

Politics, Pathogens, and Disgust

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What would a world without disgust look like? For one, people would likely get sick more often. There is growing consensus among researchers that the emotion of disgust evolved to protect individuals from potential sources of disease (such as pathogens and poisons). In fact, disgust can be understood as part of a broader set of mechanisms that likely evolved for the purpose of defending us from disease—what some psychologists have referred to as our “behavioral immune system” (Schaller & Duncan, 2007). Yet recent psychological evidence suggests that a world without disgust would also look different in a way that might be more surprising: it would be a more politically liberal world. Indeed, a number of recent findings have demonstrated that individuals who are more easily disgusted tend to be politically conservative, and that inducing people to experience disgust tends to shift their judgments toward the more conservative end of the political spectrum. In what follows, we argue that these effects are best explained as a result of disgust’s primary function in preventing physical contamination, but that a deeper look at the findings demonstrates that disgust bears no *special* relationship to either political or moral judgment. Rather, we argue that the most robust and reliable effects of disgust on political and moral judgment are on judgments regarding acts, issues, individuals, and groups that possess cues regarding the potential for physical contamination.

Disgust as disease-avoidance. In recent years, research on the nature of disgust has painted a fairly consistent picture of the emotion as one that likely evolved as an adaptation to the threat of contamination from disease-causing pathogens (such as

parasites and bacteria; Curtis, deBarra, & Aunger, 2012). This view is supported from even the most cursory glance at the sorts of things that reliably elicit disgust across most people. The elicitors that appear to universally induce a disgust response include bodily fluids/secretions (e.g, feces, urine, pus, blood), food sources that may carry pathogens (e.g., putrid meat), or individuals who display signs of disease on their body (such as sores or open wounds). While there is a great deal of flexibility in the disgust response—we can acquire and lose disgust for various things throughout our lives with relative ease—there is a rigidity to these basic elicitors that makes disgust among the easiest emotions to induce in others (a single word or image is sometimes all that is required to do so).

Additional support for this functional account of disgust can be seen in its characteristic facial expression (a wrinkled nose, squinting eyes, raising of the upper lips), which has itself been shown to protect against the entry of pathogens into the mucus membranes of the face (Susskind et al, 2008). In addition, the behavioral responses associated with strong disgust reactions (gag reflex, protrusion of the tongue) serve a clear function—the expelling of a potential contaminant from the mouth. Finally, disgust seems to motivate hygienic behaviors at the individual level, and motivate the enforcement of hygiene norms at the group level, therefore adding a further layer of defense against the spread of disease (Curtis, deBarra, & Aunger, 2011).

One final aspect of disgust that makes it especially functional as a way to avoid disease is that unlike other emotions that might qualify as “basic” (in that, e.g., they are also universal and emerge early in life), disgust works primarily by the process of

association. That is, for a stimulus to acquire the property of being “disgusting” it is sufficient that it come into close contact with something that already has that property. In contrast, emotions such as fear and anger do not appear to work this way—an individual who comes into close contact with a fearsome predator does not become fearsome herself (and there is no good reason that she should). These emotions require a set of appraisals that do not appear necessary for disgust. With disgust, however, its associative nature is part of what makes it such an effective emotion when it comes to disease, as it mimics the mechanism by which disease actually spreads (and was doing so far before humans had developed a germ theory of disease). In short, there is good reason to believe that disgust serves the function of keeping individuals motivated to avoid many potential sources of disease by generating a set of responses that might prevent exposure to contaminants (or expel them once they have been already exposed).

Disgust, Morality, and Politics

If this account of the origins and functions of disgust is correct, recent psychological research on the influence of disgust on *social* judgment would seem to pose a puzzle. A wealth of evidence has accumulated in last few years showing that disgust seems to be heavily implicated in judgments across the moral and political domain. Evidence for this relationship has come primarily from studies that have investigated 1) the moral and political judgments of individuals who vary in their general, trait-level sensitivity to disgust , and 2) the moral and political judgments of individuals who have temporarily made to feel disgust via an experimental induction (such as a foul odor, gross images, or a dirty environment). Results from both types of studies seem to

converge on a similar answer—that disgust is associated with a set of moral and political judgments that fall on the more conservative end of the spectrum.

Disgust and Moral Judgment. Initial work in this area focused on the impact of disgust on moral judgment, and was largely motivated to demonstrate that emotions played a substantive role in moral judgment (at a time in which the most dominant models of moral judgment in psychology were largely ignoring emotions). Manipulating disgust and demonstrating an effect on moral judgment was a powerful way to document the causal power that these emotions had in shaping the kinds of moral judgments individuals made (Haidt, 2001). What was observed in these studies was an overall *moral harshness* effect of disgust—individuals made to feel disgust tended to become more severe in their moral judgments of others. Schnall, Haidt, Clore, & Jordan (2008) for instance, demonstrated that when evaluating the morality of a series of putatively immoral actions, individuals who sat in front of a dirty desk were more severe in their judgments. This was consistent with earlier work by Wheatley and Haidt (2005), who had demonstrated a moral harshness effect by showing that individuals made to feel disgust via a post-hypnotic suggestion viewed an agent's transgression as more morally wrong than those who did not made to feel disgust. Since then, additional evidence for the moral harshness effect has come from studies demonstrating that participants given a bitter drink judge immoral acts to be more wrong (Eskine, Kacirik, & Prinz, 2011), and from studies linking trait disgust to more severe ratings of moral infractions. For instance, Horberg, Oveis, Keltner, & Cohen (2009) found that individuals who reported higher levels of disgust sensitivity (as measured by the Disgust Sensitivity Scale, or DSS; Haidt, McCauley, & Rozin, 1994) tended to judge certain immoral acts

as more wrong than individuals low in disgust sensitivity. Similarly, Jones and Fitness (2008) found that individuals high in disgust sensitivity had a lower threshold for determining that a criminal defendant was guilty after reading a mock transcript of a criminal trial, and were more likely to dole out harsher punishment (for a recent review of the experimental work on disgust and moral judgment see Chapman & Anderson, 2013).

Disgust and Political Orientation. While the influence of disgust on moral evaluation focused on judgments of acts and agents engaging in (putatively) immoral behaviors, another set of findings emerged that linked the tendency to experience disgust with an individual's overall conservative/liberal political orientation. Inbar, Pizarro, & Bloom (2008) initially documented the relationship between disgust sensitivity (measured with the Disgust Sensitivity Scale, or DSS) and overall political orientation on the conservative/liberal end of the spectrum, such that individuals who reported being more easily disgusted were more likely to report being politically conservative (a finding that could just as accurately be described as that liberals are relatively low in disgust sensitivity). The results from this initial demonstration were shown to be consistent across three different samples (2 colleges, and 1 sample of adults recruited on the internet), as well as when controlling for a number of demographic variables (including gender and religious affiliation).

The relationship between political orientation and score on the disgust sensitivity scale was replicated by Terrizzi, Shook, & Ventis, 2010, and was conceptually replicated by researchers using physiological measures of disgust reactivity in addition to the DSS (Smith et al, 2011). Specifically, Smith et al. (2011) found that the degree of

physiological arousal (as measured by skin conductance) observed in participants while viewing disgusting images was a positive predictor of specific conservative political attitudes (such as opposition to gay marriage).

However, Smith et al. (2011) failed to find a relationship between physiological measures of disgust and self-reported global political orientation. Moreover, while they demonstrated a relationship between scores on the DSS and certain specific conservative political attitudes, they did not replicate the overall effect on global left/right political orientation (although the authors themselves suggest that their failure to find a significant effect may be a result of their small sample size, which was just shy of 50 participants). Tybur et al (2010) also reported a failure to replicate the relationship between disgust sensitivity and global political orientation in a US college sample using an updated version of the disgust sensitivity scale (the DS-R; Olatunji et al., 2007).

These concerns led Inbar, Pizarro, Iyer, & Haidt (2012) to attempt a replication of the basic relationship between disgust sensitivity and political orientation using the updated DS-R on a much larger sample of nearly 30,000 US respondents, and on more than 5,000 international respondents (recruited from yourmorals.org). This sample also allowed the authors to include a number of variables that could account for the observed relationship between disgust sensitivity and political orientation in previous studies, but that had not been measured properly (such as religiosity, neuroticism, or openness to experience). Inbar et al. (2012) were able to replicate the relationship between disgust sensitivity and political orientation, and showed that this relationship held even when including the additional control variables in the model. In addition, disgust sensitivity was a significant predictor of voting behavior in the 2008 US

presidential election—trait disgust positively predicted intentions to vote for John McCain (the more conservative candidate) over Barack Obama, and average levels of disgust sensitivity in a state predicted the margin of victory of Obama over McCain. Finally, the authors were able to demonstrate the same basic relationship between the DS-R and political orientation in an international sample of respondents from 121 different countries, across 10 broad geographical regions. (In order to avoid confusion about terminology, participants in the international sample were told that the term “liberal” referred to the left, progressives, and in some countries, socialists, and that “conservative” referred to the right, traditionalists, and in some countries christian democrats). The effect sizes in the international sample were similar to those previously reported in the US samples (ranging from r s of .22-.33).

Accounting for the Effects of Disgust

While the basic link between disgust sensitivity and political orientation seems well-supported now given the number of studies and labs documenting similar effects, less progress has been made toward explaining *why* we observe this relationship between disgust and political orientation (Inbar & Pizarro, in press). And despite having received a great deal more attention, the nature of the relationship between disgust and moral judgment has been equally unclear (Pizarro, Inbar, & Helion, 2011). The accumulation of empirical data has far outpaced the ability of researchers to explain the data in aggregate.

There are a number of reasons why explanatory theories might be difficult in this particular domain. For one, there has been genuine disagreement among researchers as to what phenomena ought to be included when using the term *disgust*, and as to

whether the various uses of the term refer to the same emotional response at all. Bloom (2004), for instance, has claimed that “moral disgust” does not properly refer to the actual emotion of disgust, but is simply a metaphorical extension of the term, used because it communicates strong rejection. Much like a person who states that they “lust” after a new car should is likely not experiencing actual sexual arousal or sexual desire for the car, a person experiencing moral disgust should not be taken too literally to mean that they are actually grossed-out by a moral infraction. Others have proposed that a distinction ought to be made between *moral disgust* and *bodily disgust* (which refers to the emotion as we have been describing it—the emotional reaction to a the threat of literal physical contamination), and have provided evidence that everyday use of the former term refers to an emotional reaction toward a non-physically disgusting stimuli that may genuinely be labeled disgust, but that bears a greater resemblance to anger than to the bodily disgust reaction (Gutierrez, Giner-Sorolla, & Vasiljevic, 2012). Finally, others have argued that when individuals report feeling disgusted by a moral violation (even ones that contain no mention of physically disgusting stimuli, such as being disgusted that someone stole money), they are experiencing the same emotion as an individual who reports feeling disgusted by, say, feces or putrid meat (Chapman and Anderson, 2013). This explanation requires a commitment to the view that disgust may have evolved to protect against physical contamination, but that it was co-opted (or exapted) by morality, and now plays a functional role in the moral domain.

Yet another reason for why it is difficult to find a satisfactory explanation for the observed effects of disgust on political and moral judgment is that few empirical studies actually provide much in the way of necessary evidence to tease apart competing

explanations. More often than not, researchers (including us) have failed to include a negative emotion comparison (such as fear, anger, or sadness) in order to test the hypothesis that disgust has emotion-specific effects on judgments above-and-beyond the effects of negative emotionality. In addition, studies often fail to include variety at the level of the dependent variable, making it difficult to assess the impact of disgust on moral vs non-moral judgments, or domain-specific judgments regarding purity vs harm (Pizarro, Inbar, & Helion, 2011). As such, there is surprisingly little evidence that can speak both as to whether there are reliable specificity effects of disgust when compared to other emotions, and whether there are specificity effects in specific judgmental domains (Chapman & Anderson, 2013 provide a useful chart listing the manipulations and dependent variables used across all studies that had been published to date between disgust and moral judgment).

Despite these problems, there are now enough findings in the literature for a picture to begin to emerge regarding the nature of the relationship between disgust and political and moral judgment. We believe that the best explanation of the existing data is that disgust does not have any *special* relationship to moral and political judgment, but that the general observed effects of disgust on moral harshness and political orientation obtain because of the specific relationship between disgust and the threat of physical contamination, combined with the fact that many of these judgments happen to also be important in the moral and political domain (see also Inbar & Pizarro, in press). For instance, the fact that disgust exerts an influence on judgments of sexual morality is likely a result of the sexual domain being particularly relevant to concerns about physical contamination, and not because the specific effects of disgust on judgments of

homosexuality or gay marriage happen to be moral issues across many contemporary societies. A similar explanation can be given regarding negative attitudes toward strangers or unfamiliar outgroups—while xenophobia is a moral and political issue, any specific effects of disgust on judgments of the members of these outgroups may be because dissimilar others posed a potential contamination threat to our ancestors in that they were likely carriers of novel pathogens.

Sex, Disgust, and Politics. On our account, the most robust effects in which disgust influences moral and political judgments ought to be ones in which the object of evaluation (the act, person, or group) occupies the overlapping space between moral/political issues and concerns over potential physical contamination. Attitudes toward sexuality often fit this bill perfectly, and it is unsurprising that there is a wealth of findings linking disgust to political/moral attitudes about sex (such as judgments about homosexuality/gay marriage, birth control/abortion, incest, and deviant-but-harmless sexual acts).

For instance, in the initial demonstration of the link between disgust sensitivity and political conservatism, Inbar, Pizarro, & Bloom (2008) found that the relationship between conservatism and disgust sensitivity was fully explained by differences on two specific attitudes that divided liberals and conservatives: attitudes toward gay marriage and attitudes toward abortion (disgust sensitivity was not related to other political attitudes such as those about welfare, gun control, or immigration). Controlling for the relationship between gay marriage and abortion and disgust sensitivity eliminated the more general relationship between disgust sensitivity and political orientation. The general link between disgust sensitivity and sexuality was also reported by Olatunji

(2008), who found that individuals who report being easily disgusted also reported more conservative attitudes toward sex. Smith et al. (2008) provided convergent evidence for this link. They found that physiological arousal to disgusting (but non-sexual) images was a significant predictor of attitudes toward gay marriage, and that this arousal was a reliable predictor of conservative sexuality when looking across all items in the sexual/reproductive domain (including attitudes toward pornography, premarital sex, and abortion). In addition, these items were the only political attitudes of the set that were significantly related to either the physiological measures of disgust or of scores on the disgust sensitivity questionnaire. As in Inbar, Pizarro, & Bloom, (2008), attitudes toward a number of other hot-button political issues (such as tax-cuts, welfare, foreign policy) demonstrated no reliable relationships with either measure of disgust.

Additional evidence for the link between the sexual domain and disgust sensitivity was reported by Inbar, Knobe, Pizarro, & Bloom (2009), who found that individuals high in disgust sensitivity were more likely to demonstrate negative implicit attitudes toward gay men. In addition, manipulating disgust in the laboratory with a foul odor had a significant influence on the evaluation of gay men on a feeling thermometer, but had no effect on judgments of other social groups, including African Americans, immigrants, or the elderly (Inbar, Pizarro, & Bloom, 2012). Similarly, manipulating disgust with a series of disgusting images has been shown to increase negative implicit attitudes toward homosexuality (while manipulations of anger had no such effect; Dasgupta, Desteno, Williams, & Hunsinger, 2009).

Another source of evidence that helps illustrate our primary claim that disgust has no special relationship to political or moral judgments *per se*, comes from evidence

that disease avoidance mechanisms in general have a similar relationship political attitudes more broadly, but that in other cases the specific link to physical contamination is simply obvious. The set of responses that comprise the line of defense against exposure to disease is collectively referred to as the behavioral immune system (Faulkner, Schaller, Park, & Duncan, 2004; Park, Faulkner, & Schaller, 2003; Schaller & Duncan, 2007, Schaller & Park, 2011). There is growing evidence that individual differences in the strength of this behavioral immune system are related to sociopolitical attitudes in a manner very similar to that of disgust sensitivity. If these findings are right, this provides reason to believe that the effects of disgust on political and moral judgment *can* be explained as a result of the heightened sensitivity to disease that is constitutive of the emotion, and that the observed effects do not necessarily require an account of disgust as an emotion that was broadened by evolution to serve the moral domain as some have argued.

For instance, individuals who are chronically high in perceived vulnerability to disease generate more conservative responses on a variety of measures tapping social conservatism (Terrizzi, Shook, and McDaniel, in press), such as right-wing authoritarianism (Altemeyer, 1988), social dominance orientation (Pratto et al., 1994), and vertical collectivism (Singelis et al., 1995). At the cultural level, there is evidence that those cultures from geographical regions that were historically high in parasite and pathogen prevalence tend to be particularly conservative ones. Across 71 world regions, the historic prevalence of pathogens is associated with more restricted (i.e. conservative) sexual attitudes, and lower overall openness to experience (Schaller & Murray, 2008). Similarly when looking across various countries and differences between

states in the US, current disease prevalence is associated with greater religiosity and stronger family ties (Fincher & Thornhill, 2012). The traits associated with the set of attitudes and personality differences in regions with high pathogen prevalence are ones that bring with them a greater separation between groups, less experimentation with novel cultural and sexual practices, and less contact with strangers. For individuals in environments with high pathogen loads, the perceived risk of engaging in contact with unfamiliar outgroups, trying strange foods, and engaging in novel forms of sexual contact appears to outweigh the potential benefits of such activities.

As we have recently argued elsewhere (Inbar & Pizarro, in press), we believe that the best explanation of disgust's connection to specific social/political issues—as well as to broader ideological commitments—comes from its function in preventing disease, and as an efficient response to the threat of physical contamination (Schaller & Park, 2011). Our claim is that the very same mechanisms that cause us to feel disgust for putrid meat, blood, pus, and vomit, also motivate us to avoid, judge, or reject behaviors, individuals, and groups that might contain cues that threaten physical contamination. It is not surprising that disgust has such a deep relationship with many attitudes that are considered fundamentally political or moral, such as attitudes toward immigration, homosexuality, and abortion. These relationships are likely what accounts for the more global findings on political orientation. And as one might expect if this disease-avoidance account is true, you can see a similar set of findings when looking at individuals who are made to feel disgust temporarily, who are reminded of the threat of disease in the environment, who are very easily disgusted, who perceive themselves as especially vulnerable to disease, or who were raised in a culture that evolved during a

time and place where there was a lot of disease: all of these share a similar pattern of responses that is most easily described as a tendency to make judgments and hold beliefs that lean toward the conservative end of the spectrum.

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