

Effect of Self-Reported Sexual Arousal on Responses to Sex-Related and Non-Sex-Related Disgust Cues

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Abstract Prior to and during sexual intercourse, people are exposed to stimuli that in other contexts might act as disgust-eliciting cues. This study examined whether sexual arousal, in contrast to general arousal, could selectively reduce reported disgust for cues that pilot participants identified as sex or non-sex related. Male undergraduates were randomly assigned to one of four viewing groups. One group viewed erotic female images, a second clad female images, a third pleasantly arousing images (e.g., skydiving), and a fourth unpleasantly arousing images (e.g., an aimed gun). After the viewing phase, all participants were exposed to pairs of real disgust elicitors (sex versus non-sex related) drawn from various sensory modalities. Participants in the erotic images group, who rated being more sexually aroused than those in the other three groups, also reported being significantly less disgusted by sex-related elicitors. While the mechanism for this effect is not currently known, our findings suggest one plausible explanation for risky sexual behavior as well as having implications for the role of disgust in sexual dysfunction.

Keywords Disgust · Sexual arousal · Disease avoidance

Introduction

Several researchers have suggested that a major function of the emotion of disgust is to facilitate disease avoidance (e.g., Curtis & Biran, 2001; Davey, 1994; Fessler & Navarrete, 2003). This function may manifest in at least two ways. First, many disgust elicitors connote the presence of pathogens

(Curtis & Biran, 2001). Encountering such an elicitor via vision (e.g., seeing feces), audition (e.g., hearing someone vomit), olfaction (e.g., smelling feces) or touch (e.g., slimy, gooey substances) will generally result in an overwhelming urge to withdraw and thus avoid the eliciting cue (Curtis & Biran, 2001). Second, disgust may also be involved more distally in disease avoidance (Oaten, Stevenson, & Case, 2009). For example, many cultures have specific sets of norms, which surround activities that involve significant risk of contracting disease, most notably with respect to eating and sexual behavior. Indeed, it has been observed that both marriage practices (Low, 1990) and propensity to seek multiple sexual partners (Schaller & Murray, 2008) are associated with a society's historic disease burden. In the latter case, society's that had many deaths from infectious disease might be shaped to restrict sexual activity, so as to reduce one avenue by which infection could spread (i.e., sexually transmitted disease and infectious disease in general). Disgust may be involved in "policing" these types of societal norms, norms that arguably arise to minimize disease risk.

That sexual behavior presents risks in respect of disease transmission is well established. Even setting aside current concerns with HIV-AIDS, there are over 50 other known human sexually transmitted diseases (CDC, 1990). Moreover, the close contact that ensues with sexual activity, and the exchange of bodily fluids, also brings with it ample opportunity to transmit other pathogens as well. It might then be no surprise to learn that people report disgust at the prospect of sexual activity with someone who displays symptoms of disease (Symons, 1979). In addition, sexual activity normally involves intimate exposure to just the types of elicitor that normally engender disgust-bodily secretions, such as saliva, sweat, semen, and vaginal fluids.

As increasing world population implies, and as advertising perpetually illustrates, humans have a considerable appetite

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for sexual activity. How can this fundamental appetite be reconciled with the observation above that a potent emotional barrier—disgust—appears to work against it? We suggest that sexual arousal selectively reduces disgust for sex-related elicitors, relative to non-sexual related elicitors, opening the way for sexual activity. A number of prior studies suggest this might occur. First, Blanton and Gerrard (1997) found that male participants lowered their risk perception of contracting a sexually transmitted disease from a hypothetical sexual partner when they became sexually aroused after viewing erotic images. Second, Ariely and Loewenstein (2006) had participants complete a range of questions about the attractiveness of different sex-related activities and behaviors. Participants who were sexually aroused (via imagery and self-stimulation) were significantly more accepting of activities that might allow them to consummate their sexual desire. This included more affirmative responses to “finding a 12-year old girl attractive,” “having sex with someone who was extremely fat,” and “getting sexually excited by contact with an animal.” These items might under other circumstances evoke disgust and, in fact, the final item (animals) is included in the Disgust Sensitivity scale (Haidt, McCauley, & Rozin, 1994). Third, Koukounas and McCabe (1997) exposed male and female participants to erotic videos and asked them to report on their level of arousal and upon their emotional state, including disgust. Correlations revealed that disgust was negatively associated with sexual arousal, such that when sexually aroused disgust tended to be reduced. Finally, in a more recent study, de Jong, van Overveld, Weijmar-Schultz, Peters, and Buwalda (2009) examined the possible role of disgust in vaginismus, a condition in which vaginal spasms make sexual penetration extremely difficult or impossible. They suggested that heightened disgust sensitivity might predispose sufferers to experience a defensive reaction to prevent intercourse and, consistent with their hypothesis, they found that vaginismus sufferers did indeed report higher levels of disgust on the Disgust Sensitivity scale (Haidt et al., 1994). In sum, these findings suggest that disgust may be reduced in male participants during heightened sexual arousal and that, where disgust is not reduced, this may actively interfere with sexual arousal and behavior. The principal aim of the study reported here was to examine whether inducing sexual arousal was associated with a decline in reported disgust, not generally, but specifically for sex-related disgust cues that are likely to be most relevant during the period before and during intercourse.

A serious consideration for our study was the nature of the control groups. Sexual arousal is both an affectively pleasant state and an arousing state. Thus, if sexual arousal does affect disgust, and sex-related disgust in particular, this effect could equally result from being in *any* affectively pleasant state and/or *any* arousing state. Consequently, we included a non-sexual affectively pleasant arousal state control, as well as a

non-sexual affectively unpleasant arousal state control. In addition, we also employed a content control group (clad females), as it is conceivable that just viewing images of age appropriate females could induce some alteration in disgust. In the experiment described below, we tested for the first time whether subjective sexual arousal (the term sexual arousal hereafter refers to the subjective state) affects feelings of disgust in general or whether it is more specific to sex-related disgust elicitors drawn from different sensory modalities.

Method

Participants

A total of 99 males took part for a small cash payment. Participants were recruited from either the undergraduate participant pool or from the university community. In both cases, the experiment was advertised as a study on emotion and no mention of either disgust or sex was made so as to minimize self-selection or avoidance on the basis of either parameter. Participants contacted the experimenters by telephone and they were asked to present themselves at the laboratory for testing. Only when they arrived at the laboratory were they given more detailed information (see below) about the nature of the study and no participant declined to take part on this basis. Participants were randomly allocated to one of four experimental conditions, with 25 per group, except in the Erotic images condition where there were 24. There was no significant difference in age between groups ($F < 1$; see Table 1).

Stimuli

The induction stimuli were all drawn from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2001; the four-digit numbers below refer to the IAPS stimulus number). The IAPS was developed by the NIMH Center for the Study of Emotion and Attention and provides a normed set of color images for use in emotion-related research. The IAPS images have been widely used by psychologists and neuroscientists (e.g., over 150 published studies appear when using IAPS as the search term in the ISI's *Web of Science*). The images selected here consisted of: (1) 20 color A4 size age-appropriate erotic female (and couples) images (4002, 4142, 4180, 4210, 4232, 4290, 4300, 4302, 4310, 4608, 4651, 4652, 4658, 4659, 4664, 4670, 4680, 4683, 4800, 4810); (2) 20 age-appropriate clad female (and couples) images which we term the content control group (4599, 4601, 4606, 4624, 8540, 4641, 2352, 4626, 4610, 8350, 4640, 8470, 4250, 4625, 8120, 4603, 4609, 2616, 4623, 8280); (3) 20 pleasantly arousing images (e.g., skydiving; 5950, 8300, 8400, 8180, 8179, 8260, 8034, 8185, 8475, 8191, 5621, 8160,

Table 1 Mean and SD for each predictor and demographic variable by group

Variable	Group							
	Erotic ^a (<i>n</i> = 24)		Content ^a (<i>n</i> = 25)		Positive ^a (<i>n</i> = 25)		Negative ^a (<i>n</i> = 25)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Liking ^a	5.2	0.8	4.9	1.0	5.2	1.1	3.2	1.3
Adrenalin rush ^a	3.9	1.6	2.5	1.9	3.6	2.0	3.0	1.7
Heart racing ^a	3.9	1.7	2.5	1.8	2.9	1.6	2.8	1.8
Frightened ^a	1.9	1.4	1.4	0.9	2.2	1.7	3.0	1.4
Elated ^a	3.3	1.5	2.3	1.4	3.3	1.9	1.6	0.9
Sexually arousing ^a	4.0	1.9	2.3	1.5	1.6	1.1	1.4	0.9
Disgust sensitivity ^b	17.0	4.5	15.5	6.3	13.8	5.1	15.6	4.2
Age (in yrs)	21.4	3.9	21.8	3.0	22.8	3.5	22.6	3.5

^a Absolute range = 1–7

^b Absolute range = 0–32

8178, 8186, 8030, 8490, 8192, 8200, 8080, 8341); and (4) 20 unpleasantly arousing images (e.g., an aimed gun; 6211, 9810, 3530, 8485, 3500, 6260, 6312, 6313, 6350, 6230, 1931, 9050, 6570, 6510, 6300, 1300, 9630, 6560, 1120, 6370). Using the IAPS male normative data (U.S. undergraduates), the erotic, content, and pleasant arousing images were matched as closely as possible for liking. Similarly, the erotic, the pleasant, and the unpleasant arousing images were matched as closely as possible for arousal. Measures obtained at the end of the study from our sample were used to assess whether these assignments successfully induced the requisite affective and arousal states and, in particular, whether the erotic group found the pictures sexually arousing.

The test stimuli consisted of pairs of disgust evoking items drawn from four sensory modalities—visual, auditory, somatosensory and olfactory. Pilot testing on 16 male participants ensured that one item of each pair evoked significantly more sex-related disgust than the other. To accomplish this, pilot participants were exposed to a range of disgust stimuli within each modality. Within each modality, item pairs were selected that differed as much as possible in their degree of “sex-relatedness.” This was established by having participants rank each stimulus according to “how related” they felt it was to the following disgust domains: death, animals, sex, hygiene, food, and gore (the *t*-values, all *ps* < .05, presented below reflect the comparison of the mean rank for sex-relatedness between stimulus pairs). The visual pair was composed of two IAPS images “scar on naked women” (3190; sex-related) and “pollution” (9342; non-sex-related; $t(14) = 13.10$). The auditory pair was composed of two approximately 10 s clips, one of someone vomiting and the other of fellatio (obtained from <http://www.soundsnap.com/search/audio/>; $t(14) = 2.81$). The tactile pair was composed of a bucket containing cold pea and ham soup and a bucket containing four lubricated condoms ($t(14) = 11.30$). These stimuli could only be felt, not seen or smelled. The olfactory pair, presented in opaque squeeze bottles,

were composed of a fecal odor (organic fertilizer [non-sex-related]) and a fishy odor (rotting fish [sex-related]; $t(14) = 2.32$); however, there was a major problem with these stimuli, which even extensive piloting with other odor stimuli could not resolve. We could not find olfactory cues that were predominantly judged as “sex” related (even “naturally” obtained products failed in this regard). This problem was also evident in the selected sex-related olfactory stimulus. This was judged as significantly less “sex-related” ($M = 2.3/6$) than the mean for the sex-related cues from all the other modalities, which did not differ ($M = 4.9/6$; $t(14) = 6.66$). So while we kept the olfactory stimuli in the experiment to balance the design, they were not included in the reported analysis.

All of the stimuli were judged by pilot participants to evoke significantly more disgust relative to all of the other basic negative emotions (sad, angry, fearful). However, sex-related elicitors were judged, across all modalities to the same degree, to be significantly less disgusting than non-sex related stimuli.

Procedure

Participants were warned before starting the experiment that they might be asked to view erotic images and that they would be asked to touch, listen to, smell, and see things that they might find unpleasant. No participant opted to withdraw and all provided consent to participate (the project was approved by the local IRB). Participants were then handed a loose-leaf folder containing a series of pictures that varied by the condition to which they had been allocated. They were instructed to carefully examine these images, as they might be asked questions about them later in the experiment. The experimenter then told the participant that they would be left alone to view the images and that he (the experimenter was always male) would return in 5 min. On the experimenter’s return,

participants received two of the four disgust modules, order of presentation being counterbalanced across conditions. We describe each of the modules in turn.

For the visual module, the participant was handed a closed folder and instructed to examine the picture and then evaluate his response to it on two dimensions: how much he liked or disliked it (7 point bipolar category scale [1 = like]) and how disgusting he found it (7 point unipolar category scale [1 = not at all]). This process was then repeated for the second image—the order of presentation (as with all stimuli within a module) was counterbalanced across conditions.

For the tactile module, participants' nostrils were blocked with cotton wool plugs (as the soup smelled) and they were then asked to place their non-dominant hand through a small opening (so the content was not visible) and feel the content of the bucket. They were then asked to make the two ratings above while their hand was in active contact with the contents. After wiping their hand, this process was then repeated for the second bucket.

For the auditory module, participants placed headphones over their ears and then listened to the first digital sound clip and then evaluated this using the same set of ratings as above. The same procedure was followed for the second clip.

For the olfactory module, participants were asked to sniff while the experimenter administered three puffs of the first odor. After evaluating the odor, they received a second stimulus in the same manner.

Once the first two modules were complete, participants were given a second picture book that contained the same images but in a different order. The experimenter again left the participant alone to view the images and then returned after 5 min to administer the final two modules—that is, the two which had not been completed following the first set of images. Module order had no detectable effect on the pattern of results and is not further reported here. Participants were then asked to complete two questionnaires. The first obtained biographical information, including sexual orientation (no participant was excluded on this basis). Participants were then asked to complete seven 7-point category ratings: how much they liked or disliked the images they had viewed (bipolar scale); whether the pictures had given them an adrenalin rush (anchors for the remaining scales, Not at all to Very); whether the pictures had made their heart beat faster; whether the pictures had made them frightened or fearful; whether the pictures had made them feel elated or high; and finally, whether the pictures had made them feel sexually aroused. Participants then completed the Disgust Sensitivity scale (Haidt et al., 1994). This is a 32-item self-report scale, with good internal reliability ($\alpha > 0.8$) and validity, in that responses to this questionnaire are significantly predictive of how participants will behave when confronted with real disgust elicitors (Rozin, Haidt, McCauley, Dunlop, & Ashmore, 1999). Finally, participants were fully debriefed about

the purpose of the experiment, the stimuli and the nature of the images.

Data Analysis

As noted above, the olfactory stimuli were not utilized in the analysis. Analyses were primarily performed using univariate or mixed design ANCOVAs. The covariates were reported level of general arousal and fear. These were included to minimize misattribution of general arousal/fear to sexual arousal, and to ensure that the only difference between groups was in their degree of sexual arousal. The covariates were identified by a factor analysis of the four arousal ratings described at the end of the Procedure section (excluding sexual arousal). This revealed two distinct factors: general arousal (adrenalin rush; heart beat faster; high/elated) and fear. The three arousal measures (adrenalin rush; heart beat faster; high/elated) were averaged to form a “general arousal” covariate with the fear rating as the other. All of the data met the necessary assumptions for ANCOVA. Finally, only the disgust ratings are reported here, as analyses of the hedonic data produced the same pattern of results, but with smaller effect sizes relative to those for disgust.

Results

Emotion and Arousal Ratings

Participants' disgust sensitivity scores, their ratings of picture liking, arousal, fear and sexual arousal are all detailed, by group, in Table 1. Disgust sensitivity did not significantly differ between groups ($F < 1.6$). To determine whether our participants reacted to the pictures used in the induction in the way we expected, we tested whether liking ratings for each set of images differed by Group (Content versus Erotic versus Negative versus Positive), using a one-way ANOVA. There was a significant main effect of Group, $F(3, 95) = 19.85$, $p < .001$, $MSE = 1.14$, partial $\eta^2 = .39$, and a Ryan–Einot–Gabriel–Welsch (REGW) Range test revealed that the Erotic, Content, and Positive groups formed one homogenous subset and the Negative group another. Thus, picture liking was equated across the Erotic, Content, and Positive groups, and, unsurprisingly, differed for the Negative group who received unpleasantly arousing images.

For ratings of arousal, we utilized the two measures identified in the Analysis section above. We then used a 4 (Group: Content versus Erotic versus Negative versus Positive) \times 2 (Rating: General arousal versus Fear) mixed design ANOVA. The ANOVA revealed a main effect of Group, $F(3, 95) = 3.23$, $MSE = 2.67$, $p < .05$, partial $\eta^2 = .09$. An REGW Range test revealed two homogenous subsets based upon this overall pooled test of arousal (i.e., collapsing across

Fear and General arousal), with the Content group as one subset, and the other three groups as the second. There was also a significant main effect of Rating, $F(1, 95) = 26.82$, $p < .001$, $MSE = 1.31$, partial $\eta^2 = .22$, and a significant interaction of Group and Rating, $F(3, 95) = 8.96$, $p < .001$, $MSE = 1.31$, partial $\eta^2 = .22$. The interaction effect was also examined using an REGW Range test (using the mean difference between General arousal minus Fear rating by Group) and this revealed two homogenous subsets, Negative in one set and the remaining three groups in the other. In sum, the pictures used in the Erotic, Negative, and Positive groups generated significantly more arousal, overall, than in the Content group, but the nature of this arousal differed, in that Fear was the dominant form in the Negative group, but positive arousal was the dominant form in the remainder.

We then examined the sexual arousal ratings using a one-way ANOVA by Group (Content versus Erotic versus Negative versus Positive). There was a significant main effect of Group, $F(3, 95) = 17.97$, $p < .001$, $MSE = 1.98$, partial $\eta^2 = .36$, and a REGW Range test revealed that the Erotic group formed one homogenous subset, with the other three groups forming a second. Thus, the induction manipulation was successful.

Disgust Ratings

We then examined whether the groups differed in their response to the sex-related and non-sex-related disgust stimuli. Participants responses by group are detailed in Table 2. We conducted a 4 (Group) \times 2 (Stimulus type: Sex-related versus Non-sex-related) \times 3 (Modality: Auditory versus Visual versus Tactile) analysis of covariance (ANCOVA) for ratings

of disgust, in a mixed model design. General arousal and fear served as covariates. The analysis revealed three significant effects. First, there was a significant main effect for Stimulus, $F(1, 93) = 7.77$, $p < .01$, $MSE = 2.52$, partial $\eta^2 = 0.08$, with higher disgust ratings, overall, for the non-sex-related stimuli ($M = 4.8$) relative to the sex-related stimuli ($M = 3.7$). Second, there was a Stimulus by Modality interaction, $F(2, 186) = 3.71$, $p < .05$, $MSE = 1.93$, partial $\eta^2 = .04$, with the largest discrepancy between Stimulus, for touch ($M = 1.7$), then audition ($M = 1.2$), and then vision ($M = 0.3$). As we had no *a priori* interest in differences of this sort, we did not conduct any post-hoc tests. Third, and most importantly, there was a significant interaction of Group by Stimulus, $F(3, 93) = 2.87$, $p < .05$, $MSE = 2.52$, partial $\eta^2 = .09$. Examination of Table 2 suggests that the largest difference in disgust ratings for sex and non-sex cues was in the Erotic group relative to the other three conditions. To test this interpretation, which was consistent with our expectations, we conducted two post-hoc contrasts on this Group by Stimulus interaction effect. First, we tested whether the difference in disgust ratings for sex and non-sex cues was reliably different between the three control groups, using a one-way ANCOVA (same covariates as above). The difference in disgust response between sex related and non-sex related cues did not significantly differ between these control groups. Second, we tested whether the difference in disgust ratings for sex and non-sex cues was greater in the Erotic group, relative to the control groups combined. This contrast was reliable ($p < .02$) and suggests that sexual arousal produced a greater difference in disgust ratings between sex and non-sex related cues than did the other control manipulations employed here.

Table 2 Mean and SD for disgust ratings obtained for non-sex and sex cues by group and modality

Modality stimulus	Group							
	Erotic ($n = 24$)		Content ($n = 25$)		Positive ($n = 25$)		Negative ($n = 25$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Auditory ^a								
Non-sex	4.9	1.7	5.1	1.6	4.6	1.6	4.9	1.7
Sex	2.6	1.8	3.7	1.8	3.9	1.7	4.3	1.9
Difference	2.3	2.2	1.4	2.1	0.7	2.1	0.6	2.3
Visual ^a								
Non-sex	4.4	1.8	4.5	1.7	4.1	1.7	4.6	1.8
Sex	3.9	1.8	4.4	1.8	3.8	1.7	4.2	1.9
Difference	0.5	2.3	0.1	2.3	0.3	2.2	0.4	2.4
Tactile ^a								
Non-sex	5.5	1.9	5.4	1.8	4.6	1.6	5.3	1.7
Sex	3.0	1.9	3.4	2.0	3.3	1.8	4.4	1.9
Difference	2.5	1.9	2.0	1.9	1.3	1.8	0.9	2.0
Mean difference	1.8	1.4	1.2	1.3	0.8	1.3	0.6	1.4

^a Absolute range = 1–7

The preceding analysis of the Group by Stimulus interaction established that the difference in disgust evaluations between sex and non-sex related cues was greater for the Erotic group relative to the controls. However, this analysis cannot establish whether this difference resulted from a reduction in disgust for sex related cues (as expected) or from an increase in disgust for non-sex related cues. To explore these possibilities, we examined whether participants' disgust ratings for just the non-sex related elicitors differed between the erotic group and the remaining participants (the three control groups did not significantly differ in their response). A univariate ANCOVA (same covariates as above) of disgust ratings for the Erotic group versus the control groups combined revealed no significant difference in response ($F < 1$). That is, all participants responded in a similar manner to the non-sex related disgust cues. Finally, we examined whether participants' disgust ratings for the sex-related elicitors differed between the erotic group and the remaining participants (again the three control groups did not differ in their response; $F < 1.5$). A univariate ANCOVA (same covariates as above) revealed that participants exposed to the erotic images found the sex-related elicitors less disgusting, than participants not exposed to erotic images, $F(1, 93) = 4.20, p < .05, MSE = 1.57, \text{partial } \eta^2 = .04$.

Discussion

Our data suggest that, in young males, subjective sexual arousal differentially affects the experience of disgust, not disgust in general, but disgust for sex-related elicitors. This effect appears to hold across the modalities of vision, touch, and audition. We focus first on the limitations of our study and whether the differential disgust response to sex-related stimuli was mediated by sexual arousal, then we consider how sexual arousal might affect sex related disgust responding and, finally, we examine the implications of our data.

Both the pilot data and the main study indicated that male participants were less disgusted by the sex-related cues than the non-sex related disgust cues. First, it should be noted that participants did find the sex related cues disgusting. In the main experiment, sex related cues had a mean disgust score of 3.7/7 and this significantly differed from one (i.e., a response of "not at all" disgusting), $t(98) = 29.32, p < .001, r^2 = .90$. Second, the only major impact that this difference might make is if sexual arousal only affects less disgusting cues and we cannot exclude this possibility. However, Ariely and Loewenstein's (2006) data would suggest this is unlikely, as in their study sexual arousal affected responding to sexual activities that would be considered highly disgusting by most adults (i.e., sex with a minor or an animal). A further limitation concerns the study population. We do not know whether a similar effect can be obtained in female participants or

whether older men would demonstrate it too. Relatedly, would the effect be more pronounced if the level of sexual arousal was more intense, and what of the ecological validity of testing in a laboratory environment? Indeed, it needs to be stressed that this is the first study that has attempted to explore the effect of sexual arousal on disgust, and these limitations should be borne in mind when considering its implications.

Prior to sexual activity, a number of different psychological effects will occur, including positive affect, general bodily arousal (i.e., alertness), and more specific sexually oriented arousal. These latter two changes will also be accompanied by general (i.e., accelerated heart-rate, breathing) and specific physiological effects (i.e., distension of the penis or vagina). Our data suggest that the observed reduction in response to sex-related disgust was specific to sexual arousal (be it psychological, physiological or the combination), as the effect was selective to the erotic images group even when other sources of arousal (general and fear) were covaried. A key question then is how sexual arousal might affect disgust responding.

Although we did not set out to explore the mechanism behind any sexual arousal driven shift in disgust, it is important to consider how this might be instantiated. One possibility is that being in a state of heightened sexual arousal results in a shift of cognitive set in respect of how sex-related elicitors are interpreted. That is, rather than being perceived as disgust elicitors, these cues start to function instead as cues for sex, making them attractive rather than repulsive. A second and related possibility is that of direct competition between a cue's incentive salience value (as a sex-related predictor) and its function as a disgust elicitor. On this basis, the greater the level of sexual arousal, the more any sex-related cue comes to have incentive salience, which then sums with the negative affect generated by its disgust eliciting properties. The outcome of this summing would be a less disgusting sex related cue or, indeed, with sufficient arousal, a possibly positive cue. The principal difference between these two accounts is that one is essentially cognitive while the other is arguably less reliant upon consciously mediated processes.

In the Introduction, we described how disgust might function to assist disease avoidance. This has to be balanced with the requirement to reproduce, an arguably more basic biological function. This conflict between risk (sickness, infertility, and death) and benefit (reproductive success) has its basis in evolutionary theory, and more specifically in terms of reproductive strategy (Gangestad, 2007). Put another way the need to "lower the guard" during sexual arousal can be seen as one of a large number of balancing acts that organisms must engage in to optimize breeding success. As our results demonstrate, sexual arousal is able to suppress disgust responding for sex-related elicitors in young men. As others have noted, sexual arousal may be important in undermining a person's otherwise good judgment in their choice of sexual partners

(e.g., Ariely & Loewenstein, 2006; Blanton & Gerrard, 1997). Based upon our findings, we suggest that reduced sex-related disgust may play an additional and hitherto unacknowledged role in the genesis of risky sexual behavior. Moreover, our findings also have implications for the role of disgust in sexual dysfunction. As described in the introduction, recent work by de Jong et al. (2009) suggests that heightened disgust sensitivity is associated with vaginismus. Assuming that women too demonstrate a reduction in sex-related disgust during sexual arousal, a failure to do so might be a further factor in the development of this condition.

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