FlashReport

Cleanliness and godliness: Mutual association between two kinds of personal purity ☆

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A B S T R A C T

Purity rituals (such as baptism, mikvah, and ablution) are an important component of many religious practices. These practices not only help protect the faithful from physical contaminants, but also bestow symbolic purity and maintain the sanctity of sacred objects. The present work examines the association between religion and cleanliness, as two representations of personal purity. Religious primes were found to activate cleanliness concepts in a word-stem completion task (Study 1), and increased the subjective value of cleaning products (Study 2). In a final study, cleaning primes increased ratings of religious value. These studies suggest a mutual association between religiousness and cleanliness, and that each may activate the other as goals for personal purity.

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Introduction

In all faiths and cultures, religious doctrines include various rules that instruct the proper actions of its devotees. An important subset of religious rules is purity laws that describe specific circumstances that render one "unclean" and specific actions that may officially restore personal purity. For instance, in Judaism, a woman is considered impure for one week after menstruation, and anyone who touches her is also impure until nightfall. Islamic toilet etiquette requires that one cleanse the orifice with water after defecation, and cannot use one's right hand to do so. In Zoroastrianism, corpse bearers must undergo a ritual bath (Bareshnum) to restore their personal purity after contact with the dead. The prevalence of such purity rituals across different faiths suggests a deeply rooted connection between religion and cleanliness. The present research investigates this association between religion and cleanliness as two kinds of personal purity.

The sacred and the profane

Recently there has been renewed interest in the psychological literature in *disgust* as moral emotion. Rozin, Haidt, and McCauley (2000) distinguish between *core disgust*, elicited by rotting food or poisonous substances, *animal nature disgust*, elicited by poor hygiene and body functions, and *socio-moral disgust*, elicited by violations of moral rules. Socio-moral disgust is argued to be an evolutionary extension of primary disgust, but remains closely connected to feelings of physical disgust. Physical disgust (e.g., from a bad taste or smell) also elicits harsher judgments of moral transgressions (Eskine, Kacinik, & Prinz, 2011; Horberg,

Oveis, Keltner, & Cohen, 2009; Schnall, Haidt, Clore, & Jordan, 2008). On the other hand, feelings of physical *purity* seem to embody personal morality and integrity (Lee & Schwarz, 2010; Liljenquist, Zhong, & Galinsky, 2010). For instance, the mere act of washing one's hands after committing an immoral action appears to alleviate guilt and other negative feelings (Zhong & Liljenquist, 2006), literally washing away one's sins. Feelings of disgust and purity are experienced as more than a physical state of relative cleanliness, but also embody feelings of relative morality.

Similar associations may be observed in religious purity laws (Douglas, 2003; Haidt, 2006). Some religious rituals seem designed to restore literal purity by protecting the individual from potential pathogens, such as washing after contact with bodily fluids, human waste, or dead bodies. However, ritual washing is also often used to bestow symbolic purity, (e.g., baptism, mikvah, ablution), and commonly practiced in preparation for contact with sacred objects or activities (e.g., before prayer or entering a temple). Indeed, the strict separation between the sacred and the profane is an important feature in most religions, where the *sacred* refers to godlike/holy elements, (such as gods or religious artifacts), and the *profane* refers to the earthly and mundane elements (Durkheim, 1915). Reverence for the sacred requires maintaining its separation and sanctity, lest it be tainted by the profane and lose its sacred value.

Religion and spirituality are therefore closely bound up in concerns for purity. Religious doctrines not only prescribe cleaning behaviors that foster physical hygiene, but the act of religious devotion is itself represented as a motivation for spiritual purity. This connection between religion and purity is so deep-seated it frequently has been taken for granted. Religious purity rituals are often cited to support the case for the embodiment of morality (Graham & Haidt, 2010; Looy, 2004; Zhong & Liljenquist, 2006), and socio-moral disgust has been characterized as a response to violations of "divinity" (Rozin, Lowery, Imada, & Haidt, 1999). Some correlational evidence shows

that religiosity is associated with greater obsessiveness (Lewis, 1998), and distaste for "sick" humor (Saroglou & Anciaux, 2004), and other research has shown that exposure to rejected religious beliefs can elicit disgust (Ritter & Preston, 2011). But to date, no empirical work has directly investigated the conceptual or motivational association between religion and cleanliness. The present research aimed to do just that, in three studies.

The present research

Three studies examined the association between religion and cleaning. Study 1 examined whether activation of religious concepts would also increase accessibility of cleaning concepts, measured by the generation of cleaning-related words in a word-stem task. Study 2 examined whether religious primes could enhance the value of cleanliness, as measured by relative desirability of cleaning products (e.g. soap). Finally, Study 3 examined the association in the opposite direction, by observing the effect of cleaning primes on self-reported value of religious belief.

Study 1: godliness primes cleanliness

Study 1 tested the hypothesis that priming religious concepts would also increase accessibility of cleaning concepts. Participants were primed with neutral or religious concepts in a scrambled sentence paradigm, then engaged in a word-stem completion task in which some items could be solved with words related to cleanliness (e.g., "wash"). We expected that more cleaning-related words would be generated for participants primed with religious concepts, compared to a control condition.

Method

Participants

Eighty-eight participants (26 women, 62 men, $M_{age} = 31.9$ years) were recruited to participate in a brief study through Amazon's Mechanical Turk (M-Turk).

Stimuli and procedure

Participants were randomly assigned to a religion prime or control prime condition. All participants began with a scrambled sentence task, in which subjects had to create a meaningful sentence from five English words, by removing one word and rearranging the remaining four. In the religion prime condition, three of the six target scrambled sentences contained religious concepts, (e.g., "Faith is a virtue"). In the control condition, all sentences had neutral content. Following the scrambled sentence task, all participants were given a word-stem completion task, in which they converted six word fragments into meaningful words (Zhong & Liljenquist, 2006). Three of the word fragments (W _ _ H; SH _ _ ER; S _ _ P) could be completed as cleaning-related words (wash, shower, soap) or as unrelated words (e.g., wish, shaker, step).

Other measures

Participants reported their religious affiliation in an open-response item, and political ideology on a five-point Likert scale (endpoints: 1 = strongly Liberal, 5 = strongly Conservative). Next, participants reported their belief in God and religiosity on a six-item scale (e.g., "my personal religious beliefs are very important to me"). Responses on each item were measured on a 5-point scale, (endpoints: 1 = strongly disagree; 5 = strongly agree). Finally, participants also rated the frequency of attendance at religious services on a five-point scale (1 = never/rarely; 5 = more than once a week).

Results and discussion

The sum of cleaning-related word stems generated in each condition was computed and analyzed by one-way analysis of variance (ANOVA). As predicted, the effect of condition was significant, $F(1, 86) = 4.72$, $p < .05$. Participants in the religious prime condition generated more cleaning words ($M = .92$, $SD = .84$), relative to the control condition ($M = .53$, $SD = .84$), suggesting that religious primes increased activation of cleaning-related concepts. Follow-up analyses were conducted on measures of religiosity and political ideology. Reliability of the 6-item religiosity scale was strong, Cronbach's $\alpha = .95$. No effects of condition were observed on political ideology, nor religiosity ($Fs < 1$), and when entered as covariates in the ANOVA, neither ideology nor religiosity had a significant effect on completion of cleaning word-stems.

Study 2: godliness motivates cleanliness

Consistent with the hypothesis, Study 1 found that religion primes increased the accessibility of cleaning concepts. Study 2 extended these findings to examine whether religious cognition would activate cleanliness goals. Following a priming manipulation, participants rated the desirability of various consumer products, some of which were cleaning-related (e.g., soap). We predicted that religion primes would increase the desirability of cleaning-related items, but not control items, suggesting an increased motivation for physical cleanliness.

Method

Participants

One hundred forty-six pedestrians ($M_{age} = 27$ years) in the Chicago area volunteered to participate in a brief study. Three participants did not complete the dependent measures and were omitted from the analyses, leaving one hundred forty-three participants (72 women, 71 men).

Stimuli and procedure

As in Study 1, participants were randomly assigned to a religion prime or control prime condition. Participants were primed using a scrambled sentence paradigm (Shariff & Norenzayan, 2007), a common manipulation of religious cognition. Next, participants rated the desirability of twelve consumer products (adapted from Zhong & Liljenquist, 2006). Products were rated on separate 7-point scales (endpoints: 1 = extremely undesirable; 7 = extremely desirable). Six of the products were cleaning-related (soap, sanitizer, hand-wipes, stain remover, mouthwash, floss), and six were neutral products (batteries, post-it notes, pens, keychain, notebook, box of paperclips). After consumer ratings, participants reported demographic information on religious affiliation, nationality, and ethnicity. Belief in God and religiosity were measured on respective five-point scales (1 = not at all; 5 = very strongly), as was political ideology (1 = strongly Liberal; 5 = strongly Conservative).

Results and discussion

Mean ratings of product desirability were calculated for cleaning products and control products, respectively. As predicted, the one-way ANOVA on cleaning products was significant between conditions, $F(1, 141) = 5.83$, $p < .05$. Participants in the religion prime condition rated cleaning products as more desirable than those in the control condition (see means in Table 1), suggesting an increased motivation for cleanliness. However, there was no difference between conditions on ratings of the control products, $F(1, 141) = 2.48$, $p = .12$. A one-way ANOVA on condition found no effect on self-reported religiosity, political ideology, ($Fs < 1$), or belief in God, $F(1, 140) = 2.25$, $p = .14$. When entered as a covariate into the ANOVA, the effect of religiosity was significant on cleaning products, $\beta = .19$, $F(1, 140) = 8.41$, $p < .01$, but

Table 1
Mean generation of clean-related words by prime condition (Study 1), and desirability ratings of cleaning/control products by prime condition (Study 2).

	Control prime		Religion prime	
	Mean	(SD)	Mean	(SD)
Study 1: word stems				
Clean words	.53	(.84)	.92	(.84)
Study 2: product ratings				
Cleaning products	3.97	(.97)	4.37	(1.03)
Control products	3.66	(.80)	3.88	(.88)

the main effect of condition maintained significance, $F(1, 140) = 5.40$, $p < .05$, and there was no interaction between condition and religiosity ($F(1, 139) = 1.86$, ns). In other words, greater religiosity was associated with greater value of cleaning products overall, but did not moderate the main effect of religious priming.

Study 3: cleanliness primes godliness

Studies 1 and 2 demonstrated that religious concepts activate cleaning concepts and goals. In Study 3, we investigated the reciprocal effect, i.e., whether cleaning primes could enhance the subjective value of religion. Washing and personal cleanliness are integral to many religious rituals, to prepare for contact with the sacred and maintaining the purity of sacred objects. Here, participants were exposed to a clean/dirty embodiment manipulation in which they imagined themselves to be physically clean or dirty, then rated the personal importance of their religion and religious belief. In previous studies, this embodiment of cleanliness boosts personal righteousness and moral judgments of others (Zhong, Strejcek, & Sivanthan, 2010), suggesting that the feelings of personal cleanliness translated into a general sense of personal purity. To the extent that physical cleanliness is associated with the pursuit of religion and spirituality, we predict that participants who imagine themselves as clean should report enhanced value of their religious beliefs.

Method

Participants

97 participants (65 women, 32 men, $M_{age} = 31.9$ years) were recruited online through M-Turk.

Procedure

Participants were randomly assigned to either a clean or dirty prime condition, following the manipulation used by Zhong et al. (2010). Participants in the clean and dirty conditions visualized a statement in the first person, while typing the statement into a text box. In the clean condition, participants read: "*My hair feels clean and light. My breath is fresh. My clothes are pristine and like new. My fingernails are freshly clipped and groomed and my shoes are spotless. I feel so clean.*" In the dirty condition, they read: "*My hair feels oily and heavy. My breath stinks. I can see oil stains and dirt all over my clothes. My fingernails are encrusted with dirt and my shoes are covered in mud. I feel so dirty.*" Immediately following manipulation, participants were given a memory test in which they had to retype the passage to the best of their memory. Next, participants completed a 9-item scale measuring the value of religious beliefs, (e.g., "My personal religious beliefs are very important to me"). Responses on each item were measured on a 7-point Likert scale, (endpoints: 1 = not at all; 7 = very much). Participants also rated the frequency of attendance at religious services (1 = never/rarely; 5 = more than once a week).

Results and discussion

Three people failed to recall any part of the written passage in the memory test, and were omitted from analyses, leaving a sample of 94 participants. Reliability of the 9-item value of religious faith scale was strong, Cronbach's $\alpha = .98$. Mean scores on the religious value scale were computed and analyzed by one-way ANOVA on condition. As predicted, participants reported greater value of religious belief in the clean passage condition ($M = 4.17$; $SD = 2.19$) compared to dirty passage condition ($M = 3.26$; $SD = 1.92$, $F(1, 92) = 4.48$, $p < .05$). There were no differences in self-reported frequency of religious attendance, $F = 1.32$, ns.

Along with Studies 1 and 2, this finding suggests a mutual association between cleanliness and religion, as cleanliness primes increased self-reported value of religion. Although we did not include a control condition here, these findings are consistent with evidence that embodiment of personal cleanliness enhances feelings of personal righteousness (Zhong et al., 2010), and likewise we should expect that clean primes are responsible for these effects. When in a state of physical cleanliness, one adopts an overall sense of personal purity that can be translated into other judgments of the self as "pure" (e.g., morally, spiritually). Interestingly, these results may seem to be at odds with the "Macbeth effect" (Zhong & Liljenquist, 2006), where recalling past unethical actions motivates physical cleanliness, as a way of compensating for moral impurity. Unlike the Macbeth effect, the "dirtiness" prime did not elicit greater religious value to compensate for feelings of physical impurity. Perhaps the difference arises from the particular threat to self-esteem presented by feeling immoral, that elicits the compensatory goals for physical cleanliness observed in the Macbeth effect. In contrast, feeling physically unclean does not present the same threat that feeling immoral does, and so does not elicit the same need to compensate. Rather, feelings of physical purity directly embody feelings of spiritual purity. This is consistent with recent evidence that physical cleanliness embodies a sense of moral purity (e.g., Liljenquist et al., 2010). For instance, the same clean prime manipulation we use here has been demonstrated to increase feelings of moral superiority over others (Zhong et al., 2010), suggesting an association between feeling clean and feeling virtuous.

General discussion

Both cleanliness and religion are closely connected to personal purity. Whereas hygiene and washing represent a literal drive to maintain physical purity of the body, religion provides a moral–existential system that contributes to spiritual purity (Rozin et al., 1999). These three studies provide the first experimental demonstration of an association between religion and cleanliness. In Study 1, religious primes increased the accessibility of cleanliness concepts, as indicated by cleaning-related words generated in a word-stem task. Studies 2 and 3 provide evidence that this relationship could represent a motivational link, as each increased the relative *value* of the other (Forster, Liberman, & Friedman, 2007). In Study 2, religion primes increased the desirability of cleaning products (e.g. soap), but not control products (e.g. batteries). In a final study, the association operated in the reverse direction, with cleaning primes increasing the self-reported value of religious belief.

This research has several important implications and raises some questions that can be addressed in future research. One question concerns what role morality may play in the relationship between religion and cleanliness. We set aside the issue of morality here, in order to directly observe the relationship between religion and cleanliness without introducing moral cognition as an artifact. However, it is important to note that physical cleanliness can embody other forms of symbolic/psychological purity, aside from morality (see Lee & Schwarz, 2011). Though morality has important associations with both cleanliness and religion, religious rituals may be directed toward a *global* spiritual

purification, that includes moral purity, but also removes general contamination from all aspects of the profane (e.g., body, nature, objects) in order to move closer to the divine.

Another question concerns how these findings fit in with the growing literature on functions of religious belief, for example, to promote prosocial behavior (Johnson & Bering, 2006), fostering group cohesion (Graham & Haidt, 2010; Sosis & Alcorta, 2003), in providing explanation (Preston & Epley, 2009), and existential meaning (Inzlicht & Tullet, 2010). The present findings may suggest another important function of religion, to foster hygiene and cleanliness among its followers. However, such a hygiene/purity function is not mutually exclusive with other functions of religion, and indeed may facilitate some functions. For instance, purity rituals demonstrate commitment to the faith that can enhance group commitment (Sosis & Alcorta, 2003). Cleaning and grooming behavior have also been linked to social connection, and so the regimented hygiene reinforced in religious ritual could also promote prosocial behavior and large-scale cooperation within that group (Schnall, 2011). These and other questions regarding the effects of cleanliness in social groups may be addressed in future studies.

Conclusion

Religion and cleanliness have both been connected to the pursuit of purity, and many religious rituals center on physical cleanliness as a part of religious devotion. Likewise, the present research demonstrates a mutual association between cleaning and religion, the first experimental evidence that the two are conceptually and motivationally linked. In the words of Rev. John Wesley (1778): "*Cleanliness is, indeed, next to godliness.*"

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