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## Re-evaluating Moral Disgust:

Sensitivity to Many Affective States Predicts Extremity in Many Evaluative Judgments

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*IN PRESS AT SOCIAL PSYCHOLOGICAL AND PERSONALITY SCIENCE***Author Note**

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### **Abstract**

Disgust-sensitive individuals are particularly morally critical. Some theorists take this as evidence that disgust has a uniquely moral form: disgust contributes to moralization even of pathogen-free violations, and disgust's contribution to moralization is unique from other emotional states. We argue that the relationship between disgust sensitivity (DS) and moral judgment is not special in two respects. First, trait sensitivity to many other affective states, beyond disgust, predicts moral evaluations. Second, DS also predicts non-normative evaluative judgments. Four studies supported these hypotheses, using multiple measures of DS, and judgments of moral violations (Studies 1 and 4), conventional violations (Study 1), imprudent actions (Study 1), competence (Study 2), and aesthetic evaluations (Study 3). Our findings call into question the usefulness of "moral disgust" as a psychological construct by showing that the relationship between DS and moral condemnation is one instantiation of a more general association between affect and judgment.

Keywords: disgust sensitivity, emotion, moral judgment, aesthetic judgment, affect as information

## **Re-evaluating Moral Disgust:**

### **Sensitivity to Many Affective States Predicts Extremity in Many Evaluative Judgments**

The relationship between disgust and moral judgment has received substantial empirical attention of late (for reviews, see Chapman & Anderson, 2013; Giner-Sorolla & Russell, 2013; Piazza, Landy, Chakroff, Young, & Wasserman, in press). In this paper, we present a critical account of one particular claim: individual differences in the propensity to experience disgust predict the severity of moral condemnation. We argue that, while this effect is robust, it should not be interpreted as evidence for a unique connection between disgust and moral judgment. Rather, it is one example of a more general phenomenon, in which propensities to strongly experience affective states more broadly relate to more extreme evaluative judgments of many kinds.

### **Theoretical Background**

Disgust is a negatively-valenced emotion associated with the rejection of contaminating substances, such as blood, sexual fluids, rotten food, bodily waste, and certain animals (Curtis, Aunger, & Rabie, 2004; Haidt, McCauley, & Rozin, 1994; Olatunji, Sawchuk, Lohr, & de Jong, 2004; Royzman & Sabini, 2001; Rozin & Fallon, 1987). Disgust most likely evolved to prevent ingestion of toxins and to motivate avoidance of pathogen vectors (Curtis & Biran, 2001; Duncan, Schaller, & Park, 2009; Fessler, Eng, & Navarrete, 2005; Oaten, Stevenson, & Case, 2009). More controversially, some have argued that disgust plays a distinct role in the condemnation of immoral actions or actors (e.g., Giner-Sorolla & Chapman, 2017; Rozin, Haidt, & McCauley, 2008; Tybur, Lieberman, Kurzban, & DeScioli, 2013). Some theorists have argued that disgust's relationship to morality is incidental, limited to transgressions that involve the presence of canonical disgust elicitors (e.g., gory violence, aberrant sexual acts; Piazza, Russell,

& Sousa, 2013; Royzman, Atanasov, Landy, Parks, & Gepty, 2014). Others claim a more integral role for disgust in moral judgment (e.g., Chapman & Anderson, 2013, Tybur, Lieberman, & Griskevicious, 2009). For example, Chapman and Anderson (2014) argue, “disgust’s role in the moral domain is not limited to physically disgusting transgressions” (p. 341), but extends to “moralization of transgressions that do not contain references to physical disgust stimuli” (p. 342). Importantly, researchers in this area argue for “moral disgust” as an explanatory construct; disgust within this conceptualization is thought to have a specifically *moral* function, such as increased vigilance, condemnation or rejection of moral offenders. Tybur et al. (2009) propose, “moral disgust motivates avoidance of social relationships with norm-violating individuals” (p. 107). Jones and Fitness (2008) assert, “the same psychological mechanisms that alert us to threats of physical contamination are also attuned to the presence of knavery” (p. 625; for further claims about a specifically moral form of disgust and its function, see Giner-Sorolla & Chapman, 2017; Hutcherson & Gross, 2011; Molho, Tybur, Güler, Balliet, & Hoffman, 2017; Tybur et al., 2013).

If disgust has a uniquely moral function, then several conditions should follow. First, the propensity to experience disgust (henceforth, *disgust sensitivity* or DS) should relate to all types of moral offenses, even those that do not involve canonical disgust elicitors, and, indeed, this assertion has received some empirical support (Chapman & Anderson, 2014; Jones & Fitness, 2008). Second, the construct “moral disgust” should be tractable: if disgust’s role in the moral domain is an integral one, and not incidental, then disgust’s operation in the moral sphere should be distinguishable, in degree or kind, from operations it might have in other evaluative domains. Finally, disgust’s role in moral condemnation should be distinguishable from other forms of strong affect, such as anger, sadness, excitement, or fear. On this point, Jones and Fitness (2008)

and Chapman and Anderson (2014) reported relationships between DS and condemnation of canonical moral violations over and above the relationship found between trait anxiety and condemnation, and trait anger and condemnation, which seems to support the moral disgust view.

Here we test an alternative to the moral disgust view: the disgust-morality relationship is not special, but represents one example of a more general phenomenon: chronic sensitivity to affective states, not limited to disgust, makes any sort of evaluative judgment more intense. This general extremity view follows from an affect-as-information perspective on evaluative judgment (e.g., Clore, Gasper, & Garvin, 2001; Schwarz & Clore, 1988; Storbeck & Clore, 2008). On this view, evaluations – moral or otherwise – are at least partially informed by whatever affective states are available to the decision maker at the time; thus, the stronger one’s propensity to feel any affective state, the more extreme one’s judgments will be in many domains. Similar predictions emerge from a constructionist view of emotion (Cameron, Lindquist, & Gray, 2015).

If disgust is not the only emotion that promotes harsher moral judgments, and DS has similar amplifying relationships with other, non-moral judgments, this would argue against the moral disgust view. For example, if disgust were no more related to moral condemnation than, say, anger, anxiety, or general arousal, then we would presumably need to abandon the idea of “moral disgust” (or, less parsimoniously, this would suggest an unjustified proliferation of moral emotions: “moral anxiety”, “moral arousal”, etc.). Similarly, if DS were found to be related to non-normative evaluations (i.e., judgments that do not involve considerations about how a person should or should not behave), for instance, of competence or attractiveness, this would suggest that “moral disgust” is not a useful construct (or, again, that we need to explicate the

concepts “competence-related disgust,” “aesthetic disgust,” etc.). Such results would suggest that “moral disgust” as a construct is not parsimonious and thus its usefulness should be re-evaluated.

### **The Present Studies**

We tested two hypotheses that, if supported, would provide evidence against a privileged connection between disgust and moral judgments.

**Hypothesis 1 (scope of evaluations).** DS relates to the extremity of a variety of evaluative judgments, both normative and non-normative; the amplifying role of chronic disgust is not limited to moral evaluations.

**Hypothesis 2 (scope of emotions).** Chronic tendencies to experience a variety of emotional states are associated with more extreme normative judgments; multiple affective sensitivities play similar amplifying roles as DS.

Taken together, these hypotheses posit that sensitivity to affective states makes evaluations of negative stimuli more negative, and evaluations of positive stimuli more positive, regardless of whether the stimuli are morally relevant. We tested these hypotheses in four studies (and four supplemental studies). In Study 1, we tested Hypotheses 1 and 2 using vignette-based measures of emotional sensitivities and normative evaluations, and found that DS is related to harsher condemnation of imprudent but amoral actions, and that sensitivity to negative affect in general predicts normative judgments in much the same way that DS does. In Study 2, we sought a stronger test of Hypothesis 1, by showing that DS is related to evaluations of competence—a non-normative evaluation. In Study 3, we undertook an even stronger test of Hypothesis 1, and found that DS is related to more extreme aesthetic judgments—another non-normative domain of judgment. Finally, in Study 4, we tested Hypothesis 2 using image-based, rather than vignette-

based, measures of emotion and moral judgment, and again found that sensitivity to affective states, in general, predicts more extreme moral judgments.

### **Study 1**

In Study 1, we sought to test Hypotheses 1 and 2, borrowing materials from Chapman and Anderson (2014). Chapman and Anderson tested the moral disgust view using stimuli that included both prototypical “moral transgressions,” where one person directly victimizes another (e.g., pushing someone to the ground) and “conventional transgressions,” where a person violates an accepted institutional rule (e.g., wearing a t-shirt to a school that requires uniforms, see Turiel, 1983). They found that individuals high in DS exhibited harsher judgments of both moral and conventional transgressions devoid of pathogen-linked content. High-DS individuals were also more likely to “moralize” conventional transgressions, i.e., to judge violations of convention to be wrong independent of whether a legitimate authority deemed them permissible.

We extended Chapman and Anderson’s materials in two critical ways. First, we included actions that are imprudent, but which have no social ramifications; any consequences of the actions affect only the actor themselves (e.g., running in the rain, eating junk food). Because such actions do not affect others, they are typically considered to be part of the “personal” domain, rather than the moral or conventional domain, and to be at the discretion of the actor (see, e.g., Nucci, 1981; Smetana, Jambon, & Ball, 2014; Tisak & Turiel, 1984). If DS were found to relate to more negative evaluations of these amoral actions, this would provide initial evidence for Hypothesis 1.

Second, we measured the propensity to experience a variety of other emotions in response to aversive, pathogen-relevant stimuli. In their studies, Chapman and Anderson (2014) included measures of trait anxiety and trait anger, and found that these measures did not relate to

moral judgment to the degree that DS did. However, the measures they used to assess these other emotions were not pitched at the same level of specificity as DS. While DS was measured with respect to specific hypothetical stimuli and events (e.g., spoiled foods, contact with a dead body), chronic anxiety and anger were measured with inventories containing items that reflect more general behavioral tendencies (e.g., “I am quick tempered”). Thus, it is unclear whether their results reflect a unique relationship between disgust and morality, or result from an incommensurability of measures (for further discussion, see Supplemental Study 1). Therefore, we measured all emotions at the same level of specificity.

## **Method**

**Participants.** Participants located in the United States were recruited through Amazon Mechanical Turk, the same online platform through which Chapman and Anderson (2014, Study 2) recruited their participants. In all studies and supplemental studies, we only excluded participants for failing “Captcha” verifications or for failing to reach the end of the study. In Study 1, this left a final sample of  $N = 202$  (42% female,  $M_{Age} = 34.83$  years, range: 20-75). In all studies, we aimed to recruit approximately 200-300 participants, because correlations stabilize as sample sizes approach 250 (Schönbrodt & Perugini, 2013), and data collection was terminated prior to conducting any analyses.

**Materials and procedure.** Participants made judgments of eight moral and eight conventional violations set in the context of a high school, identical to the stimuli used by Chapman and Anderson (2014, Study 2). To these, we added five imprudent actions, set in the same context, for a total of 21 behavioral descriptions, presented in a new randomized order for each participant. For each action, participants indicated how wrong it was, how much they disapproved of it, and how wrong it would be “if the school’s principal said it was okay” (a



measure of authority independence, or “moralization”) on scales ranging from 1 (“Not at all”) to 5 (“Extremely”). Participants also responded to the pathogen subscale of the Three-Domain Disgust Scale (TDDS; Tybur et al., 2009). This subscale consists of seven descriptions of experiences involving potential pathogen vectors (e.g., “seeing some mold on old leftovers in your refrigerator”). It was used because it contains items that most theorists agree represent disgust-relevant stimuli. In the standard administration of the scale, participants indicate how disgusted each experience would make them feel on a 0-6 scale. We modified the measure by adding nine additional emotion terms: an additional disgust measure (“grossed out”, a lay term for disgust, see Nabi, 2002), and two terms each measuring anger (angry, irritated), general negative valence (distressed, negative), general arousal (alert, calm), and fear/anxiety (afraid, anxious). The ten emotion terms were presented in a new randomized order for each participant, and the order of presentation of the behavioral judgment block and the emotion sensitivity block was counterbalanced. After completing both blocks, participants responded to a brief demographics questionnaire.

The judgments that participants made, and our measure of DS, differ somewhat from those used by Chapman and Anderson (2014); we present a direct replication of their procedure with the addition of imprudent actions in Supplemental Study 1, the results of which parallel those reported here. No unreported measures were collected in any study reported in this paper, and full materials, raw data, and analysis scripts for all studies can be found at <https://osf.io/e47qh/>.

## **Results and Discussion**

Judgments of wrongness, disapproval, and authority independence of moral and conventional violations and imprudent actions were averaged across all the acts in each category

( $\alpha = .68-.89$ ). Similarly, ratings of all ten emotions were averaged across the seven scenarios described in the emotion sensitivity measure ( $\alpha = .83-.87$ ) to form ten composite measures of sensitivity to various emotional states.

Correlations between emotion sensitivity measures and judgments are presented in Table 1. Sensitivity to disgust was strongly related to the extremity of wrongness, disapproval, and authority-independence judgments of both moral and conventional offenses. More critically, there was a similarly robust, and comparably large, relationship between disgust sensitivity and judgments of imprudent actions, consistent with Hypothesis 1.

**Table 1.** Descriptive statistics and correlations ( $df = 199$ ) between emotional sensitivity measures and judgments of actions, in Study

1.

		<b>Moral - Wrong</b>	<b>Moral – Disap.</b>	<b>Moral – Auth.</b>	<b>Conv. – Wrong</b>	<b>Conv. – Disap.</b>	<b>Conv. – Auth.</b>	<b>Imp. – Wrong</b>	<b>Imp. – Disap.</b>	<b>Imp. – Auth.</b>
	<i>M (SD)</i>	3.97 (0.66)	4.05 (0.68)	3.99 (0.69)	2.82 (0.85)	2.74 (0.91)	2.43 (0.99)	2.62 (0.81)	2.85 (0.81)	2.70 (0.84)
<b>Disgusted</b>	3.25 (1.31)	.30***	.28***	.25**	.32***	.29***	.22**	.31***	.24**	.26***
<b>Grossed Out</b>	3.35 (1.35)	.29***	.27***	.24***	.31***	.29***	.24**	.30***	.26***	.26***
<b>Angry</b>	1.62 (1.18)	.05	.01	.05	.31***	.29***	.33***	.41***	.33***	.38***
<b>Irritated</b>	2.66 (1.31)	.18**	.16*	.13 <sup>†</sup>	.26***	.23**	.18**	.36***	.31***	.33***
<b>Distressed</b>	2.09 (1.26)	.07	.04	.01	.25***	.21**	.22**	.30***	.26***	.25***
<b>Negative</b>	2.83 (1.29)	.19**	.19**	.17*	.24***	.20**	.16*	.29***	.22**	.25***
<b>Alert</b>	3.11 (1.35)	.21**	.24**	.12 <sup>†</sup>	.32***	.29***	.17*	.20**	.18**	.12 <sup>†</sup>
<b>Calm</b>	2.30 (1.32)	-.13 <sup>†</sup>	-.13 <sup>†</sup>	-.08	.03	.05	.06	-.01	-.06	.04
<b>Afraid</b>	1.21 (1.15)	-.07	-.08	-.07	.28***	.27***	.35***	.32***	.25***	.28***
<b>Anxious</b>	2.01 (1.31)	.07	.03	.04	.31***	.27***	.31***	.32***	.24***	.27***

Note. <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; one participant did not respond to the normative judgment items and is not included

in these analyses.

Furthermore, these relationships were not unique to disgust. While DS had the strongest relationship to judgments of prototypical moral violations, propensities to experience general negative affect (“negative”) and arousal (“alert”), and to feel “irritated” also showed reliable, though somewhat smaller, correlations with these judgments.<sup>1</sup> Moreover, every emotion that we measured, other than “calm”, showed robust relationships with judgments of conventional violations and imprudent actions, including moralization measures, most of them comparable in magnitude to the relationships exhibited by disgust sensitivity. In fact, anger generally had the strongest relationship with these judgments.<sup>2</sup>

Taken together, these results suggest that DS is associated with more extreme evaluative judgments of both moral and non-moral actions (Hypothesis 1), and that more extreme moral evaluations are exhibited by people with a propensity to experience a wide variety of emotional states, rather than disgust specifically (Hypothesis 2). Thus, this study provides initial evidence in support of the general extremity view. However, one might argue that judgments of imprudent actions, while not *moral* judgments, are still *normative* judgments, in that they are judgments of what one “should” or “should not” do. Thus, people may have treated them as roughly the same as moral judgments. Accordingly, in Study 2, we conducted a more stringent test of Hypothesis 1, examining whether DS is correlated with more extreme judgments of competence, an evaluative judgment that is distinct from judgments of morality (see, e.g., Brambilla, Rusconi, Sacchi, & Cherubini, 2011; Goodwin, Piazza, & Rozin, 2014; Landy, Piazza, & Goodwin, 2016; Wojciszke, Bazinska, & Jaworski, 1998).

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<sup>1</sup> This result suggests that disgust may be somewhat *more* associated with judgments of classical moral violations, but not *uniquely* so, although it is worth noting that we do not find clear evidence for this “disgust dominant” pattern of results in Study 4 or Supplemental Study 4.

<sup>2</sup> The emotion sensitivity measures were highly inter-correlated (e.g., ignoring “calm”, *rs* ranged from .39 to .95 in Study 1 and from .34 to .95 in Study 2, all *ps* < .001). We therefore opted not to conduct multiple regression analyses.

## Study 2

### Method

**Participants.** Participants in the United States were recruited through Amazon Mechanical Turk. After exclusions, we retained a final sample of  $N = 200$  (45% female,  $M_{Age} = 36.79$  years, range: 20-69).

**Materials and procedure.** Emotion sensitivities were measured as in Study 1. This study did not include normative judgments, so it is primarily a test of Hypothesis 1 (scope of evaluations). Nonetheless, we included the same non-disgust emotion sensitivity measures from Study 1 to test an extension of Hypothesis 2: competence judgments, like moral judgments, are associated with a wide variety of affective sensitivities. Competence judgments were made in response to 15 imprudent actions – five from Study 1, and ten additional, all set in a high school (see Supplemental Materials). For each action, participants rated how “intelligent” and “competent” the student described in the scenario was, on 1-5 scales (1 = “Not at all”; 5 = “Extremely”). Order of presentation of the 15 actions was randomized for each participant, and the order of the two tasks was counterbalanced. After completing both tasks, participants responded to a short demographics questionnaire. Because all of the actions suggested some degree of incompetence or foolishness, we expected that sensitivity to affective states would relate to more extreme *criticism* of the characters’ competence.

### Results and Discussion

Composite intelligence and competence ratings across the 15 imprudent actions ( $\alpha_s = .89$  and  $.88$ , respectively) were highly correlated,  $r(198) = .85$ ,  $p < .001$ , so we averaged these judgments together to form a composite measure. As would be expected, the characters were viewed as quite incompetent,  $M = 2.22$ ,  $SD = 0.48$ , significantly below the midpoint of the scale,

$t(199) = 22.73, p < .001$ . As in Study 1, we averaged the emotion ratings across the seven scenarios, to produce ten composite measures ( $\alpha s = .83-.90$ ).

Correlations between emotion sensitivities and competence ratings are presented in Table 2. The most important result is that DS was associated with more negative competence ratings, supporting Hypothesis 1. Consistent with the extension of Hypothesis 2, the propensity to feel negative affect generally (“negative”) was also associated with more negative competence judgments, and the propensity to feel “irritated” showed a similarly-sized relationship ( $p = .053$ ). Likewise, a tendency to feel less arousal (“calm”) was associated with less critical competence judgments, and this correlation was comparable in magnitude to the correlation for “disgusted”.

**Table 2.** Descriptive statistics for emotion sensitivity measures, and correlations ( $df = 198$ ) between emotion sensitivity measures and competence judgments, Study 2.

	<i>M (SD)</i>	<b>Competence</b>
<b>Disgusted</b>	3.67 (1.36)	-.21**
<b>Grossed Out</b>	3.68 (1.41)	-.12
<b>Angry</b>	1.81 (1.36)	-.12 <sup>†</sup>
<b>Irritated</b>	3.00 (1.34)	-.14 <sup>†</sup>
<b>Distressed</b>	2.37 (1.46)	-.06
<b>Negative</b>	3.28 (1.47)	-.15*
<b>Alert</b>	3.62 (1.49)	-.02
<b>Calm</b>	2.27 (1.28)	.20**
<b>Afraid</b>	1.17 (1.16)	-.02
<b>Anxious</b>	2.14 (1.50)	-.04

Note. <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$

### Study 3

While the competence judgments made in Study 2 fall outside the normative domain, they still somewhat resemble normative judgments, in that they were made in response to a person’s actions. Therefore, in Study 3 we tested whether DS would be correlated with more extreme *aesthetic* judgments, i.e., ratings of the attractiveness of a person or object, in the absence of any action, an especially strong test of Hypothesis 1. A study by Park, van Leeuwen,

and Stephen (2012) has already garnered support for a link between DS (measured with the pathogen subscale of the TDDS) and more negative attractiveness ratings of unattractive faces, consistent with our general extremity view. We sought to extend this line of research by examining attractiveness ratings of four sets of stimuli: human faces, painted portraits, landscape paintings, and abstract paintings. We also used a different measure of DS to ensure the generality of our findings, the Disgust Scale – Revised (DS-R; Olatunji et al., 2007) and included, for exploratory purposes, the Emotion Regulation Questionnaire (see Supplemental Materials for discussion).

## Method

**Participants.** Participants in the United States were recruited through Amazon Mechanical Turk. After exclusions, we retained a final sample of  $N = 300$  (47% female,  $M_{Age} = 33.63$  years, range: 18-68).

**Materials and procedure.** Participants viewed four blocks of 15 images each (male faces, abstract art, portraits, and landscapes, see Supplemental Materials) in a counterbalanced order. The order of images within each block was randomized for each participant. For each image (60 total), participants rated how attractive they found it and how much they liked it on Likert scales ranging from -6 to 6. Afterwards, participants responded to the DS-R and the ERQ in a counterbalanced order. Lastly, they responded to a brief demographics survey.

## Results

Composite attractiveness and liking ratings of the faces, abstract art, landscapes, and portraits ( $\alpha s = .84-.94$ ) were highly correlated,  $r_s(298) > .87$ ,  $p s < .001$ , so we averaged across them to form one composite aesthetic evaluation of each type of stimulus. On average, the faces were rated somewhat negatively ( $M = -1.37$ ,  $SD = 1.77$ ,  $t(299) = -13.43$ ,  $p < .001$ ), the abstract

art and landscapes were rated somewhat positively ( $M = 0.32$ ,  $SD = 1.83$ ,  $t(299) = 3.04$ ,  $p = .003$ ;  $M = 1.79$ ,  $SD = 1.41$ ,  $t(299) = 22.02$ ,  $p < .001$ , respectively), and the portraits were rated neutrally ( $M = -0.10$ ,  $SD = 2.01$ ;  $t(299) = -0.90$ ,  $p = .369$ ). Based on these observed mean values, the general extremity view suggests that DS should relate to more negative judgments of the faces, and more positive judgments of the abstract art and landscapes. We did not have a clear prediction regarding the portraits, because they were not rated significantly differently from zero.

DS was indeed negatively correlated with aesthetic ratings of the faces,  $r(298) = -.12$ ,  $p = .036$ , and positively, though non-significantly, correlated with ratings for the abstract art,  $r(298) = .10$ ,  $p = .074$ , and landscapes,  $r(298) = .10$ ,  $p = .100$ . DS was also negatively correlated with ratings of the portraits,  $r(298) = -.15$ ,  $p = .011$ . To derive an overall estimate of the extent to which DS correlates with extreme aesthetic judgments, we averaged across the three types of image for which our view makes a clear prediction (reverse-scoring the faces, such that a positive correlation indicates that DS relates to greater extremity). This composite measure was reliable ( $\alpha_{\text{Attractiveness}} = .84$ ;  $\alpha_{\text{Liking}} = .86$ ;  $r(298) = .94$ ,  $p < .001$ ), and, consistent with our view, DS correlated with more extreme evaluations,  $r(298) = .18$ ,  $p = .001$ .

## Discussion

Supporting Hypothesis 1, DS related to more extreme aesthetic judgments. Study 3 also supported a general extremity view over a similar, but distinct, “general negativity” view, whereby sensitivity to negative affect simply makes all evaluative judgments, including judgments of positively-valenced targets, more pessimistic or negative. We found instead that evaluations of positive stimuli (abstract art and landscapes) correlated (non-significantly) positively with DS; that is, the relationship DS had with evaluations was directionally the same as the overall appraised valence of the object. See Supplemental Study 3 for additional evidence



supporting the extremity view over the negativity view; this supplemental study revealed a positive association between DS and judgments of morally praiseworthy actions, and between other affective sensitivities and praise judgments.

#### Study 4

Studies 1-3 provided evidence for Hypothesis 1 across a wide variety of evaluative judgments. However, we have only directly examined Hypothesis 2 in Study 1. Therefore, we sought to replicate our finding that sensitivity to affect, beyond disgust, predicts moral condemnation. Our prior studies employed vignette-based measures of emotion sensitivity and vignette-based dependent measures. In Study 4, we employed a different sort of stimuli, images depicting emotional content and moral transgressions, to demonstrate the generalizability of our findings beyond a single method. Moreover, in Study 1, we assessed sensitivities to different affective states using a modified version of the TDDS. Because all of the items on this scale describe canonical disgust elicitors, participants may have treated all of the negative emotion terms (e.g., angry, anxious) like measures of disgust. Therefore, in Study 4, we assessed sensitivity to emotional states by using as eliciting stimuli images that relate specifically to each emotion.

#### Method

**Participants.** Participants in the United States were recruited through Amazon Mechanical Turk. After exclusions, we retained a final sample of  $N = 251$  (51% female,  $M_{Age} = 34.96$  years, range: 18-76).

**Materials and procedure.** Participants viewed six images drawn from the International Affective Picture System (IAPS, Lang, Bradley, & Cuthbert, 2008), each depicting a pathogen-free immoral act (e.g., a carjacking; a physical altercation between a man and a woman, see

Supplemental Materials for identification numbers). Participants rated how wrong each action was on a seven-point scale (1 = “Not at all wrong”, 7 = “Extremely wrong”). Emotion sensitivities were measured using a novel image-based method. Participants viewed four IAPS images each depicting content selected to evoke disgust, anger, sadness, fear, arousal, and general negative affect (see Supplemental Materials for more information). For each image, participants rated how much it made them feel the focal emotion on a 1-9 scale (1 = “Not at all”, 9 = “Extremely”): “grossed out”, “angry”, “sad”, “fearful”, “tense”, and “negative”. The order of the moral judgment and emotion sensitivity blocks was counterbalanced. Images within the moral judgment block were presented in a new randomized order for each participant. Within the emotion sensitivity block, the four items measuring each sensitivity were presented in separate sub-blocks. The order of these sub-blocks, and the images within each one, was randomized for each participant. At the end, participants responded to a brief demographics questionnaire.

### Results and Discussion

Responses to each of the four-image emotion sensitivity scales ( $\alpha$ s = .73-.88) were averaged to create six composite measures of affective sensitivities (see Table 3 for descriptive statistics). Wrongness ratings across the six images ( $\alpha$  = .76) were also averaged together. On average, the actions depicted were rated above the scale midpoint of 4 (“Moderately wrong”),  $M = 6.20$ ,  $SD = 0.87$ ,  $t(250) = 39.91$ ,  $p < .001$ ,  $d = 2.52$ .

**Table 3.** Descriptive statistics for emotion sensitivity measures, and correlations ( $df = 249$ ) between emotion sensitivity measures and wrongness judgments, Study 4.

	<i>M (SD)</i>	<b>Wrongness</b>
<b>Grossed Out</b>	6.57 (1.75)	.35***
<b>Angry</b>	5.68 (1.77)	.35***
<b>Sad</b>	6.53 (1.83)	.43***
<b>Fearful</b>	6.24 (2.26)	.34***
<b>Tense</b>	5.86 (2.19)	.33***

**Negative**                      6.06 (1.81)                      .39\*\*\*  
*Note.* \*\*\* $p < .001$

Consistent with Study 1 and prior research, DS correlated with wrongness ratings. However, sensitivity to anger, fear, sadness, arousal, and negative affect also showed significant, and comparably-sized, correlations with wrongness ratings (see Table 3). This constitutes additional evidence in support of Hypothesis 2 – the relationship between DS and moral evaluation is not unique among affective sensitivities.

### **General Discussion**

We have presented arguments and evidence that the association between chronic disgust sensitivity (DS) and moral condemnation is not evidence for a special connection between disgust and morality (the moral disgust view). We reasoned that this relationship may be more parsimoniously explained by processes that extend beyond moral evaluations to a variety of evaluative judgments, both normative and non-normative (Hypothesis 1) and beyond disgust to a more general sensitivity to affect (Hypothesis 2). Four studies (and four supplemental studies) supported this general extremity view. Using three different measures of DS, we found robust associations not just with condemnation of moral and conventional violations (Studies 1 and 4, Supplemental Study 4), but also of imprudent actions (Study 1, Supplemental Study 1), competence judgments (Study 2), aesthetic evaluations (Study 3, Supplemental Study 2), and evaluations of positive moral acts (Supplemental Study 3), supporting Hypothesis 1. Moreover, chronic sensitivities to other negative emotions, such as irritation and general negativity, are associated with normative judgments of moral and conventional violations in much the same way as DS (Studies 1 and 4, Supplemental Study 4), supporting Hypothesis 2.

### **Relation to Past Findings**

These results join a growing number of findings that question the privileged relationship between disgust and moral judgment. For instance, although many studies have found that extrinsic, experimentally-induced feelings of disgust can lead to more severe condemnation (e.g., Eskine, Kacinik, & Prinz, 2011; Schnall, Haidt, Clore, & Jordan, 2008; Ugazio, Lamm, & Singer, 2012; Wheatley & Haidt, 2005), other work has failed to replicate this effect (Case, Oaten, & Stevenson, 2012; David & Olatunji, 2011; Johnson, Cheung, & Donnellan, 2014; Johnson et al., 2016), and a meta-analysis found that it is, at most, insubstantial (Landy & Goodwin, 2015). Furthermore, disgust seems to only be experienced in response to canonical elicitors like rotten meat (Royzman et al., 2014) or sexual aberrance (Russell & Piazza, 2015), and does not respond to features of actions that modulate people's moral judgments, such as mitigating circumstances (Piazza et al., 2013; Russell & Giner-Sorolla, 2011a) or intentions (Russell & Giner-Sorolla, 2011b). There is thus considerable recent evidence that disgust is not integral to moral judgments. While the robust link between DS and evaluations of pathogen-free violations may appear inconsistent with this conclusion, our findings reveal that the relationship between DS and moral evaluation is not evidence for a privileged connection between disgust and morality, and therefore should not be understood as a challenge to this emerging view.

Our results are more consistent with a generic role of affect in evaluative judgments (Clore et al., 2001; Storbeck & Clore, 2008). For instance, our findings with regards to Hypothesis 2 (scope of emotions) are consistent with research by Cheng, Ottati, and Price (2013), who found that inducing any high-arousal emotion can amplify the severity of moral judgments. Furthermore, with regards to Hypothesis 1 (scope of evaluation), Lerner, Small, and Loewenstein (2004) found that inducing extrinsic disgust led people to reduce the prices for

which they would be willing to sell owned objects, a patently non-moral evaluative consequence of experiencing disgust.

### **Limitations**

Our results may be limited to *evaluative* forms of judgment (of which moral judgments are a subset), and may not readily extend to non-evaluative judgments, for example, of quantity, spatial distance, and other such “objective” judgments, in which affect may be less likely to exert an influence (though see Sherman, Haidt, & Clore, 2012, regarding an intriguing link between DS and light discrimination). Moreover, our perspective is limited by the correlational nature of our findings, which do not permit firm causal inferences. This, of course, applies to all research on trait-level disgust. Our hypotheses were concerned with dispositional emotion sensitivities, but future research could use experimental approaches to explore causal connections between state affect (generally) and evaluative judgments (of many sorts).

### **Conclusion**

Our findings raise doubts about the special relationship between disgust and moral evaluation. Dispositional sensitivity to disgust does have an amplifying relationship with moral judgments, but this influence is not unique to disgust, nor is disgust’s influence limited to the moral domain. The relationship between disgust and moral judgment appears not to be privileged, and thus the law of parsimony poses a challenge to “moral disgust” as an explanatory concept. Our findings align more with the idea that sensitivity to affect more generally tends to amplify a whole host of evaluative judgments. Connecting research on disgust and morality to research on other emotions and other types of judgments will help to clarify and deepen our understanding of how affect, judgment, and morality intertwine.

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