

Gut Check: Reappraisal of Disgust Helps Explain Liberal–Conservative Differences on Issues of Purity

Matthew Feinberg
Stanford University

Olga Antonenko
University of California, Berkeley

Robb Willer
Stanford University

E. J. Horberg
Stanford University

Oliver P. John
University of California, Berkeley

Disgust plays an important role in conservatives' moral and political judgments, helping to explain why conservatives and liberals differ in their attitudes on issues related to purity. We examined the extent to which the emotion-regulation strategy reappraisal drives the disgust–conservatism relationship. We hypothesized that disgust has less influence on the political and moral judgments of liberals because they tend to regulate disgust reactions through emotional reappraisal more than conservatives. Study 1a found that a greater tendency to reappraise disgust was negatively associated with conservatism, independent of disgust sensitivity. Study 1b replicated this finding, demonstrating that the effect of reappraisal is unique to disgust. In Study 2, liberals condemned a disgusting act less than conservatives, and did so to the extent that they reappraised their initial disgust response. Study 3 manipulated participants' use of reappraisal when exposed to a video of men kissing. Conservatives instructed to reappraise their emotional reactions subsequently expressed more support for same-sex marriage than conservatives in the control condition, demonstrating attitudes statistically equivalent to liberal participants.

Keywords: disgust, emotion regulation, morality, political attitudes, conservatism

Why do liberals and conservatives differ so greatly on highly contested social issues such as same-sex marriage and abortion? Recent research suggests that the emotion of disgust plays a significant role in explaining political polarization on such purity-related issues. Both Trait levels of disgust sensitivity and induced experience of disgust predict more conservative stances on such issues (Helzer & Pizzaro, 2011; Inbar, Pizarro, & Bloom, 2009, 2012; Inbar, Pizarro, Knobe, & Bloom, 2009). Here, we build on this past research on the role of disgust in moral and political judgments, specifically exploring how differences between liberals and conservatives in the regulation of disgust help explain their divergent attitudes on purity-related issues.

The Moral Functions of Disgust

Theorists have argued that, in the course of evolution, disgust reactions were selected for because they guided humans to avoid ingesting potentially dangerous substances (Rozin & Fallon, 1987). However, many have postulated that disgust has also come to be linked with moral judgment, leading individuals to avoid others who might be immoral, and therefore potentially physically and socially dangerous (Schaller & Duncan, 2007). Recent research supports this view of disgust as a fundamental moral emotion. When a stimulus evokes disgust, individuals are much more likely to condemn acts or individuals associated with the stimulus (Haidt, Koller, & Dias, 1993; Haidt, Rozin, McCauley, & Imada, 1997). In many cases, participants are unable to verbalize an explanation for their judgment, except to simply say that the act was disgusting—a phenomenon referred to as “moral dumbfounding” (Haidt, 2001). Moreover, research finds that inducing disgust can influence moral judgments. For example, study participants exposed to a disgusting stimulus, such as a foul smell or taste, became harsher judges of impure or morally questionable behavior than individuals not exposed to the disgust elicitor (Eskine, Kaciniak, & Prinz, 2011; Horberg, Oveis, Keltner, & Cohen, 2009; Schnall, Haidt, Clore, & Jordan, 2008). In other research, participants who received hypnotic suggestions to experience disgust when exposed to neutral words while reading about a target judged the target's behavior as more inap-

This article was published Online First October 7, 2013.

Matthew Feinberg, Graduate School of Business, Center for Compassion and Altruism Research and Education, Stanford University; Olga Antonenko, Department of Psychology, University of California, Berkeley; Robb Willer, Department of Sociology, Stanford University; E. J. Horberg, Department of Psychology, Stanford University; Oliver P. John, Department of Sociology, University of California, Berkeley.

Correspondence concerning this article should be addressed to Matthew Feinberg, Center for Compassion and Altruism Research and Education, Stanford University, 306 Jordan Hall, Stanford, CA 94305. E-mail: mfeinber@stanford.edu

propriate than did those not hypnotized to experience such disgust (Wheatley & Haidt, 2005).

Disgust and Political Ideology

Many of the most polarizing political issues, such as the permissibility of same-sex marriage, sex education, and abortion, fall within the moral domain of purity and sanctity (Graham, Haidt, & Nosek, 2009; Inbar et al., 2009). Conservatives typically oppose such acts, whereas liberals are generally more accepting of them. Recent research has associated disgust with conservative positions on such purity-related political topics. For example, induced disgust experience, such as disgusting smells (Inbar, Pizarro, & Bloom, 2012), result in more conservative attitudes, including less warmth toward homosexual men. In addition, sensitivity to disgust is associated with general conservatism and conservative attitudes toward abortion and same-sex marriage (Inbar et al., 2009). Together these studies suggest that conservatives and liberals differ on purity issues because conservatives are more disgust sensitive than are liberals.

We argue that the link between disgust and politics may be attributable not only to different levels of disgust sensitivity but also to chronically different reactions to the emotional experience of disgust. Applying an emotion regulation perspective (Gross, 2007) to the disgust–conservatism link, we hypothesize that liberals and conservatives differ in their use of the emotion regulation strategy of reappraisal in response to feelings of disgust, over and above their tendencies to experience disgust in the first place. In particular, we propose that liberals are more likely to reappraise disgust than conservatives, and that this helps explain the two sides' opposing positions on purity-related issues.

Emotion Regulation and Moral Judgment

Central to research on emotion regulation is the claim that individuals do not merely experience emotions—they control and alter their emotions using different regulation strategies (Gross & John, 2003). One common regulation strategy is reappraisal, which involves “rethinking the meaning of affectively charged stimuli or events in terms that alter their emotional impact” (Ochsner & Gross, 2008, p. 154). Reappraisal usually occurs early upon the onset of an emotion, changing the whole trajectory of the emotional experience so that the intensity of the emotion is downregulated and minimized, resulting in the emotion having less influence on the individual's subsequent cognitions and behaviors (Gross & John, 2003). Importantly, we focus here on reappraisal because, unlike other regulation strategies that mask one's emotions (e.g., suppression), reappraisal diminishes the experience of an emotion (Gross, 1998) and has been shown to directly influence reactions to, and judgments of, emotion-eliciting situations (Feinberg, Willer, Antonenko, & John, 2012).

Although research has established the “primacy of intuition” in the moral judgment process (Haidt, 2007), reappraisal can greatly reduce the influence of emotion-laden intuitions, leading individuals to make more deliberative moral judgments (Feinberg et al., 2012). Those who chronically reappraise, or who are primed to do so, are significantly less likely to make intuitionist moral judgments about disgusting but harmless acts. Synthesizing prior work on disgust and reappraisal's influence on moral judgments, we

hypothesize that liberals are more likely to reappraise disgust and, as a result, are more accepting and less morally judgmental of behavior that might seem impure. Further, differences in reappraisal tendency, we contend, will help explain the different political attitudes liberals and conservatives have regarding many polarizing issues such as same-sex marriage.

We test our hypotheses across four studies. In Study 1a, we examine the relationship between chronic disgust reappraisal and political ideology. In Study 1b, we further examine this relationship while also examining the extent to which this relationship is unique to the tendency to reappraise disgust and not other emotions. Then, in Study 2, we explore the extent to which disgust reappraisal can explain the different moral judgments liberals and conservatives make when confronted with a disgust-eliciting behavior. Finally, in Study 3, we manipulate participants' use of disgust reappraisal when confronted with a film clip of men kissing, and subsequently measure moral and political attitudes regarding same-sex marriage.

Study 1a

In Study 1a, we test the hypothesized relationship between political ideology and the chronic tendency to reappraise one's disgust. We collect measures of both trait-level disgust reappraisal and disgust suppression to determine if any relationship between regulation and political ideology is specific to reappraisal or associated, more generally, with emotion regulation. We assess political ideology by measuring both attitudes on purity-related political issues and by asking participants to indicate how liberal or conservative they view themselves to be in general. Finally, as control variables, we include disgust sensitivity and religiosity measures to examine whether the proposed association between reappraisal and political ideology exists even when taking into account these other related variables.

Method

Participants. One hundred twenty-five participants (55 males, 70 females) were recruited from across the United States via Amazon Mechanical Turk.¹ Participants received modest compensation in exchange for their participation.

Procedure. Participants completed a four-item disgust regulation measure modeled after the Emotion Regulation Questionnaire (Gross & John, 2003). Two items measured participants' tendency to *reappraise* in response to disgust elicitors (“When I'm faced with a disgusting situation, I make myself think about it in a way that helps me not feel disgusted”; “When I want to feel less disgust, I change the way I'm thinking about the situation”; $\alpha = .72$). The other two items measured the tendency to use *expressive suppression*, another emotion regulation strategy, in response to disgust elicitors (“I keep my feelings of disgust to myself”; “When I feel disgusted, I am careful not to express it”; $\alpha = .87$). This was included for purposes of establishing discriminant validity.

Participants indicated on 7-point scales the extent to which they identified as liberal or conservative in general, liberal or conservative on social issues, and as a Democrat or Republican. Partic-

¹ Without prior precedent, we estimated that such a sample size would be large enough to minimize the risk of a Type II error.

ipants also completed a four-item abortion attitudes questionnaire (e.g., “Abortion should be made illegal”; $\alpha = .87$), and a four-item measure of attitudes toward same-sex marriage (e.g., “The government should allow same-sex couples to marry legally”; $\alpha = .98$). Participants indicated the extent to which they agreed with each item on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on each measure represented the more conservative position.

Participants also completed the 27-item disgust sensitivity measure (Haidt, McCauley, & Rozin, 1994, modified by Olatunji et al., 2007; $\alpha = .79$) for use as a covariate in analyses. Similarly, because previous research has found a relationship between disgust sensitivity and religiosity (Inbar, Pizzaro, & Bloom, 2009; Inbar, Pizzaro, Iyer, & Haidt, 2012), and because religious doctrines often encourage emotion regulation (e.g., “A hot-tempered man stirs up strife, but he who is slow to anger quiets contention” [Proverbs 15:18]), we asked participants to indicate how religious they were on a 7-point scale ranging from 0 (*not at all*) to 6 (*extremely*) and include this measure as a covariate in analyses.

Results and Discussion

Table 1 provides the zero-order correlations for all variables.² As hypothesized, conservatism was negatively correlated with disgust reappraisal; more conservative participants reported being less likely to employ disgust reappraisal when facing a disgust elicitor. There was no significant relationship between the conservatism measures and disgust suppression, suggesting that liberals and conservatives differ in disgust reappraisal but not disgust suppression. In addition, in line with past research, conservatism correlated positively with disgust sensitivity.

In an effort to establish the unique influence of disgust reappraisal while controlling for disgust sensitivity and religiosity, we ran separate regression analyses, entering disgust reappraisal, disgust sensitivity, and religiosity as predictors of each of our measures of conservatism. Results of these models are given in Table 1. In each of these models, reappraisal remained a significant predictor of conservatism.

Study 1b

Although Study 1a’s results demonstrate that disgust reappraisal predicts conservatism, it leaves open the possibility that this finding reflects a more general relationship between emotion reappraisal and conservatism. It is possible that conservatism might be related to reappraisal of emotions in general, especially considering some past research and theory suggesting that conservatives are more driven by intuition than liberals (e.g., Haidt & Hersh, 2001). On a related note, considering past research has found a strong overlap between scoring lower on cognitive complexity (the extent to which individuals integrate and synthesize multidimensional perspectives when reaching a decision) and conservatism (Jost, Glaser, Kruglanski, & Sulloway, 2003; Tetlock, 1983), it is possible that our measure of reappraisal—which involves changing the way one thinks about stimuli—is in fact measuring cognitive complexity.

To address these concerns, in Study 1b, we replicate Study 1a’s procedure but measure different types of reappraisal tendency—specifically, tendencies to reappraise disgust, anger, and negative

emotions in general. We measure the tendency to reappraise negative emotion in general to account for the possibility conservatives might reappraise all negative emotions more than liberals. Additionally, we chose to examine the tendency to reappraise anger specifically, because anger is an important intergroup emotion that has been associated with conservatism in prior research (de St Aubin, 1996; Lerner, Gonzalez, Small, & Fischhoff, 2003; Skitka & Tetlock, 1993). If, as we hypothesize, only disgust reappraisal tendency is significantly related to conservatism, it would help demonstrate the unique relationship between disgust reappraisal and conservatism, further suggesting that disgust reappraisal is not simply serving as a proxy for cognitive complexity.

Method

Participants. One hundred sixty-two participants (84 male, 78 female) were recruited from across the United States via Amazon Mechanical Turk. Participants received modest compensation in exchange for their participation.

Procedure. The procedure followed that of Study 1a, with participants completing the same measures of conservatism and disgust reappraisal tendency ($\alpha = .84$). However, in Study 1b, participants completed two other measures of reappraisal tendency that paralleled the disgust reappraisal measure. The first measured participants’ tendency to reappraise in response to negative emotion elicitors in general (e.g., “When I want to feel less negative emotion, I change the way I’m thinking about the situation”; $\alpha = .89$). The second measured participants’ tendency to reappraise in response to anger elicitors (e.g., “When I want to feel less anger, I change the way I’m thinking about the situation”; $\alpha = .90$).

Results and Discussion

We present the zero-order correlations between each of the reappraisal and conservatism measures in Table 2. As in Study 1a, we found a significant negative relationship between conservatism and disgust reappraisal. However, there were no significant correlations between conservatism and the other two measures of reappraisal tendency, suggesting that the relationship between reappraisal and conservatism is specific to disgust. To further establish the unique association between disgust reappraisal and conservatism, we ran a series of regression analyses, entering all three of the reappraisal measures as simultaneous predictors of each of the conservatism measures (see Table 2). Results of these analyses reveal that only disgust reappraisal tendency significantly predicted conservatism, suggesting that there is a unique relationship between disgust reappraisal and conservatism.³ In fact, it seems that the measures of negative emotion reappraisal and anger reappraisal tended to be positively associated (though not significantly) with conservatism. Additionally, by demonstrating that not all

² We report how we determined our sample sizes, all data exclusions, all conditions, and all measures in our studies.

³ In a separate study aiming to verify the uniqueness of disgust reappraisal’s relationship with conservatism, we collected measures of conservatism and had participants ($N = 607$) complete the 10-item Emotion Regulation Questionnaire (Gross & John, 2003), which measures individuals’ general tendency to reappraise and suppress positive and negative emotions. We found no significant relationship between political ideology and the more global measures of reappraisal ($r = .03, p = .41$).

Table 1

Zero-Order Correlations and Standardized Regression Weights With R² Measurements Depicting the Associations Between Reappraisal, Suppression, Disgust Sensitivity, Religiosity, and Various Measures of Conservatism (Study 1)

| | General conservatism | Social conservatism | Republican | Same-sex marriage opposition | Abortion opposition |
|--|----------------------|---------------------|------------|------------------------------|---------------------|
| Zero-order correlations | | | | | |
| Emotion regulation | | | | | |
| Disgust reappraisal | -.27** | -.30*** | -.20* | -.19* | -.19* |
| Disgust suppression | .02 | -.03 | -.03 | .02 | -.01 |
| Control variables | | | | | |
| Disgust sensitivity | .14 | .14 | .12 | .29** | .28** |
| Religiosity | .38*** | .49*** | .35*** | .52*** | .60*** |
| Standardized regression weights | | | | | |
| Disgust reappraisal (controlling for sensitivity, religiosity) | -.26** | -.28** | -.19* | -.16* | -.16* |
| Disgust sensitivity (controlling for reappraisal, religiosity) | .01 | -.03 | .00 | .13 | .10 |
| Full model R ² | .21*** | .32*** | .16*** | .31*** | .40*** |

* $p < .05$. ** $p < .01$. *** $p < .001$.

forms of reappraisal predict conservatism, these results provide evidence that our measure of disgust reappraisal tendency is an independent construct from cognitive complexity.

Study 2

The aim of Studies 2 and 3 is to test whether differences in disgust reappraisal can account for the diverging moral and political judgments that liberals and conservatives make when it comes to issues of purity. Past research has established that conservatives are more likely to form intuitionist moral judgments in such domains (Haidt & Hersh, 2001). In Study 2, we examine whether this pattern is attributable to different tendencies to reappraise disgust. Specifically, we present participants with vignettes describing disgust-eliciting behaviors and measure both participants' moral judgments of the act and the extent to which participants engaged in emotion reappraisal in forming these judgments. Taking into consideration the results of Studies 1a and 1b, coupled with recent findings showing that reappraisal leads to more deliberative moral judgments by weakening the influence of affectively laden moral intuitions to condemn an act (Feinberg et al., 2012), we expect that liberals will be more accepting of the vignette targets' disgust-eliciting behaviors because they will reappraise disgust more.

Method

Participants. One hundred fifty-one undergraduates (44 males, 107 females) completed an online survey in return for course credit.⁴

Procedure. After reporting the extent to which they identified as socially liberal or conservative using the same measure used in Study 1, participants were exposed to two vignettes shown to elicit strong disgust reactions (Haidt et al., 1993). The first describes siblings who engage in consensual sex after taking every possible precaution to avoid pregnancy or emotional complications. The second describes a man who buys a dead chicken, has sex with it, and then cooks and eats it in the privacy of his own home. Past research has employed these vignettes to demonstrate the role

disgust plays in shaping moral judgments by triggering moral intuitions about the appropriateness of the target's behavior (Haidt et al., 1993; Haidt & Hersh, 2001). This research finds that many participants will condemn the acts, although they cannot explain why the action is morally wrong, only that it is disgusting and feels wrong. Importantly, Haidt and Hersh (2001) found that, relative to liberals, conservatives were significantly more likely to find the targets' behavior immoral. Further, past research has found that a robust determinant of whether participants condemn these acts is the extent to which they reappraised their disgust upon reading the vignettes (Feinberg et al., 2012)—the more they reappraised, the less likely they were to deem the act immoral. Based on these previous findings, these vignettes provide a useful tool for testing our hypothesis that conservatives will be more likely to morally condemn a disgust evoking behavior than liberals because liberals will reappraise their disgust reaction more than conservatives.

Following Feinberg et al.'s (2012) procedure, participants read each vignette and indicated how immoral they perceived the behavior of the targets to be on a scale from 1 (*not at all*) to 7 (*extremely*). Participants then indicated what emotion(s) they felt upon first reading the vignette. A large majority reported experiencing disgust (incest vignette, 84%; chicken vignette, 85%). Finally, participants were asked to write three to five sentences in response to the following open-ended question: "What happened in your head from the first moment you felt the emotion until the moment you decided whether this action was right or wrong?"

Four trained coders blind to hypotheses coded participants' descriptions to the open-ended question using the same reappraisal indicators established by Feinberg et al. (2012): coders indicated the extent to which participants (a) "attempted to reappraise the *felt emotion*," and (b) "changed the way he or she thought about the scenario to decrease *emotional reaction*." Intercoder reliability for each indicator was high ($\alpha > .80$). The two reappraisal indicators were highly correlated for each vignette ($\alpha > .90$), so we averaged them together to form a composite for each vignette. The

⁴ This sample size reflects the number of students in the course who were willing to participate.

Table 2
Zero-Order Correlations, Standardized Regression Weights With R^2 Measurements Depicting the Associations Between the Different Types of Reappraisal and Various Measures of Conservatism (Study 1)

| | General conservatism | Social conservatism | Republican | Same-sex marriage opposition | Abortion opposition |
|--|----------------------|---------------------|------------------|------------------------------|---------------------|
| Zero-order correlations | | | | | |
| Reappraisal type | | | | | |
| Disgust | -.16* | -.15 [†] | -.16* | .19* | .15 [†] |
| Anger | .06 | .01 | -.01 | -.07 | .07 |
| Negative emotions | .06 | .04 | .06 | -.03 | .05 |
| Standardized regression weights (all three types entered simultaneously) | | | | | |
| Disgust | -.23*** | -.20* | -.21* | .27** | .15 [†] |
| Anger | .09 | .02 | -.05 | -.14 | .03 |
| Negative emotions | .10 | .11 | .18 | -.05 | -.03 |
| Full model R^2 | .05* | .04 | .05 [†] | .06* | .02 |

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

following are examples of responses coded as clear evidence for high and low reappraisal in the chicken and incest vignettes:

High:

"I felt disgusted at first but treated it immediately as a hypothetical situation, so I didn't feel as intense. I realized that the people involved didn't harm anybody and I really have no right to judge them on their actions."

"At first it is pretty gross and you think 'how could he?' But then you realize that the chicken and his encounter with it are within the privacy of his apartment, he's not hurting anyone and he seems to get some enjoyment out of it."

Low:

"I felt disgusted that the both of them actually decided to have sex. Having sex with your sibling is JUST wrong to me."

"I didn't think much about it, except how disgusting the man was for doing that . . . there must be something wrong with him to do something of that nature. I also felt that he had no morals."

Results and Discussion

In line with previous research (Haidt & Hersh, 2001), there was a significant positive association between political conservatism and the extent to which participants rated the behavior of the targets as immoral (incest: $r = .28, p < .001$; chicken: $r = .29, p < .001$). Further, consistent with Study 1's findings, there was a significant negative relationship between conservatism and disgust reappraisal (incest: $r = -.31, p < .001$; chicken: $r = -.28, p < .001$), and also a strong negative relationship between rated disgust reappraisal and judgments of immorality (incest: $r = -.63, p < .001$; chicken: $r = -.59, p < .001$).

To test whether disgust reappraisal significantly mediated the effect of political ideology on participants' judgments of immorality, we ran a regression, entering both political ideology and disgust reappraisal as simultaneous predictors. This analysis revealed that for both vignettes, reappraisal remained a significant predictor of moral judgments (incest: $\beta = -0.60, p < .001$; chicken: $\beta = -0.55, p < .001$), whereas political ideology was no longer significant for the incest vignette, $\beta = .09, p = .16$, and a much weaker predictor for the chicken vignette, $\beta = .14, p = .05$.

Bootstrap analyses (Preacher & Hayes, 2004) revealed that the 95% confidence interval for the indirect effect did not include 0 (incest: [.12, .32]; chicken: [.09, .30]). These mediation results indicate that liberals' moral judgments were less driven by disgust-elicited moral intuitions because they regulated their experience of disgust through reappraisal more than conservatives did. Such results suggest that liberals engage in more deliberative reasoning and are ultimately more accepting of impure behavior because they override their disgust more than conservatives.

Study 3

Study 3 examines whether differences in disgust reappraisal can help explain the contrasting attitudes liberals and conservatives have on political issues related to purity. Unlike the first two studies, in Study 3, we used an experimental manipulation to directly test the causal influence of disgust reappraisal. We manipulated whether participants were instructed to reappraise their emotional reactions to a video clip of two men passionately kissing one another, and then asked participants about their attitudes regarding same-sex marriage. We hypothesized that conservative participants in the reappraisal condition would be less likely to perceive homosexual relationships as immoral, relative to their conservative counterparts in the control condition, and, as a result, would also be more accepting of same-sex marriage. In contrast, we expected no difference between conditions for liberals' views of homosexuality or same-sex marriage.

Method

Participants. Fifty-nine participants (12 male, 47 female) were recruited via the craigslist.org Web sites of 15 different U.S. cities. As compensation, participants were entered into a raffle for a \$50 gift certificate.⁵

Procedure. The study was advertised as an online survey exploring whether cultural views and emotional reactions can help predict Academy Award winners. Participants first completed a demographic questionnaire that included the same measure of

⁵ We aimed to collect at least 20 participants per condition to achieve enough statistical power to test our hypotheses. The sample size reflects the total number of participants recruited over a 2-week period of time.

liberalism–conservatism used in the previous studies. Participants then learned that they would watch a series of film clips from Oscar-winning movies and answer various questions regarding the clips. Depending on condition, participants were asked to simply watch the clips (control condition) or to watch and “try to think about what you are seeing in such a way that you don’t feel anything at all” (reappraisal condition; Feinberg et al., 2012; Gross, 1998; Richards & Gross, 2000). Prior to watching each film clip, the instructions reminded participants in the reappraisal condition of their assignment. All participants in the reappraisal condition passed a comprehension check verifying they understood the instructions.

Participants first watched two 45-s film clips from the movies *Shawshank Redemption* and *Forrest Gump*, and answered questions about each film and their attitudes about a political issue the clip touched upon (the prison system for *Shawshank Redemption* and care for wounded veterans for *Forrest Gump*). The third clip was a 45-s scene from the movie *Brokeback Mountain*, in which two men passionately kiss and embrace one another. Following the clip, participants completed a questionnaire regarding their attitudes toward the film. They also completed an item measuring their perceptions of homosexuality as immoral (“Homosexual relationships between consenting adults are morally wrong”) and the four-item support for same-sex marriage measure used in Study 1 ($\alpha = .97$). Finally, participants were asked what they thought the study was about and what hypothesis we were testing. No participants correctly guessed the purpose of the study.

Results and Discussion

We hypothesized that conservative participants in the reappraisal condition would indicate significantly more positive attitudes toward homosexual relationships than their conservative counterparts in the control condition. To test this hypothesis, we ran separate multiple regression analyses, entering experimental condition, political ideology (kept continuous and standardized), and the interaction of the two as predictors of each measure of attitudes toward homosexual relationships.

A first regression predicting perceptions of homosexuality as immoral yielded significant main effects of condition, $\beta = -.24$, $p < .05$, and political ideology, $\beta = .84$, $p < .001$, and a significant Condition \times Ideology interaction, $\beta = -.47$, $p < .01$.⁶ A simple-slopes analysis comparing conservatives (participants scoring 1 standard deviation above the mean) in the reappraisal condition with their counterparts in the control condition revealed that conservative participants in the reappraisal condition found homosexual relationships to be significantly less immoral, $b = -1.36$, $p < .001$ (see Figure 1). There was no significant effect of condition on the reported attitudes of liberal participants (participants scoring 1 standard deviation below the mean), $b = .15$, $p = .69$. Moreover, although there was a main effect of political ideology, with conservatives perceiving homosexual relationships as more immoral, the difference between the liberal and conservative participants in the reappraisal condition was not significant, $b = .31$, $p = .08$.

Using a parallel statistical procedure, we found similar results for same-sex marriage attitudes. We found no main effect of condition, $\beta = .10$, $p = .38$, but did find a significant main effect of political ideology, $\beta = -.90$, $p < .001$, and a significant

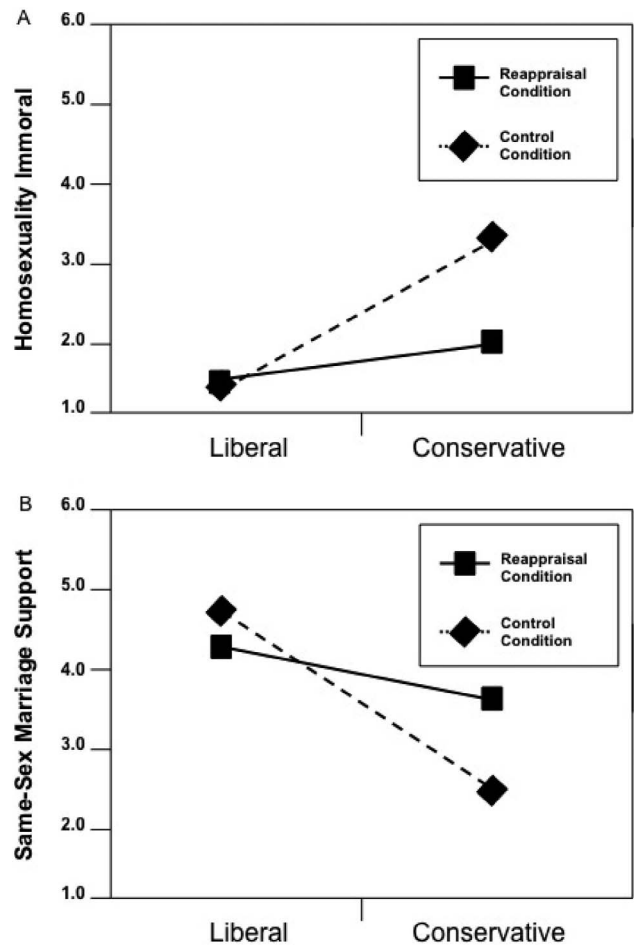


Figure 1. The interaction between experimental condition and political ideology predicting perceptions that homosexuality is immoral (Panel A) and same-sex marriage attitudes (Panel B) (Study 3).

Condition \times Ideology interaction, $\beta = .53$, $p < .01$ (see Figure 1). Conservative participants in the reappraisal condition demonstrated significantly greater support for same-sex marriage than their counterparts in the control condition, $b = 1.19$, $p < .01$. There was no difference due to condition for the liberal participants, $b = -.66$, $p = .12$. Once again, there was no significant difference between the liberal and conservative participants in the reappraisal condition, $b = -.30$, $p = .12$.

Finally, we conducted a mediated moderation analysis (Muller, Judd, & Yzerbyt, 2005) to test whether the interactive effect of political ideology and experimental condition on same-sex marriage attitudes was due to perceptions of homosexual relationships being immoral. Figure 2 depicts the results of this analysis. In line with our hypothesis, these results indicate that conservative participants in the reappraisal condition demonstrated higher levels of support for same-sex marriage to the extent they perceived homosexual relationships to be less immoral.

⁶ As expected, there was no effect of condition or Political Ideology \times Condition interaction in predicting participant attitudes toward the prison system or veterans, $t_s < 1.05$, $p_s > .30$.

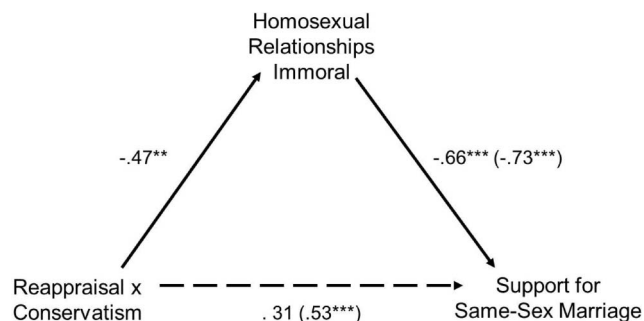


Figure 2. Mediated moderation demonstrating that conservatives in the reappraisal condition were more supportive of same-sex marriage (relative to their counterparts in the control condition) to the extent that they perceived homosexual relationships to be less immoral (Study 3). Sobel $Z = 2.42, p < .05$. Values presented without parentheses are standardized multiple regression coefficients. Values in parentheses are zero-order correlations. * $p < .05$, ** $p < .01$, *** $p < .001$.

Although these findings support our hypotheses, there could be concern that the reappraisal instructions prompted participants to be more open-minded about same-sex marriage. However, we believe demand effects likely do not account for our results because only the conservative participants in the reappraisal condition demonstrated an increase in support for same-sex marriage. If demand effects were driving the results, we would likely have found an increase in support for same-sex marriage from liberal participants as well. But, as Figure 1 shows, liberal participants actually demonstrated slightly less support (though not significant) for same-sex marriage in the reappraisal condition. Additionally, past research finds that when participants recognize someone is trying to persuade them to agree with a moral or political stance contrary to their own, they tend to demonstrate a reactance effect (Brehm, 1966; Dillard & Shen, 2005; Laurin, Kay, & Fitzsimons, 2012). This research suggests that, if anything, we would expect conservative participants to demonstrate lower levels of support for same-sex marriage in the reappraisal condition.

Overall, then, the results of Study 3 provide experimental evidence for our argument that inducing conservatives to regulate their disgust made them more accepting of homosexual relationships. When conservative participants were exposed to a clip depicting two men kissing, those instructed to reappraise their emotions subsequently perceived homosexual relationships as less immoral and demonstrated significantly greater support for same-sex marriage. Moreover, the conservative participants in the reappraisal condition reported statistically equivalent views toward homosexual relationships as the liberal participants, further emphasizing the strong influence reappraisal had on conservative participants' attitudes. Finally, the support we found for a mediated moderation model is consistent with our argument that reappraising disgust-eliciting behaviors decreases the likelihood of finding these behaviors to be immoral, and, as a result, leads individuals to be more accepting of such behaviors.

General Discussion

Liberals and conservatives are sharply divided on political issues related to moral purity. In the present research, we tested

the hypothesis that liberals are more likely to reappraise their disgust, resulting in their being more accepting of behaviors that could be construed as impure. Studies 1a and 1b established that liberals and conservatives respond differently to disgust, with liberals tending to reappraise the emotion more. Study 2 found that differences in reappraisal tendency helped account for the differing attitudes of liberals and conservatives regarding the immorality of sexual acts typically viewed as impure. Finally, Study 3 demonstrated the influence of disgust reappraisal on participants' moral and political attitudes toward homosexuality. Conservatives in the reappraisal condition were more accepting of homosexual relationships relative to their counterparts in the control condition. Moreover, these conservatives demonstrated similar attitudes toward homosexual relationships as liberal participants, further highlighting the role disgust reappraisal plays in explaining differences in liberal and conservative attitudes on purity-related issues. Such results add to the growing body of research on the role emotions play in political judgments, especially disgust (Inbar, Pizzaro, Iyer, et al., 2012; Westen, 2007), as well as the more general role emotions and emotion regulation can play in the moral judgment process (Feinberg et al., 2012).

Questions and Future Directions

Although our studies identify disgust reappraisal as a fundamental factor dividing liberal and conservative moral and political judgments, there are many questions left unanswered by the present investigation. For instance, where does the link between liberalism and disgust reappraisal come from? Possibly, those who are more likely to reappraise disgust reactions might be drawn to political liberalism. Alternatively, it could be that those who are attracted to liberal positions come to reappraise their disgust reactions in service of maintaining liberal positions on issues of purity. Future longitudinal research could be useful for investigating this question.

Additionally, the present research raises questions about when reappraisal occurs during the emotion-generative cycle. Although Gross and colleagues (e.g., Gross & John, 2003; Ochsner & Gross, 2008) refer to reappraisal as an "antecedent-based emotion regulation strategy," this may create some confusion because it implies that reappraisal only takes place prior to emotion elicitation, suggesting that individuals use reappraisal only in preparation for an anticipated encounter with an emotionally evocative situation. However, Gross and Thompson (2007) clarify that reappraisal should be considered antecedent-focused, in that it typically happens early in the emotion-generative process, before an initial appraisal leads to a full-blown emotional reaction. Consistent with this view, based on the present research, we believe that, when faced with a disgust elicitor, liberals' tendency to reappraise disgust occurs early in the emotion-generative cycle, significantly curtailing their experience of disgust. As a result of liberals downregulating their disgust more than conservatives, liberals' moral judgments within the purity domain are likely based less on affect-laden intuitions and, rather, are more deliberative (cf., Feinberg et al., 2012).

In addition, one might wonder to what extent differences between liberals' and conservatives' attitudes in purity-related

domains are due to disgust reappraisal versus disgust sensitivity. It is possible that the disgust–conservatism link is a product of conservatives being both more disgust sensitive and less likely to reappraise disgust, or possibly that liberals and conservatives are equally prone to the initial onset of disgust, and only separated by how they regulate the emotion (Eskine et al., 2011; Graham et al., 2013). Future research should further explore how liberals and conservatives differentially react to disgust elicitors, especially at the moment the elicitor first presents itself.

Overall, the present research provides one answer to why liberals and conservatives espouse such diverging attitudes when it comes to issues of moral purity. More generally, this research highlights the critical role of emotion regulation in understanding moral and political reasoning processes. Developing a refined understanding of not just the emotions people experience but also how they subsequently manage those emotions should help us establish a more nuanced and complete understanding of the psychological foundations of moral and political reasoning.

References

- Brehm, J. W. (1966). *A theory of psychological reactance*. New York, NY: Academic Press.
- de St Aubin, E. (1996). Personal ideology polarity: Its emotional foundation and its manifestation in individual value systems, religiosity, political orientation, and assumptions concerning human nature. *Journal of Personality and Social Psychology*, *71*, 152–165. doi:10.1037/0022-3514.71.1.152
- Dillard, J. P., & Shen, L. (2005). On the nature of reactance and its role in persuasive health communication. *Communication Monographs*, *72*, 144–168. doi:10.1080/03637750500111815
- Eskine, K. J., Kacinik, N. A., & Prinz, J. J. (2011). A bad taste in the mouth: Gustatory disgust influences moral judgment. *Psychological Science*, *22*, 295–299. doi:10.1177/0956797611398497
- Feinberg, M., Willer, R., Antonenko, O., & John, O. P. (2012). Liberating reason from the passions: Overriding intuitionist moral judgments through emotion reappraisal. *Psychological Science*, *23*, 788–795. doi:10.1177/0956797611434747
- Graham, J., Englander, Z., Morris, J. P., Hawkins, C. B., Haidt, J., & Nosek, B. A. (2013). *Warning bell: Liberals implicitly respond to group morality before rejecting it explicitly*. Manuscript submitted for publication.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, *96*, 1029–1046. doi:10.1037/a0015141
- Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology*, *74*, 224–237. doi:10.1037/0022-3514.74.1.224
- Gross, J. J. (Ed.). (2007). *Handbook of emotion regulation*. New York, NY: Guilford Press.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*, 348–362. doi:10.1037/0022-3514.85.2.348
- Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–24). New York, NY: Guilford Press.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, *108*, 814–834. doi:10.1037/0033-295X.108.4.814
- Haidt, J. (2007). The new synthesis in moral psychology. *Science*, *316*, 998–1002.
- Haidt, J., & Hersh, M. (2001). Sexual morality: The cultures and emotions of conservatives and liberals. *Journal of Applied Social Psychology*, *31*, 191–221. doi:10.1111/j.1559-1816.2001.tb02489.x
- Haidt, J., Koller, S., & Dias, M. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, *65*, 613–628. doi:10.1037/0022-3514.65.4.613
- Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences*, *16*, 701–713. doi:10.1016/0191-8869(94)90212-7
- Haidt, J., Rozin, P., McCauley, C., & Imada, S. (1997). Body, psyche, and culture: The relationship of disgust to morality. *Psychology and Developing Societies*, *9*, 107–131. doi:10.1177/097133369700900105
- Helzer, E. G., & Pizarro, D. A. (2011). Dirty Liberals! Reminders of cleanliness promote conservative political and moral attitudes. *Psychological Science*, *22*, 517–522. doi:10.1177/0956797611402514
- Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology*, *97*, 963–976. doi:10.1037/a0017423
- Inbar, Y., Pizarro, D. A., & Bloom, P. (2009). Conservatives are more easily disgusted. *Cognition and Emotion*, *23*, 714–725. doi:10.1080/02699930802110007
- Inbar, Y., Pizarro, D. A., & Bloom, P. (2012). Disgusting smells cause decreased liking of gay men. *Emotion*, *12*, 23–27. doi:10.1037/a0023984
- Inbar, Y., Pizarro, D. A., Iyer, R., & Haidt, J. (2012). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science*, *3*, 537–544. doi:10.1177/1948550611429024
- Inbar, Y., Pizarro, D., Knobe, J., & Bloom, P. (2009). Disgust sensitivity predicts intuitive disapproval of gays. *Emotion*, *9*, 435–439. doi:10.1037/a0015960
- Jost, J. T., Glaser, J., Sulloway, F. J., & Kruglanski, A. W. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, *129*, 339–375.
- Laurin, K., Kay, A. C., & Fitzsimons, G. M. (2012). Divergent effects of activating thoughts of God on self-regulation. *Journal of Personality and Social Psychology*, *102*, 4–21. doi:10.1037/a0025971
- Lerner, J. S., Gonzalez, R. M., Small, D. A., & Fischhoff, B. (2003). Effects of fear and anger on perceived risks of terrorism: A national field experiment. *Psychological Science*, *14*, 144–150. doi:10.1111/1467-9280.01433
- Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, *89*, 852–863. doi:10.1037/0022-3514.89.6.852
- Ochsner, K. N., & Gross, J. J. (2008). Cognitive emotion regulation insights from social cognitive and affective neuroscience. *Current Directions in Psychological Science*, *17*, 153–158. doi:10.1111/j.1467-8721.2008.00566.x
- Olatunji, B. O., Williams, N. L., Tolin, D. F., Sawchuk, C. N., Abramowitz, J. S., Lohr, J. M., & Elwood, L. (2007). The Disgust Scale: Item analysis, factor structure, and suggestions for refinement. *Psychological Assessment*, *19*, 281–297. doi:10.1037/1040-3590.19.3.281
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*, 717–731.
- Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology*, *79*, 410–424. doi:10.1037/0022-3514.79.3.410
- Rozin, P., & Fallon, A. (1987). A perspective on disgust. *Psychological Review*, *94*, 23–41. doi:10.1037/0033-295X.94.1.23
- Schaller, M., & Duncan, L. A. (2007). The behavioral immune system: Its evolution and social psychological implications. In J. P. Forgas, M. G. Haselton, & W. von Hippel (Eds.), *Evolution and the social mind:*

- Evolutionary psychology and social cognition* (pp. 293–307). New York, NY: Psychology Press.
- Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin*, *34*, 1096–1109. doi:10.1177/0146167208317771
- Skitka, L. J., & Tetlock, P. E. (1993). Providing public assistance: Cognitive and motivational processes underlying liberal and conservative policy preferences. *Journal of Personality and Social Psychology*, *65*, 1205–1223. doi:10.1037/0022-3514.65.6.1205
- Tetlock, P. E. (1983). Accountability and the perseverance of first impressions. *Social Psychology Quarterly*, *46*, 285–292. doi:10.2307/3033716
- Westen, D. (2007). *The political brain*. New York, NY: Public Affairs.
- Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science*, *16*, 780–784. doi:10.1111/j.1467-9280.2005.01614.x

Received September 23, 2012

Revision received May 15, 2013

Accepted May 15, 2013 ■

New Editors Appointed, 2015–2020

The Publications and Communications Board of the American Psychological Association announces the appointment of 6 new editors for 6-year terms beginning in 2015. As of January 1, 2014, manuscripts should be directed as follows:

- *Behavioral Neuroscience* (<http://www.apa.org/pubs/journals/bne/>), **Rebecca Burwell, PhD**, Brown University
- *Journal of Applied Psychology* (<http://www.apa.org/pubs/journals/apl/>), **Gilad Chen, PhD**, University of Maryland
- *Journal of Educational Psychology* (<http://www.apa.org/pubs/journals/edu/>), **Steve Graham, EdD**, Arizona State University
- *JPSP: Interpersonal Relations and Group Processes* (<http://www.apa.org/pubs/journals/psp/>), **Kerry Kawakami, PhD**, York University, Toronto, Ontario, Canada
- *Psychological Bulletin* (<http://www.apa.org/pubs/journals/bul/>), **Dolores Albarracín, PhD**, University of Pennsylvania
- *Psychology of Addictive Behaviors* (<http://www.apa.org/pubs/journals/adb/>), **Nancy M. Petry, PhD**, University of Connecticut School of Medicine

Electronic manuscript submission: As of January 1, 2014, manuscripts should be submitted electronically to the new editors via the journal's Manuscript Submission Portal (see the website listed above with each journal title).

Current editors Mark Blumberg, PhD, Steve Kozlowski, PhD, Arthur Graesser, PhD, Jeffrey Simpson, PhD, Stephen Hinshaw, PhD, and Stephen Maisto, PhD, will receive and consider new manuscripts through December 31, 2013.