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## FlashReport

## A clean self can render harsh moral judgment

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## ABSTRACT

Physical cleanliness has many medical benefits, such as protection from the dangers of contagion. We explore a potential unintended consequence of cleanliness. Given the metaphorical association between physical cleanliness and moral purity (Zhong & Liljenquist, 2006), we contend that a clean self may also be linked to a virtuous self. This enhanced moral self-perception can in turn license harsher moral judgment. Three experiments found that cleanliness, whether induced via physical cleansing or through a visualization task, licensed severe judgment on morally contested issues such as abortion and pornography. Further, we found that an inflated moral self mediated the relationship between cleanliness and moral judgment. These results provide unique insight to the social significance of cleanliness and may have important implications for discrimination and prejudice.

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## Introduction

Physical cleanliness has been celebrated throughout history as means to enhance individual fitness and collective survival by separation from the contaminated. Scholars argue that human beings' drive for purity and the associated rejection of the earthly is one of the clearest criteria that separate us from animals (see Nussbaum (2004)). Without disputing these important functions of cleanliness, in this paper we explore a potential negative consequence. Given the association between cleanliness and moral purity, we suggest that a clean person may not only feel dirt-free, but also morally untainted. This elevated sense of moral self can in turn license severe moral judgment.

There are many examples of social groups that both practice strict hygiene and pass harsh moral judgement on others. India's caste system, for instance, is one of the most cited examples of the endeavor for purity within a social system (Dumont, 1980; Milner, 1994). Within the caste system, a member's defining aspect is their purity: Brahmans, considered the purest, are afforded the highest positions in society, whereas Dalits, those engaging in unpleasant physical labour (e.g., cremators, sanitary workers), are not only considered physically dirty, but also morally tainted. These "untouchables" are not allowed to marry into families of higher caste, participate in religious activities, or even share physical proximity with the upper class. In the event a "pure" individual comes in social or physical contact with an "untouchable", this now tainted individual is required to forcefully cleanse to wash

away the contamination. Similarly, the Nazis' obsession with hygiene (Aly, Chroust, Pross MD, Cooper, & Kater, 1994; Proctor, 1988) coincided with their persecution of Jews and other "social undesirables", who were seen as not only physically filthy but morally corrupt. The removal or sterilization of these individuals was considered a public health measure by the Nazis.

These examples highlight the relationship of strict hygiene practices and the moral condemnation of societal members. We suggest that this concurrence is not one of coincidence, but reflects a psychological association between physical cleanliness and morality – a cleaner self may directly license severer moral judgment.

More than two decades of research have converged in documenting the affective overlap between physical cleanliness and moral purity. The emotion disgust, a common affective reaction to physical uncleanliness, is also found to prevail in moral domains. "Core disgust" was originally a gustatory emotion rooted in our evolutionary past to avoid the intake of potentially poisonous food. Over time it expanded to include social and cultural meanings, including categories of social and moral violations (Rozin, Haidt, & McCauley, 1993). Physical and moral disgust share similar facial expressions and physiological activation (Chapman, Kim, Susskind, & Anderson, 2009; Rozin, Lowery, & Ebert, 1994), and employ partially overlapping brain regions of the frontal and temporal lobes (Moll et al., 2002).

Disgust is not only a common reaction to both physical and moral offences, it also affects moral judgment. People tend to judge actions that do not harm others but elicit disgust as immoral, failing to recognize the potent influence of disgust on our judgment (Haidt, 2001). Consequently, incidental disgust induced

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by hypnosis (Wheatley & Haidt, 2005) or objects unrelated to the target of moral judgment (Schnall, Haidt, Clore, & Jordan, 2008) can also lead to harsh moral judgment when it is misattributed to the target. The role of disgust in moral judgment is further supported by the observation that if incidental disgust can be removed via cleansing, such as washing hands, it no longer increases the severity of moral judgment. For instance, Schnall, Benton, and Harvey (2008) induced disgust by having participants watch a viscerally disgusting movie clip and then allowing some participants to cleanse their hands before making a series of moral judgments (Study 2). They found participants who cleansed their hands, compared to those who did not, rendered less severe moral judgment. Presumably hand washing reduced residual disgust from the movie, preventing its influence on subsequent moral judgments. In these studies, disgust was either provoked by (e.g., wiping toilet using a national flag, Haidt, Koller, & Dias, 1993) or misattributed to the target of judgment (e.g., hypnosis, Wheatley & Haidt, 2001). The resulting moral revulsion may reflect people's desire to distance themselves from the harmful and dangerous, as in the case of physical disgust. However, it remains unclear from these studies, whether and how a state of *self* cleanliness might influence moral judgment, when the source of affect is not easily misattributed.

A recent study lends additional insights. Exploring the psychological correspondence between cleanliness and morality, Zhong and Liljenquist (2006) found that challenges to one's moral integrity induced the need to physically cleanse. Furthermore, physical cleansing was also found to alleviate moral self-condemnation and restore moral self image. Specifically, participants who were asked to write about an unethical behavior they had committed and then allowed to cleanse their hands were much less likely to volunteer to help a stranger compared to those who did not cleanse their hands. Thus, the simple act of physically cleansing through washing one's hands was enough to "cleanse" their moral "taint". These findings suggest that morality may, in part, be understood and perceived through physical cleanliness – sins feel dirty and cleanliness seems saintly. If people conflate cleanliness with moral purity and dirtiness with sin, a clean person then may also feel virtuous. This elevated moral self, we contend, paves the way to render harsher judgments on others.

In three experiments, we examined if cleanliness licenses severe moral judgment by having participants either cleanse their hands using an antiseptic wipe (Experiment 1) or visualize themselves in a clean or dirty state (Experiments 2 & 3). Across three experiments, participants made moral judgments on a wide variety of socially contested issues. Finally, Experiment 3 examined whether an inflated sense of moral self was indeed the mechanism through which cleanliness licenses severe moral judgment.

### Experiment 1

This experiment investigated whether a clean state, induced by cleansing hands (Schnall, Benton et al., 2008; Zhong & Liljenquist, 2006), can license severe moral judgment. For \$5, 58 undergraduate students (38 females,  $mean_{age} = 21.14$  years) at the University of Toronto were randomly assigned to a single factor (cleanliness prime: clean vs. control) between-subject design.

Upon arrival, participants were led into the lab and seated. Participants in the clean condition were instructed that everything in the lab was brand new (and in fact they were) and that the experimenter had been asked to maintain the lab as clean as possible. Therefore, participants were asked to cleanse their hands using an antiseptic wipe before they used the keyboard and mouse. In the control condition, participants did not cleanse their hands. Afterwards, participants in both conditions were asked to rate 6 so-

cial issues on the dimension of morality on an 11-point scale, from  $-5$  (*very immoral*) to  $5$  (*very moral*). The six issues were smoking, using drugs, pornography, use of profane language, littering, and adultery.

We created a composite score by summing the six judgments ( $\alpha = .77$ ). As expected, participants who cleansed their hands before rating the social issues, judged these issues to be more morally wrong ( $M = -2.62$ ,  $SD = 1.30$ ) compared to those who did not cleanse their hands ( $M = -1.85$ ,  $SD = 1.46$ ),  $t(56) = 2.10$ ,  $p = .04$ .

### Experiment 2

To rule out any idiosyncratic aspect of having surveyed a limited number of issues in Experiment 1, Experiment 2 set out to replicate the previous findings to include a wider range of social issues. Participants were recruited from a nation-wide database that includes 15,000 registered participants across the US with wide demographic characteristics. In exchange for being entered into a lottery for a \$25 and \$50 online gift certificate, 323 participants (201 female,  $mean_{age} = 33.89$ ) were randomly assigned to a single factor (cleanliness prime: clean vs. dirty vs. control) between-subject online experiment<sup>1</sup>.

After giving consent, participants were informed that the experiment included a number of unrelated tasks. Participants in the clean and dirty conditions first visualized a statement in the first person, while typing this into a text box. They were instructed that they would be tested on their ability to recall these sentences, following a set of "unrelated" questions. In the *clean* condition, participants read, "My hair feels clean and light. My breath is fresh. My clothes are pristine and like new. My fingernails are freshly clipped and groomed and my shoes are spotless. I feel so clean." In the *dirty* condition, they read, "My hair feels oily and heavy. My breath stinks. I can see oil stains and dirt all over my clothes. My fingernails are encrusted with dirt and my shoes are covered in mud. I feel so dirty." Participants in the control condition did not engage in the visualization task.

Following this, participants rated 16 social issues on the dimension of morality on an 11-point scale, from  $-5$  (*very immoral*) to  $5$  (*very moral*). These 16 items were comprised of the 6 items in Experiment 1 plus 10 additional items. Together they covered a wide variety of social issues or activities; ranging from those vigorously contested in society (i.e., abortion, homosexuality) to those considered a form of personal indulgence (i.e., masturbation) (see Fig. 1 for a complete list).

None of the participants reported any suspicion regarding the link between the prime and the judgment task. Similar to Experiment 1, the 16 items were averaged to create a composite measure of moralization ( $\alpha = .88$ ) (see Fig. 1 for scores on individual issues). Consistent with Experiment 1, cleanliness primed participants rendered harsher moral judgment ( $M = -1.76$ ,  $SD = 1.13$ ) than both the dirtiness primed participants ( $M = -1.42$ ,  $SD = 1.14$ ) and control participants ( $M = -1.49$ ,  $SD = 1.55$ ),  $t(320) = 2.02$ ,  $p = .045$ ; there was no difference between the dirty and control condition,  $t(320) = .42$ ,  $p = .675$ .

Findings from both experiments suggest that priming self cleanliness led to harsh moral judgments. On the surface these results contradict the conclusion that cleanliness lessens the severity of moral judgment (Schnall, Benton et al., 2008). However, it is important to note that Study 1 of Schnall, Benton et al., (2008) abstractly primed cleanliness related concepts and hence it is unclear whether the prime implicated the self or the target. Additionally in their second study, cleanliness is relevant to the extent that it mitigated the visceral disgust induced by the video and prevents

<sup>1</sup> Two participants failed to indicate sex.

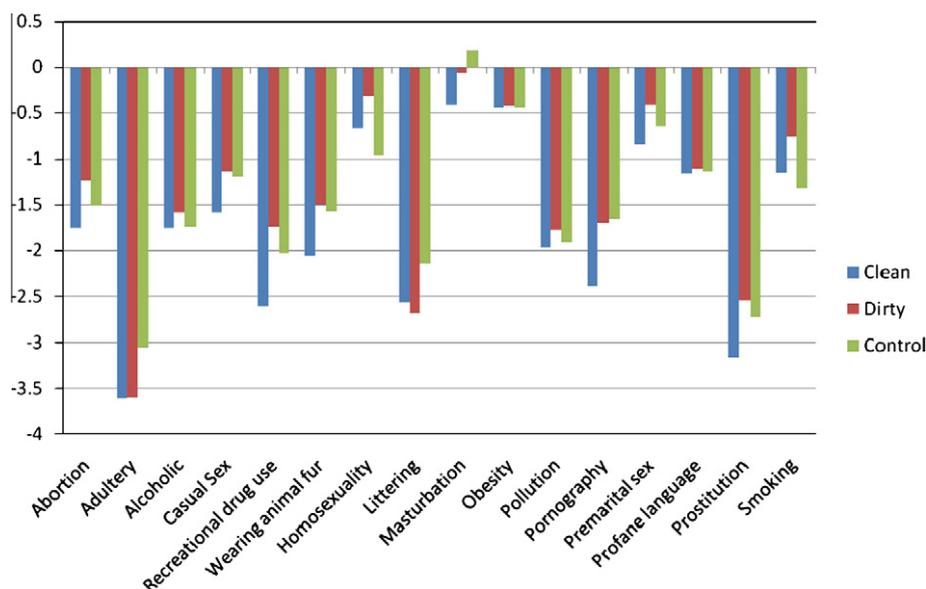


Fig. 1. Moral judgment of social issues (–5 very immoral to 5 very moral) in Experiment 2.

disgust being misattributed to the target. Whereas we suggest that a state of *self* cleanliness may directly impact moral self-perception through the metaphorical link between cleanliness and moral purity. The resulting change in one's own moral standing, in turn, influences judgment of others by a comparison process. Our findings highlight the complexity of the relationship between cleanliness and moral judgment – the source of cleanliness matters. By examining cleanliness as it clearly pertains to the self, our studies complement previous research in developing a more nuanced picture of the psychological consequences of physical cleanliness. Just as a disgusting target can keep people at distance, a clean self can make objects or activities that are otherwise tolerable seem unclean and contaminated by comparison.

In the next experiment, we measure moral self-perception and directly examine if self cleanliness increases the severity of moral judgment by enhancing one's moral self image.

### Experiment 3

For \$5, 136 undergraduate students (98 female,  $\text{mean}_{\text{age}} = 22.00$ ) at the University of Toronto were randomly assigned to a similar single factor (cleanliness prime: clean vs. dirty) between-subject design. Given no difference between the dirty and control condition in Experiment 2, we used the dirty condition as control.

Experiment 3 closely followed the procedures of Experiment 2 except, after the cleanliness prime, participants were first asked to rank themselves in comparison to other undergraduates at the University of Toronto on eight different dimensions (sense of humor, intelligence, moral character, creativity, physical attractiveness, fitness, social sensitivity, and leadership). They indicated the percentile that described their position relative to others, from 0 (*worse than all others*) to 100 (*better than all others*). Finally, participants provided their morality ratings on the same issues surveyed in Experiment 2, which served as the dependent variable.

As in Experiment 2, cleanliness primed participants rendered harsher moral judgment on the 16 issues or activities ( $M = -2.04$ ,  $SD = 1.28$ ) than dirtiness primed participants ( $M = -1.59$ ,  $SD = 1.16$ ),  $t(134) = 2.13$ ,  $p = .04$ . Moreover, participants who were primed for cleanliness also ranked themselves higher on moral character in comparison to their fellow students ( $M = 80.44$ ,  $SD = 15.24$ ) than those primed for dirtiness ( $M = 75.03$ ,  $SD = 15.70$ ),  $t(134) = -2.03$ ,  $p = .045$ . The cleanliness prime did

not affect participants' self rankings on any other dimension ( $|t_s| < .78$ ,  $p_s > .40$ ).

Finally we tested whether an inflated moral self mediated the relationship between cleanliness prime and moralization. When both cleanliness prime and moral self image were included as independent variables in an OLS regression, only moral self image ( $B = -.018$ ,  $SE = .007$ ,  $t = -2.73$ ,  $p = .007$ ), not cleanliness ( $B = -.348$ ,  $SE = .208$ ,  $t = -1.67$ ,  $p = .097$ ) significantly predicted moralization. Thus, the previously significant relationship between the cleanliness prime was no longer significant when controlling for the mediator, moral self image. This indirect effect of cleanliness prime on moralization through moral self image was further tested using bootstrapping (Preacher & Hayes, 2008) and was significant at 95% confidence level with 1000 bootstrap resamples (confidence intervals between  $-.24$  and  $-.01$ ).

### General discussion

Three experiments using different manipulations of cleanliness showed that participants primed with self cleanliness rendered harsher moral judgments on contested social issues and activities with ambiguous moral implications. Experiment 3 revealed that an inflated moral self image mediated the effect of cleanliness on moral judgment. Thus, a clean self feels like a moral self; the resulting moral high ground licenses severer moral judgment of others.

This finding fits nicely with recent research on embodiment and metaphor that reveal psychological correspondences between concrete physical experience and abstract social experience (e.g., Jostmann, Lakens, & Schubert, 2009; Schubert, 2005; Williams & Bargh, 2008; Zhong & Leonardelli, 2008). They suggest that metaphors are fundamental lenses through which we comprehend our social environment (Bargh, 2006; Lakoff & Johnson, 1980) and can have significant social implications (Sherman & Hoffmann, 2007). Our finding provides unique insight to the social and historical significance of cleanliness and suggests a potentially negative consequence: If members of a "clean" society perceive those who are different as less moral, then separating and segregating them is more easily justified. This may be part of the mechanism behind the caste system or other more extreme forms of social cleansing.

Just as there is a broad category of materials we consider dirty (i.e., soil) but pose no direct physical threat, there are social behaviors while different, engender no real danger to others. Our

aversion to those materials and behaviors may not reflect real concerns over health and social order but originate from the desire to rise above our material existence and intolerance to differences and impurities (Nussbaum, 2004). We deem this form of magical thinking potentially negative: The changes observed in our moral judgment were not based on rational reasoning or realistic alteration to one's moral standing, but the outcome of metaphorical thinking that confuses physical purity with moral purity.

Our studies leave open several avenues for future research. First, the social issues surveyed in our studies are by no means complete. Consistent with previous research on moral judgment, we studied issues that are morally ambiguous and negative in valence (e.g., Schnall, Benton et al., 2008). It is unclear how self cleanliness would alter our judgment of positive activities such as recycling and thus open to future inquiry. For instance, an enhanced moral standing may lead one to look down upon others regardless of the valence; alternatively, it is also possible that an enhanced moral self image leads one to see positive behaviors as more moral because of their proximity to one's moral anchor. Second, the possibility that self cleanliness may affect judgments of positive and negative behaviors differently also suggests that an individual's pre-existing opinion on a specific issue may act as a moderator to their judgment. The observed effect of cleanliness may be one that exacerbates a pre-existing negative view. If however, the person holds a positive view, the licensing effect of cleanliness may be lessened or even reversed. Future studies should measure individuals' opinion prior to the cleanliness manipulation and moral judgment.

In sum, our results highlight both the complexity and struggle of moral regulation faced by the *self*. Our seemingly rational desires and acts of cleanliness have not only the potential to shift our moral pendulum to a more virtuous self, but also license harsher moral judgment on others.

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#### References

- Aly, G., Chroust, P., Pross MD, C., Cooper, B., & Kater, M. H. (1994). *Cleansing the fatherland*. London: Johns Hopkins University Press.
- Bargh, J. A. (2006). What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behaviour. *European Journal of Social Psychology*, 36, 147–168.
- Chapman, H. A., Kim, D. A., Susskind, J. M., & Anderson, A. K. (2009). In bad taste: Evidence for the oral origins of moral disgust. *Science*, 323, 1179–1180.
- Dumont, L. (1980). *Homo hierarchicus*. Chicago, IL: University of Chicago Press.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108, 814–834.
- Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, 65, 613–628.
- Jostmann, N. B., Lakens, D., & Schubert, T. W. (2009). Weight as an embodiment of importance. *Psychological Science*, 20, 1169–1174.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Milner, M. (1994). *Status and sacredness*. New York, NY: Oxford University Press.
- Moll, J. et al. (2002). The neural correlates of moral sensitivity: A functional magnetic resonance imaging investigation of basic and moral emotions. *The Journal of Neuroscience*, 22, 2730–2736.
- Nussbaum, M. C. (2004). *Hiding from humanity: Shame, disgust, and the law*. Princeton, NJ: Princeton University Press.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891.
- Proctor, R. (1988). *Racial hygiene: Medicine under the Nazis*. Harvard University Press.
- Rozin, P., Haidt, J., & McCauley, C. R. (1993). Disgust. In M. Lewis & J. Haviland (Eds.), *Handbook of emotions* (pp. 575–594). New York: Guilford.
- Rozin, P., Lowery, L., & Ebert, R. (1994). Varieties of disgust faces and the structure of disgust. *Journal of Personality and Social Psychology*, 66, 870–881.
- Schnall, S., Benton, J., & Harvey, S. (2008). With a clean conscience: Cleanliness reduces the severity of moral judgments. *Psychological Science*, 19, 1219–1222.
- Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin*, 34, 1096–1109.
- Schubert, T. W. (2005). Your highness: Vertical positions as perceptual symbols of power. *Journal of Personality and Social Psychology*, 89, 1–21.
- Sherman, S. J., & Hoffmann, J. L. (2007). The psychology and law of voluntary manslaughter: What can psychology research teach us about the “heat of passion” defense? *Journal of Behavioral Decision Making*, 20, 499–519.
- Wheatley, T., & Haidt, J. (2005). Hypnotically induced disgust makes moral judgments more severe. *Psychological Science*, 16, 780–784.
- Williams, L. E., & Bargh, J. A. (2008). Experiencing physical warmth promotes interpersonal warmth. *Science*, 322, 606–607.
- Zhong, C. B., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion literally feel cold? *Psychological Science*, 19, 838–842.
- Zhong, C. B., & Liljenquist, K. A. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313, 1451–1452.