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Disgust sensitivity selectively predicts attitudes toward groups that threaten (or uphold) traditional sexual morality

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ABSTRACT

Previous research has linked disgust sensitivity to negative attitudes toward gays and lesbians. We extend this existing research by examining the extent to which disgust sensitivity predicts attitudes more generally toward groups that threaten or uphold traditional sexual morality. In a sample of American adults ($N = 236$), disgust sensitivity (and particularly contamination disgust) predicted negative attitudes toward groups that threaten traditional sexual morality (e.g., pro-choice activists), and positive attitudes toward groups that uphold traditional sexual morality (e.g., Evangelical Christians). Further, disgust sensitivity was a weaker predictor of attitudes toward left-aligned and right-aligned groups whose objectives are unrelated to traditional sexual morality (e.g., gun-control/gun-rights activists). Together, these findings are consistent with a sexual conservatism account for understanding the relationship between disgust sensitivity and intergroup attitudes.

1. Introduction

The emotion of disgust, which likely evolved to discourage us from ingesting noxious or dangerous substances (Rozin, Haidt, & McCauley, 2008), also seems to play an important role in our moral, social, and political beliefs (Bloom, 2004; Nussbaum, 2001). People who are more readily disgusted are more likely to describe themselves as politically conservative (Inbar, Pizarro, & Bloom, 2009), and especially as socially conservative (Inbar, Pizarro, Iyer, & Haidt, 2012; Terrizzi, Shook, & Ventis, 2010). They are also more negative toward a variety of social groups including immigrants, foreigners, and gays and lesbians. The link between disgust sensitivity and negative evaluations of gays and lesbians has been most firmly established—whereas a relationship between disgust sensitivity and negativity toward foreigners and immigrants has only been demonstrated in a single sample (Hodson & Costello, 2007), correlations between disgust sensitivity and anti-gay attitudes have been documented by independent labs across multiple samples (Inbar, Pizarro, Knobe, & Bloom, 2009; Inbar et al., 2009; Olatunji, 2008; Terrizzi et al., 2010).

Although there seems to be a reliable relationship between disgust sensitivity and anti-gay attitudes, the reason for this relationship is less clear. One possibility is that gay men and lesbians are seen as low-status outgroups, and that disgust leads to more negative evaluations of gay people at least in part because it strengthens intergroup boundaries, support for social hierarchies, and outgroup dehumanization (Hodson & Costello, 2007; Terrizzi et al., 2010; for a similar theoretical perspective see Nussbaum, 2001). Another possibility (which is not mutually exclusive with the hierarchy account) is that the relationship between disgust sensitivity and anti-gay attitudes is best explained by the fact that disgust-sensitive individuals have more conservative views about sex in general (Olatunji, 2008) – we call this the "sexual conservatism" account.

According to the sexual conservatism account, disgust sensitivity should predict attitudes toward *any* groups seen as threatening traditional (i.e., conservative) sexual morality. To date, however, there is no evidence linking trait differences in disgust sensitivity to attitudes toward sexual purity-threatening groups besides gay men and lesbians. There is, however, some suggestive support for this hypothesis. First, conservatives, more than liberals, see the upholding of sexual purity as a moral good (Graham, Haidt, & Nosek, 2009; Haidt & Graham, 2007). Second, irrespective of political ideology, those who endorse spiritual and bodily purity as a moral value are more condemning of sexually licentious behavior (e.g., having casual sex or using pornography; Koleva, Graham,

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Iyer, Ditto, & Haidt, 2012). Third, differences in *state* levels of disgust are both a consequence and a cause of evaluations of some sexual behaviors. People tend to be disgusted by taboo sex (Haidt & Hersh, 2001), and those made to feel disgusted are more likely to say that unusual sexual behaviors—but not moral infractions unrelated to sex—are morally wrong (Horberg, Oveis, Keltner, & Cohen, 2009).

The sexual conservatism account also makes a related prediction: Greater disgust sensitivity should also be associated with *liking* of groups that uphold sexual purity. After all, if those who are more disgust-sensitive value traditional sexual norms, they should evaluate groups that defend or uphold those norms more positively. To date there is no evidence, direct or otherwise, for this hypothesis.

The sexual conservatism account, then, makes two as yet untested predictions: that disgust sensitivity will predict more negative attitudes toward a variety of groups seen as threatening traditional sexual morality; and more positive attitudes toward groups seen as upholding it. In the current research, we tested both of these predictions by asking people to rate a range of different social groups that we thought would be seen as either threatening or upholding traditional sexual morality. We also included groups typically associated with the political left and right, but *not* with sexual morality, to rule out the alternative explanation that any relationship between disgust sensitivity and attitudes toward sexual morality-associated groups could simply be the result of people liking politically similar groups (i.e., right-aligned groups for those high in disgust sensitivity) and disliking politically dissimilar groups (i.e., left-aligned groups for those high in disgust sensitivity).

2. Method

2.1. Participants

We recruited 236 U. S. residents for an online survey through Amazon.com's Mechanical Turk (MTurk), an online labor market where researchers can recruit diverse samples of participants (e.g., Buhrmester, Kwang, & Gosling, 2011). Well-established psychological findings have been replicated in MTurk samples (e.g., Berinsky, Huber, & Lenz, 2012). Interested individuals selected a link to the survey and were compensated 50 cents.

2.2. Materials and procedure

Participants first completed the 36-item ACT scale (Duckitt, Bizumic, Krauss, & Heled, 2010) and a 4-item SDO scale (Pratto et al., 2013). These were assessed for exploratory purposes, but are not included in the primary analyses (see Supplemental Materials for analyses of these measures).

Participants then completed the 25-item Disgust Scale-Revised (DS-R; Haidt, McCauley, & Rozin, 1994; modified by Olatunji et al., 2007), which contains subscales measuring three types of disgust: core (basic disgust elicitors such as vomit); contamination (interpersonal contagion threats such as drinking from someone else's soda); and animal-reminder (corpses and other sometimes "creepy" reminders that human bodies are like animals'). Participants indicated their agreement with 13 statements (e.g., "I never let any part of my body touch the toilet seat in a public washroom") on a 7-point scale (1 = *Strongly Disagree*; 7 = *Strongly Agree*), and rated how disgusting they would find 12 specific situations (e.g., "You take a sip of soda, and then realize that you drank from the glass that an acquaintance of yours had been drinking from") on a 7-point scale (1 = *Not at all disgusting*; 7 = *Very disgusting*).

Participants then completed feeling thermometer ratings for 18 different groups (in random order) on 0 (very cold) to 100 (very warm) scales (with a neutral point of 50). Feeling thermometers are commonly used to measure intergroup attitudes (e.g. Inbar, Pizarro, & Bloom, 2012; Sears & Henry, 2003; Uhlmann, Dasgupta, Elgueta, Greenwald, & Swanson, 2002). Based on a priori assumptions, we included five groups who threaten traditional sexual morality (young people who are sexually active, gays and lesbians, pro-gay activists, pro-choice activists, feminists), four groups who uphold traditional sexual morality (young people who wait until marriage to have sex, Evangelical Christians, anti-gay activists, pro-life activists), and three left-aligned groups (Occupy Wall Street, gun control activists, and illegal immigrants) and two right-aligned groups (Tea Party and gun rights activists) whose objectives are not directly related to traditional sexual morality. We also included feeling thermometer ratings of liberals, conservatives, Democrats, and Republicans. However, we exclude these groups from the sexual morality analyses because they are broad enough that they could be construed both as related and unrelated to traditional sexual morality.

On a separate page, participants then evaluated each group (again, in random order) for how much it threatens traditional sexual morality ("This group threatens traditional moral values about sex") on a 7-point scale (1 = *Strongly Disagree*; 7 = *Strongly Agree*). Participants next were asked to place themselves on a 7-point political ideology scale (1 = *Extremely Liberal*; 7 = *Extremely Conservative*). They were also separately asked to indicate where they stood on "social policy," "economic policy," and "foreign policy" using the same 7-point scale. Finally, participants reported political party identification (1 = Strong Democrat; 7 = Strong Republican), religiosity, and demographic information (age, religion, sexual orientation, gender, ethnicity, education, and SES).

3. Results

3.1. Participant demographic information

Participants varied in their gender (54% female), ethnicity (74% White, 9% Black, 7% Hispanic/Latino, 5% Asian, and 5% other or mixed ethnic heritage), religion (43% Christian, 43% atheist or agnostic, 2% Jewish, 1% Muslim, 1% Hindu, 1% Buddhist, and 9% indicated "Other"), education (47% with at least a bachelor's degree, 36% with some college or an associate degree, and 17% with no education beyond high school), and SES (64% struggle to buy the things they need or have just enough, 36% have no problem buying the things they need). The average age was 37 years. On average, participants leaned to the political left (overall ideology $M = 3.28$, $SD = 1.61$; party identification $M = 3.27$, $SD = 1.59$).

3.2. Left- and right-aligned groups

We first verified that attitudes toward left- and right-aligned groups were predicted by the respondent's political ideology. As Table 1 shows, this was the case: self-reported ideology predicted attitudes toward all 18 groups, all $ps < .001$.

3.3. Perceived threat to traditional sexual morality

We next tested whether our sexual-morality threatening groups were indeed seen as more threatening to traditional sexual morality. We created composite threat ratings for groups that threaten traditional sexual morality, groups that uphold traditional sexual morality, and both left-aligned and right-aligned groups not explicitly related to sexual morality. We submitted these composites to a repeated-measures ANOVA, which showed a significant

Table 1
Correlations between group attitudes and self-reported political ideology.

	Ideology
Liberals	−.71***
Democrats	−.53***
Pro-gay	−.53***
Pro-choice	−.50***
Feminists	−.48***
Gun control	−.45***
Gays and lesbians	−.44***
OWS	−.41***
Illegal immigrants	−.33***
Sexually active	−.23***
Sexually chaste	.28***
Anti-gay	.45***
Gun rights	.48***
Pro-life	.52***
Evangelicals	.53***
Tea party	.66***
Republicans	.66***
Conservatives	.74***

*** $p < .001$.

within-subjects effect, $F(3, 226) = 54.04$, $p < .0001$. This was driven by the composite threat rating for the groups that threaten traditional sexual morality, which was higher than the composite ratings for the other three group types (all $ps < .0001$). Ratings for the other three group types did not differ significantly (all $ps > .06$). *Ms* and *SDs* for each group type are shown in the final four columns of Table 2, and threat ratings for each group are shown in the second column of Table 3.

3.4. Disgust and group attitudes

Table 2 shows correlations and descriptive statistics for DS-R, its three subscales, and the average group attitude and perceived threat measures for groups that threaten traditional sexual morality, groups that uphold traditional sexual morality, and the remaining left-aligned and right-aligned groups. We expected disgust sensitivity to correlate negatively with attitudes toward groups that threaten traditional sexual morality and positively with attitudes toward groups that uphold traditional sexual morality. Further, we expected the effects of disgust sensitivity on attitudes toward left-aligned and right-aligned groups not explicitly related to sexual morality to be weaker than those observed for attitudes toward groups that threaten or uphold traditional sexual morality.

As Table 2 shows, DS-R was negatively correlated with attitudes toward groups that threaten traditional sexual morality, but positively correlated with attitudes toward groups that uphold traditional sexual morality. DS-R was unrelated to attitudes toward the left-aligned and right-aligned groups not directly related to traditional sexual morality. The strongest effects of disgust sensitivity on group attitudes were observed on the contamination disgust subscale. Fig. 1 shows the relationship between group attitudes, DS-R, and contamination disgust for each of the four group types.

As a formal statistical test, we computed a path analysis in Mplus 7 (Muthén & Muthén, 1998–2012) with the average attitude measures toward the four different types of groups as outcome variables and DS-R as the independent variable. In this model, DS-R significantly predicted attitudes toward groups that threaten traditional sexual morality, $b = -3.57$, $SE = 1.39$, $p = .010$, and toward groups that uphold traditional sexual morality, $b = 3.65$, $SE = 1.69$, $p = .031$, but not toward left-aligned groups, $b = -2.67$, $SE = 1.70$, $p = .117$, or right-aligned groups, $b = -1.50$, $SE = 2.14$, $p = .483$, whose objectives are not directly related to traditional sexual morality. We computed a similar model with the three disgust sensitivity subscales as independent variables instead of the full DS-R. In this model, only contamination disgust significantly predicted attitudes toward groups that threaten ($b = -5.32$, $SE = 1.20$, $p < .001$) and uphold ($b = 3.12$, $SE = 1.52$, $p = .040$) traditional sexual morality (all other $ps > .099$). No components of disgust sensitivity significantly predicted attitudes toward left-aligned and right-aligned groups whose objectives are not directly related to traditional sexual morality (all $ps > .130$).

Together, these results are consistent with the sexual conservatism account: Disgust sensitivity (especially contamination disgust) was negatively related to attitudes toward groups that threaten traditional sexual morality and positively related to groups that uphold it. Disgust sensitivity did not significantly predict attitudes toward left-aligned and right-aligned groups whose objectives are not directly related to traditional sexual morality, suggesting that the observed relationships are not simply the result of people liking politically similar groups and disliking politically dissimilar ones.

3.5. Does perceived threat moderate the relationship between disgust and group attitudes?

We expected that the relationship between disgust sensitivity and group attitudes would be influenced by perceived threat to traditional sexual morality, such that perceived threat would

Table 2
Descriptive statistics for and correlations among study variables.

		1	2	3	4	5	6	7	8	9	10	11	12
1. DS-R													
2. Core		.89***											
3. Contamination		.72***	.53***										
4. AR		.84***	.57***	.44***									
5. Attitude-threatening		−.17*	−.06	−.30***	−.12								
6. Attitude-upholding		.15*	.08	.18**	.13	.07							
7. Attitude-LA		−.10	−.11	−.14*	−.01	−.57***	.17*						
8. Attitude-RA		−.04	−.04	.01	−.05	.03	−.62***	.35***					
9. Threat-threatening		.02	−.05	.08	.03	.22**	−.22**	.11	−.17*				
10. Threat-upholding		.12	.10	.07	.12	.19**	.09	.06	.09	−.09			
11. Threat-LA		.09	.05	.16*	.07	.20**	−.09	.15*	−.15*	.46***	.30***		
12. Threat-RA		.10	.08	.07	.08	.12	.04	.06	.02	.12	.55***	.63***	
	M	4.39	4.74	3.71	4.31	58.04	39.66	48.00	37.72	3.87	2.59	2.77	2.66
	SD	.95	.98	1.26	1.29	19.76	23.71	24.37	30.12	1.71	1.34	1.35	1.32
	α	.88	.79	.66	.81	.61	.74	.63	.73	.91	.81	.80	.65

Note. AR = animal-reminder; LA = left-aligned; RA = right-aligned. *dfs* for correlations ranged from 207 to 229.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 3
Relationships between disgust sensitivity and group attitudes.

	M(*SD*) Sexual threat	DS-R	Core	Contamination	AR	Core *b*	Contamination *b*	AR *b*
Sexually active	4.24(1.97)	−.28***	−.19**	−.30***	−.20**	−.69	−4.48**	−1.76
Gays and lesbians	4.01(2.09)	−.18**	−.06	−.35***	−.13	4.72	−10.75***	−.98
Pro-gay	3.95(2.13)	−.19**	−.05	−.36***	−.15*	7.21*	−12.36***	−2.09
Pro-choice	3.61(2.02)	−.15*	−.04	−.23***	−.12	−2.80	5.29*	1.96
Feminists	3.58(1.79)	−.08	−.01	−.16*	−.06	3.64	−5.77**	−1.30
OWS	3.06(1.67)	−.22**	−.21**	−.22**	−.10	−5.42	−3.26	1.12
Tea party	2.81(1.58)	.05	.03	.07	.05	−1.82	2.91	.68
Anti-gay	2.76(1.73)	.09	−.04	.23***	.08	−7.55**	8.35***	1.69
Illegal immigrants	2.72(1.58)	−.19**	−.18**	−.15*	−.10	−7.07**	−1.27	1.57
Pro-life	2.67(1.65)	.12	.07	.17*	.10	−2.80	5.29*	1.96
Evangelicals	2.64(1.70)	.17*	.14*	.17*	.12	.40	4.15	1.96
Gun control	2.59(1.56)	.11	.09	.02	.12	2.74	−2.23	3.95
Gun rights	2.52(1.50)	−.13*	−.11	−.05	−.13	−4.15	2.16	−2.82
Sexually chaste	2.31(1.62)	.10	.16*	−.01	.07	4.74	−3.27	.29

Note. AR = animal-reminder. *df*s for correlations ranged from 210 to 231.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

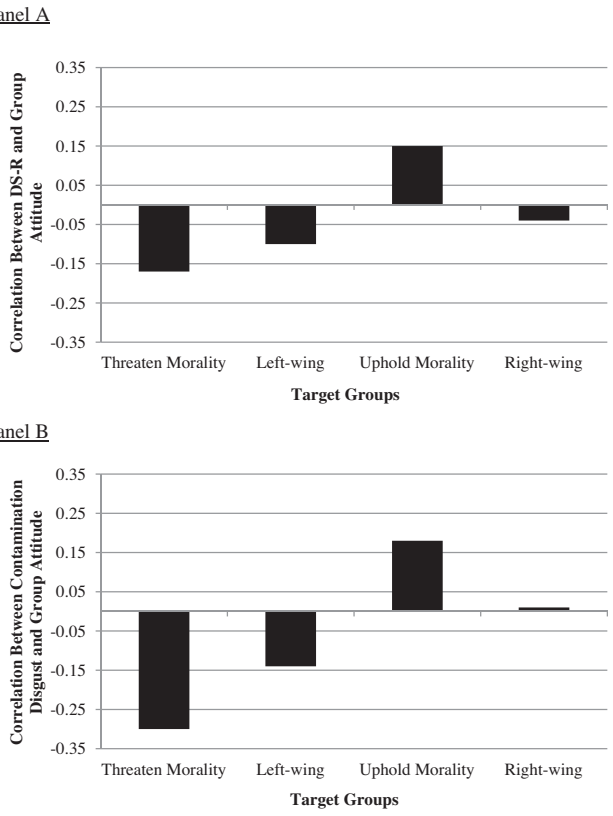

Fig. 1. Relationship between group attitude and the total DS-R scale (Panel A) and the contamination disgust subscale (Panel B) for each target group type.

predict the strength of the relationship between disgust sensitivity and group attitudes. That is, the more threatening the group is to traditional sexual morality, the more strongly disgust sensitivity should predict attitudes toward that group.

We show data relevant to this hypothesis in Table 3. The first column shows the name of each group. The second column shows the *M* and *SD* for the group's perceived threat to traditional sexual morality. The next four columns show the bivariate correlations between group attitude and the DS-R, core disgust, contamination disgust, and animal-reminder disgust, respectively. The final three columns show the unstandardized regression coefficients (for core, contamination, and animal-reminder disgust, respectively) from multiple regression models with group attitude regressed simultaneously on all three subscales. Table 3 is organized so that groups are listed in descending order from most to least threatening to traditional sexual morality. Reading from top to bottom, it is immediately apparent that the relationships between disgust and group attitudes are generally negative near the top of the table (i.e., for those groups most threatening to traditional sexual morality) and generally positive near the bottom (i.e., for the least-threatening groups).

As a formal test of the reliability of this pattern, we performed a group-level analysis in which we regressed the correlation between group attitude and each type of disgust on average threat to sexual morality ratings, which produced four separate regression models. Conceptually, this analysis treats each group as a subject, and tests whether, across groups, disgust sensitivity is associated with more negative attitudes for groups seen as more threatening to sexual morality and more positive attitudes for groups seen as less threatening. As expected, threat to sexual morality significantly or marginally predicted the bivariate correlation between group attitude and the DS-R and its subscales: DS-R, $b = -.17$, $SE = .05$, $\beta = -.71$, $t = -3.49$, $p = .004$; core disgust, $b = -.09$, $SE = .05$, $\beta = -.47$, $t = -1.83$, $p = .093$; contamination disgust, $b = -.25$, $SE = .05$, $\beta = -.80$, $t = -4.56$, $p = .001$; animal-reminder disgust, $b = -.13$, $SE = .04$, $\beta = -.73$, $t = -3.73$, $p = .003$ (total $df = 13$ for each model). We performed parallel analyses with the unstandardized regression coefficients for core, contamination, and animal-reminder disgust reported in the last three columns of Table 3 as the dependent variables. Threat to sexual morality significantly predicted the contamination disgust unstandardized regression coefficient, $b = -5.69$, $SE = 2.23$, $\beta = -.59$, $t = -2.55$, $p = .026$, but did not significantly predict the unstandardized coefficients for core disgust, $b = 2.69$, $SE = 1.97$, $\beta = .37$, $t = 1.37$, $p = .196$, or animal-reminder disgust, $b = -1.53$, $SE = .76$, $\beta = -.50$, $t = -2.00$, $p = .069$ (total $df = 13$ for each model).

4. Discussion

We tested two hypotheses derived from the sexual conservatism account of the relationship between disgust sensitivity and negative attitudes toward gays and lesbians: (1) that disgust sensitivity would predict negative attitudes toward a variety of groups seen as threatening traditional moral values regarding sex; and (2) that disgust sensitivity would predict *positive* attitudes toward groups seen as upholding traditional moral values regarding sex. We found support for both hypotheses. Using our a priori classifi-

cation of groups as threatening or upholding traditional sexual morality, and left- or right-aligned but not directly related to sexual morality, we found that disgust sensitivity (especially contamination disgust) predicted disliking and liking of groups that threaten and uphold traditional sexual morality, respectively. For the remaining two classes of groups, there was no significant relationship between disgust sensitivity and group attitudes. We found very similar results conducting parallel analyses at the group level, i.e., when not imposing our a priori classification. The average correlation between disgust and group attitudes was most negative for groups rated as threatening sexual morality, and most positive for groups rated as upholding it. It therefore appears that disgust sensitivity does not simply increase disliking of left-aligned groups (and liking of right-aligned groups) across the board; rather, it is selectively associated with attitudes toward groups associated with sexual morality.

Furthermore, the current results suggest that the relationship between disgust sensitivity and anti-gay attitudes is part of a broader dislike of groups seen as threatening traditional sexual morality among the disgust-sensitive. Of course, disgust sensitivity may also be associated with support for social hierarchies and outgroup dehumanization (Hodson & Costello, 2007), but that would not fully explain the relationships we found here. The groups perceived as threatening sexual morality in the current study are not obviously low-status minorities in the way such groups have been described in the literature (e.g., the poor, drug addicts, and AIDs patients; Hodson & Costello, 2007). If anything, one might expect feminists and pro-choice activists, for example, to be seen as more educated and affluent than the average American. And sexually active young adults, another one of our groups that threatened sexual morality, by far outnumber their sexually chaste counterparts. Finally, the sexual conservatism account is better suited to explain why disgust sensitivity is associated with disliking of groups that threaten traditional sexual morality *and* with liking of groups that uphold it.

Assuming that the relationship between disgust sensitivity and anti-gay attitudes is due to a general commitment to conservative sexual values, another question arises: Why should there be a relationship between disgust sensitivity and sexual attitudes at all? Anthropologists and psychologists have pointed to the role that disgust plays in enforcing norms of purity, both physical and spiritual (e.g., Rozin, Lowery, Imada, & Haidt, 1999; Schweder, Much, Mahapatra, & Park, 1997). However, establishing *that* disgust plays a role does little to explain *why* it does so. A possible explanation may lie in the role that disgust has played in shaping norms related to sexual behavior, among other areas. Schaller and colleagues (Faulkner, Schaller, Park, & Duncan, 2004; Park, Faulkner, & Schaller, 2003; Schaller & Duncan, 2007) have argued that over the course of human evolution, people developed a "behavioral immune system" that functioned to shield them from exposure to pathogens or parasites. According to this argument, engaging in socially novel practices regarding sex, cleanliness, and food raised one's risk of encountering infectious agents. Thus, people or populations with a chronically high level of behavioral immune system activation should be more negative toward deviation from established cultural norms and practices (i.e., more socially conservative).

There is evidence for this proposition both at the individual and at the group level. Individuals who are especially sensitive to disgust—the emotion that drives the behavioral immune system—score higher on measures of conservative ideology such as right-wing authoritarianism, are more religious, and are more likely to describe themselves as socially conservative (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2012; Inbar et al., 2009; Terrizzi, Shook, & Ventis, 2012; Terrizzi et al., 2010; for a review and meta-analysis see Terrizzi, Shook, & McDaniel, 2013). Likewise, in regions where infectious disease has historically been more common (a situation that presumably promotes disease-avoidant behaviors), societies are more sexually conservative, more collectivistic, and less gender-egalitarian (Schaller & Murray, 2008; Thornhill, Fincher, & Aran, 2009; Thornhill, Fincher, Murray, & Schaller, 2010). The current results further support the notion that the behavioral immune system plays a broad role in social attitudes, and show that this role extends to attitudes toward a variety of groups seen as supporting or threatening traditional sexual values.

5. Conclusion

Our results suggest that negative evaluations of gay men and lesbians by those high in disgust sensitivity are one piece of a more general dislike of groups seen as threatening traditional sexual morality. Of course, this cannot excuse prejudice against sexual minorities, which is pernicious regardless of its ultimate origin. The current results do, however, undermine the argument that the social attitudes of the disgust-sensitive are motivated primarily by an attachment to social hierarchies and an animus toward low-status outgroups. Instead, they suggest that these attitudes may be one consequence of an evolved system (whether biological or cultural) that reduces pathogen exposure.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.paid.2014.07.001.

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