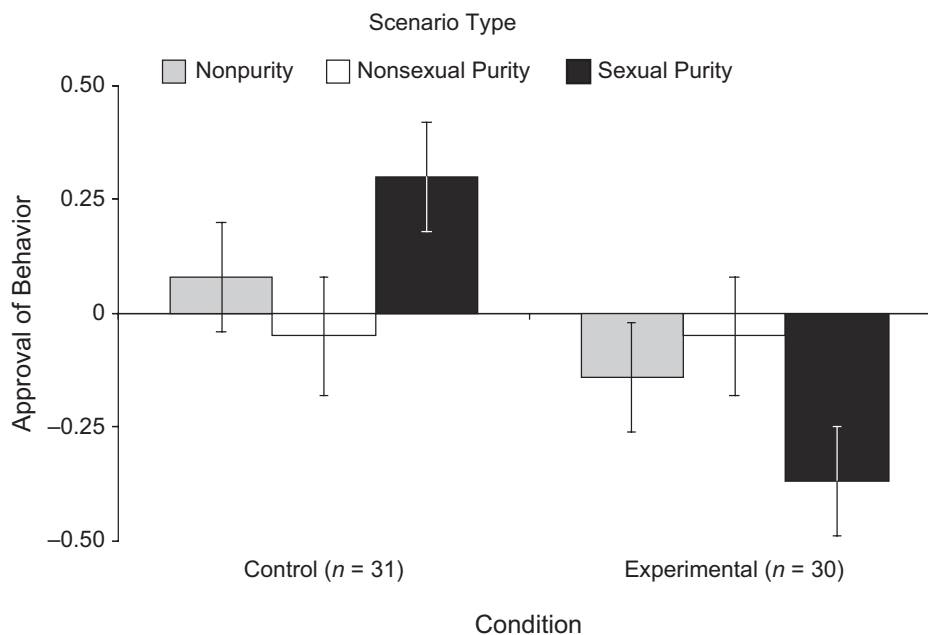
One possible explanation for this pattern of results is that the reminder of cleanliness shifted participants in the experimental condition toward a more politically conservative stance, and that this general shift, in turn, led participants to

make harsher judgments of specific sexual violations. In order to test this possibility, we conducted a mediational analysis (Baron & Kenny, 1986). As can be seen in Figure 2, although condition predicted participants' moral judgments and self-reported political attitudes, we found that the effect of condition on moral judgment was significantly attenuated when controlling for changes in participants' political attitudes, Sobel  $z = 2.64$ ,  $p < .01$ . It is important to note that the effect of the cleanliness reminder on political orientation was not mediated by participants' moral judgments. A second mediational analysis confirmed that the direct effect of condition on political orientation remained significant ( $p < .05$ ) when controlling for moral judgments; this finding suggests that our manipulation influenced moral judgments by influencing a general shift in political orientation.

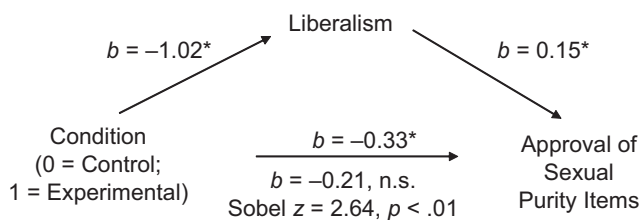
## General Discussion

In two studies, we demonstrated that environmental reminders of physical cleanliness shifted participants' attitudes toward the conservative end of the political spectrum (Studies 1 and 2) and altered their specific attitudes toward various moral acts (Study 2). When we induced greater conservatism in participants by reminding them of physical cleanliness, they judged moral violations in the sexual domain more harshly, but their moral attitudes toward other behaviors remained intact.

It is worth noting that the cleanliness reminder used in these studies was quite subtle—in one case, through simple



**Fig. 1.** Results from Study 2: participants' mean approval of behavior in three types of scenarios as a function of condition. Participants in the experimental condition received a hand-washing reminder, and participants in the control condition did not. For ease of presentation, z scores have been reverse-coded such that higher numbers represent greater permissiveness or approval. Error bars show standard errors of the mean.



**Fig. 2.** Model of political orientation as a mediator of the effect of condition on moral judgments in Study 2. Unstandardized regression coefficients are shown; asterisks indicate coefficients significantly different from 0 ( $*p < .01$ ). The two coefficients along the lower path show the effect of condition before (above the arrow) and after (below the arrow) political orientation was entered into the model.

exposure to a public hand-sanitizer station and in another case via a sign on the laboratory wall reminding experimenters to wash their hands. It is notable that simply reminding participants of physical cleanliness rather than involving them in direct physical cleansing was sufficient for the effect to emerge. These results suggest that everyday reminders of cleanliness (such as “Employees must wash hands before returning to work” signs or hand-sanitizer stations scattered throughout public buildings) may have unintended effects on people’s social attitudes.

Although our results suggest that the link between cleanliness reminders and moral judgments are domain-specific (i.e., limited to judgments of sexual behavior), the effect of these manipulations on participants’ issue-specific political attitudes remains an open question. Although our manipulations shifted participants’ political judgments toward the conservative end of the spectrum equally across the moral, social, and fiscal domains, our data cannot speak to whether that shift would lead participants to assume a more conservative stance toward specific political issues such as immigration, affirmative action, or tax reform.

Moreover, it may be that the shift toward conservatism demonstrated in this study is the manifestation of a more general hypervigilance toward potential contaminants of the physical and moral variety. In the same way that people may be motivated to avoid getting their hands dirty after having just washed them, our manipulation may work by motivating participants to stay clean in the physical sense as well as in the more symbolic moral sense. This interpretation would be consistent with the way in which some researchers have described the emotion of disgust—as a *behavioral immune system* (Schaller & Duncan, 2007) that gives rise to a general wariness toward anything that might lead to pathogen exposure (e.g., rotten food, strange sexual acts, contact with strangers). If so, it may be that cleanliness reminders would encourage more conservative attitudes in some domains, such as sexuality (e.g., attitudes toward gay marriage) or intergroup contact (e.g., attitudes toward immigration or interracial marriage), but not affect attitudes on other hot-button political issues that fall outside of these domains (e.g., tax reform).

If this is the case, then the question of domain specificity for the moral-judgment items is more easily explained.

Nonetheless, there are plausible alternative explanations for the differences we observed on the moral-judgment items (i.e., that sexual behaviors were the only behaviors judged more harshly by participants in the experimental condition). One possibility is that the sexual behaviors we presented are more morally ambiguous than the other types of behavior and that this ambiguity provided a more sensitive measure for detecting the effect of our cleanliness reminders. However, if this were true, participants in the control condition should have shown a reliable difference in their ratings of the sexual purity items compared with items in the other two categories. Yet this was not the case. We might also expect greater variance in the control condition between ratings of sexual purity items and the other items. However, variance in this condition was greater across responses toward the nonsexual purity items ( $SD = 1.02$ ) than for responses to the sexual purity and nonpurity items ( $SDs = 0.86$ ). Furthermore, all 12 of the morality items were pretested to elicit moral judgments that would fall near the midpoint of the scale. It does not appear, then, that our results are due to a priori differences in the moral ambiguity of the items across the three categories.

Yet even following this account, it may seem puzzling that our cleanliness manipulations affected judgments only in the sexual domain and not judgments of the nonsexual purity violations. After all, putting a coworker’s lunch in a sterilized bedpan or spreading the family dog’s ashes in a sandbox are at least intuitive threats to physical contamination, so why did reminders of physical cleanliness not affect people’s judgments of these acts? One reason may be that participants did not experience the same visceral reaction when reading these scenarios as they did when reading about sexual violations (such as sex in grandma’s bed). The former items may have come off as weird or aberrant, but the latter items just seemed gross. The extreme visceral nature of sexual behavior may make it a particularly salient source of potential contamination.

Consistent with this account, recent work by Borg et al. (2008) suggests distinct neural activation for disgust reactions to sexual and nonsexual activities. Although their participants rendered similarly harsh judgments of both sexual and nonsexual moral violations, disgust reactions to sexual violations involved different neural pathways than did disgust reactions arising from other sources (including violations of equity and sanitation). It seems likely, then, that although the emotional reactions reliably elicited by disgusting stimuli produce similar subjective experiences, they may involve different neural and physiological mechanisms. These mechanisms might, in turn, have different downstream effects on judgments across different domains.

Finally, these findings, in conjunction with those of Inbar, Pizarro, and Bloom (2009), suggest a bidirectional link between conservatism and concerns for moral purity. Conservatives show a stronger tendency than liberals to feel disgust and find specific violations of sexual purity more offensive (Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Knobe, & Bloom, 2009). But, as our data show, concerns for moral purity

can also prime a generalized conservative attitude that guides moral evaluations of sexual behavior. When taken together, these two sets of results point to the possibility that political orientation may be, in some measure, shaped by the strength of an individual's motivation to avoid physical contamination (whether measured as a stable, individual difference or triggered temporarily as a response to environmental reminders of cleanliness and contamination) and that resulting vigilance for threats to purity may serve to reinforce a politically conservative stance toward the world.

### Acknowledgments

We would like to thank Jun Fukukura, Chelsea Helion, Yoel Inbar, and Dennis Regan for their helpful comments on earlier drafts. We would also like to thank Carolyn Spiro, Kelly White, and Frank Chen for their assistance with data collection.

### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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