Journal of Experimental Psychology: General
2017, Vol. 146, No. 4, 592–605

0096-3445/17/$12.00 http://dx.doi.org/10.1037/xge0000285

Embodiment as Procedures: Physical Cleansing Changes Goal Priming Effects

Ping Dong and Spike W. S. Lee
University of Toronto

Physical cleansing reduces the influence of numerous psychological experiences, such as guilt from immoral behavior, dissonance from free choice, and good/bad luck from winning/losing. How do these domain-general effects occur? We propose an integrative account of cleansing as an embodied procedure of psychological separation. By separating physical traces from a physical target object (e.g., detaching dirt from hands), cleansing serves as the embodied grounding for the separation of psychological traces from a psychological target object (e.g., dissociating prior experience from the present self). This account predicts that cleansing reduces the accessibility of psychological traces and their consequences for judgments and behaviors. Testing these in the context of goal priming, we find that wiping one's hands (vs. not) decreases the mental accessibility (Experiment 1), behavioral expression (Experiment 2), and judged importance (Experiments 3–4) of previously primed goals (e.g., achievement, saving, fitness). But if a goal is primed after cleansing, its importance gets amplified instead (Experiment 3). Based on the logic of moderation-of-process, an alternative manipulation that psychologically separates a primed goal from the present self produces the same effects, but critically, the effects vanish once people wipe their hands clean (Experiment 4), consistent with the notion that cleansing functions as an embodied procedure of psychological separation. These findings have implications for the flexibility of goal pursuit. More broadly, our procedural perspective generates novel predictions about the scope and mechanisms of cleansing effects and may help integrate embodied and related phenomena.

Keywords: physical cleansing, goal priming, embodied cognition, mental procedure, psychological separation

Supplemental materials: http://dx.doi.org/10.1037/xge0000285.supp

Concern with personal cleanliness dates back to prehistoric times. It started with the use of water for rinsing off mud and dirt, followed by soap making, which evolved as it moved from ancient Babylon and Egypt, to Greek and Roman civilizations, through Western Europe during the 1200s to 1800s, to all over the world in the 20th century. While the physical properties and health benefits of cleansing have been heavily studied since the mass production of soaps and detergents (American Cleaning Institute, 2015), cleansing also triggers a host of psychological outcomes, an observation that has only recently come to the fore of experimental research.

For example, after recalling unethical behaviors in the past, cleaning one's hands with an antiseptic wipe reduces one's moral guilt and one's tendency to engage in compensatory prosocial behavior (Zhong & Liljenquist, 2006; also Lee, Tang, Wan, Mai, & Liu, 2015; Reuven, Liberman, & Dar, 2014; H. Xu, Bègue, & Bushman, 2014). Numerous other effects of cleanliness on morality, and vice versa, have been identified (Casciaro, Gino, & Kouchaki, 2014; Chan, Van Boven, Andrade, & Ariely, 2014; Cramwinckel, De Cremer, & van Dijke, 2013; Cramwinckel, van Dijk, Scheepers, & van den Bos, 2013; Denke, Rotte, Heinze, & Schaefer, 2014; Gino, Kouchaki, & Galinsky, 2015; Golec de Zavala, Waldzus, & Cypryanska, 2014; Gollwitzer & Melzer, 2012; Helzer & Pizarro, 2011; Huang, 2014; Kaspar, Krapp, & König, 2015; Kim & Cohen, 2010; Lee & Schwarz, 2010; Liljenquist, Zhong, & Galinsky, 2010; Lobel et al., 2015; Rachman, Radomsky, Elliott, & Zysk, 2012; Ritter & Preston, 2011; Rothschild, Landau, Keefer, & Sullivan, 2015; Rottman, Kelemen, & Young, 2014; Schnall, Benton, & Harvey, 2008; Sheikh, Botindari, & White, 2013; Yang et al., 2013; Zhong, Strejcek, & Sivanathan, 2010). These effects are often attributed to the "Morality Is Cleanliness" conceptual metaphor (Lakoff & Johnson, 1980, 1999), which assumes that abstract reasoning about morality is scaffolded upon the image schema and inferential structure of the more concrete, easier-to-understand domain of cleanliness. While this account is compatible with the findings cited above, it has trouble explaining an emerging body of work showing that cleansing effects extend far beyond the moral domain.

Ping Dong, Rotman School of Management, University of Toronto; Spike W. S. Lee, Rotman School of Management, and Department of Psychology, University of Toronto.

We thank Norbert Schwarz, for extraordinarily helpful comments. Spike W. S. Lee acknowledges generous support by the Social Sciences and Humanities Research Council, Connaught New Researcher Award, and Netherlands Institute for Advanced Study while preparing this article.

Correspondence concerning this article should be addressed to Ping Dong or to Spike W. S. Lee, Rotman School of Management, University of Toronto, 105 St. George Street, Toronto, Ontario M5S 3E6, Canada. E-mail: ping.dong12@rotman.utoronto.ca or spike.lee@utoronto.ca

As a case in point, physical cleansing reduces postdecisional dissonance. After making a free choice between similarly attractive options, people often experience dissonance ("was that the right choice?") and resolve this aversive state by focusing on positive features of the chosen option and negative features of the rejected option, thereby developing an even stronger preference for the chosen over the rejected option to justify their choice (Brehm, 1956). This tendency is eliminated by washing or wiping one's hands (Lee & Schwarz, 2010; also De Los Reyes, Aldao, Kundey, Lee, & Molina, 2012; Marotta & Bohner, 2013). Similar cleansing manipulations also reduce the influence of good and bad luck from recent gambles on subsequent risk-taking behavior (A. J. Xu, Zwick, & Schwarz, 2012; also Moscatiello & Nagel, 2014), the influence of failing an academic task on subsequent pessimism and performance (Kaspar, 2013), and the influence of receiving an endowed product on subsequent product exchange (Florack, Kleber, Busch, & Stöhr, 2014). Dissonance, luck, failure, and endowment—none of these has to do with morality. But cleansing influences all of them. Such domain-general effects have been collectively referred to as "clean-slate effects" (Lee & Schwarz, 2011), since cleansing appears to reduce the residual influence of any prior experience, as if wiping the mental slate clean.

But "clean-slate effects" is no more than a summary term. It remains entirely unclear why a simple act of cleansing has the power to reduce the impact of all kinds of prior experience. The present research seeks to unpack the theoretical nature of clean-slate effects. We propose an integrative account—cleansing as an embodied procedure of psychological separation—for the domain-general effects of cleansing, and we test its novel predictions in four experiments.

Cleansing as an Embodied Procedure of Psychological Separation

Experimental demonstrations of clean-slate effects have used a common methodological structure, including three ostensibly unrelated parts (see Table 1). Part 1 invokes an experience, either real (e.g., choosing between products, winning money in gambles) or recalled (e.g., describing one's unethical behavior in the past). Part 2 manipulates physical cleansing between subjects (e.g., using vs. examining a sanitizing wipe to clean one's hands). Part 3 measures self-reported or behavioral outcomes of the previously invoked experience (e.g., changing preference following free choice, risk taking after good luck, guilty feelings and prosocial behavior as a result of immoral recall). Whatever the experience, whatever the outcome, physical cleansing reduces the influence of the former on the latter. What unifying mechanism, if any, may underlie this broad range of effects?

We propose that cleansing functions as an embodied procedure of psychological separation. In the most basic sense, physical cleansing involves separating traces from a target object, where separation is physically realized (e.g., detaching, removing), traces are physical (e.g., dirt, grease), and the target object is physical (e.g., body, table). Such basic physical experience can serve as the sensorimotor grounding of higher mental processes (Barsalou, 2008; Williams, Huang, & Bargh, 2009), especially when they share similar relational and inferential properties. Psychological cleansing shares similar relational and inferential properties insofar as it involves separating traces from a target object as well, where separation is psychologically realized (e.g., dissociating, diminishing), traces are from psychological experience (e.g., sinning, choosing), and the target object is psychological (e.g., self, other). In this view, by invoking the same underlying relational structure of separation, physical cleansing can produce consequences of psychological cleansing.

This procedural perspective essentially assumes that physical cleansing has the power to weaken the influence of psychological experiences by separating their traces from the target of interest. By conceptualizing cleansing as a procedure, and by recognizing that procedures are applicable across content domains (Wyer, Xu, & Shen, 2012), this provides an integrative account for clean-slate effects across domains of experience and outcome (Table 1, parts 1 and 3). More importantly, beyond integrating prior findings, it brings forth several lines of empirical possibilities. We investigate one of them in the present research—the impact of cleansing on goal priming effects—and explore others in the General Discussion.

Physical Cleansing and Goal Priming

If cleansing works by separating traces of prior experience from the present, it should reduce the mental accessibility of these traces as well as their effects on judgments and behaviors. Accordingly, cleansing should reduce priming effects, because priming is about increasing the mental accessibility of information and priming effects refer to the consequences of such increased accessibility for judgments and behaviors (Higgins, 1996). To examine this core prediction, we manipulate cleansing in the context of goal priming, thanks to several of its empirical and theoretical properties. From these properties, we derive specific predictions regarding the impact of cleansing on goal priming effects:

1. Goals can be primed easily and, once primed, their mental accessibility can be measured (Bargh & Gollwitzer, 1994; Bargh & Chartrand, 2000; Higgins, 1996; Wyer, 2004). Insofar as cleansing functions as a procedure that psychologically separates the past from the present, we predict that it should reduce the mental accessibility of a previously primed goal (Experiment 1).

2. Goal priming is known to influence judgments such as valuation of goal-relevant activities (Ferguson & Bargh, 2004), elicit goal-consistent behaviors (Aarts & Dijksterhuis, 2000; Chartrand & Bargh, 1996; Custers & Aarts, 2005, 2007; Kruglanski et al., 2002), and enhance goal-consistent performance (Shantz & Latham, 2009; see Latham, 2016, for a review on the relationship between primed goals and performance). A recent meta-analysis of hundreds of effect sizes (Weingarten et al., 2016) revealed robust behavioral effects of goal priming and goal-related priming, with more valued goals yielding stronger priming effects than less valued goals. We predict that cleansing should reduce not just the mental accessibility of a previously primed goal (as noted above), but also its behavioral expression (Experiment 2) and judged importance (Experiments 3 & 4).

3. Beyond the operation of a single goal, a distinctive property of goal priming (as opposed to nongoal semantic

Table 1
Domains, Experimental Demonstrations, and the Three-Part Methodological Structure of Clean-Slate Effects

Domain	Experiment (chronological within domain)	Part 1: Experience, real or recalled	Part 2: Cleansing manipulation between subjects	Part 3: Self-reported or behavioral outcome of experience
Morality	Zhong & Liljenquist, 2006, Experiment 4	Describing one's past unethical behavior	Being asked (vs. not being asked) to wipe hands	Cleansing reduces self-reported moral emotions (e.g., guilt) & volunteering behavior
Morality	Schnall et al., 2008, Experiment 2	Watching a disgusting movie clip	Being asked (vs. not being asked) to wash hands	Cleansing reduces judged wrongness of moral transgressions
Morality	H. Xu et al., 2014	Describing one's past unethical behavior	Wiping hands (vs. watching a video of wiping hands vs. typing numbers)	Cleansing reduces self-reported guilt & shame, & volunteering behavior
Morality	Reuven et al., 2014	Describing one's past unethical behavior	Being asked (vs. not being asked) to wipe hands	Cleansing reduces self-reported moral emotions (e.g., guilt) & volunteering behavior
Morality	Lee et al., 2015, pilot experiment	Describing one's past unethical behavior	Using a sanitizing wipe on face (vs. hands)	Cleansing of face reduces self-reported guilt & regret when Chinese culture is salient
Morality	Lee et al., 2015, Experiment 1	Describing one's past unethical behavior	Using a sanitizing wipe on face (vs. hands vs. examining the wipe)	Cleansing of face reduces volunteering behavior among Chinese
Dissonance	Lee & Schwarz, 2010, Experiment 1	Choosing between 2 similarly attractive CDs	Using (vs. examining) a bottle of hand soap	Cleansing reduces ranked preference of chosen over rejected CD
Dissonance	Lee & Schwarz, 2010, Experiment 2	Choosing between 2 similarly attractive jams	Using (vs. examining) a sanitizing wipe	Cleansing reduces difference in expected taste of chosen over rejected jam
Dissonance	De Los Reyes et al., 2012	Choosing between 2 pens	Using (vs. examining) a sanitizing wipe	Cleansing reduces difference in expected quality of chosen over rejected pen
Dissonance	Marotta & Bohner, 2013	Choosing between 2 similarly attractive jams	Wiping hands with a cleaning cloth (vs. examining it vs. rubbing hands with sticky chocolate rub)	Cleansing reduces difference in ratings for chosen over rejected jam
Luck	A. J. Xu et al., 2012, Experiment 1	Recalling an incident of good (or bad) financial luck	Using (vs. examining) a sanitizing wipe	Cleansing reduces choice of financially risky (or nonrisky) option in a hypothetical investment
Luck	A. J. Xu et al., 2012, Experiment 2	Winning (or losing) money in 2 rounds of gamble	Using (vs. examining) a bar of soap	Cleansing decreases (or increases) amount of bet in final round of gamble
Luck	Moscatiello & Nagel, 2014, Experiment 1	Winning 4 rounds of a color-guessing game	Using (vs. imagining using) soap	Cleansing decreases desire to play the game again
Luck	Moscatiello & Nagel, 2014, Experiment 2	Winning (or losing) 4 rounds of a color-guessing game	Using (vs. imagining using) soap	Cleansing decreases (or increases) desire to the game again
Failure	Kaspar, 2013	Failing an anagram task	Being asked (vs. not being asked) to wash hands	Cleansing reduces pessimism & performance on another anagram task
Endowment	Florack et al., 2014, Experiment 1	Being endowed with 1 of 2 soft drinks	Being asked (vs. not being asked) to wash hands	Cleansing reduces reluctance to exchange endowed soft drink with another one
Endowment	Florack et al., 2014, Experiment 2	Being endowed with 1 of 2 snack bars	Using (vs. evaluating) a liquid soap	Cleansing reduces reluctance to exchange endowed snack bar with another one
Endowment	Florack et al., 2014, Experiment 3	Being endowed with 1 of 2 soft drinks	Being asked (vs. not being asked) to wash hands	Cleansing reduces reluctance to exchange endowed soft drink with another one

Note. CD = compact disc.

priming) is that it involves inhibition of conflicting goals (Förster, Liberman, & Friedman, 2007). Priming one focal goal renders concepts related to it more accessible but concepts related to a conflicting goal less accessible, leaving unrelated concepts unaffected in accessibility. We thus predict that cleansing should not only decrease the mental accessibility of a previously primed goal (as noted above), but also increase that of a conflicting goal, without influencing that of an unrelated goal (Experiment 1).

4. When multiple goals are being pursued, people may prioritize them (Austin & Bobko, 1985) or make tradeoffs between them (Dhar & Simonson, 1999; Fishbach & Dhar, 2005). People may balance their goal-pursuit efforts by seeking variety in the choices they make (Ariely & Levav, 2000; Ratner, Kahn, & Kahneman, 1999; Read & Loewenstein, 1995). Or people may commit to the most desired goal and form implementation intentions regarding how to pursue it (Gollwitzer & Sheeran, 2006). Such commitment to a focal goal, just like priming of a focal goal, automatically results in more thoughts about that goal and fewer thoughts about competing goals (Fishbach & Ferguson, 2007; Shah, Friedman, & Kruglanski, 2002). Perceived progress on the focal goal, regardless of whether it is actual or illusionary, liberates people to subsequently pursue other goals (Fishbach & Dhar, 2005), in line with classic theorizing about the dynamic competition of goals for access to expression (Atkinson & Birch, 1970). Based on these goal dynamics, we predict that cleansing should have opposite effects on previously and subsequently primed goals. Specifically, it should not only render a previously primed goal less important (as noted above), but also render a subsequently primed goal more important (Experiment 3).

5. Finally, if these effects emerge because cleansing functions as an embodied procedure of psychological separation, then by the logic of moderation-of-process (Spencer, Zanna, & Fong, 2005), an alternative manipulation that psychologically separates the past from the present should likewise affect the relative importance of previously and subsequently primed goals, but critically, these effects should be eliminated by physical cleansing. An example of such a manipulation is a shift in salient identity, which can psychologically separate previously primed content from one's present self (Oyserman, 2009). Because psychological connection between primed content and one's present self-concept plays a key role in goal priming effects (Bargh et al., 2012; Wheeler, DeMarree, & Petty, 2007), we predict that a shift in salient identity should render a previously primed goal less important and a subsequently primed goal more important, but these effects should vanish once people engage in physical cleansing (Experiment 4).

Experiment 1: Goal Accessibility

We set out to test whether physical cleansing may reduce the accessibility of a previously primed goal. In line with the aforementioned principles of goal priming (Förster et al., 2007), we predicted that wiping one's hands clean should render concepts about the primed focal goal less accessible, concepts about a conflicting goal more accessible, and concepts about an unrelated goal unaffected.

Method

One hundred three undergraduates (41 male, 59 female, 3 unidentified; M_{age} = 19.57 years, SD_{age} = 1.45) took part in the experiment for partial course credits. They were randomly assigned to two between-subjects conditions (using vs. examining wipe). Sample-size determination and data-collection stopping rules for all experiments are presented in the online supplemental material.

Upon arrival at the lab, participants were told that the session combined several unrelated studies conducted by different researchers. Each "study" had its own cover page. First, to activate a goal, all participants completed a scrambled sentence task (allegedly to assess students' verbal skills; Srull & Wyer, 1979) by forming a grammatically correct four-word phrase out of five scrambled words, and there were six sets, all related to the goal of academic achievement (e.g., "Aim for high GPA" from "For, High, Aim, How, GPA").

Then, to manipulate cleansing, all participants were given an antiseptic wipe to evaluate (liking for the product, liking for its packaging and design, willingness to pay for it; see the online supplemental material) under the pretense of a product evaluation study. Half were asked to evaluate the wipe by using it; the other half, by examining it.

Next, to measure goal accessibility, all participants did a word completion task, ostensibly as another assessment of verbal ability. Six word fragments (_ _ AM; LIB _ _ _Y; BE_ _; _ IN; TE_ _; _ OOK) could be completed as words related to the previously primed goal of academic achievement (e.g., *EX*AM, LIB*RAR*Y, BE*ST*, *W*IN, TE*ST*/TE*XT*, *B*OOK) or as other words (e.g., *CLAM*, LIB*ERT*Y, BE*LL*, *B*IN, TE*AM*, *L*OOK). If cleansing reduced the accessibility of a primed goal, participants who used (vs. examined) the wipe should complete fewer achievement-related words.

To verify whether our manipulation successfully activated a goal (as opposed to a semantic concept), we included six other word fragments that could be completed as words related to a goal in conflict with academic achievement, namely, socializing (*DR*INK, AM*US*EMENT, F*U*N, *C*LU*B*, PL*AY*, V*A*CATION), or as other words (*TH*INK, AM*AZ*EMENT, FAN, *B*LU*E*/*C*LU*E*, PL*OT*, V*O*CATION). If cleansing reduced the accessibility of the academic goal, the socializing goal should be less inhibited (Förster et al., 2007), so participants who used (vs. examined) the wipe should complete more socializing-related words.

Six additional fillers unrelated to academic achievement were included that could be completed as words about kindness (*K*IND, *N*ICE, H*EL*P, C*H*ARITY, *G*IVE, CONS*IDER*ATE) or as other words (*W*IND, *M*ICE, H*OO*P, C*L*ARITY, *D*IVE/*L*IVE, CONS*OLID*ATE). Cleansing should not affect the accessibility of these words, as they were unrelated to the previously primed goal.

The number of words completed was submitted to a 2 (using vs. examining wipe; between subjects) × 3 (academic- vs. socializing- vs. kindness-related words; within subjects) mixed analysis of variance (ANOVA). Completion of more goal-related words would indicate higher goal accessibility.

Results

The 2 × 3 mixed ANOVA yielded a significant main effect of Goal Type, $F(2, 202) = 27.55$, $p < .001$, $\eta^2 = .214$, indicating overall differences in the number of completed words related to the three goals (see Figure 1), and no significant main effect of Cleansing Condition, $F(1, 101) = .08$, $p = .772$. Crucial to our hypothesis is that the predicted Cleansing Condition × Goal Type interaction effect was significant, $F(2, 202) = 6.16$, $p = .003$, $\eta^2 = .057$, indicating that the cleansing manipulation had differential effects on the number of completed words related to the three goals (see Figure 1). Specifically, participants who used (vs. examined) the wipe completed fewer words related to the focal goal (academic: $M_{\text{using wipe}} = 1.00$, $SD_{\text{using wipe}} = .79$, vs. $M_{\text{examining wipe}} = 1.37$, $SD_{\text{examining wipe}} = .89$), $F(1, 101) = 5.02$, $p = .027$, 95% confidence interval (CI) for mean difference = [.043, .702], $d = 0.440$, but more words related to the conflicting goal (socializing: $M_{\text{using wipe}} = 2.39$, $SD_{\text{using wipe}} = .89$, vs. $M_{\text{examining wipe}} = 1.86$, $SD_{\text{examining wipe}} = .96$), $F(1, 101) = 8.20$, $p = .005$, 95% CI = [.160, .883], $d = 0.573$. Using (vs. examining) the wipe did not influence the completion of words unrelated to the focal goal (kindness: $M_{\text{using wipe}} = 1.46$, $SD_{\text{using wipe}} = 1.06$, vs. $M_{\text{examining wipe}} = 1.51$, $SD_{\text{examining wipe}} = 1.12$), $F(1, 101) = .05$, $p = .822$, 95% CI = [−.474, .377], $d = .046$. Funnel debriefing (Bargh & Chartrand, 2000) revealed no participant awareness of these effects or the experiment's purpose.

Discussion

Cleansing changes goal accessibility. Wiping one's hands rendered concepts about a primed goal less accessible, concepts about a conflicting goal more accessible, and concepts about an unrelated goal unaffected. This pattern of results suggests that a goal rather than a semantic concept was activated, as cleansing increased the accessibility of a conflicting goal that might otherwise be inhibited (Förster et al., 2007).

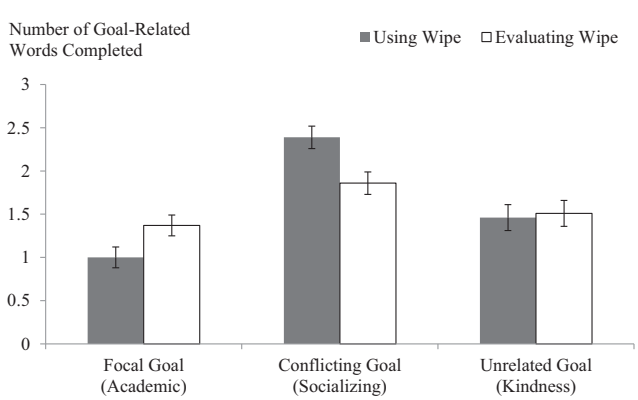

Figure 1. Accessibility of focal, conflicting, and unrelated goals as a function of cleansing condition (Experiment 1). Error bars indicate ±1 *SEM*.

Is it possible that cleansing effects result from greater distraction when people use (vs. examine) the wipe? It seems unlikely for two reasons. First, distraction would have increased (rather than decreased) the accessibility of goal-related concepts (Dijksterhuis & Aarts, 2010). Second, other studies have demonstrated that even if the control condition is as distracting as using a wipe—such as using a moisturizer (Strack, 2012) or touching and smelling a quirky object (Cramwinckel, De Cremer, & van Dijke, 2013)—cleansing continues to produce distinct effects.

If cleansing reduces the accessibility of a prior goal, does it also reduce its behavioral expression? In Experiment 2, we investigate the effect of physical cleansing on overt behavior driven by a previously primed goal. We predicted that physical cleansing after goal priming should reduce people's tendency to make goal-consistent choices. We tested this possibility in the context of healthy food choice. When a health goal is primed, cleansing should reduce the primed behavioral tendency to choose healthy over unhealthy food. But when no particular goal is activated, cleansing should have no systematic effect.

Experiment 2: Goal Pursuit

Method

Two hundred forty-two undergraduates (95 male, 129 female, 18 unidentified; $M_{\text{age}} = 21.69$ years, $SD_{\text{age}} = 3.16$) participated in an experiment on campus in exchange for a snack bar. They were told that they would complete two unrelated studies and were randomly assigned to 2 (health vs. no goal prime) × 2 (using vs. examining wipe) between-subjects conditions.

First, participants completed a scrambled sentence task with the same format as in Experiment 1 but with words either related to health (e.g., "Being healthy is important" from "Being, Healthy, Important, Is, Am") or not (e.g., "This ball is blue" from "This, Blue, Ball, Is, Be"). Then, participants either used or examined an antiseptic wipe under the pretense of product evaluation. Afterwards, participants were asked about their experience with the study (see the online supplemental material) and provided demographic information. Finally, as a token of appreciation, participants were given a 90-calorie Quaker granola bar and a 250-calorie Snickers chocolate bar to choose from. Their choice behavior constituted the dependent measure. Choosing the healthier food item (granola rather than chocolate bar) would be more consistent with the previously primed health goal.

Snack choice (1 = choosing the granola bar; 0 = choosing the chocolate bar) was submitted to a binary logistic regression with goal prime condition (1 = health goal prime; −1 = no goal prime), cleansing condition (1 = using wipe; −1 = examining wipe), and their interaction as the independent variables. Sixteen participants took neither the granola nor the chocolate bar. Two were suspicious of links between the allegedly unrelated tasks based on postexperimental probing. They were excluded from analysis (final $N = 224$), though including them would not change the conclusions.

Results

Neither the main effect of Goal Prime Condition, $B = .03$, $SE = .14$, $z = 0.19$, $p = .848$, Exp(B) = 1.03, nor the main effect of Cleansing Condition, $B = -.18$, $SE = .14$, $z = -1.29$, $p = .197$, Exp(B) = .84, was significant. But importantly, as predicted, we found a significant Goal Prime × Cleansing interaction effect, $B = -.39$, $SE = .14$, $z = -2.80$, $p = .005$, Exp(B) = .68: If participants had been primed with a health goal, using (vs. examining) the wipe reduced their tendency to choose the granola bar (28.6% vs. 55.6%), $\chi^2(1) = 8.75$, $p = .003$, odds ratio = 0.32, 95% CI for odds ratio = [.149, .688]. But if participants had been primed with no particular goal, using (vs. examining) the wipe did not influence their food choice (45.3% vs. 35.2%), $\chi^2(1) = 1.14$, $p = .287$, odds ratio = 1.52, 95% CI for odds ratio = [.701, 3.317].

Discussion

Cleansing reduces the behavioral expression of a previously primed health goal. Is it possible that by wiping their hands clean, participants felt like they had performed a healthful action, so they became less likely to engage in other healthy behaviors? If that was the case, using (vs. examining) the wipe should have produced a main effect, reducing health pursuit regardless of the goal prime. But in fact, cleansing only reduced health pursuit if the health goal had been activated (an interaction effect). Also, the "cleansing fulfills health goal" explanation would not account for the results of other experiments in this article, where the activated goals had nothing to do with health (e.g., academic achievement, saving). The more parsimonious account across experiments seems to be that cleansing separates the previously primed goal (e.g., health) from the present activity (e.g., snack choice), rendering the goal less mentally accessible (Experiment 1) and less likely to be actively pursued (Experiment 2).

So far our experimental results are compatible with extant findings in that cleansing reduces the influence of prior experience, which in the present context is the goal primed before cleansing. We expect a different pattern regarding the impact of physical cleansing on goals primed after cleansing. The reason, as described in the general introduction, is that when one goal is weakened, alternative goals have stronger effects (e.g., Fishbach & Ferguson, 2007), and suppressing the accessibility of one salient goal enhances the impact of a newly activated goal (e.g., Atkinson & Birch, 1970). Accordingly, as cleansing diminishes the impact of a previously primed goal, it should amplify the relative impact of a subsequently primed goal. We test these predictions by pitting two goals against each other in Experiment 3. We compare cleansing effects on the judged importance of a previously primed goal and a subsequently primed goal.

Experiment 3: Wipe Off and Write On

Method

Two hundred nine undergraduates (50 male, 147 female, 12 unidentified; $M_{age} = 19.43$ years, $SD_{age} = 2.23$) participated for partial course credit. They were randomly assigned to 2 (health goal primed before cleansing manipulation and saving goal primed after vs. saving goal primed before cleansing manipulation and health goal primed after) × 2 (using vs. examining wipe) between-subjects conditions.

Upon arrival at the lab, participants were told that they would complete three unrelated studies (see Figure 2 for experimental flow). To first prime either a health or saving goal, participants completed a scrambled sentence task with words related to health (same as in Experiment 2) or saving (e.g., "Saving is a virtue" from "Saving, Virtue, Are, Is, A"). Then, participants either used or examined an antiseptic wipe under the pretense of product evaluation. After this cleansing manipulation, participants were primed with a different goal by completing another scrambled sentence task, allegedly as a retest of their verbal skills. Those primed with a health (vs. saving) goal before the cleansing manipulation were primed with a saving (vs. health) goal after. Finally, in a survey labeled "About Yourself," participants rated the importance of various goals ("To what extent do you think [*the goal*] is important to you?"; 0 = *not important at all*, 10 = *very important*), including health (*eating healthy food* and *being healthy*; $r = .76$, $p < .001$, averaged as a composite score) and saving (*saving money*) among fillers (*academic achievement*, *being kind and charitable*, *having many friends*, *developing hobbies*). The items on health and saving were counterbalanced between subjects, which had no significant main or interactive effects on the importance of the health ($ps \geq .128$) or the saving goal ($ps \geq .298$).

Importance ratings for the health and saving goals served as the dependent measures. They were submitted to a 2 (health goal primed before cleansing manipulation and saving goal primed after vs. saving goal primed before cleansing manipulation and health goal primed after; between subjects) × 2 (using vs. examining wipe; between subjects) × 2 (rated importance of health vs. saving goal; within subjects) mixed ANOVA.

Funnel debriefing identified four participants suspicious of a connection between the cleansing task and the goal importance ratings. They were excluded from analysis (final $N = 205$), though including them would not change the conclusions.

Results

The 2 × 2 × 2 mixed ANOVA yielded a significant main effect of Goal Type, $F(1, 201) = 10.78$, $p = .001$, $\eta^2 = .051$, a

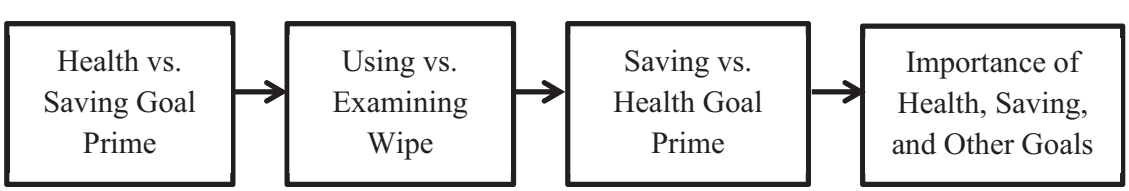

Figure 2. Flow of Experiment 3.

significant two-way interaction effect of Goal Type × Goal Priming Order, $F(1, 201) = 19.30$, $p < .001$, $\eta^2 = .088$, and as predicted, a significant three-way interaction effect of Goal Type × Goal Priming Order × Cleansing Condition, $F(1, 201) = 19.63$, $p < .001$, $\eta^2 = .089$. No other main or interaction effects were significant, $Fs(1, 201) \leq .581$, $ps \geq .447$.

To tease apart the predicted three-way interaction, let us first focus on participants who merely examined the wipe without using it (Figure 3, left panel). We submitted their goal importance ratings to a Goal Type (within subjects) × Goal Priming order (between subjects) mixed ANOVA. Overall the health goal was rated as more important than the saving goal ($M_{\text{health}} = 8.56$, $SD = 1.49$; $M_{\text{saving}} = 8.04$, $SD = 1.81$), $F(1, 101) = 8.09$, $p = .005$, $\eta^2 = .074$, for the main effect of Goal Type, possibly because these undergraduate participants are at a life stage where they are more concerned about being healthy in the present than saving money for the future. In any case, what is informative for our hypothesis is that the health goal was rated as similarly important regardless of whether it was primed before or after participants examined the wipe ($M_{\text{primed before examining wipe}} = 8.55$, $SD_{\text{primed before examining wipe}} = 1.57$, vs. $M_{\text{primed after examining wipe}} = 8.58$, $SD_{\text{primed after examining wipe}} = 1.43$), $F(1, 201) = .010$, $p = .925$; likewise, the saving goal was rated as similarly important regardless of whether it was primed before or after participants examined the wipe ($M_{\text{primed before examining wipe}} = 8.06$, $SD_{\text{primed before examining wipe}} = 1.84$, vs. $M_{\text{primed after examining wipe}} = 8.02$, $SD_{\text{primed after examining wipe}} = 1.81$), $F(1, 201) = .011$, $p = .916$. The main effect of Goal Priming Order was not significant, $F(1, 101) = .015$, $p = .904$, nor was the interaction effect of Goal Type × Goal Priming Order, $F(1, 101) = .001$, $p = .978$.

Turning to participants who actually used the wipe (Figure 3, right panel), again we submitted their goal importance ratings to a Goal Type (within subjects) × Goal Priming Order (between subjects) mixed ANOVA. The health goal was rated as marginally more important than the saving goal ($M_{\text{health}} = 8.45$, $SD = 1.45$; $M_{\text{saving}} = 8.12$, $SD = 1.59$), $F(1, 100) = 3.35$, $p = .070$, $\eta^2 = .032$, for the main effect of Goal Type, and the main effect of Goal Priming Order was not significant, $F(1, 100) = 1.28$, $p = .261$, $\eta^2 = .013$. But the patterns looked different here. There was a significant interaction effect of Goal Type × Goal Priming Order, $F(1, 100) = 36.87$, $p < .001$, $\eta^2 = .269$. Specifically, the health goal was rated as more important if it was primed after than before participants used the wipe ($M_{\text{primed after using wipe}} = 8.94$, $SD_{\text{primed after using wipe}} = .93$, vs. $M_{\text{primed before using wipe}} = 7.98$, $SD_{\text{primed before using wipe}} = 1.69$), $F(1, 201) = 11.37$, $p = .001$, 95% CI = [.398, 1.520], $d = 0.703$. Likewise, the saving goal was rated as more important if it was primed after than before participants used the wipe ($M_{\text{primed after using wipe}} = 8.81$, $SD_{\text{primed after using wipe}} = 1.05$, vs. $M_{\text{primed before using wipe}} = 7.40$, $SD_{\text{primed before using wipe}} = 1.75$), $F(1, 201) = 18.74$, $p < .001$, 95% CI = [.766, 2.049], $d = 0.977$.

In short, without physical cleansing, goals are judged as similarly important regardless of whether they are primed before or after people merely examine a cleaning product. But with physical cleansing, goals are judged as more important if they are primed after than before people actually use a cleaning product. These patterns emerge for both health and saving goals, suggesting that they are unlikely to be driven by the idiosyncrasy of specific goal types.

Discussion

Why does physical cleansing have the power to diminish and amplify the relative effects of previously and subsequently primed goals? We have been assuming that cleansing, as a bodily procedure of separating traces from physical objects (e.g., detaching dirt from hands), scaffolds the mental procedure of separating traces from psychological objects (e.g., dissociating a goal from the self). If cleansing indeed works as an embodied procedure of psychological separation, then by the logic of moderation-of-process (Spencer et al., 2005), we would predict the following: An alternative manipulation that psychologically separates the past from the present (e.g., shifting one's salient identity; Oyserman, 2009) should render a previously primed goal less important and a subsequently primed goal more important, but these effects should vanish once people engage in physical cleansing because of its power of psychological separation. We test this prediction in Experiment 4.

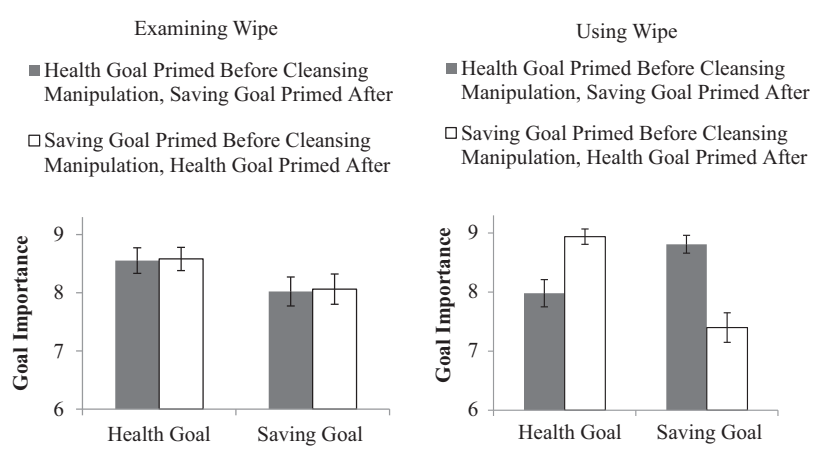

Figure 3. Importance ratings for health and saving goals as a function of cleansing condition and goal priming order (Experiment 3). Error bars indicate ±1 *SEM*.

Experiment 4: Moderation-of-Process

One hundred twenty-six undergraduates (M_{age} = 20.24 years, SD_{age} = 2.16) participated for partial course credit. They were randomly assigned to 2 (using vs. examining wipe) × 2 (same vs. different salient identity) between-subjects conditions. For the purpose of manipulating identity (explained below), we recruited only female participants. They were told that they would complete several unrelated studies conducted by different researchers.

First, to prime a fitness goal within a female identity, all participants completed an "Activity Survey" supposedly exploring "female activities" that women pursue to stay in good shape, and they had to list several things they did to keep fit. Then, participants either used or examined an antiseptic wipe under the pretense of product evaluation. Next, all participants completed a scrambled sentence task that primed an academic achievement goal (same as in Experiment 1), but half were told that the researchers were interested in "female students' verbal ability" (same identity as invoked earlier), and the other half, "University of Toronto students' verbal ability" (different identity from that invoked earlier).

To assess the effects of cleansing and salient identity manipulations, in a survey labeled "About Yourself," all participants rated the importance of various goals ("To what extent do you think [*the goal*] is important to you?"; 0 = *not important at all*, 10 = *very important*), including fitness (*keeping in shape*) and academic achievement (*achieving academic success*) among fillers (*job hunting*, *saving money*, *being kind and charitable*, *having many friends*, *developing hobbies*). The items on fitness and academic achievement were counterbalanced between subjects, which had no significant main or interactive effects on the importance of the fitness ($ps \geq .170$) or the academic achievement goal ($ps \geq .088$). Funnel debriefing at the end revealed no participant awareness of the experiment's purpose.

Importance ratings for the fitness and academic achievement goals served as the dependent measures. They were submitted to a 2 (using vs. examining wipe; between subjects) × 2 (same vs. different salient identity; between subjects) × 2 (rated importance of fitness vs. academic achievement goal; within subjects) mixed ANOVA. Our hypothesis was that invoking a different salient identity (female and University of Toronto), as opposed to invoking the same salient identity (female), should render the previously primed goal (fitness) less important and the subsequently primed goal (academic achievement) more important—but only if participants did not clean their hands (examining wipe). If participants did clean their hands (using wipe), the salient identity manipulation should no longer exert any influence on goal importance; the previously primed goal should simply become less important and the subsequently primed goal more important.

Results

As predicted, the 2 × 2 × 2 mixed ANOVA yielded a significant three-way interaction effect of Cleansing Condition × Salient Identity Condition × Goal Type, $F(1, 122) = 11.47$, $p = .001$, $\eta^2 = .086$. No other main or interaction effects were significant, $Fs(1, 122) \leq 3.04$, $ps \geq .084$.

To tease apart the three-way interaction, let us first focus on participants who merely examined the wipe without using it (Figure 4, left panel). We submitted their goal importance ratings to a Salient Identity Condition (between subjects) × Goal Type (within subjects) mixed ANOVA. The main effect of Salient Identity Condition was not significant, $F(1, 60) = 0.08$, $p = .774$, nor was the main effect of Goal Type, $F(1, 60) = 0.04$, $p = .838$. But pertinent to our hypothesis is that there was a significant interaction effect of Salient Identity Condition × Goal Type, $F(1, 60) = 11.27$, $p = .001$, $\eta_p^2 = .158$. Specifically, invoking a different (vs. same) salient identity rendered the previously primed goal (fitness) marginally less important ($M_{\text{different identity}}$ = 8.06, $SD_{\text{different identity}}$ = 1.91; $M_{\text{same identity}}$ = 8.77, $SD_{\text{same identity}}$ = .99), $F(1, 122) = 3.63$, $p = .059$, 95% CI = [−1.447, .028], $d = .467$, but the subsequently primed goal (academic achievement) significantly more important ($M_{\text{different identity}}$ = 8.90, $SD_{\text{different identity}}$ = 1.01; $M_{\text{same identity}}$ = 8.03, $SD_{\text{same identity}}$ = 1.62), $F(1, 122) = 7.54$, $p = .007$, 95% CI = [.243, 1.499], $d = .644$.

Turning to participants who actually used the wipe (Figure 4, right panel), again we submitted their goal importance ratings to a

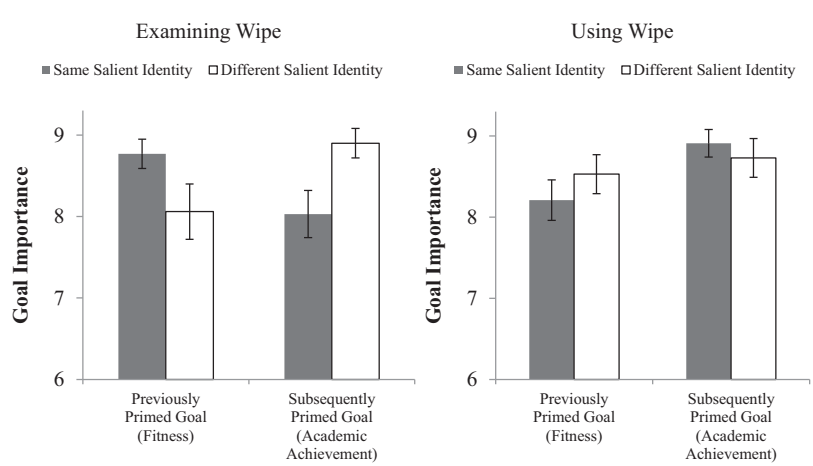

Figure 4. Importance ratings for previously primed and subsequently primed goals as a function of cleansing and salient identity conditions (Experiment 4). Error bars indicate ±1 *SEM*.

Salient Identity Condition (between subjects) × Goal Type (within subjects) mixed ANOVA. The patterns looked different here. There was only a significant main effect of Goal Type, $F(1, 62) = 5.14$, $p = .027$, $\eta_p^2 = .077$, such that the previously primed goal (fitness) was rated as less important than the subsequently primed goal (academic achievement), regardless of whether a different or the same salient identity was invoked (no significant interaction effect of Salient Identity Condition × Goal Type), $F(1, 62) = 1.602$, $p = .210$, $\eta_p^2 = .025$. There was no significant main effect of Salient Identity Condition, $F(1, 62) = .088$, $p = .768$, $\eta_p^2 = .001$: Invoking a different (vs. same) salient identity did not influence the importance of either the previously primed goal (fitness: $M_{\text{different identity}} = 8.53$, $SD_{\text{different identity}} = 1.33$; $M_{\text{same identity}} = 8.21$, $SD_{\text{same identity}} = 1.47$), $F(1, 122) = .80$, $p = .374$, or the subsequently primed goal (academic achievement: $M_{\text{different identity}} = 8.73$, $SD_{\text{different identity}} = 1.31$; $M_{\text{same identity}} = 8.91$, $SD_{\text{same identity}} = .97$), $F(1, 122) = .33$, $p = .569$.

To sum up, without cleansing, a subsequently primed goal becomes more important if it invokes a different (vs. the same) salient identity than before, whereas a previously primed goal appears to become less important. But with cleansing, invoking a different (vs. the same) salient identity no longer influences the importance of either the subsequently or the previously primed goal. The subsequently primed goal is simply more important than the previously primed one. In short, physical cleansing, just like a shift in salient identity, seems to produce psychological separation between previous and subsequent experiences.

Discussion

An alternative manipulation that psychologically separates the past identity from the present identity changes the relative importance of previously and subsequently primed goals, but these effects disappear once people wipe their hands clean. Consistent with the logic of moderation-of-process, this pattern indicates that cleansing may be changing goal priming effects by separating previously primed content from the present self.

The logic of moderation-of-process is applicable when two assumptions are met. First, there is external evidence that the alternative manipulation "has the intended effect on the proposed psychological process" (Spencer et al., 2005, p. 847). There is plentiful evidence that shifting one's salient identity increases psychological separation from one's previous goals (Oyserman, 2009). Second, an alternative explanation for the observed pattern of moderation is unlikely. The interactive effect of cleansing and shifting one's salient identity on goal importance seems unlikely to be driven by variables other than psychological separation. Accounts that focus on the effect of shifting one's salient identity on goal importance would have to explain why we found not two main effects of shifting identity and cleansing, but the predicted pattern of interaction. Insofar as both assumptions are met, the present findings support the process of psychological separation. We expect future research to amass convergent evidence through different manipulations and designs such as measurement of mediation and experimental causal chain (Spencer et al., 2005).

General Discussion

Four experiments test specific predictions derived from our account of cleansing as an embodied procedure of psychological separation. They provide convergent evidence that a simple act of physical cleansing can diminish or amplify goal priming effects. Specifically, it diminishes the mental accessibility (Experiment 1), behavioral expression (Experiment 2), and judged importance (Experiment 3) of a previously primed goal. It amplifies the judged importance of a subsequently primed goal (Experiment 3), which to our knowledge is the first evidence that cleansing can change the impact of subsequent experience. An alternative manipulation that produces psychological separation also affects the relative importance of previously and subsequently primed goals, but the effects disappear once people wipe their hands clean (Experiment 4). Taken together, these findings indicate that cleansing works across different goal contents (achievement, health, fitness, saving) and reinforce a procedural view of clean-slate effects, hence their content-general nature (see Table 1). Below we highlight the theoretical implications of our findings for the flexibility of goal pursuit, the mechanisms and scope of clean-slate effects, and the procedural perspective on cleansing and other embodied phenomena.

Cleansing and Flexible Goal Pursuit

The present results suggest that physical cleansing, as mundane and routine a behavior as it seems, may be recruited to facilitate the motivationally challenging task of reorienting goal pursuit. We know from prior research that people adept at adjusting their goal pursuit to changing circumstances live better and happier lives (Brandtstädter & Renner, 1990). But we also know that flexible goal adjustment is no easy feat. Oftentimes multiple goals need to be pursued simultaneously (e.g., tenure and family), posing conflicting demands and straining people as they try to switch back and forth (e.g., working on papers and taking kids out; Dhar & Simonson, 1999; Fishbach & Dhar, 2005). Even the pursuit of a single, focal goal may get derailed as last-minute meetings, health problems, or other unexpected challenges have their way (Carver & Scheier, 1998). One would then be better off disengaging from unattainable goals, except that letting go of unaccomplished goals proves motivationally difficult, especially if people are tenacious (Masicampo & Baumeister, 2011; Shah, Friedman, & Kruglanski, 2002). The ability to actively and flexibly adjust one's goal pursuit—withdrawing effort and commitment from unattainable goals, identifying and reengaging with more attainable or priority-deserving alternatives—predicts one's long-term success and physical and psychological well-being (Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Empirical work, unfortunately, has offered little help by way of practical strategies for people to enhance this ability.

With the present experimental evidence that cleansing can function as a content-general procedure of psychological separation and diminish cognitive and behavioral manifestations of past goals and amplify future ones, soaps and wipes may come in handy for facilitating disengagement from goals in the past and reengagement with more attainable or priority-deserving goals in the future. Given cleansing's ability to reduce the accessibility of a previously primed goal, it may facilitate flexible goal pursuit by reducing the errors and costs involved in switching from one goal-driven task to another (cf. Monsell, 2003). It may enhance the adoption of new mental procedures in goal-directed thinking such as creative problem solving (Higgins & Chaires, 1980). Also, by providing the first

demonstration that cleansing can amplify the impact of subsequent experience, our findings open up new empirical questions. Does cleansing amplify the influence of subsequently primed goals only if they are virtuous, as tested here (e.g., health, saving), or also if they are vicious (e.g., indulgence, aggression)? Do the goal amplification effects of cleansing last long? In the lab these effects look fleeting, but in naturalistic contexts sometimes new goals can be adopted together with a new, powerful identity associated with physical cleansing. For example, for Christians, baptism may "wash away your sins" (Acts 22:16, *Holy Bible,* New King James Version) as much as it symbolizes the commitment "to put on the new self" (Ephesians 4:24, *Holy Bible*, New International Version) that marks the beginning of spiritual pursuit for years to come. The extent to which cleansing enhances the flexibility of goal processes in daily life, under what conditions, for whom, and for how long, are promising avenues for future research.

Clean-Slate Effects Unbound?

While the present research zeroes in on goal priming, it is instructive to take a step back and ask, theoretically, Just how broad are the psychological consequences of physical cleansing? Lay intuition might assume this to be a matter of faith, because cleanliness is next to godliness, and ritual purification of the physical body has clear religious overtones as it symbolizes spiritual purification across all major religions, be it baptism of Christianity, Mikvah of Judaism, ablution of Islam and Buddhism, bathing in the Ganges River of Hinduism, or Amrit of Sikhism (Lee & Schwarz, 2016a). The overtones are strong enough that purity is unconsciously associated with religiosity even among nonreligious individuals (Preston & Ritter, 2012).

Beyond religion and morality. Yet cleanliness is not an exclusive territory of spiritual concerns. It is linked to all sorts of moral situations, even those with little religious relevance (e.g., Yang et al., 2013), as reflected in a large body of linguistic and psychological evidence (for reviews, see Lakoff & Johnson, 1999; Lee & Schwarz, 2011, 2016a; Zhong & House, 2014).

But even the moral domain seems too narrow for delineating the scope of cleansing effects. Behavioral experiments show that people can clean their hands not only of guilt from past immorality, but also of dissonance from free choice, risk aversion from bad luck, and pessimism from academic failure (see Table 1). And it is not just negative experiences that get wiped off; cleansing also reduces the influence of positive experiences such as good luck, product endowment, and as demonstrated here, a variety of primed goals. Clean-slate effects seem valence- and content-general: Traces of any psychological experience become less influential after cleansing.

Such generality would be hard to explain parsimoniously with content-specific accounts, but comes naturally from the integrative view that cleansing functions as an embodied procedure of psychological separation. By separating physical traces from a physical target object (e.g., detaching dirt from hands), cleansing serves as the embodied grounding for the separation of psychological traces from a psychological target object (e.g., dissociating goals from the self). This separation procedure is applicable across contents, hence its diverse manifestations in different domains.

Deeper mechanisms. Digging one level deeper, exactly what kinds of psychological separation are conferred by physical cleansing? A precise answer to this question will help us identify the hitherto unknown boundary conditions of clean-slate effects. We propose several plausible candidates of deeper mechanisms, which predict different boundary conditions.

1. Cleansing may work by affectively neutralizing prior events (cf. Frischen et al., 2012). This mechanism would fit with existing studies, where the event prior to the cleansing manipulation always involves some affective (emotional or motivational) experience, from guilt, dissonance, and failure, to luck, endowment, and goals. If this is the mechanism, cleansing effects may disappear in nonaffective domains (e.g., declarative memory, procedural memory).

2. Cleansing may work by psychologically distancing prior events. This mechanism would result in not just reappraisal of affect-laden events (Kross, Ayduk, & Mischel, 2005), but also abstract construal of affective and nonaffective experiences alike (Trope & Liberman, 2003, 2010). Specifically, cleansing may elicit psychological distancing by serving as a temporal marker that demarcates the past from the present (Dai, Milkman, & Riis, 2014; Zauberman, Levav, Diehl, & Bhargave, 2010). That would imply that clean-slate effects are fundamentally mediated through temporal distancing, which triggers other kinds of psychological distancing and produces downstream consequences. It predicts that cleansing should reduce not just the mental accessibility, but also the clarity, vividness, and concreteness of mental representations of past events. It also predicts that cleansing should change the construal of past events such that they seem less spatially near, less socially related, and less causally linked to the present self. If these turn out to be true, then again by the logic of moderation-of-process (cf. Experiment 4), cleansing should exert stronger influence on decisions regarding one's present than on decisions regarding one's future, especially among those who tend to view their future self as psychologically close to their current self (Kross & Ayduk, 2011; Pronin & Ross, 2006; Pronin, Olivola, & Kennedy, 2008).

3. Cleansing may work by carving a category boundary that excludes the prior event from the construal of the present reality and uses the former as a standard for evaluating the latter (cf. Schwarz & Bless, 1992). That would imply that clean-slate effects are driven by a comparative process of subjective construal, which should influence not just the accessibility, but also the relevance and use of information (cf. Eitam & Higgins, 2010).

All three candidates of deeper mechanisms are compatible with all clean-slate effects documented thus far, including the present findings. Teasing them apart, assessing their relative contributions, and testing the different boundary conditions they predict will be important next steps for advancing our theoretical understanding of exactly what kinds of psychological separation are conferred by cleansing.

Cleansing as One of Many Embodied Procedures of Psychological Separation

The core message of this article is that we can unpack clean-slate effects by identifying cleansing as an embodied procedure of psychological separation. This account has even broader integrative potential, because embodied separation can take numerous forms; cleansing is but one of them.

Various forms of embodied separation, all producing conceptually similar effects, can be identified in recent research. For example, wearing (vs. not wearing) gloves while hand-copying an immoral story leads people to judge the immoral behavior as less wrong (Lee & Schwarz, 2016b). Writing about emotional events on a piece of paper and putting (vs. not putting) it in an envelope minimizes its emotional impact (Li, Wei, & Soman, 2010). Writing down thoughts about one's body image on a piece of paper and throwing it into a rubbish bin (vs. keeping it) eliminates their attitudinal consequences (Briñol, Gascó, Petty, & Horcajo, 2013). Choosing a snack from a container and closing (vs. not closing) the lid decreases one's comparative thoughts between the chosen and foregone options and increases one's choice satisfaction (Gu et al., 2013). Tempting one's fate and engaging in avoidant (vs. approach) actions reduces one's perceived likelihoods of bad luck (Zhang, Risen, & Hosey, 2014).

All of these manipulations involve physical separation. All of them reduce the influence of a salient experience on psychological outcomes and processes. In many ways, these effects seem weird, irrational, and eerily similar to magical beliefs and superstitious behaviors (Lindeman & Svedholm, 2012; Rozin & Nemeroff, 1990). But their existence among even "typical," nonsuperstitious people suggests that their psychological underpinnings may be more normal than abnormal. Are they but different bodily states that activate the basic procedure of psychological separation? We expect much theoretical mileage to be gained by integrating bodily effects from different research traditions (e.g., embodied cognition, sympathetic magic, irrational behavior) into a unified framework of embodied procedures.

References

Aarts, H., & Dijksterhuis, A. (2000). Habits as knowledge structures: Automaticity in goal-directed behavior. *Journal of Personality and Social Psychology, 78,* 53–63. http://dx.doi.org/10.1037/0022-3514.78.1.53

American Cleaning Institute. (2015). *Soaps & detergent: History*. Retrieved October 14, 2015, from http://www.cleaninginstitute.org/clean_living/soaps__detergent_history.aspx

Ariely, D., & Levav, J. (2000). Sequential choice in group settings: Taking the road less traveled and less enjoyed. *Journal of Consumer Research, 27,* 279–290. http://dx.doi.org/10.1086/317585

Atkinson, J. W., & Birch, D. (1970). *The dynamics of action*. New York, NY: Wiley.

Austin, J. T., & Bobko, P. (1985). Goal-setting theory: Unexplored areas and future research needs. *Journal of Occupational Psychology, 58,* 289–308. http://dx.doi.org/10.1111/j.2044-8325.1985.tb00202.x

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). New York, NY: Cambridge University Press.

Bargh, J. A., & Gollwitzer, P. M. (1994). Environmental control of goal-directed action: Automatic and strategic contingencies between situations and behavior. In W. D. Spaulding (Ed.), *Nebraska symposium on motivation: Integrative views of motivation, cognition, and emotion* (Vol. 41, pp. 71–124). Lincoln, NE: University of Nebraska Press.

Bargh, J. A., Schwader, K. L., Hailey, S. E., Dyer, R. L., & Boothby, E. J. (2012). Automaticity in social-cognitive processes. *Trends in Cognitive Sciences, 16,* 593–605. http://dx.doi.org/10.1016/j.tics.2012.10.002

Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology, 59,* 617–645. http://dx.doi.org/10.1146/annurev.psych.59.103006.093639

Brandtstädter, J., & Renner, G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology and Aging, 5,* 58–67. http://dx.doi.org/10.1037/0882-7974.5.1.58

Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. *Journal of Abnormal and Social Psychology, 52,* 384–389. http://dx.doi.org/10.1037/h0041006

Briñol, P., Gascó, M., Petty, R. E., & Horcajo, J. (2013). Treating thoughts as material objects can increase or decrease their impact on evaluation. *Psychological Science, 24,* 41–47. http://dx.doi.org/10.1177/0956797612449176

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY: Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139174794

Casciaro, T., Gino, F., & Kouchaki, M. (2014). The contaminating effects of building instrumental ties how networking can make us feel dirty. *Administrative Science Quarterly, 59,* 705–735. http://dx.doi.org/10.1177/0001839214554990

Chan, C., Van Boven, L., Andrade, E. B., & Ariely, D. (2014). Moral violations reduce oral consumption. *Journal of Consumer Psychology, 24,* 381–386. http://dx.doi.org/10.1016/j.jcps.2013.12.003

Chartrand, T. L., & Bargh, J. A. (1996). Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions. *Journal of Personality and Social Psychology, 71,* 464–478. http://dx.doi.org/10.1037/0022-3514.71.3.464

Cramwinckel, F. M., De Cremer, D., & van Dijke, M. (2013). Dirty hands make dirty leaders?! The effects of touching dirty objects on rewarding unethical subordinates as a function of a leader's self-interest. *Journal of Business Ethics, 115,* 93–100. http://dx.doi.org/10.1007/s10551-012-1385-4

Cramwinckel, F. M., van Dijk, E., Scheepers, D., & van den Bos, K. (2013). The threat of moral refusers for one's self-concept and the protective function of physical cleansing. *Journal of Experimental Social Psychology, 49,* 1049–1058. http://dx.doi.org/10.1016/j.jesp.2013.07.009

Custers, R., & Aarts, H. (2005). Positive affect as implicit motivator: On the nonconscious operation of behavioral goals. *Journal of Personality and Social Psychology, 89,* 129–142. http://dx.doi.org/10.1037/0022-3514.89.2.129

Custers, R., & Aarts, H. (2007). In search of nonconscious sources of goal pursuit: Accessibility and positive affective valence of the goal state. *Journal of Experimental Social Psychology, 43,* 312–318. http://dx.doi.org/10.1016/j.jesp.2006.02.005

Dai, H., Milkman, K. L., & Riis, J. (2014). The fresh start effect: Temporal landmarks motivate aspirational behavior. *Management Science, 60,* 2563–2582. http://dx.doi.org/10.1287/mnsc.2014.1901

De Los Reyes, A., Aldao, A., Kundey, S. M., Lee, B. G., & Molina, S. (2012). Compromised decision making and the effects of manipulating physical states on human judgments. *Journal of Clinical Psychology, 68,* 1–7. http://dx.doi.org/10.1002/jclp.20851

Denke, C., Rotte, M., Heinze, H. J., & Schaefer, M. (2014). Belief in a just world is associated with activity in insula and somatosensory cortices as

a response to the perception of norm violations. *Social Neuroscience, 9,* 514–521. http://dx.doi.org/10.1080/17470919.2014.922493

Dhar, R., & Simonson, I. (1999). Making complementary choices in consumption episodes: Highlighting versus balancing. *Journal of Marketing Research, 36,* 29–44. http://dx.doi.org/10.2307/3151913

Dijksterhuis, A., & Aarts, H. (2010). Goals, attention, and (un)consciousness. *Annual Review of Psychology, 61,* 467–490. http://dx.doi.org/10.1146/annurev.psych.093008.100445

Eitam, B., & Higgins, E. T. (2010). Motivation in mental accessibility: Relevance of a representation (ROAR) as a new framework. *Social and Personality Psychology Compass, 4,* 951–967. http://dx.doi.org/10.1111/j.1751-9004.2010.00309.x

Ferguson, M. J., & Bargh, J. A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology, 87,* 557–572. http://dx.doi.org/10.1037/0022-3514.87.5.557

Fishbach, A., & Dhar, R. (2005). Goals as excuses or guides: The liberating effect of perceived goal progress on choice. *Journal of Consumer Research, 32,* 370–377. http://dx.doi.org/10.1086/497548

Fishbach, A., & Ferguson, M. J. (2007). The goal construct in social psychology. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 490–515). New York, NY: Guilford Press.

Florack, A., Kleber, J., Busch, R., & Stöhr, D. (2014). Detaching the ties of ownership: The effects of hand washing on the exchange of endowed products. *Journal of Consumer Psychology, 24,* 284–289. http://dx.doi.org/10.1016/j.jcps.2013.09.010

Förster, J., Liberman, N., & Friedman, R. S. (2007). Seven principles of goal activation: A systematic approach to distinguishing goal priming from priming of non-goal constructs. *Personality and Social Psychology Review, 11,* 211–233. http://dx.doi.org/10.1177/1088868307303029

Frischen, A., Ferrey, A. E., Burt, D. H., Pistchik, M., & Fenske, M. J. (2012). The affective consequences of cognitive inhibition: Devaluation or neutralization? *Journal of Experimental Psychology: Human Perception and Performance, 38,* 169–179. http://dx.doi.org/10.1037/a0025981

Gino, F., Kouchaki, M., & Galinsky, A. D. (2015). The moral virtue of authenticity: How inauthenticity produces feelings of immorality and impurity. *Psychological Science, 26,* 983–996. http://dx.doi.org/10.1177/0956797615575277

Golec de Zavala, A., Waldzus, S., & Cypryanska, M. (2014). Prejudice towards gay men and a need for physical cleansing. *Journal of Experimental Social Psychology, 54,* 1–10. http://dx.doi.org/10.1016/j.jesp.2014.04.001

Gollwitzer, M., & Melzer, A. (2012). Macbeth and the joystick: Evidence for moral cleansing after playing a violent video game. *Journal of Experimental Social Psychology, 48,* 1356–1360. http://dx.doi.org/10.1016/j.jesp.2012.07.001

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology, 38,* 69–119. http://dx.doi.org/10.1016/S0065-2601(06)38002-1

Gu, Y., Botti, S., & Faro, D. (2013). Turning the page: The impact of choice closure on satisfaction. *Journal of Consumer Research, 40,* 268–283. http://dx.doi.org/10.1086/670252

Helzer, E. G., & Pizarro, D. A. (2011). Dirty liberals! Reminders of physical cleanliness influence moral and political attitudes. *Psychological Science, 22,* 517–522. http://dx.doi.org/10.1177/0956797611402514

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York, NY: Guilford Press.

Higgins, E. T., & Chaires, W. M. (1980). Accessibility of interrelational constructs: Implications for stimulus encoding and creativity. *Journal of Experimental Social Psychology, 16,* 348–361. http://dx.doi.org/10.1016/0022-1031(80)90027-X

Huang, J. L. (2014). Does cleanliness influence moral judgments? Response effort moderates the effect of cleanliness priming on moral judgments. *Frontiers in Psychology, 5,* 1276. http://dx.doi.org/10.3389/fpsyg.2014.01276

Kaspar, K. (2013). Washing one's hands after failure enhances optimism but hampers future performance. *Social Psychological and Personality Science, 4,* 69–73. http://dx.doi.org/10.1177/1948550612443267

Kaspar, K., Krapp, V., & König, P. (2015). Hand washing induces a clean slate effect in moral judgments: A pupillometry and eye-tracking study. *Scientific Reports, 5,* 10471. http://dx.doi.org/10.1038/srep10471

Kim, Y. H., & Cohen, D. (2010). Information, perspective, and judgments about the self in face and dignity cultures. *Personality and Social Psychology Bulletin, 36,* 537–550. http://dx.doi.org/10.1177/0146167210362398

Kross, E., & Ayduk, O. (2011). Making meaning out of negative experiences by self-distancing. *Current Directions in Psychological Science, 20,* 187–191. http://dx.doi.org/10.1177/0963721411408883

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking "why" does not hurt. Distinguishing rumination from reflective processing of negative emotions. *Psychological Science, 16,* 709–715. http://dx.doi.org/10.1111/j.1467-9280.2005.01600.x

Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal-systems. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 331–376). New York, NY: Academic Press.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. New York, NY: Basic Books.

Latham, G. P. (2016). Goal setting: A possible theoretical framework for examining the effect of priming goals on organizational behavior. *Current Opinion in Psychology, 12,* 85–88. http://dx.doi.org/10.1016/j.copsyc.2016.07.005

Lee, S. W. S., & Schwarz, N. (2010). Washing away postdecisional dissonance. *Science, 328,* 709. http://dx.doi.org/10.1126/science.1186799

Lee, S. W. S., & Schwarz, N. (2011). Wiping the slate clean: Psychological consequences of physical cleansing. *Current Directions in Psychological Science, 20,* 307–311. http://dx.doi.org/10.1177/0963721411422694

Lee, S. W. S., & Schwarz, N. (2016a). Clean-moral effects and clean-slate effects: Physical cleansing as an embodied procedure of psychological separation. In R. Duschinsky, S. Schnall, & D. H. Weiss (Eds.), *Purity and danger now: New perspectives* (pp. 136–161). London, United Kingdom/New York, New York: Routledge.

Lee, S. W. S., & Schwarz, N. (2016b). *Embodied separation*. Manuscript in preparation, University of Toronto, Toronto, Ontario, Canada.

Lee, S. W., Tang, H., Wan, J., Mai, X., & Liu, C. (2015). A cultural look at moral purity: Wiping the face clean. *Frontiers in Psychology, 6,* 577. http://dx.doi.org/10.3389/fpsyg.2015.00577

Li, X., Wei, L., & Soman, D. (2010). Sealing the emotions genie: The effects of physical enclosure on psychological closure. *Psychological Science, 21,* 1047–1050. http://dx.doi.org/10.1177/0956797610376653

Liljenquist, K., Zhong, C. B., & Galinsky, A. D. (2010). The smell of virtue: Clean scents promote reciprocity and charity. *Psychological Science, 21,* 381–383. http://dx.doi.org/10.1177/0956797610361426

Lindeman, M., & Svedholm, A. M. (2012). What's in a term? Paranormal, superstitious, magical and supernatural beliefs by any other name would mean the same. *Review of General Psychology, 16,* 241–255. http://dx.doi.org/10.1037/a0027158

Lobel, T. E., Cohen, A., Shahin, L. K., Malov, S., Golan, Y., & Busnach, S. (2015). Being clean and acting dirty: The paradoxical effect of self-cleansing. *Ethics & Behavior, 25,* 1–7.

Marotta, M., & Bohner, G. (2013). *Dissonanz abwaschen, Dissonanz reinreiben: Symbolische Abschwächung vs. Verstärkung von Dissonanz nach Entscheidungen*. Paper presented at the Tagung der Fachgruppe Sozialpsychologie, Hagen, Germany.

Masicampo, E. J., & Baumeister, R. F. (2011). Unfulfilled goals interfere with tasks that require executive functions. *Journal of Experimental Social Psychology, 47,* 300–311. http://dx.doi.org/10.1016/j.jesp.2010.10.011

Monsell, S. (2003). Task switching. *Trends in Cognitive Sciences, 7,* 134–140. http://dx.doi.org/10.1016/S1364-6613(03)00028-7

Moscatiello, T., & Nagel, E. (2014, May). *The effects of cleansing on risk taking*. Poster presented at the Celebration, Gettysburg, PA. Retrieved December 3, 2015, from http://cupola.gettysburg.edu/cgi/viewcontent.cgi?article=1592&context=celebration

Oyserman, D. (2009). Identity-based motivation: Implications for action-readiness, procedural readiness, and consumer behavior. *Journal of Consumer Psychology, 19,* 250–260. http://dx.doi.org/10.1016/j.jcps.2009.05.008

Preston, J. L., & Ritter, R. S. (2012). Cleanliness and godliness: Mutual association between two kinds of personal purity. *Journal of Experimental Social Psychology, 48,* 1365–1368. http://dx.doi.org/10.1016/j.jesp.2012.05.015

Pronin, E., Olivola, C. Y., & Kennedy, K. A. (2008). Doing unto future selves as you would do unto others: Psychological distance and decision making. *Personality and Social Psychology Bulletin, 34,* 224–236. http://dx.doi.org/10.1177/0146167207310023

Pronin, E., & Ross, L. (2006). Temporal differences in trait self-ascription: When the self is seen as an other. *Journal of Personality and Social Psychology, 90,* 197–209. http://dx.doi.org/10.1037/0022-3514.90.2.197

Rachman, S., Radomsky, A. S., Elliott, C. M., & Zysk, E. (2012). Mental contamination: The perpetrator effect. *Journal of Behavior Therapy and Experimental Psychiatry, 43,* 587–593. http://dx.doi.org/10.1016/j.jbtep.2011.08.002

Ratner, R. K., Kahn, B. E., & Kahneman, D. (1999). Choosing less-preferred experiences for the sake of variety. *Journal of Consumer Research, 26,* 1–15. http://dx.doi.org/10.1086/209547

Read, D., & Loewenstein, G. (1995). Diversification bias: Explaining the discrepancy in variety seeking between combined and separated choices. *Journal of Experimental Psychology: Applied, 1,* 34–49. http://dx.doi.org/10.1037/1076-898X.1.1.34

Reuven, O., Liberman, N., & Dar, R. (2014). The effect of physical cleaning on threatened morality in individuals with obsessive-compulsive disorder. *Clinical Psychological Science, 2,* 224–229. http://dx.doi.org/10.1177/2167702613485565

Ritter, R. S., & Preston, J. L. (2011). Gross gods and icky atheism: Disgust responses to rejected religious beliefs. *Journal of Experimental Social Psychology, 47,* 1225–1230. http://dx.doi.org/10.1016/j.jesp.2011.05.006

Rothschild, Z. K., Landau, M. J., Keefer, L. A., & Sullivan, D. (2015). Another's punishment cleanses the self: Evidence for a moral cleansing function of punishing transgressors. *Motivation and Emotion, 39,* 722–741. http://dx.doi.org/10.1007/s11031-015-9487-9

Rottman, J., Kelemen, D., & Young, L. (2014). Tainting the soul: Purity concerns predict moral judgments of suicide. *Cognition, 130,* 217–226. http://dx.doi.org/10.1016/j.cognition.2013.11.007

Rozin, P., & Nemeroff, C. J. (1990). The laws of sympathetic magic: A psychological analysis of similarity and contagion. In J. Stigler, G. Herdt, & R. A. Shweder (Eds.), *Cultural psychology: Essays on comparative human development* (pp. 205–232). Cambridge, UK: Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139173728.006

Schnall, S., Benton, J., & Harvey, S. (2008). With a clean conscience: Cleanliness reduces the severity of moral judgments. *Psychological Science, 19,* 1219–1222. http://dx.doi.org/10.1111/j.1467-9280.2008.02227.x

Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 217–245). Hillsdale, NJ: Erlbaum.

Schwarz, N., Bless, H., Wänke, M., & Winkielman, P. (2003). Accessibility revisited. In G. V. Bodenhausen & A. J. Lambert (Eds.), *Foundations of social cognition: Afestschrift in honor of Robert S. Wyer, Jr.* (pp. 51–77). Hillsdale, NJ: Erlbaum.

Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology, 83,* 1261–1280. http://dx.doi.org/10.1037/0022-3514.83.6.1261

Shantz, A., & Latham, G. P. (2009). An exploratory field experiment of the effect of subconscious and conscious goals on employee performance. *Organizational Behavior and Human Decision Processes, 109,* 9–17. http://dx.doi.org/10.1016/j.obhdp.2009.01.001

Sheikh, S., Botindari, L., & White, E. (2013). Embodied metaphors and emotions in the moralization of restrained eating practices. *Journal of Experimental Social Psychology, 49,* 509–513. http://dx.doi.org/10.1016/j.jesp.2012.12.016

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89,* 845–851. http://dx.doi.org/10.1037/0022-3514.89.6.845

Srull, T. K., & Wyer, R. S., Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology, 37,* 1660–1672. http://dx.doi.org/10.1037/0022-3514.37.10.1660

Strack, F. (2012, January). *From wow to how*. Paper presented at the Embodiment preconference of the annual meeting of Society for Personality and Social Psychology, San Diego, CA.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110,* 403–421. http://dx.doi.org/10.1037/0033-295X.110.3.403

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review, 117,* 440–463. http://dx.doi.org/10.1037/a0018963

Weingarten, E., Chen, Q., McAdams, M., Yi, J., Hepler, J., & Albarracín, D. (2016). From primed concepts to action: A meta-analysis of the behavioral effects of incidentally presented words. *Psychological Bulletin, 142,* 472–497. http://dx.doi.org/10.1037/bul0000030

Wheeler, S. C., Demarree, K. G., & Petty, R. E. (2007). Understanding the role of the self in prime-to-behavior effects: The active-self account. *Personality and Social Psychology Review, 11,* 234–261. http://dx.doi.org/10.1177/1088868307302223

Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. *European Journal of Social Psychology, 39,* 1257–1267. http://dx.doi.org/10.1002/ejsp.665

Wrosch, C., Miller, G. E., Scheier, M. F., & de Pontet, S. B. (2007). Giving up on unattainable goals: Benefits for health? *Personality and Social Psychology Bulletin, 33,* 251–265. http://dx.doi.org/10.1177/0146167206294905

Wrosch, C., Scheier, M. F., Miller, G. E., Schulz, R., & Carver, C. S. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin, 29,* 1494–1508. http://dx.doi.org/10.1177/0146167203256921

Wyer, R. S., Jr. (2004). *Social comprehension and judgment: The role of situation models, narratives, and implicit theories*. Hillsdale, NJ: Erlbaum.

Wyer, R. S., Jr.,Xu, A. J., & Shen, H. (2012). The effects of past behavior

on future goal-directed activity. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology* (Vol. 46, pp. 237–283). Burlington, MA: Academic Press.

Xu, A. J., Zwick, R., & Schwarz, N. (2012). Washing away your (good or bad) luck: Physical cleansing affects risk-taking behavior. *Journal of Experimental Psychology: General, 141,* 26–30. http://dx.doi.org/10.1037/a0023997

Xu, H., Bègue, L., & Bushman, B. J. (2014). Washing the guilt away: Effects of personal versus vicarious cleansing on guilty feelings and prosocial behavior. *Frontiers in Human Neuroscience, 8,* 97. http://dx.doi.org/10.3389/fnhum.2014.00097

Yang, Q., Wu, X., Zhou, X., Mead, N. L., Vohs, K. D., & Baumeister, R. F. (2013). Diverging effects of clean versus dirty money on attitudes, values, and interpersonal behavior. *Journal of Personality and Social Psychology, 104,* 473–489. http://dx.doi.org/10.1037/a0030596

Zauberman, G., Levav, J., Diehl, K., & Bhargave, R. (2010). 1995 feels so close yet so far: The effect of event markers on subjective feelings of elapsed time. *Psychological Science, 21,* 133–139. http://dx.doi.org/10.1177/0956797609356420

Zhang, Y., Risen, J. L., & Hosey, C. (2014). Reversing one's fortune by pushing away bad luck. *Journal of Experimental Psychology: General, 143,* 1171–1184. http://dx.doi.org/10.1037/a0034023

Zhong, C.-B., & House, J. (2014). Dirt, pollution, and purity: A metaphorical perspective on morality. In M. Landau, M. D. Robinson, & B. P. Meier (Eds.), *The power of metaphor: Examining its influence on social life* (pp. 109–131). Washington, DC: American Psychological Association. http://dx.doi.org/10.1037/14278-006

Zhong, C.-B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science, 313,* 1451–1452. http://dx.doi.org/10.1126/science.1130726

Zhong, C.-B., Strejcek, B., & Sivanathan, N. (2010). A clean self can render harsh moral judgment. *Journal of Experimental Social Psychology, 46,* 859–862. http://dx.doi.org/10.1016/j.jesp.2010.04.003

Received October 20, 2015
Revision received December 20, 2016
Accepted January 13, 2017 ■