

Disgust and the Moralization of Purity

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Guided by appraisal-based models of the influence of emotion upon judgment, we propose that disgust *moralizes*—that is, amplifies the moral significance of—protecting the purity of the body and soul. Three studies documented that state and trait disgust, but not other negative emotions, moralize the purity moral domain but not the moral domains of justice or harm/care. In Study 1, integral feelings of disgust, but not integral anger, predicted stronger moral condemnation of behaviors violating purity. In Study 2, experimentally induced disgust, compared with induced sadness, increased condemnation of behaviors violating purity and increased approval of behaviors upholding purity. In Study 3, trait disgust, but not trait anger or trait fear, predicted stronger condemnation of purity violations and greater approval of behaviors upholding purity. We found that, confirming the domain specificity of the disgust–purity association, disgust was unrelated to moral judgments about justice (Studies 1 and 2) or harm/care (Study 3). Finally, across studies, individuals of lower socioeconomic status (SES) were more likely than individuals of higher SES to moralize purity but not justice or harm/care.

Keywords: purity, disgust, moral judgment, emotion, socioeconomic status

Until recently, morality scholars often assumed that moral judgments—of an action as right or wrong, of a person’s character as good or evil—are founded upon higher order cognitive processes. The individual, in making a moral judgment, was presumed to consciously apply a priori principles, such as beliefs about equality or rights.

A different view of moral judgment has emerged over the past two decades (Damasio, 1994; Greene & Haidt, 2002; Haidt, 2001, 2007). This view highlights how emotions feed into *intuitions*, or fast, automatic hunches of right and wrong that figure prominently in moral judgments. Empirical evidence of precise emotion-to-moral-judgment associations is scarce, however, and some have argued that emotions may exert little, if any, direct influence upon moral judgment (Huebner, Dwyer, & Hauser, 2009).

The present research contributes new theory and evidence of the way emotions act upon moral judgment. Across three studies, we investigate the link between the emotion of disgust and purity, a moral domain broadly oriented toward preserving the sanctity of

the body and mind. Our three studies are guided by the claim that distinct emotions can amplify the importance of different moral domains during moral judgments, a process known as *moralization* (Rozin, 1997, 1999). The first study focuses on integral emotion and how disgust but not anger relates to amplified moral judgments of purity violations but not of justice violations. Our second study focuses on incidental emotion and how disgust, but not sadness, elicited by an earlier cause influences judgments of purity-related violations, as well as virtues, that are unrelated to the cause of the emotion. Our third study focuses on trait disgust by documenting how elevated levels of trait disgust, but not trait anger or fear, link to stronger judgments of purity-related violations and virtues but not violations or virtues related to harm or care giving. Taken together, these three studies show that disgust, but not other negative emotions, relates to and causes the moralization of purity but not the moralization of other domains.

Purity as One of the Moral Domains

Beginning with Kohlberg’s groundbreaking research, moral psychology initially conceptualized morality in terms of harm and justice, which involves values about individual rights, fairness, and personal freedom (e.g., Kohlberg, 1969). However, moral judgments can pertain to domains other than harm and justice. Many people also believe in, for example, being loyal to one’s group, respecting authority, and, critical to this research, preserving one’s purity and sanctity. These observations have led moral psychologists to propose that moral judgments are founded upon approximately five moral domains (called elsewhere “ethics” or “psychological foundations”; Haidt & Graham, 2007). Moral domains involve discrete sets of interrelated principles, rules, and values that impart a specific idea of what is good and virtuous, how

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people ought to behave, and what warrants punishment or sanctions. Moral domains relate to moral judgments: Actions are judged morally wrong if perceived to breach the rules of a moral domain but judged morally virtuous if perceived to uphold those rules.

An initial account of the moral domains emerged from work in India and the United States by Shweder, Much, Mahapatra, and Park (1997). This work discussed three moral domains: autonomy (which includes ideas about both justice and harm), divinity (i.e., purity), and community (e.g., group hierarchy, obligations). More recently, Haidt and colleagues (e.g., J. Graham, Haidt, & Nosek, 2009; Haidt & Graham, 2007; Haidt & Joseph, 2004) differentiated these three domains into five: harm/care, fairness/reciprocity (justice domain in this article), ingroup/loyalty, authority/respect, and purity/sanctity (purity domain in this article). These domains are considered basic, innate elements of moral judgment present in virtually all cultures but elaborated upon or downplayed to varying degrees for different individuals or cultures. Indeed, evidence mounts for the universality of these five domains but also for cultural variation in how prominently specific domains factor in people's moral judgments (e.g., Haidt, Koller, & Dias, 1993; Rozin, Lowery, Imada, & Haidt, 1999; Shweder et al., 1997; Vasquez, Keltner, Ebenbach, & Banaszynski, 2001). The present research includes three domains: purity, justice, and harm/care.

The domain of justice encompasses beliefs that people should respect each other's individual rights and liberties, reciprocate aid, and treat others fairly. These morals promote adaptive social behaviors, such as cooperation and reciprocity among nonkin and reduced cheating. Within this domain, actions are judged morally wrong if they are unfair or partial, create inequality, or otherwise restrict others' rights. Actions are particularly moral if they enhance rights, autonomy, freedom, or self-expression.

The harm/care domain pertains to convictions that people should not harm others and ought to help others, especially those in need. These beliefs may be linked to the evolution of mammalian care giving, which fundamentally functions to ensure the survival of offspring; but even among nonkin, people respond with care giving to signs of weakness, vulnerability, or need. Within the harm/care domain, actions that cause physical or mental harm are morally condemned, whereas actions to improve others' welfare or reduce suffering are particularly lauded.

Finally, the domain of purity involves values and principles directed at protecting the sanctity of the body and soul. These values originally related to the evolutionary challenges of avoiding the consumption of toxins, parasites, or bacteria. What began as concerns over purity and contamination of the physical form, however, subsequently extended to include concerns over the purity of the individual's character and social conduct, thus promoting beliefs in the moral value of a physically and mentally pure lifestyle. The purity domain encompasses the belief that people ought to be, in their bodies and minds, clean, chaste, self-restrained, and spiritually pure and should strive to live in a sacred, divine way (which does not necessarily require belief in deity). From a purity standpoint, it is virtuous to reject contaminating forces or hedonistic pleasure, to cleanse the soul, and to act in accordance with the "natural order." It is immoral to behave in a way that is self-polluting, filthy, profane, carnal, hedonistic, unnatural, animal-like, or ungodly (see, e.g., Haidt & Joseph, 2007; Rozin, Lowery, et al., 1999).

In the present research, we investigate how disgust relates to the moralization of the purity domain among adults in the United States. For these individuals, research shows, purity has some moral significance but less significance than the domains of justice and harm/care (Shweder et al., 1997). For example, U.S. participants in one study rated autonomy rules as highly important, universal and obligatory regardless of context, whereas purity rules were rated only moderately on these dimensions (Vasquez et al., 2001). The central goal of the present research is to investigate whether momentary and trait-related disgust augments the moral importance of the purity domain in U.S. adults, evidenced by stronger moral judgments regarding pure and impure behaviors.

An Appraisal-Tendency Approach to the Disgust–Purity Relationship

Recent treatments have conceptualized disgust as a moral emotion defined by appraisals of purity and contamination (Haidt, 2003; Rozin & Fallon, 1987). Rozin, Haidt, and colleagues have argued that our hominid predecessors possessed a distaste system to protect against the ingestion of toxins and contaminants (e.g., Rozin & Fallon, 1987; Rozin, Haidt, & McCauley, 1999). From distaste evolved disgust, an emotion that functions to guard the body and soul from contamination, impurity, and degradation.

Several categories of elicitors arouse disgust via appraisals of contamination, impurity, or potential degradation (Marzillier & Davey, 2004; Rozin, Haidt, & McCauley, 1999). *Core disgust* is revulsion elicited by noxious objects, such as soft body products or offensive odors. Characterized predominantly by unpleasant sensory experiences, core disgust elicitors bear a minimal explicit association with conceptions of morality. *Animal nature disgust* is triggered by activities that remind people of their animal origins, such as certain sexual or eating habits. *Interpersonal disgust* is elicited by the prospect of contact with strangers, evildoers, or diseased persons. Finally, *sociomoral disgust* is revulsion evoked by people who commit vulgar violations against others, such as child abuse or incest. However elicited, disgust motivates people to reject anything perceived as likely to contaminate the self physically or spiritually or to threaten their status as civilized human beings. In this way, disgust signals the "badness" of impurity and, by extension, the "goodness" of purity.

The *appraisal-tendency framework* offers clear predictions and methods for studying the disgust–purity association (Lerner & Keltner, 2000, 2001). The appraisal-tendency framework presupposes that each emotion is defined by a core appraisal and that an emotion influences judgments in domains that are thematically related to the eliciting appraisal. Fear, for example, is an emotion characterized by appraisals of low certainty and low control and has been found to amplify perceptions of risk, particularly for judgments with some degree of uncertainty and uncontrollability, such as having a heart attack or being unemployed (Lerner & Keltner, 2000, 2001). The appraisal-tendency framework has helped illuminate how different negative and positive emotions influence causal attribution (Keltner, Ellsworth, & Edwards, 1993), risk perception (Lerner & Keltner, 2001), assessments of losses and gains (Lerner, Small, & Loewenstein, 2004), judgments of effort (Tiedens & Linton, 2001), and judgments of self–other similarity (Oveis, Horberg, & Keltner, in press).

The appraisal-tendency framework readily extends to the study of emotion–morality associations. We propose that experiencing certain emotions heightens moral judgments of right and wrong, primarily for events within the moral domain related to the emotion-specific appraisals. In terms of the present research, disgust is associated with appraisals of impurity or contamination in the environment, which correspond to the rules and principles of the purity moral domain (Rozin, Haidt, & McCauley, 1999; Rozin, Lowery, et al., 1999). With heightened disgust, conceptions or intuitions of purity as moral and impurity as immoral should be strong and salient, and therefore, people feeling disgust will make stronger moral judgments about actions violating or upholding the purity domain (Horberg & Keltner, 2007; Keltner, Horberg, & Oveis, 2006; see also Rozin, 1999; Rozin, Markwith, & Stoess, 1997; Rozin & Singh, 1999, for discussions of moralization).

Critically, the appraisal-tendency approach points to clear requirements for documenting a distinct disgust–purity association. First, to the extent that specific emotions bolster specific moral domains, disgust should not relate to the moralization of judgments linked to other moral domains—in the present research, justice and harm/care. Second, other negative emotions—such as anger, sadness, and fear—should not moralize judgments of purity. Data that meet these requirements eliminate important alternative hypotheses to the model we test here. Most notably, the sense of badness is central to the experience of disgust and other negative emotions (Ortony, Clore, & Collins, 1988). A plausible alternative to our proposed model is that disgust, founded upon a general sense of badness, leads individuals to moralize many moral domains. Following similar reasoning, other negative emotions that share this core sense of badness, or things not going well, might just as readily moralize the purity domain. The most rigorous assessment of the disgust–purity association, therefore, requires the study of multiple moral domains (to ascertain that disgust relates to moralization of only the purity domain) and multiple emotions (to ascertain that only disgust relates to the moralization of the purity domain). With these criteria in mind, we now review existing disgust–purity research.

Previous Studies of the Disgust–Purity Association

Existing empirical studies offer several kinds of evidence relating disgust to the moral domain of purity. One category of studies has documented that, at the level of conceptual knowledge or emotional experience, people associate purity domain violations with the reaction of disgust. For example, Rozin, Lowery, et al. (1999) found that U.S. and Japanese individuals believe purity violations are likely to trigger disgust. Participants read about behaviors violating the domain of autonomy (e.g., “A person is seeing someone steal a purse from a blind person”), community (e.g., “A person is hearing an 8-year-old student speak to his/her teacher in the same way that he/she talks to her friends”), or purity (e.g., “A person is eating a piece of rotten meat”). They then indicated the emotional reaction a person would most likely feel in that situation. Participants reliably linked anger reactions to autonomy violations, contempt to community violations, and disgust to purity violations (see also Vasquez et al., 2001). It is important to note, however, that this research did not assess participants’ own experiences of disgust or moral judgments of the violations, so we

cannot ascertain from these data whether disgust feelings related to purity moralization.

In this same category of evidence, recent research examined participants’ reactions of disgust and anger in response to purity-violating taboo behaviors (Gutierrez & Giner-Sorolla, 2007). For example, participants in one study were exposed to harm-free taboo behaviors (e.g., eating a small cloned strip of one’s own muscle tissue), then reported their emotions and the extent to which they presumed harm to be involved in the violation. Several findings relate to our own claims. First, the taboo behaviors aroused greater disgust than anger. Second, higher presumptions of harm (a concern relevant to the harm/care and justice domains but not the purity domain) predicted higher anger but not higher disgust. Both of these findings are fitting with our appraisal-tendency framework of distinct emotion–morality associations. However, this research focused on emotions as outcomes of impurity and harm and did not test whether disgust or anger was associated with stronger judgments of right and wrong about the taboo behavior.

A second kind of evidence reveals that inducing disgust leads people to more harshly condemn moral violations in general—that is, from unspecified moral domains. Wheatley and Haidt (2005) hypnotized participants to feel disgust whenever they encountered an innocuous target word (e.g., *often*). Participants then encountered these targets in stories of moral violations, such as theft or incest, which led participants to report higher disgust and greater condemnation of the violations. In other research, individuals induced to feel core disgust through film clips or offensive odors were more critical of vignettes about moral violations than were individuals made to feel sad or no emotion (Schnall, Haidt, Clore, & Jordan, 2008). Important for the present research, this work examined whether disgusted participants were particularly critical of disgusting violations, compared to nondisgusting moral violations. It is noteworthy that in this comparison, disgust did not heighten criticism of disgusting violations significantly more than nondisgusting ones (although the means in Experiment 1 were nonsignificantly in that direction). However, it is not known whether participants in these studies viewed disgusting stories as centrally violating purity and not other domains. It is possible, for example, that participants also interpreted violations of justice or harm/care in the disgusting stories. Thus, research has not conclusively determined whether disgust influences purity but not non-purity moral issues, and only one study has compared disgust with another negative emotion (sadness), raising questions about the emotion specificity of the disgust–purity link.

Finally, a third line of evidence has documented an association between trait or state disgust and criticism against moral violations in general and, in some cases, apparent purity violations. In one line of studies, trait disgust sensitivity (DS), but not trait anger, predicted greater condemnation of criminal activity (Jones & Fitness, 2008). High DS participants in the role of mock jurors were more likely to find a suspect guilty of a crime for which the evidence was ambiguous, to impose harsher sentences, and to consider the suspect evil. They also tended toward inflated perceptions of criminal activity in their own communities. The researchers also examined whether the relationship of DS to these moral judgments was stronger for disgusting than nondisgusting crimes but found no significant difference. However, it is again unknown whether participants viewed disgusting and nondisgust-

ing violations as related to purity and nonpurity domains, respectively. Finally, consistent with our model, a recent study found that DS individuals reported more conservative attitudes, especially toward purity-relevant issues such as gay marriage (Inbar, Pizarro, & Bloom, 2009).

A study by Haidt and colleagues (1993) provided evidence that state disgust is associated with condemnation of purity violations. High- and low-socioeconomic (SES) individuals from Brazil and the United States read about purity violations such as having sex with a dead chicken. They then reported their affect and evaluations of the violations. Particularly for low-SES U.S. participants and for all Brazilians, there was high concordance between negative feelings (presumably disgust) and deeming the behaviors immoral.

Other research has found a positive correlation between disgust and moral criticism of deviant sexual behaviors (Haidt & Hersh, 2001). In interviews, college students were given descriptions of deviant sexual acts. Politically conservative participants were more critical of all sexual acts except incest than were liberal participants. They also more frequently invoked purity concerns to justify their moral evaluations. For both political groups, negative affect (presumably often disgust) in response to the sexual acts better predicted their condemnation of the acts than did political ideology, religion, or harm appraisals. Thus, disgust was related to greater disapproval of these purity-violating behaviors, even among these presumably high-SES U.S. participants.

Along these same lines, opposition to two purity-relevant behaviors—meat consumption and cigarette smoking—correlates positively with disgust toward those behaviors. In one study, participants who found meat disgusting were more likely to report avoiding meat for moral reasons than for health reasons (Rozin, 1997). In a second investigation, disgust toward cigarette smoking correlated with stronger beliefs that smoking is immoral and should be illegal (Rozin & Singh, 1999). Yet, because disgust was not manipulated in any of these studies, it is unknown whether disgust at meat consumption, smoking, sexually deviant acts, and the purity-violation vignettes caused harsher moral judgments or vice versa.

The evidence for disgust and the moralization of purity remains equivocal, and furthermore, the available evidence does not unambiguously document whether disgust moralizes the purity domain. No study has examined whether disgust moralizes purity issues but not issues from other moral domains, with the exception of Schnall et al. (2008), where the evidence was inconclusive. Nor has research shown that disgust, but not other negative emotions, moralizes purity. This kind of data is necessary to rule out alternative hypotheses that disgust moralizes other moral domains and that other negative emotions moralize purity judgments in the same way as disgust does. Additionally, no study has examined the link between disgust and judgments of behaviors that uphold a moral domain, what we call *moral virtues*. Evidence that disgust pertains to the moralization of purity virtues is critical because it would suggest that the disgust–purity association is not limited to valence-congruent judgments and would help refute the claim that negative valence drives the disgust–purity association.

The Present Research

We examined, on the basis of an appraisal-tendency framework, disgust and the moralization of purity across three types of

emotion–judgment relationships: the effects of integral emotion, incidental emotion, and individual differences in trait emotion. With *integral emotion* effects, the emotion elicited by a particular event influences judgments made about that same event. For example, anger toward criminal activity predicts harsher punishment for that crime, whereas sympathy triggered by the same criminal acts predicts more lenient punishment (S. Graham, Weiner, & Zucker, 1997). *Incidental emotion* effects describe when emotion elicited by one event shapes later judgments of issues unrelated to the emotion-eliciting event (e.g., Lerner & Keltner, 2001; Schwarz & Clore, 1983; Tiedens & Linton, 2001). Finally, there are *individual differences in trait emotion* effects, whereby trait levels of an emotion predict judgments. Highly fearful individuals, for example, perceive more risk in their environments (Lerner & Keltner, 2001).

Study 1 examined integral emotion effects by testing how disgust and anger elicited by violations from purity versus justice domains would differentially predict moral judgments about those violations. Study 2 examined incidental emotion effects by inducing disgust and sadness and then examining the different effects of those emotions upon moral judgments of purity and harm/care made during a subsequent, ostensibly unrelated task. Finally, Study 3 investigated individual differences in trait emotion effects by testing the relationship of trait disgust, anger, and fear to moral judgments of purity and justice. Across these studies, we tested the hypothesis that disgust will relate to stronger moral judgments of violations and virtues within the purity domain. We further predicted that, supporting the proposed specificity of these effects, disgust will not relate to stronger judgments of violations and virtues within the moral domains of justice or harm/care and that other negative emotions (anger, sadness, fear) will not be associated with moral judgments of purity violations and purity virtues.

In all studies, we controlled for three variables known to relate to disgust or moral judgments: SES, political conservatism, and gender (Haidt & Hersh, 2001; Haidt et al., 1993; Haidt, McCauley, & Rozin, 1994). This allowed us to ascertain whether disgust relates to the moralization of the purity domain independent of these identity-related sources of moral judgment.¹ Moreover, these data allowed us to systematically examine the relationship between SES and moral judgment. Scattered findings have suggested that individuals of higher SES backgrounds conceptualize morality in more narrow terms, prioritizing harm, and justice while relegating issues of purity to matters of convention or personal preference (e.g., Haidt et al., 1993). Individuals of lower SES backgrounds, by contrast, appear to incorporate purity concerns into their moral codes alongside harm and justice (Haidt et al., 1993; Keltner, Van Kleef, Chen, & Kraus, 2008). We expected SES, on the basis of these findings, to negatively predict purity judgments but to be unrelated to judgments within the justice or harm/care domains.

Study 1: Integral Disgust and Anger Uniquely Predict Purity and Justice Judgments, Respectively

Haidt and colleagues (1993) demonstrated that harmless but offensive stories about apparent purity violations elicited negative

¹ Patterns of results do not change when analyses are conducted without covariates.

affect and were usually morally condemned (within the U.S. sample, this was particularly true of lower SES individuals). In Study 1 we extended, on the basis of our moralization model, Haidt and colleagues' findings by assessing anger and gathering judgments about violations within the moral domain of justice, in addition to assessing disgust and judgments about purity violations. Anger—with its constituent moral appraisals of rights, fairness, and autonomy—should relate to matters of justice but not purity (Jones & Fitness, 2008; Rozin et al., 1997). Thus, we predicted that feelings of disgust, but not anger, would predict condemnation of purity violations, whereas feelings of anger, but not disgust, would predict condemnation of justice violations.

Method

Participants and Procedure

Ninety-six undergraduates (30 male, 60 female, 6 unreported; 51% East or South Asian, 22% European American, 5% Latino, and 22% other ethnicities) at a large U.S. public university completed a questionnaire packet as part of a class demonstration.

This packet contained two purity-violation vignettes and two justice-violation vignettes. After reading each vignette, participants rated the extent to which they condemned the violations and then the extent to which the violations had aroused feelings of disgust and anger. For all participants, the vignettes appeared in identical order, starting with the two purity vignettes. Participants provided demographic information at the end of the packet.

Materials

Purity and justice vignettes. The four vignettes are reproduced in Appendix A, in the order that all participants read them. The purity-violation vignettes were identical to two used by Haidt et al. (1993). The justice-violation vignettes were constructed to represent mild, intentional breaches of others' rights, a core concern of the justice domain (Rozin, Lowery, et al., 1999; Vasquez et al., 2001).

Moral judgment ratings. Similar to Haidt et al. (1993), participants rated "How wrong is the behavior in this scenario?" on a 7-point scale ranging from 0 (*Not at all wrong*) to 6 (*Very wrong*). Judgments of the two purity violations were averaged, as were the judgments of the two justice violations.

Emotion composites. Participants rated the extent to which the violations made them feel disgust- and anger-relevant emotions on 7-point scales ranging from 0 (*Not at all*) to 6 (*A great deal*). Three emotion terms—"grossed out," "disgusted" and "queasy, sick to my stomach"—were averaged to form a disgust score ($\alpha = .85$). Three emotion terms—"angry," "mad," and "furious"—were averaged to form an anger score ($\alpha = .89$).

Demographics. Participants reported their gender and ethnicity and then rated their political conservatism on a 5-point scale ranging from 1 (*Extremely liberal*) to 5 (*Extremely conservative*; $M = 2.46$, $SD = 0.88$). Finally, SES was measured by asking participants to select the social class of the family they grew up in from the following: lower class, lower middle class, middle class, upper middle class, or upper class (median = middle class). There were no significant relationships between any of the demographic variables.

Results

Descriptive Statistics

Overall, participants were moderately critical of the four violations. A paired-samples *t* test showed that the purity violations were judged to be more "wrong" ($M = 4.72$, $SD = 1.50$) than the justice violations were ($M = 4.12$, $SD = 1.27$), $t(95) = 3.74$, $p < .001$.

We first examined how gender, political conservatism, and SES related to moral judgment and emotion. In two separate regressions, we simultaneously regressed judgment of the purity violations, then judgment of the justice violations, onto gender (1 = Female, -1 = Male) and standardized scores of political conservatism and SES. Women were more critical than men were of the justice violations ($\beta = .27$), $t(87) = 3.42$, $p < .05$, but not the purity violations ($t < 1$). Political conservatism was associated with greater criticism of the purity violations ($\beta = .31$), $t(87) = 3.42$, $p < .01$, but not the justice violations ($t < 1$). The association between SES and moral judgment of the purity violations was negative as predicted, although it did not reach significance ($\beta = -.13$), $t(87) = 1.29$, $p = .20$. SES was unrelated to the justice violations ($ts < 1$). A set of similar regression analyses showed that SES did not predict disgust or anger toward the purity or justice violations ($ps > .20$).

Emotion and Moral Judgment

In examining links between emotions and moral judgments, we first tested whether participants reported greater disgust than anger toward the purity violations but greater anger than disgust toward justice violations (e.g., Rozin, Lowery, et al., 1999). Paired-samples *t* tests confirmed that participants reported significantly more disgust ($M = 3.85$, $SD = 1.48$) than anger ($M = 1.13$, $SD = 1.40$) in response to the purity violations, $t(95) = 18.18$, $p < .001$. Participants reported more anger ($M = 2.29$, $SD = 1.34$) than disgust ($M = 0.40$, $SD = 0.79$) in response to the justice violations, $t(95) = 16.48$, $p < .001$.

To test our moralization predictions, we separately regressed moral judgments of the purity and justice violations simultaneously onto the (standardized) predictor variables of disgust and anger toward the relevant vignette. Gender, political conservatism, and SES were also standardized and entered into the regression to control for their effects on variables. As predicted, disgust toward the purity violations predicted harsher moral judgments of purity violations ($\beta = .52$), $t(87) = 4.84$, $p < .001$. Anger toward purity violations, by contrast, did not ($\beta = -.02$), $t(87) = 0.14$, *ns*. Also as expected, anger felt toward the justice violations predicted harsher moral judgment of the justice violations ($\beta = .42$), $t(87) = 3.42$, $p < .01$, but disgust toward the justice violations did not ($\beta = -.06$), $t(87) = 0.48$, *ns*.

Discussion

In Study 1, integral disgust but not integral anger predicted harsher moral judgments of the purity violations, whereas integral anger but not integral disgust predicted harsher judgments of the justice violations. These are among the first findings to document that disgust predicts criticism of purity violations but not violations in other moral domains and that disgust—but not another negative

emotion, anger—is associated with the moralization of purity. As anticipated by our appraisal-tendency framework, anger related to harsher criticism of justice violations but not purity violations. Finally, there was a suggestive, though nonsignificant, trend for people of lower SES backgrounds to more harshly judge purity violations but not justice violations. The lack of statistical significance for this predicted pattern warrants firmer evidence, however. We return to explore this relationship in the other studies. Lower SES did not predict disgust or anger toward the violations, suggesting that there were no class-based differences in the emotional impact of moral violations.

Study 2: Incidental Disgust and Sadness and the Moralization of Purity

Study 2 extends the results of Study 1 in several ways. To ascertain whether disgust has a causal influence upon purity moralization, participants were induced to feel either disgust or sadness. Sadness and disgust share a negative valence, but sadness is not associated with appraisals of contamination or impurity. Rather, sadness involves appraisals of irrevocable loss (Lazarus, 1991). Additionally, we again sought to document specificity effects, this time in comparison with the harm/care domain. Although harm and care are moral concerns across cultures (Haidt, 2007; Miller, Bersoff, & Harwood, 1990; Turiel, Killen, & Helwig, 1987), they do not correspond to appraisals of disgust.

Finally, we examined whether disgust moralizes virtuous behaviors within the purity domain in addition to moral violations. Perceptions of virtue are understudied in morality research, and research has focused more on reactions to wrongdoing than on reactions to good deeds. Within the growing literature on disgust and moral judgment, little is known about the relationship of disgust to judgments of moral goodness. Our appraisal-based framework suggests that the negative emotion of disgust will even impact positive moral judgments, specifically when judgment stimuli pertain to the purity domain.

Study 2 adopted a paradigm from Schnall et al. (2008) in which participants were experimentally induced to feel disgust or sadness by watching brief emotionally evocative film clips just prior to making moral judgments about disgusting and nondisgusting moral violations. We induced disgust and sadness in the same way but modified the outcome measures to examine judgments of moral violations and virtues from the purity and harm/care domains. We predicted that participants induced to feel disgust would condemn purity violations and approve of purity virtues more than would participants induced to feel sadness (conceptually replicating the central result of Study 1). We did not expect disgust to influence harm/care violations and virtues judgments, since the appraisals of disgust are unrelated to the harm/care moral domain.

Method

Participants and Procedure

One hundred twenty-two undergraduates (91 female, 31 male; 51% East or South Asian, 25% European American, 6% Latino, and 18% other ethnicities) at a large U.S. public university completed the experiment alone in a small laboratory room or in a

cubicle within a larger room in exchange for psychology course credit.

Upon arriving at the study, participants were told that the experiment was concerned with personality and how people process visual and auditory information. Participants were randomly assigned to view either a disgust-inducing film clip (disgust condition) or a sadness-inducing film clip (sadness condition). They were not forewarned about the emotional nature of the clip and were asked to simply watch the clip, which would last approximately three minutes. Before starting the clip and leaving the room, the experimenter placed a questionnaire packet face-down on the table and instructed the participant to turn over and complete the packet once the clip ended. The packet was described as containing personality scales and questions about participants' experience when viewing the clip. It contained the following, in this order: (a) the moral judgment task, (b) an assessment of emotional responses during the clip, and (c) demographic items. We concealed the purpose of the study by including several filler scales throughout the packet, and the packet cover sheet stated that the various scales had been shuffled to appear in a random order. After completing the questionnaire packet, participants were probed for awareness of the hypotheses, thanked, and excused. No participants discerned the research hypotheses.

Nine participants (6 disgust, 3 sadness) were dropped from analyses due to procedural errors (e.g., interruptions during the film clip). The remaining sample contained 59 participants in the disgust condition and 63 participants in the sadness condition.

Materials

Emotion induction. In the disgust condition, participants watched a scene from the 1996 film *Trainspotting*, in which the lead character plunges his hand into a toilet covered in feces. In the sadness condition, participants watched a scene from the 1979 film *The Champ*, in which a young boy witnesses his father's death. Neither clip contained references to morality or immorality. Participants watched the clips on Dell computers.

Moral judgment task. Drawing upon research regarding people's descriptions of rules within the purity domain (Vasquez et al., 2001), we created a series of purity-relevant behaviors (see Appendix B). In this previous research, participants were given a general definition of *purity* and were asked to generate specific rules of conduct related to purity. Participants' rules tended to describe bodily health and cleanliness, meticulousness of one's personal possessions and surroundings, sexual purity, avoidance of intoxicants, and purity of the mind. We modeled four mild purity-violation items and four mild purity virtue items after these results. In addition, three harm/care violations were constructed to depict mild levels of harm, and three harm/care virtues were constructed to depict mild levels of caring or helping behavior.²

Data from a separate sample of participants ($N = 27$; 14 male, 13 female) confirmed that purity items fitted the purity domain and

² For two reasons, we aimed to develop somewhat mild, rather than strong, violation and virtue behavioral items for Study 2 and Study 3. First, mild items are less likely to unintentionally elicit emotions. Second, mild items are likely to yield greater variability in moral judgment ratings, which is necessary to detect a relationship between emotion and moral judgment.

that the harm/care items fitted the harm/care domain. These participants read brief definitions of *purity*, *impurity*, *caring*, and *harm*. On 7-point scales ranging from 1 (*Not at all*) to 7 (*Highly*), they then rated how well each violation fit the *impurity* and *harm* definitions and how well each virtue fit the *purity* and *caring* domains. All violations were perceived as fitting the intended domain significantly better than the other domain (one effect was marginally significant in the expected direction). Six out of seven virtues were perceived as significantly better fitting the intended domain (one effect showed no significant difference).

The moral judgment task contained all 14 violations and virtues. In this task, participants in the main study made two ratings of each moral violation. First they rated “how bad (in the sense of being immoral or wrong)” they perceived the behavior to be on a 7-point scale ranging from 1 (*Not at all bad*) to 7 (*Extremely bad*). Next they rated the extent to which they would punish the behavior on a 7-point scale ranging from 1 (*Do not punish*) to 7 (*Punish severely*). Ratings of the purity violations were averaged ($\alpha = .79$), as were ratings of the harm/care violations ($\alpha = .81$).

For each moral virtue, participants first rated “how good (in the sense of being moral or righteous)” they perceived the behavior to be on a 7-point scale ranging from 1 (*Not at all good*) to 7 (*Extremely good*) and then rated the extent to which they would reward the behavior on a 7-point scale ranging from 1 (*Do not reward*) to 7 (*Reward highly*). Ratings of the purity virtues were averaged ($\alpha = .82$), as were ratings of the harm/care virtues ($\alpha = .75$).

Emotional responses during film clips. Following the moral judgment task, participants rated the extent to which they experienced three disgust-relevant emotion terms (“grossed out,” “disgusted,” “queasy/sick to your stomach”; $\alpha = .95$) and three sadness-relevant emotion terms (“sadness,” “pain,” “soft-hearted”; $\alpha = .82$) on 7-point scales ranging from 1 (*Not at all*) to 7 (*Very strongly*) while they watched the clips.

Three additional items ascertained whether participants’ emotional responses to the film clips differed on either valence or intensity, which could confound analyses of emotion condition differences in moral judgment. Participants rated how positive their reaction was on a 7-point scale ranging from 1 (*Not at all positive*) to 7 (*Very positive*) and how negative their reaction was on a 7-point scale ranging from 1 (*Not at all negative*) to 7 (*Very negative*). Negative reaction was subtracted from the positive reaction to form a valence score. Participants also rated the intensity of their emotional reaction on a 7-point scale ranging from 1 (*Not at all intense*) to 7 (*Very intense*).

Demographics. Gender, political conservatism, and SES were measured with the same items as in Study 1. Mean political conservatism was 2.53 on a 5-point scale, and the median of the SES item was “middle class.” There were no significant relationships between any of the demographics.

Results

Preliminary Analyses

As in Study 1, we examined the relationship between gender, political conservatism, SES, and moral judgment. To this end, the purity judgment and then harm/care judgment scores were separately regressed onto gender (1 = Female, -1 = Male) and the

standardized variables of political conservatism and SES. Gender did not relate to any of the violations or virtues ($ts < 1$).

Political conservatism related positively to the moralization of purity violations ($\beta = .18$), $t(120) = 2.02$, $p < .05$, and was unrelated to all other judgments ($ts < 1$). Lower SES individuals made stronger moral judgments of purity violations ($\beta = -.18$), $t(120) = 1.98$, $p = .05$, although this same trend was not significant for purity virtues ($\beta = -.14$), $t(120) = 1.51$, $p = .14$. As expected, SES was unrelated to judgments of harm/care violations and virtues ($ps > .25$). A similar set of regressions determined that SES did not significantly predict disgust or sadness during the film clip ($ps > .05$).

Manipulation Check: Emotional Responses During the Film Clips

We then analyzed whether the film clips elicited their intended emotions. Disgust participants felt significantly more disgust ($M = 5.55$, $SD = 1.35$) than did sadness participants ($M = 1.57$, $SD = 0.80$), $F(1, 120) = 397.70$, $p < .001$, who, as expected, reported more sadness ($M = 4.57$, $SD = 1.27$) than did disgust participants ($M = 1.95$, $SD = 1.31$), $F(1, 120) = 138.86$, $p < .001$. There were no condition differences in reported intensity of emotional response ($p > .15$); however, disgust participants had a lower valence score ($M = -2.56$, $SD = 2.54$) than did sadness participants ($M = -3.93$, $SD = 1.81$), $F(1, 120) = 11.72$, $p < .01$. Therefore, we controlled for the valence score in all subsequent tests of emotion and moral judgment.

Effects of Induced Disgust and Sadness on Moral Judgments

Our central hypothesis was that disgust participants would make stronger moral judgments about the purity behaviors than would sadness participants, whereas no differences would emerge for the harm/care behaviors. Figure 1 displays the mean purity and harm/care violation and virtue judgments by condition. To examine moral judgments across conditions, we first conducted an omnibus 2 (condition: disgust vs. sadness) \times 2 (domain: purity vs. harm/care) \times 2 (type: violation vs. virtue) analysis of covariance (ANCOVA), controlling for gender, political conservatism, SES, and valence. There was a significant main effect of condition: Consistent with prior research (Schnall et al., 2008; Wheatley & Haidt, 2005), disgust participants made stronger judgments overall than did sadness participants, $F(1, 115) = 4.51$, $p < .01$. A significant main effect of domain showed that participants across conditions made stronger moral judgments about the harm/care behaviors than the purity behaviors, $F(1, 115) = 7.41$, $p < .01$. This domain effect is consistent with claims that harm is a moral universal (e.g., Vasquez et al., 2001). As well, the main effect of judgment type established that participants praised moral virtues more than they criticized moral violations, $F(1, 115) = 19.60$, $p < .001$. Most importantly, the Condition \times Domain interaction was significant, $F(1, 115) = 7.43$, $p < .01$, $\eta_p^2 = .06$, and as expected, the nonsignificant Condition \times Domain \times Type interaction ($F < 1$) supports that the Condition \times Domain effect did not differ for violations versus virtues. To break down the Condition \times Domain interaction and focus on our hypotheses, we tested the effect of emotion condition separately on purity violations, purity virtues,

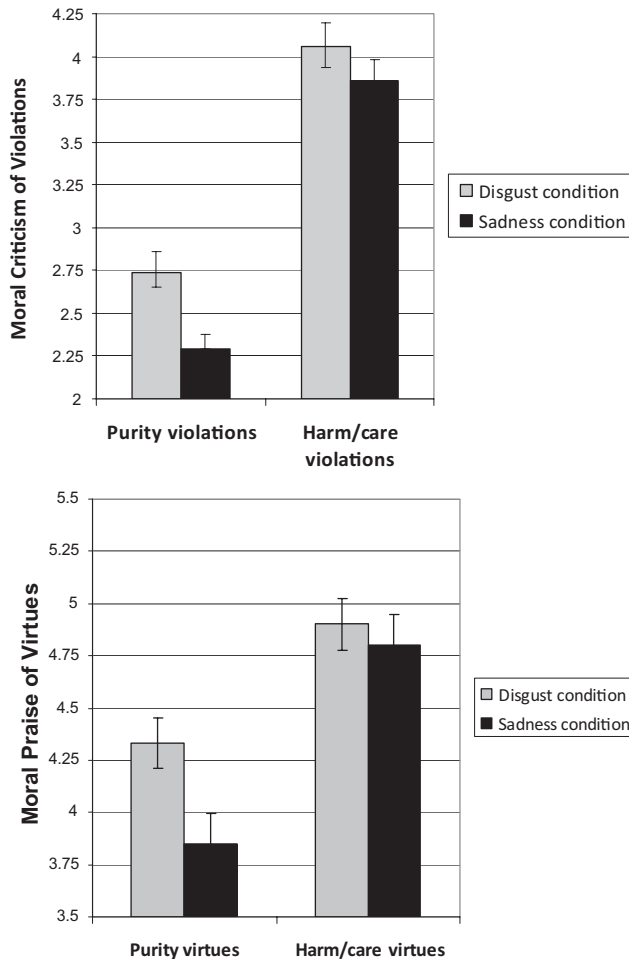


Figure 1. Emotion condition differences in violation and virtue judgments for the purity and harm/care domains (see Study 2).

harm/care violations, and harm/care virtues. To this end, we performed four separate one-way ANCOVAs, controlling again for gender, political conservatism, SES, and global valence. Disgust participants made significantly stronger judgments than did sadness participants for purity violations, $F(1, 115) = 8.64, p < .01, \eta_p = .07$, and for purity virtues, $F(1, 115) = 5.87, p < .05, \eta_p = .05$. As expected, there were no condition differences for either harm/care violations or harm/care virtues ($ps > .25$).

Discussion

The results of Study 2 offer causal evidence that disgust moralizes the purity domain. Overall, disgust-induced participants moralized purity behaviors more than did sadness-induced participants. Importantly, there was support for emotion and domain specificity: Disgust did not influence judgments about the harm/care domain, and sadness did not moralize the purity domain. Moreover, the data establish that disgust moralizes judgments of purity virtues in addition to purity violations, suggesting that disgust's effect upon purity judgments is not simply due to valence (see Lerner & Keltner, 2001).

With respect to SES, lower SES predicted less permissiveness toward impure actions but not harmful actions. SES did not predict stronger emotional reactions, in this case, of disgust and sadness to the respective film clips. Replicating past research, these findings indicate that individuals of lower SES backgrounds attach greater moral significance to violating values of purity (Haidt et al., 1993) and not, we find, because of differences in emotion.

In our final study, we extend these findings to a third type of emotion–judgment relationship: individual differences in trait emotion. In this study, we simultaneously compare trait disgust with two other trait emotions—anger and fear—and we return to the comparison moral domain of justice.

Study 3: Individual Differences in Emotional Traits and Moralization

Individual differences in emotion shape judgments in systematic ways, typically reflecting the same relationship to judgments as to experimentally induced emotion (Lerner & Keltner, 2001; Malatesta, 1990). Study 3 investigated whether trait disgust is uniquely associated with moralization of purity behaviors. For this study, we operationalized moral judgment in terms of a classic marker of morality: punishment and reward (Turiel et al., 1987). Specifically, individuals with high trait levels of disgust, but not trait anger or fear, were expected to punish purity violations more harshly and reward purity virtues more strongly. Trait disgust was not expected to relate to punishment of justice violations or reward of justice virtues.

Method

Participants and Procedure

Eighty-eight undergraduates (26 male, 62 female)³ at a large U.S. public university participated for psychology course credit. Small groups of participants completed questionnaires in a large classroom. The questionnaire packet contained the moral judgment task, followed by assessments of trait disgust, trait anger, and trait fear and a section on demographics. To disguise the purpose of the research, we embedded filler scales among the tasks.

Materials

Moral judgment task. Moral judgment stimuli appear in Appendix B. The purity items were identical to those used in Study 2. The justice items were derived from previous research on the content of the justice domain (Vasquez et al., 2001). In that research, participants were provided with a general definition of autonomy (akin to the justice domain), from which they generated specific domain-relevant rules of conduct. These rules concerned obstructing others' goals and upholding principles of equality, freedom of expression, fairness of treatment, and respect. We modeled four violations and three virtues on these results.

Data from a separate sample of participants ($N = 30$; 11 male, 19 female) generally confirmed that purity items fitted the purity domain and that justice items fitted the justice domain. Participants read brief definitions of *purity*, *impurity*, *justice*, and *injustice*. On

³ Ethnicity data were not collected in Study 3.

7-point scales ranging from 1 (*Not at all*) to 7 (*Highly*), they then rated how well each violation fit impurity and injustice and how well each virtue fit purity and justice. Seven out of eight violations were perceived as significantly better fitting the intended domain than the other domain. Six out of seven virtues were perceived as significantly better fitting the intended domain.

The moral judgment task included all 15 purity and justice items. In this task, participants rated the extent to which they would punish each of the moral violations on a 7-point scale ranging from 1 (*Do not punish*) to 7 (*Punish severely*) and the extent to which they would reward each of the moral virtues on a 7-point scale ranging from 1 (*Do not reward*) to 7 (*Reward highly*). Related items were averaged to form the moral judgment composites. Cronbach's alpha was .53 for purity violations, .66 for purity virtues, .69 for justice violations, and .65 for justice virtues.

Assessments of trait disgust, anger, and fear. Trait emotion assessments of anger and fear were used in previous related research (Lerner & Keltner, 2001), and neither assessment contains explicit references to moral concerns. The 10-item Trait Anger Scale (Spielberger, 1996) measures how often participants display anger on a 4-point scale ranging from 1 (*Almost never*) to 4 (*Almost always*). Cronbach's alpha for this scale was .87. As was done in previous research (Lerner & Keltner, 2001), we assessed trait fear with Spielberger's (1983) 20-item Trait Anxiety Scale. It assesses how frequently participants experience fear and anxiety on a 4-point scale ranging from 1 (*Almost never*) to 4 (*Almost always*). Cronbach's alpha for this scale was .93. For trait disgust, we sought a scale that would also measure how frequently participants experience disgust, without mention of morality or purity. We constructed a brief scale by adapting emotion frequency assessments from prior emotion research (e.g., Roesch, 1998). Participants were instructed to rate how frequently in their daily life they feel "grossed out," "disgusted," and "repulsed" on a 5-point scale ranging from 1 (*Very infrequently*) to 5 (*Very frequently*; $\alpha = .84$). Trait disgust correlated positively with trait anger, $r(88) = .45$, $p < .001$, and trait fear, $r(88) = .34$, $p < .01$. Trait anger correlated positively with trait fear, $r(88) = .52$, $p < .001$.

Demographics. Participants reported their gender and rated their political conservatism on the same 5-point scale as in the first two studies ($M = 2.29$, $SD = 0.72$) and answered three questions pertaining to their SES. The first two items inquired about the highest level of education attained by the participants' mother (mode = "College degree or higher") and father (mode = "College degree or higher"), and the third asked participants to estimate their family's annual household income by selecting the appropriate bracket from a list (median = "\$75,000 – \$100,000"). These three SES items were standardized and averaged to form an SES index (Kraus & Keltner, 2009). Cronbach's alpha for the SES items was .75. There was one significant relationship between demographic items: Men reported higher levels of political conservatism ($M = 2.53$) than did women ($M = 2.19$), $t(85) = 1.08$, $p < .05$.

Results

Preliminary Analyses

On average, participants reported moderately low trait levels of disgust ($M = 1.73$, $SD = 0.69$), anger ($M = 1.92$, $SD = 0.56$), and

fear ($M = 2.08$, $SD = 0.54$). Moral judgments of the justice violations ($M = 2.53$, $SD = 0.96$) were significantly stronger than were judgments of the purity violations ($M = 2.05$, $SD = 0.87$), $t(1, 86) = 5.44$, $p < .001$. Judgments of the justice virtues ($M = 3.62$, $SD = 1.55$) were significantly stronger than were judgments of the purity virtues ($M = 2.97$, $SD = 1.37$), $t(1, 86) = 5.33$, $p < .001$. These findings are consistent with claims that justice is more central than purity to morality in the United States (Shweder et al., 1997).

To examine the relationships between moral judgment and the demographic variables, we regressed the four moral judgment scores onto gender (1 = Female, -1 = Male), political conservatism, and SES. The sole gender difference to emerge was that women judged justice virtues more positively than did men ($\beta = .35$), $t(84) = 3.28$, $p < .01$. Political conservatism did not predict any judgments in this study. As in Study 2, lower SES participants judged purity violations more negatively ($\beta = -.22$), $t(84) = 2.05$, $p < .05$, but that same tendency was not statistically significant for purity virtues ($\beta = -.08$, $t < 1$). As expected, SES was unrelated to judgments of justice violations or virtues ($ps > .25$). Finally, a similar set of regressions determined that SES did not relate to trait disgust, trait anger, or trait fear (all $ts < 1$).

Relationship of Trait Emotions to Moral Judgment

To test our central hypotheses, we ran several simultaneous regressions with trait anger, trait fear, and trait disgust entered as predictors of the moral judgment composites. We also entered SES, political conservatism, and gender to control for their effects. Predictors and covariates were standardized.

First we examined judgments of the purity domain and found that trait disgust was significantly associated with greater punishment of purity violations ($\beta = .40$), $t(78) = 3.49$, $p < .01$, and greater reward of purity virtues ($\beta = .23$), $t(78) = 1.87$, $p = .06$, whereas trait anger and trait fear were not ($ts < 1$). Next we examined the justice domain and found no significant associations between trait emotion and justice violations or virtues (all $ps > .10$).

Discussion

Study 3, involving individual differences in trait emotion, once again illustrated the distinct association between disgust and amplified moral judgments of purity. In a conceptual replication of Study 2 results, individuals higher in trait disgust reported a stronger inclination to punish impure behaviors and to reward pure behaviors.

In support of our domain specificity prediction, trait disgust did not relate to judgments in the justice domain, and in support of our emotion specificity prediction, trait anger and trait fear were not associated with purity judgments. That fear did not relate to stronger judgments of purity suggests that heightened purity judgments were not simply due to avoidance action tendencies, which characterize both fear and disgust (Davidson, Ekman, Saron, Senulis, & Friesen, 1990). That the moral emotion of anger did not predict stronger judgments of purity suggests that purity moralization is not a correlate of all moral emotions.

One might have expected a positive association between anger and moral judgments of justice behaviors, replicating the relation-

ship observed in Study 1. We suggest the lack of association may be due to the justice items' already being highly moralized, as is common in the United States (Shweder et al., 1997; Vasquez et al., 2001). Indeed, mean levels of justice moral judgments in this study were significantly higher than those of purity. People's moral judgments of justice in this study may have been less susceptible to differences in trait emotion for this reason.

Finally, we found once again that lower SES predicted stronger judgments of purity violations, although the effect for purity virtues was not significant. As expected, lower SES did not predict judgments in the justice domain. In a conceptual replication of results from Studies 1 and 2, SES was not related to trait disgust, anger, or fear.

Meta-Analysis of the SES Effects Across Studies

Across studies, we found that lower SES, with a few exceptions, tended to relate to stronger purity, but not nonpurity, judgments. To explore the reliability of these effects, we conducted a meta-analysis across the studies on moral judgments. Purity violations in all three studies, and purity virtues in Studies 1 and 2, were converted to *z* scores. Justice and harm/care were jointly treated as the nonpurity comparison domain, and judgments were likewise converted to *z* scores. These scores were separately regressed onto standardized SES, with standardized political conservatism and gender entered simultaneously as controls. Analyses revealed that lower SES individuals made significantly more negative judgments about purity violations ($\beta = -.17$, $t(290) = 3.07$, $p < .01$), and marginally more positive judgments of purity virtues ($\beta = -.12$, $t(202) = 0.83$, $p = .08$). By contrast, SES did not relate to nonpurity violations or virtues ($t_s < 1$). Figure 2 displays these patterns.

Results of each study had indicated that SES was unrelated to disgust. To perform the meta-analysis of this effect, we regressed SES onto standardized disgust scores (integral, incidental, or trait) while simultaneously controlling for gender and political conservatism. Once again, results of the meta-analysis revealed no relationship between SES and disgust ($\beta = .05$, $t < .01$), suggesting that disgust cannot explain the association of SES to purity moralization.

General Discussion

Recent theorizing about moral judgment posits purity as an evolved psychological foundation guiding judgments of right and wrong (Haidt, 2007; Haidt & Joseph, 2004), with disgust as its emotional accompaniment. Previous studies have offered three types of evidence concerning this disgust–purity association: People associate disgust reactions with purity violations; disgust feelings amplify criticism of violations from nonspecified moral domains; and disgust correlates with negative attitudes toward putative purity violations, such as smoking or meat eating. Almost no research has systemically examined the effects of disgust on other moral domains or the effects of other emotions on purity—two central aims of the present research.

The three studies reported here yield strong evidence of the disgust–purity association and for the first time show that disgust is uniquely associated with moralization of the purity domain. Three studies, relying upon different methodologies, found that the

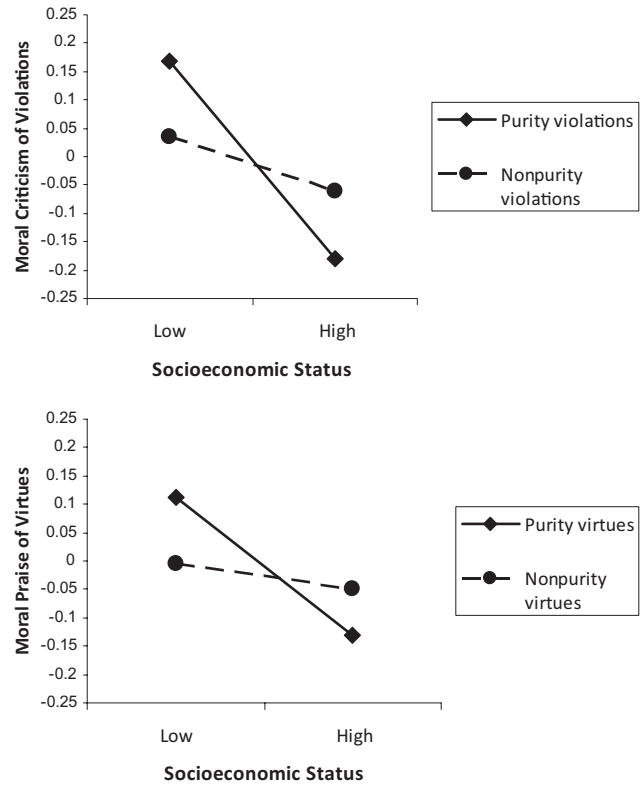


Figure 2. Relationship of socioeconomic status to moral judgments of purity and nonpurity (see Studies 1–3).

experience of disgust related to, or caused, higher moral evaluations of purity behaviors. In Study 1—a study of the influence of integral disgust upon moral judgment—feeling disgusted, but not angered, by purity violations predicted greater condemnation of those acts. As expected from our appraisal-tendency approach, being angered, but not disgusted, by justice violations related to condemnation of those unjust acts. In Study 2—a study of incidental disgust—people induced to feel disgust from viewing an individual plunge his hand into a feces-covered toilet were subsequently more likely to moralize violations and virtues related to purity, but not harm/care, than were people induced to feel sad. Finally, in Study 3—a study of trait emotion—people who frequently experience disgust evaluated purity, but not justice, violations as especially worthy of punishment; they also evaluated purity, but not justice, virtues as especially worthy of reward.

Several findings across all three studies highlight the specificity of the disgust–purity association. This is important, given that past research on disgust and moral judgment has either not tested or not found this specificity (e.g., Schnall et al., 2008; Wheatley & Haidt, 2005). Disgust was associated with judgments of pure and impure behaviors but not with judgments of just or unjust (Studies 1 and 3) or harmful or caregiving (Study 2) behaviors. Disgust is therefore uniquely associated with the moralization of purity concerns and not of concerns in the realms of justice or harm/care. Just as important is the pattern of results showing that purity judgments were related to only disgust. Anger (Studies 1 and 3), sadness (Study 2), and fear (Study 3) were all unrelated to moral judgments

of purity. We cast this pattern of results within an appraisal-tendency framework, which presupposes that perceptions of impurity and contamination are core appraisals underlying the momentary and dispositional experience of disgust. During disgust, this core appraisal heightens the importance of purity values when judging morally relevant issues and actions, as evidenced by the condemning judgments of purity violations and praiseworthy judgments of purity virtues.

The data from the present studies disconfirm one alternative explanation: that the strong negative valence underlying disgust accounts for our purity moralization findings. Such an account would hold that people feeling disgust simply feel bad about anything impure—or more generally, anything immoral—and reflect this negativity in harsher moral judgments. This valence-based explanation, however, cannot explain the findings from Studies 2 and 3, in which disgust heightened moral praise of purity virtues. These virtue results imply that disgust relates to the moralization of the purity domain not through valence processes, which would have yielded effects on solely purity violations, but rather through a heightened belief in the importance of upholding moral values of purity. These are among the first data to portray the role of disgust in perceptions of moral goodness, and in addition to being an interesting pursuit in their own right, they bolster our broader thesis of purity moralization. Moreover, a valence account would likewise have led to the predictions that disgust heightens condemnation of transgressions in other moral domains and that other negative emotions moralize impure acts—two predictions that yielded no support in the present investigation.

Beyond demonstrating that disgust relates to the moralization of purity, this research advances a theory on how emotions, more generally, figure in moral judgments via appraisal-tendency processes. We expect other emotion–judgment relationships to show similar effects, where the appraisals of an emotion correspond to the content of a moral domain. Study 1 provided supporting evidence of this by showing that anger uniquely predicted harsher moral judgments of injustice. We anticipate that future research will find unique links between, for example, anger and justice, contempt and respect for the social hierarchy (Rozin, Lowery, et al., 1999), and compassion and harm toward vulnerable others (Oveis et al., in press).

The present findings are limited by two design features of our studies. The first limitation pertains to the measurement of disgust. It is possible that our measures or induction of disgust could have activated associated moral purity concepts. This explicit conceptual knowledge, instead of emotion-based appraisal processes, could have contributed to the moralization of purity violations and virtues. However, we took great care not to prime explicit moral concepts during the induction and measurement of disgust. Integral (Study 1) and trait (Study 3) disgust were measured with reports of “grossed out” or “disgusted”; these terms bear minimal explicit association to the purity moral domain. The disgust induction of Study 2 involved visually exposing participants to feces, which is an elicitor of core, rather than interpersonal, animal nature or sociomoral disgust. These decisions helped rule out the possibility that conceptual knowledge about this domain might have been responsible for the observed moralization effects. Nevertheless, future studies could more definitively rule out this concern by eliciting disgust through strictly nonexplicit conceptual means—

for example, through pharmacological intervention—or by priming disgust unconsciously (Ruys & Stapel, 2008).

The second limitation of the present studies concerns the kinds of moral judgments we chose to study. The moral domain of purity is broad, and we found that trait and state disgust related to the moralization of diverse facets of the purity domain, ranging from sexual promiscuity to the mental purity associated with meditation. Most of the events we studied, however, were precise examples of the purity domain and were mild to moderate in their severity (with perhaps the exception of the more severe purity actions judged in Study 1). It is important to acknowledge, however, that real-world moral issues often cut across moral domains. For example, moral debates over gay marriage or drilling for oil in pristine natural settings can invoke concerns about purity, rights, freedom, or harm. This raises the question of how disgust would moralize more complex actions and issues.

One answer, we suggest, hinges on the way an issue is framed. When framed as a matter of justice or harm, such as highlighting freedom and rights in a debate about gay marriage, disgust should have little if any relationship to moral judgments pertaining to gay rights (see DeSteno, Petty, Rucker, Wegener, & Braverman, 2004, for relevant results pertaining to anger, sadness, and persuasion). Yet when framed in terms of purity, such as dwelling on sexual acts in a debate about gay marriage, the degree to which one does or does not experience disgust could partly determine how deeply the issue is moralized.

SES and Moral Judgment

A secondary aim of this investigation was to address how SES relates to moral judgment (e.g., Keltner et al., 2008). Previous research documented that people of lower SES backgrounds were less permissive toward purity violations than were people of upper SES backgrounds. These results suggest that lower SES individuals include purity concerns in their conception of morality, whereas upper SES individuals limit their sense of morality to concerns over harm and justice (Haidt et al., 1993). The results of the present three studies, synthesized in the meta-analysis, replicate and extend these earlier findings (see Figure 2). Evidence across the three studies and meta-analysis showed that, compared with upper SES individuals, lower SES individuals were more critical of purity-violating behaviors. They also tended toward higher praise of purity-enhancing actions, although the data were less reliable. Equally important, there was no association between SES and justice or harm/care moralization in any of the studies. One plausible explanation for this pattern is that justice and harm/care represent universal moral concerns, central to the belief systems of virtually all cultures (e.g., Turiel et al., 1987; Vasquez et al., 2001).

In all studies, SES was unrelated to either state or trait disgust, which suggests that the tendency for lower SES individuals to prioritize purity more than upper SES individuals is not due to feelings of disgust. The mechanisms that do account for this SES effect on purity moral judgments are an important area for future inquiry. One possibility might simply be class-based differences in environmental exposure to impurities. Impurities, such as pollution or toxins, may be more prevalent in the environments of lower SES individuals, which could chronically prime the moral concept of purity. Another possibility is that upper SES individuals, who

enjoy greater freedom and resource-rich environments, may de-emphasize moral realms like purity, because these realms constrain the pursuit of personal goals (see Keltner et al., 2008). Upper SES individuals may instead prioritize moral realms pertaining to freedom and rights precisely because they enable the pursuit of self-interest. These kinds of explanations await empirical examination and, once they are examined, will shed light on the intriguing association between SES and the moralization of purity documented here.

Emotions as Moral Intuitions

Our findings dovetail with two main claims about moral intuitions (e.g., Haidt, 2007; Haidt & Joseph, 2004). The first is that moral judgments often derive from gut level, emotion-based intuitions. The second claim is that there are five innate psychological foundations, or domains, that construct meaning and morality in social systems. These foundations may be elaborated or downplayed within different communities, helping to shape intuitions underlying moral judgment. Research on these two claims about moral intuitions is just emerging, and the present research lends support to both. Our perspective is that, on the basis of the available literature, purity is intrinsically a moral domain, with factors like culture and, our research suggests, disgust influencing just how critically purity factors into moral intuitions and judgments.

The present research attests to the promise of studying how distinct emotions figure in the content of morality. This kind of research will continue to challenge the age-old assumption that emotions are unsystematic in their effects upon reasoning, revealing instead that the role of emotions in what members of societies deem moral is rich, organized, and profound.

References

- Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York, NY: Putnam.
- Davidson, R. J., Ekman, P., Saron, C. D., Senulis, J. A., & Friesen, W. V. (1990). Approach-withdrawal and cerebral symmetry: Emotion expression and brain physiology I. *Journal of Personality and Social Psychology*, *58*, 330–341.
- DeSteno, D., Petty, R. E., Rucker, D. D., Wegener, D. T., & Braverman, J. (2004). Discrete emotions and persuasion: The role of emotion-induced expectancies. *Journal of Personality and Social Psychology*, *86*, 43–56.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, *96*, 1029–1046.
- Graham, S., Weiner, B., & Zucker, G. S. (1997). An attributional analysis of punishment goals and public reactions to O. J. Simpson. *Personality and Social Psychology Bulletin*, *23*, 331–346.
- Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work? *Trends in Cognitive Sciences*, *6*, 517–523.
- Gutierrez, R., & Giner-Sorolla, R. (2007). Anger, disgust, and presumption of harm as reactions to taboo-breaking behaviors. *Emotion*, *7*, 853–868.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, *108*, 814–834.
- Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852–870). Oxford, England: Oxford University Press.
- Haidt, J. (2007, May 18). The new synthesis in moral psychology. *Science*, *316*, 998–1002.
- Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research*, *20*, 98–116.
- Haidt, J., & Hersh, M. (2001). Sexual morality: The cultures and emotions of conservatives and liberals. *Journal of Applied Social Psychology*, *31*, 191–221.
- Haidt, J., & Joseph, C. (2004). Intuitive ethics. *Daedalus*, *133*, 55–66.
- Haidt, J., & Joseph, C. (2007). The moral mind: How 5 sets of innate moral intuitions guide the development of many culture-specific virtues, and perhaps even modules. In P. Carruthers, S. Laurence, & S. Stich (Eds.), *The innate mind* (Vol. 3, pp. 367–391). New York, NY: Oxford University Press.
- Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, *65*, 613–628.
- Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences*, *16*, 701–713.
- Horberg, E. J., & Keltner, D. (2007). Passions for justice. In D. De Cremer (Ed.), *Advances in the psychology of justice and affect* (pp. 155–174). Greenwich, CT: Information Age.
- Huebner, B., Dwyer, S., & Hauser, M. (2009). The role of emotion in moral psychology. *Trends in Cognitive Sciences*, *13*, 1–6.
- Inbar, Y., Pizarro, D. A., & Bloom, P. (2009). Conservatives are more easily disgusted than liberals. *Cognition & Emotion*, *23*, 714–725.
- Jones, A., & Fitness, J. (2008). Moral hypervigilance: The influence of disgust sensitivity in the moral domain. *Emotion*, *8*, 613–627.
- Keltner, D., Ellsworth, P. C., & Edwards, K. (1993). Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality and Social Psychology*, *64*, 740–752.
- Keltner, D., Horberg, E. J., & Oveis, C. (2006). Emotions as moral intuitions. In J. P. Forgas (Ed.), *Affect in social thinking and behavior* (pp. 161–175). New York, NY: Psychology Press.
- Keltner, D., Van Kleef, G. A., Chen, S., & Kraus, M. W. (2008). A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in Experimental Social Psychology*, *40*, 151–192.
- Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 347–480). Chicago, IL: Rand McNally.
- Kraus, M. W., & Keltner, D. (2009). Signs of socioeconomic status: A thin-slicing approach. *Psychological Science*, *20*, 99–106.
- Lazarus, R. S. (1991). *Emotion and adaptation*. London, England: Oxford University Press.
- Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition & Emotion*, *14*, 473–493.
- Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, *81*, 146–159.
- Lerner, J. S., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings: Carryover effects of emotions on economic decisions. *Psychological Science*, *15*, 337–341.
- Malatesta, C. Z. (1990). The role of emotions in the development and organization of personality. In R. A. Thompson (Ed.), *Socioemotional development: Nebraska Symposium on Motivation* (pp. 1–56). Lincoln: University of Nebraska Press.
- Marzillier, S. L., & Davey, G. C. L. (2004). The emotional profiling of disgust-eliciting stimuli: Evidence for primary and complex disgusts. *Cognition & Emotion*, *18*, 313–336.
- Miller, J. G., Bersoff, D. M., & Harwood, R. L. (1990). Perceptions of social responsibilities in India and in the United States: Moral imperatives or personal decisions? *Journal of Personality and Social Psychology*, *58*, 33–47.

- Ortony, A., Clore, G. L., & Collins, A. (1988). *The cognitive structure of emotions*. New York, NY: Cambridge University Press.
- Oveis, C., Horberg, E. J., & Keltner, D. (in press). Compassion, pride, and social intuitions of self-other similarity. *Journal of Personality and Social Psychology*.
- Roesch, S. C. (1998). The factorial validity of trait positive affect: Confirmatory factor analyses of unidimensional and multidimensional models. *Educational and Psychological Measurements*, 58, 451–466.
- Rozin, P. (1997). Moralization. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 379–401). New York, NY: Routledge.
- Rozin, P. (1999). The process of moralization. *Psychological Science*, 10, 218–221.
- Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review*, 94, 32–41.
- Rozin, P., Haidt, J., & McCauley, C. R. (1999). Disgust: The body and soul emotion. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 429–445). New York, NY: Wiley.
- Rozin, P., Lowery, L., Imada, S., & Haidt, J. (1999). The CAD triad hypothesis: A mapping between three moral emotions (contempt, anger, disgust) and three moral codes (community, autonomy, divinity). *Journal of Personality and Social Psychology*, 76, 574–586.
- Rozin, P., Markwith, M., & Stoess, C. (1997). Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological Science*, 8, 67–73.
- Rozin, P., & Singh, L. (1999). The moralization of cigarette smoking in America. *Journal of Consumer Behavior*, 8, 321–337.
- Ruys, K. I., & Stapel, D. A. (2008). The secret life of emotions. *Psychological Science*, 19, 385–391.
- Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin*, 34, 1096–1109.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513–523.
- Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “Big Three” of morality (autonomy, community, and divinity) and the “Big Three” explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119–169). New York, NY: Routledge.
- Spielberger, C. D. (1983). *State-Trait Anxiety Inventory for Adults*. Palo Alto, CA: Mind Garden.
- Spielberger, C. D. (1996). *Manual for the State-Trait Anger Expression Inventory (STAXI)*. Odessa, FL: Psychological Assessment Resources.
- Tiedens, L. Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, 81, 973–988.
- Turiel, E., Killen, M., & Helwig, C. C. (1987). Morality: Its structure, functions and vagaries. In J. Kagan & S. Lamb (Eds.), *The emergence of morality in young children* (pp. 155–243). Chicago, IL: University of Chicago Press.
- Vasquez, K., Keltner, D., Ebenbach, D. H., & Banaszynski, T. L. (2001). Cultural variation and similarity in moral rhetorics: Voices from the Philippines and the United States. *Journal of Cross-Cultural Psychology*, 32, 93–120.
- Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science*, 16, 780–785.

Appendix A

Purity-Violation and Justice-Violation Vignettes Used in Study 1

Purity violations	Justice violations
<ol style="list-style-type: none"> 1. A man goes to the supermarket once a week and buys a dead chicken. But before cooking the chicken, he has sexual intercourse with it. Then he cooks and eats it. 2. A brother and sister like to kiss each other on the mouth. When nobody is around, they find a secret hiding place and kiss each other on the mouth passionately. 	<ol style="list-style-type: none"> 1. Kim is taking a chemistry course and checks out the only class textbook from the library. She is supposed to return the book because another student needs to use it before the exam, but she doesn't get around to it. The other student isn't able to read the textbook before the exam. 2. Bob sometimes asks his friend Jack for small favors. Often, Bob decides to barge in and interrupt Jack's important work meetings to ask for the favors. Jack worries that his boss thinks less of him.

(Appendixes continue)

Appendix B

Purity, Harm/Care, and Justice Judgment Items Used in Study 2 and Study 3

Purity violations	Purity virtues
<ol style="list-style-type: none"> 1. Keeping an untidy and dirty living space 2. Being sexually promiscuous 3. Purposefully wearing unmatched clothing 4. Buying music with sexually explicit lyrics 	<ol style="list-style-type: none"> 1. Being a vegetarian 2. Refraining from consuming drugs, cigarettes, and alcohol 3. Meditating 4. Maintaining a healthy body
Harm/care violations	Harm/care virtues
<ol style="list-style-type: none"> 1. Refusing to lend lecture notes to a classmate 2. Kicking a dog that is blocking a doorway 3. Ridiculing a stranger's clothing as she walks by 	<ol style="list-style-type: none"> 1. Giving spare change to a homeless person in the street 2. Visiting elderly people in a senior center 3. Helping a child lost in a supermarket to find his parents
Justice violations	Justice virtues
<ol style="list-style-type: none"> 1. Expecting to be given special rights or treatment 2. Interrupting a meeting 3. Leaving small tips 4. Dawdling to return overdue library books 	<ol style="list-style-type: none"> 1. Freely expressing himself/herself 2. Refusing to cheat or steal 3. Voting in elections

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