

BRIEF REPORT

Washing Away Your (Good or Bad) Luck: Physical Cleansing Affects Risk-Taking Behavior

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Many superstitious practices entail the belief that good or bad luck can be “washed away.” Consistent with this belief, participants who recalled (Experiment 1) or experienced (Experiment 2) an episode of bad luck were more willing to take risk after having as opposed to not having washed their hands, whereas participants who recalled or experienced an episode of good luck were less willing to take risk after having as opposed to not having washed their hands. Thus, the psychological effects of physical cleansings extend beyond the domain of moral judgment and are independent of people’s motivation: incidental washing not only removes undesirable traces of the past (such as bad luck) but also desirable ones (such as good luck), which people would rather preserve.

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Superstitious attempts to control one’s luck often follow the logic of contagion that is central to sympathetic magic (Rozin & Nemeroff, 1990). People attempt to improve their luck by touching lucky persons or objects (Radford & Radford, 1961) and attempt to maintain or change their luck through strategic cleansing behaviors. For example, British fishermen used to abstain from washing during a period of good catches for fear of washing their luck away (Radford & Radford, 1961), and Chinese folk beliefs warn against washing on specific “lucky” days, like the lunar new year, for the same reason (Fong, 2000). Similarly, gamblers and athletes keep wearing the same unwashed socks or shirts during a winning streak but welcome clean cloths after a losing streak (Gmelch, 1974; Vyse, 1997). These practices suggest a belief that good or bad luck is an essence attached to the self or to objects, which can be transferred (Wohl & Enzle, 2002) as well as washed away. If so, a physical cleansing should attenuate the influence of a preceding streak of good or bad luck on subsequent risk taking.

To date, studies of the psychological consequences of physical cleansings have focused on moral judgment (for a review, see Lee & Schwarz, in press). People respond to moral transgressions with disgust, an emotion associated with exposure to physical contam-

inants, such as open wounds or spoiled food. Just as physical disgust elicits a desire to clean the contaminated body part, so does moral disgust (Lee & Schwarz, 2010a; Zhong & Liljenquist, 2006). Whereas cleansing one’s physically contaminated body parts may attenuate the risk of disease (Curtis, Aunger, & Rabie, 2004), cleansing after moral contamination may alleviate the upsetting consequences of one’s own and others’ unethical behavior (Zhong & Liljenquist, 2006) and may reduce the impact of disgust on moral judgment (Schnall, Benton, & Harvey, 2008). This scaffolding of moral judgment on an older disgust response is compatible with neural re-use models, which assume that in the development of higher mental processes, neural circuits acquire new uses (Anderson, 2010); it is also compatible with conceptual metaphor theory (Lakoff & Johnson, 1999), which assumes that abstract moral reasoning is metaphorically grounded in the concrete experience of physical contamination. Both assumptions are not mutually exclusive and metaphors of moral purity may reflect as well as support parallels between physical and moral disgust (for a discussion, see Lee & Schwarz, in press).

Going beyond the moral domain, Lee and Schwarz (2010b) found that washing one’s hands can eliminate postdecisional dissonance effects in a free-choice paradigm, leading them to suggest that washing can more generally “wipe one’s slate clean” by metaphorically removing traces of the past. Note, however, that cognitive dissonance is an aversive arousal state (Zanna & Cooper, 1976) and shares this characteristic with people’s responses to moral transgressions (Haidt, 2001). In both cases, the promises of a metaphorical cleansing may match the person’s desire to alleviate a negative state. If so, clean-slate effects may be limited to things people want to “wash their hands of”—experiences that are negative, though not necessarily immoral. As the above-described

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superstitious behaviors indicate, bad luck is one of the negative experiences that prompt washing. In contrast, good luck is something that motivates the avoidance of washing, presumably in an effort to preserve one's good luck. But suppose a lucky person is induced to wash her hands anyway, for example, because somebody persuades her to test a novel soap. Would this act of unintended physical cleansing undermine her trust in her good luck, prompting her to take less risk on a subsequent task? Or would the physical cleansing only affect people who had bad luck, allowing them to clean their slate of an undesired burden? In short, do physical cleansings only clean the slates that individuals want to clean, removing only undesired traces of the past? Or do physical cleansings remove even traces that people would rather preserve?

As these questions indicate, the influence of physical cleansing on risk taking after a streak of good versus bad luck provides a promising venue for testing motivational boundary conditions of clean-slate effects. The present studies provide this test. They extend the analysis of physical cleansings beyond the domain of (im)morality and other negative states and shed light on whether the influence of accessible and applicable metaphors depends on the person's motivation.

Participants recalled (Experiment 1) or experienced (Experiment 2) an episode of good or bad luck. Next, they participated in an allegedly unrelated product test and either inspected an antiseptic wipe (Experiment 1) or organic soap (Experiment 2) without using it or tested it by cleaning their hands. Finally, they made a risky decision, either by choosing one of several options in a scenario (Experiment 1) or by betting their own money in a gamble (Experiment 2). Of interest is (a) whether the psychological impact of past good or bad luck can be "washed away" and (b) whether such metaphorical clean-slate effects (Lee & Schwarz, 2010b) are limited to bad luck, which people usually want to remove, or also extend to good luck, which people usually want to preserve.

Experiment 1

Method

Participants and design. Fifty-nine business students at a North American university participated for payment of \$10. They were randomly assigned to the conditions of a 2 (good vs. bad luck) \times 2 (washing vs. not washing hands) factorial between-participants design.

Procedure. Experimenters manipulated participants' perception of good luck by asking them to recall an incident in which they had good luck financially (e.g., "You purchased a lottery ticket and won a prize"); we manipulated their perception of bad luck by asking them to recall an incident in which they had bad luck financially (e.g., "You purchased many lottery tickets but won nothing"). In either case, participants described what happened and how they felt about it.

Next, an ostensibly unrelated product evaluation study served as the cover story for the cleaning manipulation. All participants evaluated an antiseptic wipe; half examined the wipe without actually using it, whereas the other half tested it by cleansing their hands. Several product evaluation questions completed this interpolated task.

Finally, participants worked on a managerial decision task (adapted from MacCrimmon & Wehrung, 1986). Taking the role

of chief executive officer of a computer manufacturing company, they had to decide whether to adopt or reject a product improvement recommendation provided by their research and development department. Participants' decision served as the dependent variable; the consequences of the two courses of actions were described as follows:

Option A. If you stay with the current product, the profits will remain at the current level, which is \$20 million a year.

Option B. If the product is modified, the profits will depend upon the acceptance by consumers. The marketing research indicates that there is a 75% chance of strong acceptance, resulting in an increase in profits of \$4 million (to \$24 million), but there is a 25% chance of weak acceptance, resulting in a drop in profits of \$12 million (to \$8 million).

Results and Discussion

As predicted, participants' risk taking depended on whether they recalled a past episode of good or bad luck and did or did not clean their hands (Figure 1), $F(1, 55) = 9.73, p < .003$, for the interaction. Among those who did not clean their hands, 77% of those who recalled past good luck chose the more risky Option B, whereas only 36% of those who recalled past bad luck did so, $F(1, 55) = 5.90, p < .03$, for the simple effect. Thus, accessible memories of past luck influenced current risk taking, consistent with earlier findings and the superstitious belief that past luck is persistent (Kramer & Block, 2008, Study 2). More important, the influence of past luck was significantly attenuated by hand cleaning: Participants who recalled past bad luck were more likely to choose the risky option when they had cleaned their hands (73%) than when they had not (36%), $F(1, 55) = 3.81, p < .06$, for the simple effect; conversely, participants who recalled past good luck were less likely to choose the risky option when they had cleaned their hands (35%) than when they had not (77%), $F(1, 55) = 6.64, p < .02$, for the simple effect.

In sum, recalling a past episode of personal good or bad luck in the finance domain affected participants' risk-taking behavior in a hypothetical scenario. However, the impact of these memories was eliminated when participants wiped their hands with an antiseptic

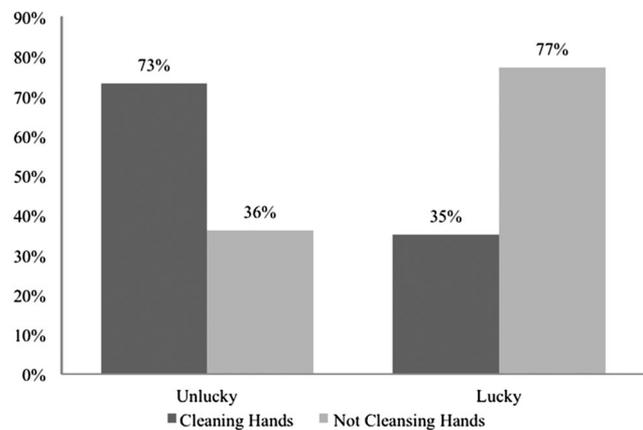


Figure 1. The likelihood of choosing the riskier option as a function of luck recall and cleansing hands—Experiment 1.

wipe as part of a product test. This is consistent with the superstitious behaviors noted in the introduction, which indicate people's belief that good as well as bad luck can be "washed away."

In fact, washing one's hands seems surprisingly effective. Participants who recalled an episode of bad luck and wiped their hands took as much risk as participants who recalled an episode of good luck without wiping their hands; conversely, those who recalled an episode of good luck and wiped their hands were as cautious as those who recalled an episode of bad luck without wiping their hands. Unfortunately, the lack of a no-recall control condition did not allow us to establish a neutral baseline. Given that people are usually overconfident in their decisions (Baron, 1998), we assumed that the baseline would probably be close to the risk taking of lucky participants. Finally, it is worth noting that the absence of any residual effects of the respective accessible memories after a hand cleansing parallels the observation that cleaning one's hands fully eliminated postdecisional dissonance effects in a free-choice paradigm (Lee & Schwarz, 2010b). Future research may fruitfully address what moderates the strength of clean-slate effects.

Experiment 2

In Experiment 2, we tested the robustness of these findings by providing participants with a salient current episode of good or bad luck, namely a winning or losing streak in a gamble. Following three rounds of gambling, participants completed a soap evaluation that did or did not require them to wash their hands. Subsequently, they participated in a final round of gambling; their bets in this final round served as the dependent variable. We predicted that participants who experienced a winning streak would bet more in a later round than participants who experienced a losing streak. However, we predicted that this difference would be attenuated by an interpolated hand washing: participants with a winning streak would bet less when they washed their hands than when they did not, whereas participants with a losing streak would bet more.

In addition, this study included participants who had mixed luck in the first round of gambling, experiencing some wins and some losses. Consistent with prospect theory (Kahneman & Tversky, 1979), we conjectured that losses loom larger than gains; hence, these participants' responses should resemble the responses of losers.

Method

Participants and design. Students and staff ($N = 147$) from a Hong Kong university participated in a 2 (good vs. bad luck) \times 2 (washing vs. not washing hands) factorial between-participants design. They were randomly assigned to the washing or no-washing condition and randomly self-selected into the luck conditions. They received \$10 for their participation and could win up to additional \$300 (all amounts are in Hong Kong (HK) dollars; US\$1 = HK\$7.8).

Procedure. Participants received an initial endowment of \$100, which they could use to gamble. The experimenter showed participants one pink and one green ball and placed the balls in a bag. Participants chose one of the colors as their "winning" color and blindly picked a ball from the bag. If they picked their winning color, they won \$50; otherwise, they lost \$50 from their endow-

ment. Participants repeated the gamble until they lost their \$100 endowment, won \$100 (ending up with a total of \$200), or completed four rounds, whichever came first.

Next, an ostensibly unrelated product evaluation study, conducted in a separate room, served as the cover story for the hand-washing manipulation. All participants evaluated organic hand soap; half examined the soap without actually using it, whereas the other half tested the soap by washing their hands. Several product evaluation questions completed this interpolated task.

Participants then returned to the original room for a second round of gambling. They received an additional endowment of \$50 and could bet any amount from \$0 to \$50. The game was identical to the previous one, except that it was played once and the bet was determined by the participant. If they bet \$ X and won, they earned an additional \$ X ; otherwise, they lost the money they had bet. The amount of their bet served as the dependent variable.

Analyses. In our key analyses, we contrasted participants who had good or bad luck in the initial round of gambling. "Good luck" participants ($n = 46$) made two winning bets and no losing bets, ending the game with a total of \$200; "bad luck" participants ($n = 32$) made two losing bets and no winning ones, ending the game with \$0. The remaining participants had "mixed luck" ($n = 69$) and made winning as well as losing bets.

Results and Discussion

Good versus bad luck. Participants who had good luck in the initial round of gambling bet more money in the second round than participants who had bad luck ($M_s = \$32.92$ vs. $\$24.31$), $F(1, 74) = 4.75$, $p < .04$, for the main effect of luck.

More important, the impact of participants' initial good or bad luck again depended on the hand-washing manipulation (Figure 2), $F(1, 74) = 8.76$, $p < .005$, for the interaction. As predicted, participants who had bad luck in the first round bet more money in the second round if they had washed their hands ($M = \$31.15$) than if they had not ($M = \17.47), $F(1, 74) = 5.06$, $p < .03$, for the simple effect. In contrast, those who had good luck in the first round later bet less money if they had washed their hands ($M = \$28.08$) than if they had not ($M = \37.75), $F(1, 74) = 3.70$, $p < .06$, for the simple effect.

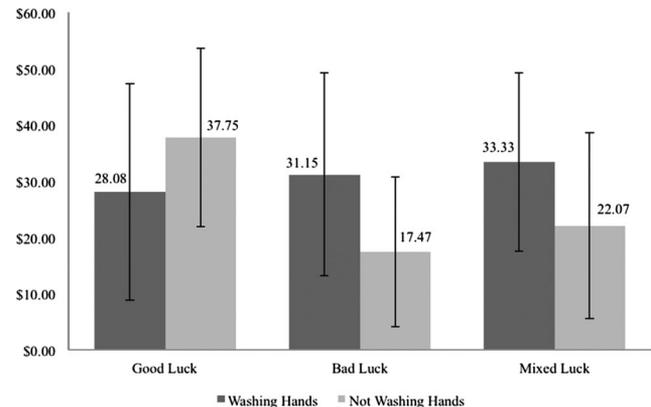


Figure 2. Amount of bet as a function of previous luck and washing hands—Experiment 2. Error bars indicate standard error of the mean.

In sum, consecutive losers bet more in subsequent gambles after having had a chance to wash away their bad luck; conversely, consecutive winners bet less after having been induced to wash away their good luck.

Mixed luck. Based on the common observation that losses loom larger than gains (Kahneman & Tversky, 1979), we conjectured that participants with mixed luck would resemble participants who experienced bad luck. This was the case. Overall, these participants bet more after washing ($M = \$33.33$) than not washing ($M = \22.07) their hands, $F(1, 63) = 7.39, p < .01$ for the main effect of washing. This held true for all versions of mixed luck: for participants who won three times and lost once ($n = 11$; $M_{wash} = 37.50$ vs. $M_{no\ wash} = 16.00$), those who won twice and lost twice ($n = 37$; $M_{wash} = 31.82$ vs. $M_{no\ wash} = 20.33$), and those who won once and lost three times ($n = 21$; $M_{wash} = 34.62$ vs. $M_{no\ wash} = 30.63$); accordingly, type of mixed luck did not interact with the hand-washing manipulation, $F(2, 63) = 1, p > .10$.

General Discussion

Our experimental findings converge with anecdotal reports of superstitious practices and show that magical beliefs about luck have behavioral consequences. Following a streak of good luck, people hesitate to wash away their luck (Radford & Radford, 1961; Vyse, 1997). When they are nevertheless induced to wash their hands, as in the present experiments, they subsequently take less risk than they would otherwise do, suggesting that they are concerned that their good luck may have been removed. Conversely, following a streak of bad luck, people appreciate the opportunity to wash it away—and after washing their hands, they take more risk than they would otherwise do, suggesting that they assume their bad luck has been removed. These findings have important theoretical implications.

First, they show that people perceive good and bad luck as an essence that can not only be transferred by touching lucky people or objects (Wohl & Enzle, 2002) but also removed with soaps and wipes. These beliefs and the corresponding superstitious practices are consistent with the contagion law of magical thinking (Rozin & Nemeroff, 1990).

Second, the findings extend our understanding of the psychological consequences of physical cleansings. Learning from Lady Macbeth, Zhong and Liljenquist (2006) demonstrated that washing one's hands can alleviate one's guilt from moral transgressions. Going beyond the morality domain, Lee and Schwarz (2010b) observed that hand washing can also eliminate postdecisional dissonance, suggesting that people behave as if physical cleansing can more generally wipe one's slate clean. The present studies support this suggestion by showing that people act as if good or bad luck is a trace of the past that can be wiped away. Future research may address to what extent a physical cleansing can also remove traces of past events that are attributed to more stable factors, such as one's own ability, rather than fickle luck. The observation that concerns about one's past decisions can be washed away (Lee & Schwarz, 2010b) suggests that the range of things people can wash their hands of may be rather extensive.

Third, and most important, our findings highlight that the psychological power of physical cleansings is not limited to traces of the past that people want to remove. Even the winners, whose usual superstitious practices indicate a desire to hold on to their

good luck (Gmelch, 1974), are affected by an incidental hand cleaning and take less risk once their good luck has been removed. This suggests that accessible applicable metaphors exert their influence independent of a person's motivation, consistent with the assumptions of conceptual metaphor theory (Lakoff & Johnson, 1999). It also suggests that a conceptual metaphor that may initially have been scaffolded on an older disgust response can generalize far beyond the original domain of application and its associated affective experience. Understanding when and how embodied metaphors generalize across content domains and affective valence is a promising avenue for future research.

Finally, debriefing conversations with participants suggest that people remain unaware of these influences, as has also been observed in other studies (Lee & Schwarz, 2010a, 2010b; Zhong & Liljenquist, 2006). Although participants are familiar with the underlying metaphors and related superstitious practices, they do not realize that this knowledge is applicable to the experiment and, needless to say, insist that they would never be influenced by such a thing.

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Correction to Fritz et al. (2011)

The article “Effect Size Estimates: Current Use, Calculations, and Interpretation,” by Catherine O. Fritz, Peter E. Morris, and Jennifer J. Richler (*Journal of Experimental Psychology: General*, Advance online publication, August 8, 2011. doi:10.1037/a0024338) contained a production-related error. The sixth equation under “Effect Sizes Specific to Comparing Two Conditions” should have had a plus sign rather than a minus sign in the denominator. All versions of this article have been corrected.

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