

## **Disgust and Public Opinion**

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We thank Bunmi Olatunji, Liz Zechmeister, the Research on Individuals, Politics & Society Lab Group, and seminar participants at the Behavioral Research Workshop at Vanderbilt University, the Clinical Psychology Brownbag series at Vanderbilt University, and the Van Ek Lecture at the University of Colorado-Boulder, for constructive feedback.

## **ABSTRACT**

We contribute to the growing literature on emotions and politics by focusing on the political relevance of disgust, a basic emotion characterized by visceral aversion to a potentially offensive stimulus. We offer a conceptual clarification of disgust's potential connection to politics and we evaluate how individual sensitivity to feeling disgusted affects public opinion. Although the limited work on disgust and public opinion suggests a relationship between disgust sensitivity and political conservatism, we show that disgust sensitivity operates independently of political ideology and informs a wide array of protectionist policy preferences across the ideological spectrum, even controlling for other relevant predispositions. Our analyses suggest that disgust is distinct from simple outgroup hostility and the relationship between disgust sensitivity and opinion on policies regarding outgroups depends upon the content of those policies. Finally, survey experimental results demonstrate that political communication can activate disgust sensitivity in public opinion.

*I aimed at the public's heart, and by accident I hit it in the stomach.* – Upton Sinclair

Upton Sinclair's novel, *The Jungle*, chronicles the struggles of a Lithuanian immigrant working in Chicago's meatpacking industry. Sinclair, a journalist, novelist, and two-time Socialist candidate for Congress, aimed to use *The Jungle* to spotlight the heartbreaking conditions of American wageworkers, living at the mercy of a corrupt and merciless wage system. The press, the public, and politicians seized upon the novel, not so much for its harrowing portrayal of the plight of wage workers, but for its graphic descriptions of toxic practices in the meat-packing industry. Through *The Jungle*, Americans learned that their sausages were laced with rancid beef and pork, or worse, rat meat; that the canned "chicken" they ate was actually beef hearts and other organs; that a worker could die and be absorbed into the lard sold on their neighborhood grocery shelves. Then-President Theodore Roosevelt, taking advantage of the public outcry, ordered two separate investigations of the meat inspection and packing industries. Within four months of *The Jungle's* debut, Congress passed the Pure Food and Drugs Act and the Meat Inspection Act.

*The Jungle* is but one historical example of the potential potency of the emotion of disgust in animating political debate and in shaping public opinion. Contemporary examples along these lines are easy to find as well. Anti-abortion demonstrators routinely use graphic photographs of aborted fetuses. People for the Ethical Treatment of Animals (PETA) has staged protests at Fashion Week events across the globe – with activists wearing (nothing but) skinned foxes, protestors holding bloody photos of harmed animals, and demonstrators covering themselves (and others) with faux-blood. And, disgust has worked its way into electoral campaigns as well: Carl P. Paladino, Republican candidate in

the 2010 New York State gubernatorial race, sent garbage-scented mailings to prospective voters with the headline “The stink of corruption in Albany is overpowering” (Chen 2010).

If political life is tinged with disgust-laden rhetoric, disgust-evoking imagery, and, even disgust-inducing odors, does this necessarily mean that disgust works its way into public opinion? And if so, how?

### UNDERSTANDING DISGUST

Nearly 150 years ago, Charles Darwin described disgust as “something revolting, primarily in relation to the sense of taste, as actually perceived or vividly imagined; and secondarily to anything which causes a similar feeling, through the sense of smell, touch, and even of eyesight” (1872, p. 254). In his early work on discrete emotions, psychologist Paul Ekman (1984) identified disgust (along with surprise, anger, fear, sadness, and happiness) as a “basic emotion,” characterized by a distinctive set of universally recognizable signals and a distinctive physiological response, and accompanied by automatic appraisal of a stimulus. Psychologists largely agree that disgust occurs when an individual perceives and seeks to reject contact with an impure object, action, or event (e.g., Rozin et al. 2008). Disgusted individuals feel the sensation of nausea (a physiological response associated with the expulsion of offending matter) and have a distinct facial expression: a wrinkled nose, gape, and retraction of the upper lip (physiological responses associated with creating a barrier to ward off entry of offending matter and to allow the expulsion of it; e.g., Rozin et al. 1994).<sup>1</sup> In line with this notion of disgust as creating barriers between the self and offending stimuli, Miller (2004) entitles her book *Disgust: The Gatekeeper Emotion*.

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<sup>1</sup> Attesting to the innateness of physiological responses of disgust, even the congenitally blind make these facial expressions when disgusted (Galati et al. 1997).

Evolutionary psychologists believe that disgust developed as a defensive mechanism to protect the body against pathogens.<sup>2</sup> This aspect of disgust, namely *Core Disgust*, as it is now called, is “an oral defense against harm from potential foods, or things that can easily contaminate foods such as body products and some animals” (Rozin et al. 2008, p. 761). Rozin et al. (2008) distinguish other aspects of disgust that each, in turn, expand to defense of the body, soul, and social order.<sup>3</sup> *Interpersonal Contamination Disgust* extends beyond the body to the soul and the social order: this is disgust characterized by an aversion to particular groups of people such as strangers/outsideers and to social behaviors that are culturally deemed to be unacceptable (Rozin et al. 2008). This contamination disgust also contains an aspect of sympathetic magical thinking – that the emotion of disgust can emerge even when there is no “real” threat of contamination. For example, subjects find a piece of chocolate (that happens to be shaped like dog feces) disgusting: even though the chocolate itself is not likely to contaminate, the sympathetic law of similarity (Rozin et al. 1986) imparts the objectionable qualities of dog feces to a chocolate shaped like that object. Contamination, thus, may be real or imaginary. Importantly, judgments about which groups of people or which behaviors are deemed “disgusting” are culturally constructed: just because society feels disgust toward a particular group or action does not mean that the group or action actually present a real harm; indeed we often unfairly fabricate a reason something or someone disgusts us as a way to stigmatize the behavior or group and legislate against it (Nussbaum 2010). Regardless of any true harm brought on

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<sup>2</sup> For a detailed account of this disease-avoidance mechanism, see, e.g., Oaten et al. 2009.

<sup>3</sup> *Animal Reminder Disgust* extends to all parts of the body and includes reminders (such as the fluids involved in sexual reproduction and decaying organisms) that humans are animalistic beings (Rozin et al. 2008). We set aside this particular aspect of disgust, as we believe it is less centrally related to politics compared with the other two.

by purported objects of disgust, disgust seems to be a powerful emotion that can be used as protection against physical, spiritual, and societal harm.

Although evolutionary psychologists focus on disgust as an adaptive mechanism, present in all societies, much of the existing empirical work on disgust focuses on either state-based or trait-based disgust (as well as their interaction).<sup>4</sup> Here, we are primarily interested in trait-based disgust: individual differences in people's sensitivity to experiencing disgust, and the attitudinal and behavioral correlates of trait-based disgust. Work along this vein has developed various scales (and subscales) to identify individuals' self-reported likelihood of experiencing different types of disgust when faced with various scenarios. Most work points to the pioneering research by Haidt, McCauley, and Rozin (1994) that developed and validated the original 32-item Disgust Scale.<sup>5</sup> The original scale was aimed at tapping seven aspects of disgust: "food, animals, body products, sex, envelope violations, death, and hygiene" (Haidt et al. 1994, p. 710). Subsequent work has revised

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<sup>4</sup> The empirical work on state-based disgust examines how situational triggers (such as images of disgust-evoking objects, offensive smells, or bitter tastes) induce the emotion of disgust and thereby shape subsequent attitudes and behaviors. One stream of work investigates disgust with respect to the human/animal divide: visual exposure to aspects of core disgust (feces, vomit), by emphasizing the "creatureliness" of human beings, increases the accessibility of death-related thoughts (Cox et al. 2007). Another stream of work looks at the role of disgust on social judgments (relating to disgust as a trigger for protection of the social order). For example, subjects who were exposed to offensive smells (Schnall et al. 2008), disgusting workspace (Schnall et al. 2008), disgusting videos (Schnall et al. 2008), and bitter tastes (Eskine et al. 2011), and who were asked to recall disgusting experiences (Schnall et al. 2008) rendered harsher judgments on moral transgressions than subjects in the respective control conditions. In another stream of work, Lerner et al. (2004) examine the endowment effect among subjects exposed to a disgust-evoking film clip, finding that disgusted subjects who participate in subsequent economic games have lower selling prices (they are more eager to rid themselves of an endowment) and higher buying prices (they are less eager to adopt new items). In a series of behavioral studies, Porzig-Drummond et al. (2009) examine the effect of disgust-inducing videos and posters on hand-washing behaviors, finding significant increases in hand-washing hygiene in both lab and field interventions.

<sup>5</sup> There are several other individual difference measures on disgust as well. The Disgust Emotion scale (DES, Walls & Kleinknecht 1996) is a 30-item measure tapping the propensity to experience disgust towards five types of stimuli. The Disgust propensity and sensitivity scale-revised (DPSS-R, van Overveld et al. 2006) is a twelve-item scale that taps propensity to experience disgust as well as sensitivity ("tendency to evaluate experiencing disgust negatively", Overveld et al. 2011, p. 327).

and reanalyzed the psychometric properties of this scale, producing the revised 25-item Disgust Scale, or DS-R (Haidt, McCauley and Rozin, 1994, modified by Olatunji et al. 2007).<sup>6</sup>

In line with the notion that disgust is a protective reaction designed to ward off contamination, psychologists have uncovered a relationship between disgust sensitivity and clinical conditions such as obsessive-compulsive disorders and specific phobias (Olatunji and Sawchuk 2005, Olatunji et al. 2007; Tolin et al. 2006). Another line of work has uncovered a relationship between disgust sensitivity and intergroup attitudes, with the idea that disgust arises out of a desire to protect the body, soul, and society from contamination. Inbar et al. (2009b) demonstrate a correlation between disgust sensitivity and implicit attitudes towards homosexuals, and Navarette and Fessler (2006) show that disgust sensitivity is correlated with favoritism towards Americans and hostility towards foreigners.

### **DISGUST AND ...POLITICS?**

To say that disgust influences our choices about what to eat, when to wash, and who to avoid is perhaps indisputable. But how much of a role does disgust play in *political* attitudes? A smattering of existing work, most of it published in the past five years, offers suggestive but, to our mind, not dispositive evidence in this regard.

Some of this work centers on the role of disgust in policing the social order, with the idea that disgust serves to control the possibility of contagion across groups of people. For example, Dasgupta et al. (2009) find that disgust manipulations increase bias against disgust-relevant groups. Existing work cited above on disgust sensitivity shows a

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<sup>6</sup> The original and revised scales have been translated into at least eleven languages for use around the world. For more on the disgust scale, see <http://people.stern.nyu.edu/jhaidt/disgustscale.html>.

relationship between disgust sensitivity and intergroup attitudes. Although these studies do not explicitly link disgust with public policy preferences, it is not difficult to see how feelings about particular groups, ingroup bias, and outgroup antipathy might lead to support or opposition for certain public policies.

A recent body of work has begun to directly explore the relevance of disgust sensitivity for politics. Disgust sensitivity is often linked to conservatism through a behavioral immune system account: conservative ideology (typically conceptualized as social, as opposed to economic, conservatism) operates to minimize pathogen entry and contamination.<sup>7</sup> Across several convenience samples, Inbar and colleagues (Inbar et al. 2009a, 2012) find a significant (though substantively small) correlation between disgust sensitivity and political conservatism in the United States. For example, the bivariate correlation between overall disgust sensitivity and ideological identification in Inbar et al. (2012) was  $r=0.17$ . Inbar et al. (2012) also utilize a large-scale cross-national convenience sample to uncover a significant bivariate relationship ( $r=0.22$ ) between disgust sensitivity and political conservatism in 121 separate countries of the world. In addition, Inbar et al. (2009a) also identify a relationship between self-reported disgust sensitivity and specific policy attitudes, particularly those related to moral, social issues such as abortion and gay marriage as opposed to economic issues or foreign policy (also see Inbar et al. 2012), and Terrizzi et al. (2010) uncover a significant bivariate relationship between disgust sensitivity and social issues (gay marriage, stem cell research, abortion, euthanasia, medicinal marijuana) but do not control for confounding factors. And, the relationship

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<sup>7</sup> But Tybur et al. (2010) explicitly test for this mechanism and, in three separate studies, uncover no relationship between sensitivity to pathogen disgust and political conservatism. They also failed to uncover a significant relationship between overall disgust sensitivity and political conservatism ( $r=0.06$ ).



between disgust sensitivity and politics may also translate to electoral choice: Inbar et al. (2012) uncover a suggestive bivariate relationship between disgust sensitivity and intended presidential vote choice: people high in disgust sensitivity reported a lower likelihood that they would vote for Obama in 2008 ( $r=-0.10$ ).

While this work provides a fruitful starting point for work relating disgust sensitivity to matters of political relevance, we believe further work is needed. Most of this work utilizes convenience samples; the Inbar et al. (2009b) evidence is based on laboratory studies of students and the Inbar et al. (2012) demonstrations are based on online convenience samples. While we have no *a priori* opposition to convenience samples *per se*, the fact is that these particular convenience samples are sharply skewed in the liberal direction, making it difficult to discern the extent to which there are substantial differences across the entire ideological spectrum or among liberals themselves.<sup>8</sup> Additionally, most of the significant bivariate correlations are modest in magnitude (in the 0.10 to 0.20 range). And, much of this work utilizes bivariate correlations that put aside other standard predictors of public opinion, uses *ad hoc* measures yet to be validated in the political science literature (Inbar et al. 2009, Study 2), or reports mixed results on the relationship between disgust sensitivity and conservatism, when measured with partisanship or ideological identification (e.g., Inbar et al. 2009, Study 1).

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<sup>8</sup> For example, in the large US convenience sample used in Study 1 of Inbar et al. (2012), only 11.8% of the 25,588 respondents are slightly to very conservative; 10.5% are moderate, and the remainder (77.6%) are very to slightly liberal. In the large-scale study of respondents from 121 countries, only 9.3% of respondents reported being slightly to very conservative compared with the 77.5% of respondents reporting being slightly to very liberal).

Our research builds on existing scholarship in four ways. First, we examine the relationship between disgust sensitivity and political ideology using a nationally representative sample and a standard political science measure of ideology.

Second, while previous research provides suggestive evidence linking disgust sensitivity with conservative ideology, conservative policy preferences, and conservative voting, we will argue that disgust sensitivity should have a distinct effect on public opinion, one that may either run alongside or diverge from political conservatism. Although we entertain the potential relationship between disgust and ideology, we also view disgust as a distinct factor that can potentially influence public opinion in ways quite divorced from standard ideological accounts. We will test this possibility systematically by investigating the relationship between disgust sensitivity and a wide variety of policy preferences

Third, we aim to disentangle the relative impact of two types of disgust—core and contamination—on the connection between disgust and politics. Although Inbar et al. (2009a) remove the explicitly sex-related items from their measure to make sure these items were not driving the relationship between disgust and opinions on issues like gay marriage, they do not explicitly compare core and contamination disgust. When Inbar et al. (2012) do examine the connection between each type of disgust and conservative attitudes, they find that contamination disgust seems to have a stronger relationship to overall conservatism, social conservatism, economic conservatism, foreign policy conservatism, and vote choice than core disgust, but several of the analyses are simple bivariate correlations with modest correlations. Ultimately, more work is needed to better

understand how the different types of disgust influence public opinion, under which circumstances.<sup>9</sup>

Beyond these contributions, we also seek to examine the extent to which political rhetoric can activate disgust sensitivity. Because policies can be framed in multiple ways, this allows for the possibility that political entrepreneurs can use disgust-evoking rhetoric to marshal disgust in public opinion. As such, we will examine the extent to which political policies can be framed in ways to accentuate and attenuate the role of disgust in public opinion using a randomized survey experiment.

#### **A DISGUST SENSITIVITY SCALE FOR PUBLIC OPINION**

Before we can assess the effect of dispositional disgust on public opinion it is helpful to understand how we measure disgust sensitivity, the reliability of our measure, and its structural correlates. Perhaps the most commonly used measure of disgust sensitivity is the 25-item DS-R. The DS-R consists of two batteries of questions, asked with distinct formats. The first battery of questions presents the respondent with a range of non-political situations (e.g., “If I see someone vomit, it makes me sick to my stomach.”) and assesses their agreement or disagreement with reactions to various situations. The second battery of questions presents the respondent with a scenario (e.g., “You see maggots on a piece of meat in an outdoor garbage pail.”) and asks the respondent to report the level of disgust that scenario elicits.<sup>10</sup>

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<sup>9</sup> See Oaten et al. (2009) for a discussion of the distinction between disgust and contamination.

<sup>10</sup> Research in this approach relies upon self-reported assessments of sensitivity to disgust. Work by Hibbing and colleagues (2009) suggests that physiological measures of disgust sensitivity may also be informative: they find that respondents who experience higher levels of skin conductance after the presentation of disgust-evoking images voice more restrictive views on homosexuality than those who are not physiologically responsive to the images.

The DS-R taps three related but separable aspects of disgust. The first, Core Disgust, is defined as “a sense of offensiveness and the threat of disease, consisting of stimuli such as rotting foods, waste products, and small animals” (Olatunji et al. 2007, 285). The second, Contamination Disgust, consists of “disgust reactions based on the perceived threat of transmission of contagion” (Olatunji et al. 2007, 285). And the third, Animal Reminder, represents “the aversion of stimuli that serve as reminders of the animal origins of humans” (Olatunji et al. 2007, 282). Although the 25-item DS-R has very good psychometric properties (Olatunji et al. 2007; van Overveld et al. 2011)<sup>11</sup>, the use of twenty-five separate items to measure a single construct can be cost-prohibitive, time-intensive, and unusual in standard political science surveys. As such, we measure Disgust Sensitivity using eight items from the Disgust Scale (DS-R). These items were fielded on a module of the 2012 Cooperative Congressional Election Study (CCES).<sup>12</sup>

To select our eight items from the DS-R, we first discarded items relating to Animal Reminder Disgust, on the idea that, for the most part, Core Disgust and Contamination Disgust were more likely to be politically relevant than Animal Reminder Disgust. The DS-R contains 12 items tapping Core Disgust. Of those 12 items, we selected the two items from the Core Disgust battery that had the highest factor loadings per Olatunji et al. 2007 (Study 1): DS1 and DS6, and two items from the Contamination Disgust battery that had the highest factor loadings (DS18 and DS19). The DS-R contains five items that tap Contamination Disgust. Of these five items, one explicitly asks about a “sex education

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<sup>11</sup> Olatunji et al. (2007) demonstrate its convergent validity using existing psychometric scales to tap fear of contamination, state anxiety, the Disgust Emotion Scale, and obsessive-compulsive behaviors, and van Overveld et al. (2011) give further validation to the three-factor structure and its cross-cultural portability.

<sup>12</sup> The 2012 CCES took place in two waves. A twenty-minute internet survey was fielded in October 2012 before the general election, and a ten-minute internet survey was fielded during the two weeks following the election. For more on the CCES 2012, see Ansolabehere (2013) and Ansolabehere and Rivers (2013). When weighted, the CCES is a nationally representative sample of US adults.

class," a topic that could have political relevance *and* that may have more resonance for an undergraduate convenience sample. Hence, when we exclude that item, it leaves us with two items from the first battery (DS13 and DS14) and two items from the second battery (DS29 and DS31).<sup>13</sup>

Next, we examine the distribution and reliability of our overall scale and the two subscales. Our 8-item additive scale (which we will refer to as the *DSR-8*) is rescaled to range from 0 (least disgust sensitive) to 1 (most disgust sensitive). It has nice variation with a mean of 0.58 (s.e. = 0.01), a bell-shaped distribution, and a very high response rate for all eight items (97.8% of respondents answered all eight). The scale also has good reliability ( $\alpha=0.71$ ). We also construct two additive subscales: a 4-item Core Disgust scale ( $M = 0.69$ , s.e. = 0.01,  $\alpha = 0.63$ ) and a 4-item Contamination Disgust scale ( $M= 0.46$ , s.e. = 0.01,  $\alpha = 0.60$ ). The two subscales correlate at 0.45 ( $p<0.0001$ ). Figure 1 displays the distributions of the overall scale and the two subscales.<sup>14</sup>

[Figure 1 here]

We next analyze the structural correlates of our scales. Existing work suggests that certain types of people are more disgust sensitive than others. We begin with two demographic characteristics: sex and race. Existing work demonstrates that women tend to score higher on the traditional disgust scale than men (Haidt et al. 1994; Inbar et al. 2008), and this is the case with our measure as well. The mean score for men is 0.53 (s.e.=0.01), and the mean score for women on the scale is 0.62 (s.e. = 0.01), with a

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<sup>13</sup> Appendix A displays the full text and descriptives for each of these items. There, we see that there is good variation in how individuals respond to these items. Appendix B displays inter-item correlations. Appendix C displays standardized factor loadings from Confirmatory Factor Analysis.

<sup>14</sup> We also created a version of the overall scale and the two subscales based on factor scores. The results were substantively and statistically identical; the additive and factor-score based versions for overall and subscale disgust each correlate at  $r>0.95$ .

significant difference of means at  $p < 0.001$ . Existing work also shows that blacks are more disgust-prone than whites (Haidt et al. 1994), and this is also the case with our measure: the mean score for blacks is 0.67 (s.e. = 0.02) and the mean score for whites is 0.56 (s.e. = 0.01), with a significant difference of means at  $p < 0.001$ .<sup>15</sup>

Recent evidence suggests that political conservatives may be more disgust sensitive than liberals (Inbar et al. 2009a, Inbar et al. 2012, Terrizi et al. 2010), but we believe there is mixed evidence on this front (e.g., Inbar et al. 2009a Study 1 shows no correlation between partisanship and disgust sensitivity; and Tybur et al. 2010 uncover an insignificant correlation between ideology and disgust sensitivity). In our dataset, the weighted bivariate correlation between political ideology, measured on a seven-point scale ranging from 0 = Very Liberal to 1 = Very Conservative, and disgust is just about zero ( $r = 0.0019$ , *ns*). The weighted bivariate pairwise correlation between partisanship, measured with the standard branch-stem question and ranging from strong Democrat at 0 to strong Republican at 1, actually runs the wrong way: it is  $-0.05$  (*ns*), implying that strong Democrats *on average* report higher levels of disgust sensitivity than strong Republicans.<sup>16</sup>

Probing further into the data, we examine the correlations between ideology and partisanship and each of the disgust subscales. We find a modest *negative* pairwise correlation between core disgust and political ideology ( $r = -0.069$ ,  $p < 0.06$ ) and between core disgust and partisanship ( $r = -0.069$ ,  $p < 0.05$ ), suggesting that liberals and Democrats are *more* (not less) disgust sensitive than conservatives and Republicans, respectively.

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<sup>15</sup> The mean for Hispanics is indistinguishable from that of whites ( $M = 0.57$ , s.e. = 0.02).

<sup>16</sup> We also looked for nonlinearities in the relationship between disgust sensitivity and ideology and partisanship. When we looked at the mean levels of disgust by the seven-categories of ideological identification, no discernible patterns emerged. Looking the mean levels of disgust by the seven-category partisanship measure, it appears there may be a curvilinear relationship between partisanship and disgust sensitivity, with stronger partisans ( $M_{\text{strong Dem}} = 0.61$ , s.e. = 0.01;  $M_{\text{strong Rep}} = 0.58$ , s.e. = 0.02) expressing somewhat higher levels of disgust sensitivity than independents ( $M = 0.55$ , s.e. = 0.02).

And, the pairwise correlation between partisanship and contamination disgust is -0.02 (*ns*). We do uncover a modest *positive* pairwise correlation between contamination disgust and political ideology ( $r=0.067$ ) that is marginally significant ( $p<0.10$ ).

While these pairwise correlations are interesting, examining the net effect of these covariates, after controlling for other demographics, is advisable. To do so, we regress our Disgust Scale (and separately the two subscales for Core Disgust and Contamination Disgust) on a suite of demographic variables. These results appear in Table 1. There, we see that while women score higher on the overall scale as well as each of the subscales – the difference between women and men emerges more strongly on Core Disgust. We also see that although blacks score higher on the overall scale, this emerges as a result of their significantly higher scores on the Contamination Disgust scale. We also see that Hispanics score higher on the Contamination Disgust scale than whites. Finally, partisanship is not significantly linked to the overall scale nor either of the subscales. Ideological conservatives score higher on Contamination Disgust but not Core Disgust, but this effect is only marginally distinguishable from zero at a generous  $p<0.10$ . Thus far, our analyses, which are the first of which we are aware that are based on a weighted nationally representative sample, provide little evidence suggesting a linear relationship between disgust and political conservatism.<sup>17</sup>

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<sup>17</sup> We also conducted an analysis of respondents' presidential vote choice in 2012 and self-reported vote choice from 2008. Inbar et al. (2012) find a significant negative relationship between vote intention and disgust ( $r=-0.10$  for the full disgust scale,  $r=-0.21$  for contamination subscale, and  $r = -0.07$  for the core disgust subscale). We uncover an insignificant pairwise correlation between disgust and vote choice in 2012 ( $r=0.008$  for the whole sample and  $r = -0.065$ , *ns* among whites only) between disgust and vote choice in 2008 ( $r=0.04$  for the whole sample and  $r = -0.01$  for whites only). When we conduct probit regression on white respondents, controlling for the usual covariates, we find that disgust sensitivity *decreases* the likelihood of voting for Obama in 2012 ( $b=-0.73$ , *s.e.* = 0.51, *ns*) and *increases* the likelihood of voting for Obama in 2008 by just as much ( $b=0.72$ , *s.e.* = 0.46, *ns*). In short, we have found no clear evidence of a relationship between disgust sensitivity and presidential vote choice.

## DISGUST SENSITIVITY AND PROTECTIONIST PUBLIC OPINION

Having established that disgust sensitivity is not synonymous with political conservatism, our main goal in this section is to assess the extent to which overall disgust sensitivity and its subscales inform public opinion on policies. Our primary expectation is that people who score higher on the disgust sensitivity scale (and its subscales) will be more supportive of policies that serve to protect the self and the ingroup from physical or moral contamination compared with people who score lower on the scale (and its subscales).

We test this expectation using an array of issues ranging from food safety regulation, abortion, immigration, gay rights policies, and racial attitudes.<sup>18</sup> While we believe there is no necessary connection between disgust sensitivity and public opinion, we build our expectations here based on the content of the issues and the most prevalent framing of the issues. Some issues, we think, resonate more naturally with the content of disgust, where the issue literally (rather than metaphorically) deals with objects of core disgust (e.g., pathogens or the exchange of bodily fluids). Here, in homage to Upton Sinclair, we expect food safety concerns to elicit the support of the disgust-sensitive. Oaten et al. (2009) argue that moral issues are likely to evoke disgust “where there is a clear connection back to concrete disgust elicitors” (p. 316). Based on this, we suspect to see a relationship between disgust sensitivity and abortion opinion, particularly given the Pro-Life Movement’s frequent use of graphic depictions of abortions. We expect the disgust sensitive to register more hostility to immigration; this expectation has its roots in the behavioral immune hypothesis from evolutionary psychology (Tybur 2010). For gay rights

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<sup>18</sup> Question text, response options, and frequencies appear in Appendix D. Inter-item correlations appear in Appendix E.



policies and racial attitudes, we probe into nuances within these domains. We expect disgust sensitivity to be more consequential for matters relating to the body and core elements of disgust: that is, to policies and attitudes relating to the intimate joining of bodies – perhaps best exemplified by the topics of gay marriage, interracial dating, and interracial marriage. In contrast, we suspect disgust sensitivity to be of less consequence for the more public, less intimate policies relating to, say, fair employment laws and affirmative action. Ours is the first study to push beyond a simple outgroup prejudice story and to consider the particularities of how features of policies may or may not draw from disgust sensitivity.

To summarize, across these various issues, we expect that the disgust sensitive will be more supportive of food safety regulation, less supportive of abortion rights, less supportive of immigrant rights, less supportive of gay rights, and take more racially conservative positions – particularly in the private as opposed to public domain. Importantly, food safety regulation is typically considered a liberal policy preference while the other protectionist stances align more closely with the conservative side. Using issues that cross political lines allows us to add further credibility to our argument that disgust propensity is distinct from political conservatism.

To test these expectations, we analyze each dependent variable using an ordered probit model, with each dependent variable coded such that higher values represent the more protectionist position. We control for basic demographics such as ideology, party identification, education, income, gender, race (on the non-racial policy items; black and Hispanic respondents were omitted from the racial attitudes models), and age to make our results more credible.

The results in Table 2 demonstrate a significant relationship between our 8-item Disgust Sensitivity scale and several of the dependent variables, and Figure 2 illustrates the magnitude of these effects.<sup>19</sup> Even after accounting for the effects of sex, race, age, income, education, ideology, and partisanship, we see a strong and substantial effect for disgust sensitivity in Table 2. For example, we can see that those who are more disgust sensitive are, indeed, more likely to support laws for more stringent food safety; the predicted probability of supporting a law that would increase government regulation of food safety rises from about 0.62 among the least disgust sensitive to over 0.88 among the most disgust sensitive.<sup>20</sup> Predicted support for restrictions on abortion (combining the two most restrictive responses: never allowed and allowed only in the case of rape or incest) rises from 0.19 to 0.54 across the range of disgust sensitivity. People who are disgust sensitive are more supportive of detaining illegal immigrants who cannot prove their immigration status: the predicted probability rises from 0.49 to 0.85.

On the topic of gay rights and racial preferences, we see some divergence between government policies in the public domain versus policies and preferences in the private domain. The relationship between disgust sensitivity and these various indicators suggests that we are picking up nuances beyond simple outgroup hostility. For example, we see that disgust sensitivity registers a substantially bigger effect on opposition to gay marriage – a more private matter in which the political rhetoric, as Nussbaum (2010) describes, has been saturated with disgust-laden triggers – compared with opposition to job protections

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<sup>19</sup> These predicted probabilities set all control variables to their sample mean or modes: white females aged 40 with family income between \$50,000-\$59,999, some college, who are pure independents and ideologically middle-of-the-road.

<sup>20</sup> These predicted probabilities set all control variables to their sample mean or modes: white females aged 40 with family income between \$50,000-\$59,999, some college, who are pure independents and ideologically middle-of-the-road.

for gays – a public matter arguably more often framed in terms of equal rights. Predicted opposition to gay marriage skyrockets from 0.16 to 0.63 across the range of disgust sensitivity, but predicted opposition to job protections for gays only moves from 0.09 to 0.21. On the topic of racial preferences, we see no significant effect of disgust sensitivity for affirmative action, but we do see a significant effect for social preferences: disgust-sensitive whites are more opposed to interracial dating and marriage, again signaling a distinction between those matters in the public arena and others more intimately tied to the private and more closely bordering the terrain of disgust. Indeed, predicted opposition to interracial marriage rises nearly ten-fold, from 0.05 among the least disgust-sensitive whites to 0.49 among the most disgust-sensitive whites.

Importantly, the effect of disgust sensitivity on these preferences rivals and in some cases surpasses that of ideology and party identification, making the effects quite substantial. Furthermore, and as expected, disgust sensitivity works in ways that sometimes run counter to conservative inclinations (support for stricter food safety laws) and other times alongside conservative inclinations (opposition to abortion, hostility towards immigrants, and opposition to gay marriage and miscegenation).

[Table 2 Here]

[Figure 2 Here]

Are these results attributable to disgust sensitivity or something else? As noted, we have already controlled for the likeliest suspects in Table 2. But, to probe further, we include a moral traditionalism scale in our model to ensure our results do not conflate

disgust propensity with a desire to adhere to traditional notions of morality.<sup>21</sup> The new results, presented in Table 3, suggest that this is not the case. Even when we include moral traditionalism in the model disgust sensitivity maintains a strong effect on policy preferences in all cases except for one: the item speaking to job protections for homosexuals. Even in the case of gay marriage, even *after* controlling for moral traditionalism, disgust sensitivity is still a significant and sizable predictor of opinion.

[Table 3 Here]

Although the effect of disgust sensitivity on policy preferences cannot be explained away by moral traditionalism, it is possible that our results are driven primarily by broader personality traits that correlate with both disgust sensitivity and public opinion.<sup>22</sup> When we include the Big Five personality traits into our base model we do, in fact, find that openness to experience, agreeableness, and conscientiousness have an effect on at least some of the dependent variables. Importantly, however, we also find that disgust sensitivity maintains its effect throughout. Table 3 shows the key results from this model. Ultimately, the results here show that dispositional disgust has a robust effect on a variety of political relevant issues and policy preferences that rivals that of even the most predictive influences such as ideology and partisanship.

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<sup>21</sup> Moral traditionalism is a four-item additive index, developed by with mean of 0.52, s.e. = 0.01, and  $\alpha = 0.77$ . It correlates with disgust sensitivity at 0.08 ( $p < 0.03$ ).

<sup>22</sup> We measure personality with the standard Ten-Item Personality Index (TIPI). The weighted pairwise correlation between the disgust scale and the Big Five personality traits are: -0.010 (*ns*) for openness to experience, 0.18 ( $p < 0.01$ ) for conscientiousness, 0.02 (*ns*) for extraversion, 0.17 ( $p < 0.01$ ) for agreeableness, and 0.02 (*ns*) for neuroticism.

Next, we include two other commonly-analyzed predictors of opinion: authoritarianism and racial resentment.<sup>23</sup> We see that authoritarianism (which is modestly correlated with disgust sensitivity at  $r=0.21, p<0.01$ ) exerts an independent effect on public opinion – but importantly for our purposes – only barely changes the effect of disgust sensitivity throughout. Next we drop in a measure of racial resentment (which is *not* correlated with disgust sensitivity,  $r = -0.02, ns$ ). Notice that racial resentment has an *enormous* effect when it comes to affirmative action and a sizable effect for the other two racial items.<sup>24</sup> But, the distinction in the effect of disgust sensitivity we observed above between the “public domain” item of affirmative action and the “private domain” items regarding dating and marriage remains.

As a final investigation, we reanalyzed the models in Table 2, this time breaking apart the Disgust Scale into its two components: Core Disgust and Contamination Disgust. These results appear in the last rows of Table 3. There, we see that the effects of Core Disgust are inconsistent across the dependent variables, sometimes significant, but sometimes signed in the wrong direction. We also see that the effects of Contamination Disgust are consistently signed, large in magnitude, and statistically significant in nearly every case (the one exception is affirmative action, where we were not expecting an effect, per the discussion above). Here, the evidence suggests that the stronger mechanism undergirding the relationship between disgust and public opinion on protectionist policies

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<sup>23</sup> Authoritarianism is the standard additive four-item index of child-rearing values (Stenner 200x), with mean 0.56, s.e. = 0.01,  $\alpha = 0.60$ . Racial resentment is the standard additive four-item index (Kinder and Sanders 1996), with mean 0.62, s.e. = 0.01,  $\alpha = 0.86$ .

<sup>24</sup> Consistent with Kinder and Sanders (1996), we find that racial resentment has an effect across non race-related domains as well.

is not a gut-level reaction of distaste to core elements of disgust, but a fear (whether grounded or ungrounded in reality) of contamination.

### **ACTIVATION OF DISGUST SENSITIVITY**

In this last section, we examine the extent to which political discourse can heighten the effect of disgust sensitivity. In particular, we note that issues can be described in multiple ways, and emotionally evocative language that highlights sources of core or contamination disgust may resonate strongly with the disgust sensitive. To this end, we designed an experiment on food safety to test this idea. Recent years have seen a surge in the frequency and scale of consumer product recalls due to potential foodborne disease. The Centers for Disease Control and Prevention estimate that 1 in 6 Americans falls victim to foodborne illness.<sup>25</sup> Such illnesses range from minor gastro-intestinal discomfort to nausea to more serious symptoms that lead to hospitalization and even death.

Our experiment, which was fielded in the post-election wave of the 2012 CCES, asked respondents to read a story about food-borne illness and food safety regulation. The article was based upon existing news media coverage of the issue. Each article provided information under the following headings: “Symptoms,” “Causes,” and “A Toothless Law?” Respondents were randomly assigned to the treatment or control condition. The treatment condition exposed subjects to vivid, disgust-evoking language that taps core aspects of disgust. For example, where the control condition mentions “intestinal distress,” the treatment condition mentions “projectile vomiting, watery and bloody diarrhea, and severe cramping.”<sup>26</sup> Where the control condition mentions “contaminants” reaching produce, the

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<sup>25</sup> <http://www.cdc.gov/foodsafety/facts.html>

<sup>26</sup> The full treatments appear in Appendix F.

treatment condition mentions “animal or human feces.” We expect the language in the treatment condition to activate disgust sensitivity and thus influence respondents’ views on what the federal government should do to regulate food safety in the country.<sup>27</sup>

Following exposure to the article, respondents were asked, “Do you think spending for FDA enforcement of the New Food Safety Law should be increased, kept the same as it is, or decreased?” In the sample as a whole, a bare majority of respondents supported increased spending (17.5% recommended a lot more spending and 36.2% recommended a little more spending). About a third of respondents thought spending should remain at current levels, and about 14% of respondents recommended cutting spending. We are primarily interested in whether the disgust-evoking language accentuates the role of disgust sensitivity in public opinion. As such, we model support for increased spending on the FDA as a function of the Disgust Scale and our basic set of covariates, across the treatment and control groups.<sup>28</sup>

The results in Table 4 suggest that the vivid language did activate disgust sensitivity for public opinion. In the control condition, there is no statistically significant relationship between disgust sensitivity and spending preferences; those more prone to feel disgusted are no more likely to support an increase in spending than those who are less prone to feel disgusted. Other variables do predict citizens’ views on FDA spending, including age, household income, partisanship, and ideology.

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<sup>27</sup> We also investigated state-based disgust, elicited in a battery of emotion questions immediately following the article. However, we do not find a statistically higher level of state-based disgust among those in the treatment condition compared with the control condition. We do, however, find a relationship between disgust sensitivity and self-reported disgust after viewing the information.

<sup>28</sup> To check for balance, we conducted predicted treatment assignment with our standard demographic covariates. None were significantly predictive ( $p > F \sim 0.83$ ).

In the treatment condition, however, there is strong relationship between disgust sensitivity and support for FDA spending. In the treatment condition, the predicted probability of supporting greater FDA spending is 0.34 among the least disgust sensitive; it nearly doubles (to 0.65) among the most disgust sensitive.<sup>29</sup> We also see that age positively correlates with support, with older people more likely to support greater food safety spending. And this is a case where disgust can be marshaled to work against the grain of ideology and partisanship.

[Table 4 Here]

What kind of disgust is driving these effects? We designed our treatments with aspects of core disgust in mind. As such, our primary expectation is that core disgust will be activated by the vivid language. It is also possible, though, that the vivid language enhances respondents' concerns about being contaminated – and thus it would also be reasonable if contamination disgust were activated. As above, we substituted our overall Disgust Scale for the two subscales and re-analyzed the model in Table 4, as shown in the last two columns of Table 4. We find that neither Core Disgust nor Contamination Disgust is significantly related to support for FDA spending in the control condition. However, in the treatment condition, both effects run in the expected direction, but only Core Disgust is significantly distinguishable from zero. Thus, in this case, we show that reminders of core elements of disgust can indeed trigger the activation of Core Disgust and its application to public opinion.<sup>30</sup>

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<sup>29</sup> In a fully interactive ordered-probit model, where we test for a moderating relationship between disgust sensitivity and experimental condition, we find that the effect of disgust is stronger in the treatment condition ( $p < 0.05$ , *one-tailed*).

<sup>30</sup> In a final set of analyses, we explored whether our analyses were sensitive to the inclusion of another potentially relevant covariate: general health. The CCES carries a measure of the respondent's self-reported general state of health. This question was administered in the Profile Survey, which preceded the pre-



## CONCLUSIONS

“... the specific cognitive content of disgust makes it of dubious reliability in social life, but especially in the life of the law... it will do well to cast disgust onto the garbage heap where it would like to cast so many of us.” – Martha Nussbaum, *Hiding from Humanity* (2004), p. 74-75

Prominent political theorist and legal scholar, Martha Nussbaum, repudiates the role of disgust in the law. As “an especially visceral emotion” (2010, p. 13), disgust, Nussbaum argues, has no legitimate place in policymaking and the public sphere. But, to argue against the place of disgust in political life is to *assume* its presence – to take for granted that it plays a role in policymaking and public opinion. Our purpose here has been to offer a conceptual clarification on the emotion of disgust, as it relates to politics, and to shed empirical light on the extent to which, and the conditions under which, disgust figures into public opinion.

Our results provide strong evidence that disgust shapes public opinion. Disgust sensitivity, we have shown, is only barely related to political ideology. As such, it can provide an independent source of explanation for citizens’ opinions and social preferences, sometimes running in tandem with and sometimes moving in opposition to political ideology. We find that disgust sensitivity informs a wide array of protectionist social and policy preferences across the ideological spectrum. Our analyses suggest that the role of disgust sensitivity is strongest on policies that most overtly lend themselves to concerns about bodily and societal contamination. We also show that the effect of disgust sensitivity is unaffected by the inclusion of other, potentially related predispositions, such as moral

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election wave of the CCES. Perhaps the disgust sensitivity measure is simply picking up a general concern about one’s health (and concomitant desire to avoid becoming ill). This appears not to be the case: disgust sensitivity and poor general health are unrelated:  $r=0.01$  for the overall disgust sensitivity scale,  $r=0.03$  (*ns*) for Core Disgust, and  $r = -0.01$  (*ns*) for Contamination Disgust. Moreover, including poor general health in our model makes no difference for the effect of disgust sensitivity: disgust sensitivity remains insignificant in the control condition and significant in the treatment condition.

traditionalism, personality, authoritarianism, and racial resentment. We have shown that disgust sensitivity is not merely outgroup hostility. And, we find that most of the work in these general policy opinion and social preference effects is attributable to the four-question Contamination Disgust subscale.

We have also shown that disgust sensitivity can be activated by public discourse. In our survey experiment, disgust-evoking communications can activate disgust sensitivity and marshal it into public opinion. Our results, we believe, are all the more impressive given our research design. Recall that the disgust sensitivity battery was asked in the pre-election wave of the CCES. The food safety experiment was administered a month later in the post-election wave. The treatment we designed was relatively mild: it was confined to a small proportion of disgust-evoking text – comprising about 15% of the words in the article – that was scattered throughout the news report. We used disgust-evoking text, as opposed to disgust-evoking images, and we still found effects. We suspect, given that emotionally-evocative images can be quickly and even subconsciously processed (e.g., Bradley and Lang 2007), that using disgust-evoking images might have provoked an even stronger response. In political life, communications from candidates, activists, and the media can take the form of disgust-evoking text (as we have employed), disgust-evoking images, or even, as with Paladino’s run for the New York governorship suggests, disgust-evoking smells. Any of these disgust inductions has the potential for shifting public opinion in a protectionist direction.

Is the connection between disgust and public opinion socially constructed or innate to particular issues? Although disgust has its evolutionary roots in gut-level self-protection, many current disgust-linked issues have been arbitrarily—and dangerously,

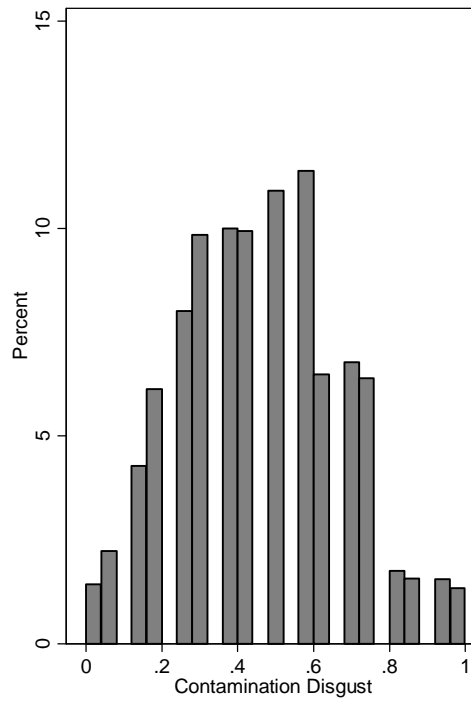
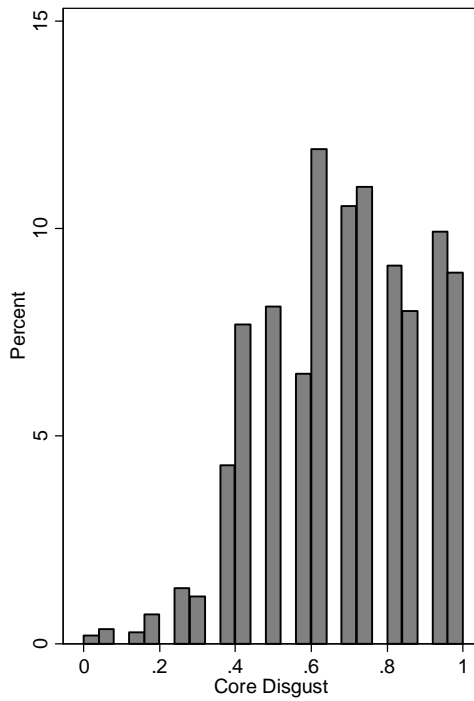
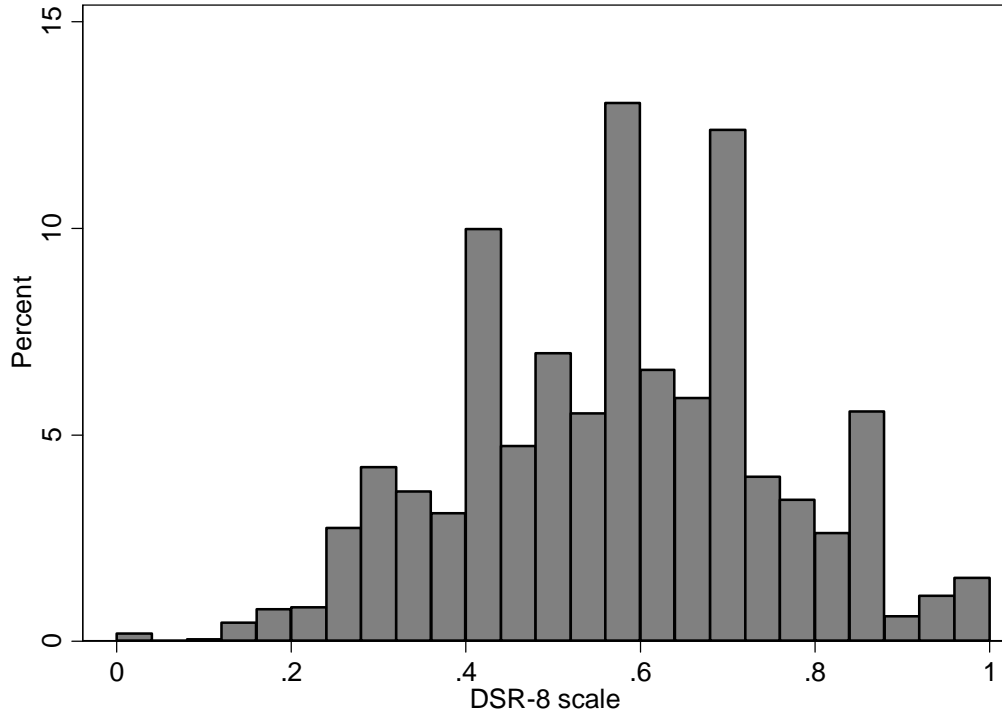
Nussbaum would contend—framed to draw on these evolutionary tendencies and elicit particular reactions. Hence, we suspect that social construction does quite a bit of work, not least because issues can be framed in multiple ways. Here we have provided evidence that disgust influences public opinion, and we suspect that both vertical (the media, political entrepreneurs, opinion leaders) and horizontal (family, peers) networks play a role in forging the connection between disgust and opinion.

While we believe our evidence provides a strong foundation for the importance of disgust sensitivity in public opinion, it by no means exhausts all possible investigations of the role of disgust in politics. One investigation beyond the scope of the current project is the connection between disgust and political behavior. As we have shown, disgust influences policy preferences. But does it spur political action? The potential effect of disgust on citizens' willingness to engage in the political process on behalf of those issues is unclear. When emotions are categorized on an approach-avoidance spectrum, disgust is, at its core, an avoidance emotion. People who are disgusted seek to reject the offending stimuli. It is hard to imagine that disgust would serve to *motivate* political participation – that is, to encourage the proactive *approach* towards politics; it is more likely that disgust would turn people off from politics. Very recent work suggests this to be the case: disgust with politics seems to depress political participation (Vandenbroek 2011) and political information-seeking (Vandenbroek 2012). But if disgust is demobilizing, why do political elites use it? We suspect that disgust may be used strategically to persuade the undecided and to enfeeble the opposition, rather than to mobilize active support among believers.

Our findings are the first that we know of to establish a clear connection between disgust sensitivity and public opinion on a nationally representative sample. We have

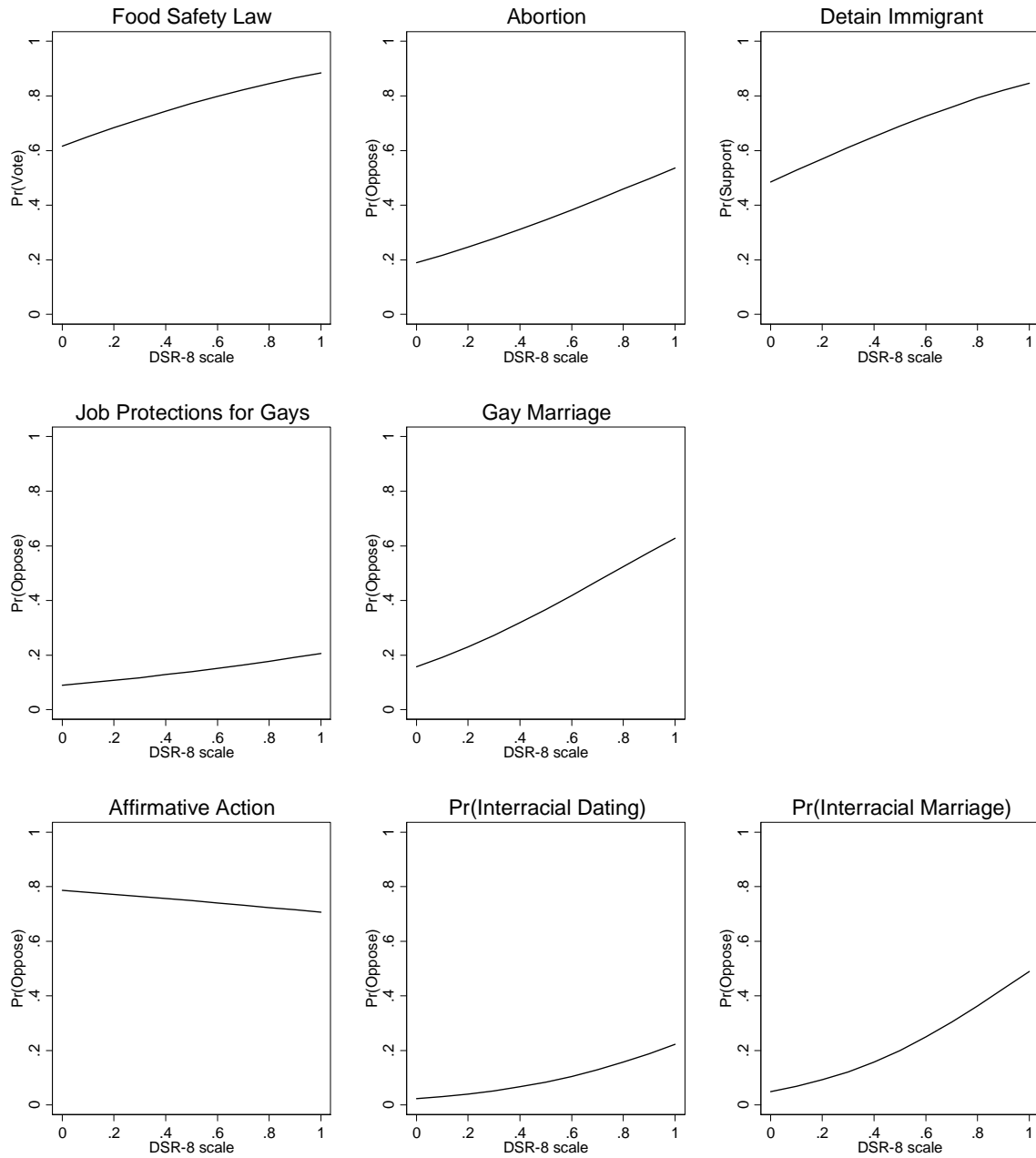
shown that people who are more easily disgusted also report political and social preferences aimed at protecting the self and society from contamination – be it real or imaginary. And we have shown that this disgust sensitivity can be marshaled into public opinion by political rhetoric. If disgust is such a visceral, physiological reaction that can potentially be evoked by strategic political elites, we worry and wonder if the connection between disgust and public policies, political candidates, and social groups, once forged, can effectively be undone.

Figure 1: Distribution of Scores on Disgust Scale and Subscales



Note: Weighted data

Figure 2: Predicted Probability of Taking Protectionist Position, by Disgust Sensitivity



Estimates from Table 2.

Table 1. Structural Correlates of Disgust Scales

	<b>Overall Disgust Scale</b>	<b>Core Disgust</b>	<b>Contamination Disgust</b>
<b>Female</b>	0.09*** 0.01	0.13*** 0.02	0.05*** 0.02
<b>Black</b>	0.08*** 0.02	-0.01 0.02	0.18*** 0.03
<b>Hispanic</b>	0.02 0.02	-0.02 0.02	0.05* 0.03
<b>Age</b>	-0.02 0.03	-0.04 0.03	-0.01 0.04
<b>Household Income</b>	-0.03 0.04	-0.04 0.04	-0.02 0.04
<b>Income Refused</b>	-0.03 0.03	-0.05 0.03	-0.02 0.03
<b>Education</b>	-0.03 0.02	-0.02 0.03	-0.04 0.03
<b>Ideology</b>	0.04 0.03	0.00 0.03	0.07* 0.04
<b>Partisanship</b>	-0.02 0.03	-0.03 0.03	-0.01 0.03
<b>Intercept</b>	0.53 0.03	0.68 0.03	0.38 0.03
<b><i>p</i>&gt;<b>F</b></b>	0.00	0.00	0.00
<b>R<sup>2</sup></b>	0.11	0.12	0.13
<b>N</b>	1309	1333	1311

Note: Table entry is the OLS regression coefficient with standard error below.  
Weighted analysis.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 2: Disgust Scale and Support for Protectionist Policies

	Food Safety	Abortion	Detain Immigrant	Job Protections for Gays	Gay Marriage	Affirmative Action	Interracial Dating	Interracial Marriage
<b>Disgust Sensitivity</b>	0.90*** 0.30	0.97*** 0.32	1.06*** 0.30	0.53* 0.32	1.33*** 0.36	-0.25 0.30	1.23*** 0.30	1.63*** 0.31
<b>Female</b>	-0.06 0.10	0.01 0.11	-0.18* 0.10	-0.33*** 0.11	-0.26* 0.14	0.07 0.11	-0.31** 0.12	-0.28*** 0.11
<b>Black</b>	0.37*** 0.13	-0.18 0.16	-0.19 0.12	-0.00 0.15	0.54*** 0.18	(omitted)	(omitted)	(omitted)
<b>Hispanic</b>	0.16 0.20	0.18 0.19	-0.67*** 0.21	0.06 0.19	0.15 0.24	(omitted)	(omitted)	(omitted)
<b>Age</b>	0.07 0.23	-0.28 0.25	0.60*** 0.24	0.24 0.28	0.91*** 0.34	0.40 0.25	1.97*** 0.33	1.80*** 0.25
<b>Income</b>	-0.08 0.22	-0.58** 0.26	-0.36 0.23	0.05 0.26	-0.48 0.35	0.78*** 0.28	-0.36 0.32	-0.21 0.24
<b>Income Refused</b>	-0.15 0.21	-0.34 0.22	-0.06 0.19	0.15 0.19	-0.45* 0.24	0.19 0.22	-0.35* 0.19	-0.23 0.19
<b>Education</b>	-0.07 0.18	-0.37* 0.19	-0.68*** 0.17	-0.36** 0.18	-0.61*** 0.22	-0.52*** 0.19	-1.05*** 0.20	-0.66*** 0.18
<b>Ideology</b>	-0.82*** 0.24	1.24*** 0.28	1.51*** 0.24	0.65** 0.29	1.35*** 0.35	1.72*** 0.26	1.22*** 0.43	0.80*** 0.27
<b>Partisanship</b>	-0.89*** 0.18	0.75*** 0.20	0.51*** 0.19	0.96*** 0.19	1.26*** 0.26	0.73*** 0.22	-0.14 0.25	0.21 0.20
<b>τ<sub>1</sub></b>	-2.22 0.26	1.00 0.26	0.03 0.27	0.88 0.28	2.02 0.35	-0.51 0.25	1.26 0.31	0.79 0.26
<b>τ<sub>2</sub></b>	-1.23 0.24	1.45 0.27	0.73 0.28	1.80 0.30		0.69 0.25	1.82 0.33	1.16 0.26
<b>τ<sub>3</sub></b>	0.28 0.24	2.61 0.29	1.77 0.29	2.30 0.31		1.73 0.26	2.49 0.35	2.26 0.26
<b>τ<sub>4</sub></b>							3.16 0.35	2.88 0.27
<b>p&gt;F</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>N</b>	1304	1301	1304	1299	1300	1025	1026	1026

Note: Table entry is the ordered probit coefficient with standard error below.

Weighted analysis.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .



Table 3: Effect of Disgust on Public Opinion, Robustness Checks

	Food Safety	Abortion	Detain Immigrant	Job Protections for Gays	Gay Marriage	Affirmative Action	Interracial Dating	Interracial Marriage
<b>Adding Moral Traditionalism</b>								
<b>Disgust Sensitivity</b>	0.87*** 0.28	0.96*** 0.29	0.95*** 0.27	0.41 0.29	1.22*** 0.38	-0.41 0.31	1.16*** 0.30	1.47*** 0.31
<b>Moral Traditionalism</b>	-0.57** 0.26	1.24*** 0.27	1.61*** 0.25	1.95*** 0.28	3.19*** 0.37	1.35*** 0.29	1.14*** 0.35	1.25*** 0.28
<b>Adding Personality</b>								
<b>Disgust Sensitivity</b>	0.79*** 0.29	1.00*** 0.29	1.01*** 0.32	0.65** 0.32	1.43*** 0.36	-0.30 0.30	1.44*** 0.31	1.68*** 0.31
<b>Openness</b>	0.43* 0.26	-0.05 0.30	-0.13 0.28	-0.84*** 0.27	-0.31 0.34	-0.12 0.32	-0.74** 0.31	-0.75*** 0.27
<b>Conscientiousness</b>	0.18 0.30	1.17*** 0.29	0.01 0.29	-0.35 0.33	-0.08 0.41	0.76** 0.31	-0.34 0.42	0.19 0.31
<b>Extraversion</b>	0.13 0.21	0.08 0.22	-0.24 0.23	0.23 0.21	-0.31 0.29	0.33 0.23	-0.18 0.25	0.03 0.23
<b>Agreeableness</b>	0.72** 0.28	-0.71** 0.30	-0.00 0.34	-0.47 0.29	0.10 0.38	-0.89*** 0.31	-0.62* 0.35	-0.34 0.35
<b>Neuroticism</b>	-0.10 0.27	-0.12 0.26	-0.46* 0.25	-0.23 0.28	-0.55 0.34	0.14 0.28	0.03 0.31	-0.01 0.28
<b>Adding Authoritarianism</b>								
<b>Disgust Sensitivity</b>	0.96*** 0.31	0.96*** 0.30	0.69** 0.33	0.30 0.33	1.11*** 0.38	-0.26 0.30	1.04*** 0.30	1.54*** 0.31
<b>Authoritarianism</b>	-0.20 0.20	0.33* 0.18	0.99*** 0.18	0.80*** 0.18	0.94*** 0.22	0.04 0.17	0.74*** 0.19	0.34* 0.19
<b>Adding Racial Resentment</b>								
<b>Disgust Sensitivity</b>	0.81*** 0.28	1.16*** 0.30	1.19*** 0.27	0.67** 0.29	1.48*** 0.34	-0.32 0.35	1.31*** 0.30	1.70*** 0.31
<b>Racial Resentment</b>	-0.86*** 0.26	1.44*** 0.22	-0.10 0.23	0.58*** 0.21	0.54* 0.28	3.20*** 0.35	1.02*** 0.26	1.78*** 0.26
<b>Breaking Disgust into Subscales</b>								
<b>Core Disgust</b>	0.20 0.23	0.61** 0.26	0.57** 0.26	-0.26 0.26	0.10 0.32	-0.17 0.28	0.06 0.29	0.57** 0.27
<b>Contamination Disgust</b>	0.61** 0.26	0.56** 0.25	0.62** 0.26	0.90*** 0.26	1.36*** 0.34	-0.15 0.29	1.24*** 0.32	1.12*** 0.29

Note: Table entry is the ordered probit coefficient with standard error below.

Weighted analysis. All models control for covariates in Table 2.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 4: Disgust Sensitivity and Vivid Language

	<b>Control</b>	<b>Treatment</b>	<b>Control</b>	<b>Treatment</b>
<b>Disgust Sensitivity</b>	-0.06 0.43	0.86** 0.35		
<b>Core Disgust</b>			0.12 0.38	0.61* 0.33
<b>Contamination Disgust</b>			-0.15 0.37	0.19 0.35
<b>Female</b>	0.03 0.14	0.03 0.14	0.02 0.13	0.02 0.14
<b>Black</b>	0.19 0.22	0.58** 0.23	0.22 0.24	0.62*** 0.23
<b>Hispanic</b>	0.08 0.31	-0.15 0.31	0.09 0.32	-0.10 0.29
<b>Age</b>	0.58* 0.31	1.07*** 0.36	0.59* 0.31	1.06*** 0.37
<b>Household income</b>	-0.89*** 0.33	0.24 0.35	-0.90*** 0.34	0.27 0.35
<b>Income refused</b>	-0.37 0.31	0.46 0.31	-0.37 0.31	0.46 0.31
<b>Education</b>	0.22 0.21	-0.17 0.21	0.23 0.22	-0.16 0.21
<b>Ideology</b>	-0.59* 0.30	-2.02*** 0.38	-0.57* 0.30	-2.00*** 0.38
<b>Partisanship</b>	-1.02*** 0.26	-0.25 0.34	-1.01*** 0.26	-0.26 0.33
<b><math>\tau_1</math></b>	-2.55 0.34	-1.97 0.32	-2.49 0.38	-1.92 0.32
<b><math>\tau_2</math></b>	-2.07 0.31	-1.50 0.30	-2.01 0.35	-1.46 0.30
<b><math>\tau_3</math></b>	-0.88 0.32	-0.25 0.31	-0.83 0.37	-0.20 0.31
<b><math>\tau_4</math></b>	0.30 0.34	0.98 0.31	0.36 0.39	1.02 0.31
<b><math>p&gt;F</math></b>	0.00	0.00	0.00	0.00
<b>N</b>	537	540	537	541

Note: Table entry is the ordered probit coefficient with standard error below.

Weighted analysis.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

## APPENDIX

### Appendix A. Disgust Scale Item Text and Descriptives.

Item	Full text	Disgust Subscale	Mean
Q1-Q4: Please indicate how much you agree with each of the following statements, or how true it is about you. Strongly disagree (very untrue about me)/Mildly disagree (somewhat untrue about me)/Neither agree nor disagree/Mildly agree (somewhat true about me)/Strongly agree (very true about me)			
Q1. Monkey	I might be willing to try eating monkey meat, under some circumstances. ( <i>R</i> ) (DS1)	Core	0.75 0.01
Q2. Vomit	If I see someone vomit, it makes me sick to my stomach. (DS6)	Core	0.61 0.01
Q3. Toilet	I never let any part of my body touch the toilet seat in public restrooms. (DS13)	Contamination	0.53 0.01
Q4. Cook	I probably would not go to my favorite restaurant if I found out that the cook had a cold. (DS14)	Contamination	0.57 0.01
Q5-Q8: How disgusting would you find each of the following experiences? Not disgusting at all/ Slightly disgusting/ Moderately disgusting / Very disgusting/ Extremely disgusting			
Q5. Milk	You are about to drink a glass of milk when you smell that it is spoiled. (DS18)	Core	0.69 0.01
Q6. Maggot	Q6. You see maggots on a piece of meat in an outdoor garbage pail. (DS19)	Core	0.72 0.01
Q7. Chocolate	Q7. A friend offers you a piece of chocolate shaped like dog doo. (DS31)	Contamination	0.44 0.01
Q8. Soda	Q8. You take a sip of soda, and then realize that you drank from the glass that an acquaintance of yours had been drinking from. (DS29)	Contamination	0.29 0.01

Table entry is the weighted mean with standard error below. *R* indicates reverse-coded.

DS(#) indicates original scale item from original Disgust Scale.

All items rescaled to range from 0 (lowest) to 1 (highest) in disgust.

Appendix B: Pairwise Inter-Item Correlations Between Disgust Items

Item	Q1.	Q2.	Q3.	Q4.	Q5.	Q6.	Q7.	Q8.
Q1. Monkey	1.00							
Q2. Vomit	0.08**	1.00						
Q3. Toilet	0.17***	0.01	1.00					
Q4. Cook	0.15***	0.14***	0.41***	1.00				
Q5. Milk	0.17***	0.25***	0.16***	0.22***	1.00			
Q6. Maggot	0.28***	0.26***	0.25***	0.18***	0.54***	1.00		
Q7. Chocolate	0.22***	0.22***	0.14***	0.26***	0.35***	0.38***	1.00	
Q8. Soda	0.09**	0.21***	0.24***	0.27***	0.28***	0.29***	0.35***	1.00

Weighted analysis.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Appendix C: Confirmatory Factor Analysis Results

Item	One Factor Model	Core Disgust	Contamination Disgust
Q1. Monkey	0.33 0.04	0.33 0.04	-----
Q2. Vomit	0.36 0.04	0.35 0.04	-----
Q3. Toilet	0.35 0.05	-----	0.43 0.06
Q4. Cook	0.39 0.05	-----	0.49 0.05
Q5. Milk	0.66 0.03	0.69 0.03	-----
Q6. Maggot	0.71 0.04	0.78 0.04	-----
Q7. Chocolate	0.56 0.04	-----	0.59 0.05
Q8. Soda	0.48 0.04	-----	0.56 0.05
Corr(Core, Contamination)		0.72 0.05	
N	1456	1456	
Pseudo lnL	-2244.66	-2191.82	
SRMR	0.059	0.051	
Coefficient of determination	0.761	0.861	

Table entry is the standardized factor loading with robust standard error below.

Weighted data. Maximum Likelihood Estimation.

All loadings significant at  $p < 0.01$ .

Appendix D. Public Opinion Item Text and Descriptives.

Item	Full text	Mean
Food Safety	Suppose that on Election Day you could vote on key issues as well as candidates. Would you vote for or against a law that would increase government regulation of food safety? Definitely vote for (1) / Probably vote for / Probably vote against / Definitely vote against (0)	0.68 (0.01)
Abortion	R is asked to indicate agreement with one of four statements or decreasing restrictiveness, from "By law, abortion should never be permitted" (coded 1) to "By law, a woman should always be able to obtain an abortion" (coded 0)	0.33 (0.01)
Detain	Do you favor or oppose allowing local and state police to detain anyone who cannot prove their immigration status? Favor strongly (1) / Favor somewhat / Oppose somewhat / Oppose strongly (0)	0.61 (0.01)
Job Protections for Gays	Do you favor or oppose laws to protect homosexuals against job discrimination? Favor strongly (0) / Favor somewhat / Oppose somewhat / Oppose strongly (1)	0.27 (0.01)
Gay Marriage	Do you favor or oppose allowing gays and lesbians to marry legally?	0.46 (0.02)
Affirmative Action	Affirmative action programs give preference to racial minorities in employment and college admissions in order to correct for past discrimination. Do you support or oppose affirmative action? Strongly support (0) / Somewhat support / Somewhat oppose / Strongly oppose (1)	0.68+ (0.01)
B/W Dating	I think it's all right for blacks and whites to date each other. Strongly agree (0) / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree (1)	0.28+ (0.02)
Interracial Marriage	I prefer that my close relatives marry spouses from their same race. Strongly agree (1) / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree (0)	0.48+ (0.02)

Table entry is the weighted mean with standard error below.

All items rescaled to range from 0 (least protectionist) to 1 (most protectionist).

+Whites only.

Appendix E. Pairwise Inter-Item Correlations Between Public Opinion Items

Item	Food Safety	Abortion	Detain	Job Protections	Gay Marriage	Affirmative Action	B/W Dating
Food Safety	1.00						
Abortion	-0.15***	1.00					
Detain	-0.20***	0.31***	1.00				
Job Protections for Gays	-0.28***	0.33***	0.23***	1.00			
Gay Marriage	-0.22***	0.52***	0.39***	0.45***	1.00		
Affirmative Action <sup>+</sup>	-0.34***	0.17***	0.45***	0.31***	0.30***	1.00	
B/W Dating <sup>+</sup>	-0.05	0.19***	0.30***	0.36***	0.37***	0.25***	1.00
Interracial Marriage <sup>+</sup>	-0.10**	0.15***	0.32***	0.34***	0.34***	0.29***	0.63***

Weighted analysis. <sup>+</sup>Whites only.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## Appendix F: Experimental Stimuli

### Control Condition

#### ON FOOD SAFETY, A LONG LIST BUT LITTLE MONEY

It seems that every week the news features a story about food-related illness. Last year, cantaloupes containing listeria killed 30 people and sickened over 100 others. This summer's E. coli outbreak has sickened 15 people in 6 states and killed one infant girl—and the case remains unknown. The list goes on.

##### Symptoms

Symptoms of food-related illnesses can range from mild discomfort to intestinal distress following exposure to contaminated food.

##### Causes

Some contaminants are introduced by unsanitary production practices that allow contaminants to reach produce, as was the case with the recent spinach outbreak. Field conditions are often unsanitary and hard to manage, lacking sanitation facilities, which forces workers to find alternative solutions for managing production issues. This increases the odds of spreading contaminants.

##### A Toothless Law?

The landmark food safety law passed by Congress last December is supposed to reduce the frequency and severity of food safety problems. Recent outbreaks suggest that deep problems remain.

While farmers worry that the rules will be too stringent, food safety advocates worry that budget cuts could render the law toothless. The Congress-



sional Budget Office has said the Food and Drug Agency (FDA) will need hundreds of millions of dollars in new financing to execute the law

"Writing rules is inexpensive; enforcing them is expensive," said David W. Acheson, a former associate commissioner of the F.D.A. who is now a food safety consultant. "Hundreds of people could become very sick if the agency doesn't get the funds it needs for enforcement."

### Treatment Condition

#### ON FOOD SAFETY, A LONG LIST BUT LITTLE MONEY

It seems that every week the news features a story about food-related illness. Last year, cantaloupes containing listeria killed 30 people and sickened over 100 others. This summer's E. coli outbreak has sickened 15 people in 6 states and killed one infant girl—and the case remains unknown. The list goes on.

##### Symptoms

Symptoms of food-related illnesses can range from mild discomfort to projectile vomiting, watery and bloody diarrhea, and severe cramping following exposure to contaminated food.

##### Causes

Some contaminants are introduced by unsanitary production practices that allow animal or human feces to reach produce, as was the case with the recent spinach outbreak. Field conditions are often unsanitary, lacking sanitation facilities which forces workers to defecate or urinate in the fields. This increases the odds of spreading contaminants.

##### A Toothless Law?

The landmark food safety law passed by Congress last December is supposed to reduce the frequency and severity of food safety problems. Recent outbreaks suggest that deep problems remain.

While farmers worry that the rules will be too stringent, food safety advocates worry that budget cuts could render the law toothless. The Congress-



sional Budget Office has said the Food and Drug Agency (FDA) will need hundreds of millions of dollars in new financing to execute the law

"Writing rules is inexpensive; enforcing them is expensive," said David W. Acheson, a former associate commissioner of the F.D.A. who is now a food safety consultant. "Hundreds of people could get hit with vomiting, diarrhea, or worse if the agency doesn't get the funds it needs for enforcement."



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