



# Perceptions of Sexual Images: Factors Influencing Responses to the Ubiquitous External Ejaculation

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## Abstract

The debate over pornography has drawn attention to sex differences not only in the frequency of pornography consumption but also in the different ways males and females may perceive sexually explicit images and respond to them. Some of these differences may be due to sex differences in a variety of factors including sexual strategies and disgust, in particular, disgust related to pathogen avoidance. There is a large literature that focuses on how pathogen avoidance has shaped human behavior from political ideology to in-group/outgroup behavior to sexual risk taking/avoidance. This study examined sex differences in perceptions and how they are influenced by the emotional context of the image as well as individual difference factors, including disgust sensitivity, mate value, sociosexuality, and sexual orientation. Participants viewed a series of sexually explicit images of external ejaculations and rated them in terms of being positive, neutral, or negative. The factors accounting for the greatest variance in perceptions were target affect and sex, sexual orientation, and respondent sex, followed by pathogen and sexual disgust, self-perceived mate value, and sociosexual attitudes and desire.

**Keywords** Pornography · External ejaculation · Sex differences · Sociosexuality · Sexual disgust

## Introduction

There has, and continues to be, a great deal of interest and controversy over pornography and what factors influence individuals' attitudes toward and preferences for visual images of sexual behavior (Hald & Štulhofer, 2016; Salmon & Diamond, 2012; Salmon et al., 2019). Many claims have been made about the effects of pornography consumption on men and women (Diamond, 2009; Kohut et al., 2016; Malamuth, 2018; Skorska et al., 2018; Wright & Vangeel, 2019) with studies reporting positive, negative, and no effects. The rise of the Internet has increased access to pornographic images and video (Short et al., 2012), partially due to the greater anonymity people have on their electronic devices in the privacy of their own homes as well as the wide variety of materials available online for free. The popular pornography website Pornhub.com reported 42 billion visits in 2019, with an average of 115 million visits per day. There was also a record number of video uploads in 2019 with over 6.83 million new videos uploaded to Pornhub (Pornhub, 2019).

Perhaps one of the most long-standing arguments has been over whether pornography is evidence of male contempt for women or that it is designed to be degrading to women (Dworkin, 1985; Glascock, 2005; Jensen, 2007). A number of researchers have tried to assess this issue, including McKee (2005) who examined the objectification of men and women in heterosexual pornography including such measures as who initiated sex, who had orgasms, various sex acts, point of view, voice (whether they spoke and how much), physical violence, and violent language. He found no sex difference across the majority of measures, suggesting men and women were similarly objectified. One act that has often been highlighted in discussing how men and women are portrayed in pornography is the ubiquitous external ejaculation, or “cum shot,” with particular vitriol directed toward cum shots that land on the female partner's face, though some have staunchly argued that they are not inherently degrading (Salmon & Diamond, 2012). While McKee (2005) reported on frequency of oral sex, he did not provide data on external ejaculations.

In their book on female sexuality, Salmon and Symons (2001) suggested that there are no substantial differences between gay male pornography and pornography produced for heterosexual men (other than the sex of the actors) because they both tap into basic male sexual psychology. Salmon and Diamond (2012) tested this by comparing pornographic films that targeted

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heterosexual and homosexual male audiences. Their results indicated that on the majority of activities measured, there were no differences between homosexual and heterosexual pornography for men. One exception was the frequency and location of these external ejaculations. Such scenes were more frequent in homosexual pornography but the location of the ejaculation being on the face of the partner was less frequent. One question that Salmon and Diamond (2012) raised in response to the focus on external ejaculations on female faces was the following: Do men simply enjoy seeing positive expressions on faces that received external ejaculations because it may indicate approval of them or arousal directed toward them? The suggestion here is that men might not perceive the cum shot as degrading but rather that their partner's facial signs of enjoyment serve as an indicator of their approval of his sexual desires, and/or their own sexual arousal toward him. This might be particularly relevant for heterosexual men as they do not receive as many obvious physical cues of their partners' arousal as homosexual men do. However, the lower frequency of facial cum shots in homosexual porn might also be simply due to the lesser frequency of sex in the face to face position (Salmon & Diamond, 2012).

### What Factors Influence Perceptions of the External Ejaculation or “Cum Shot”?

The question remains that some individuals perceive pornographic images differently than others and some evidence suggests that men perceive such images quite differently than women (Cowan & Dunn, 1994; Glascock, 2005). One factor that may contribute to this difference may be differences in disgust sensitivity, in particular, disgust related to pathogen avoidance. There is a large literature that focuses on how pathogen avoidance has shaped human behavior from political ideology to in-group/outgroup behavior to sexual risk-taking/avoidance (Fincher & Thornhill, 2012; Tybur et al., 2009). A number of studies have also focused on sex differences in disgust, noting relatively small differences for pathogen disgust and larger ones for sexual disgust (Fleischman, 2014; Tybur et al., 2011) as well as offering a number of hypotheses for why such greater female sensitivity to disgust occurs (Al-Shawaf et al., 2018). But if females generally display more sexual and pathogen disgust, bodily fluid contamination may make them more averse than males to facial cum shots.

Several other factors that are likely to influence perceptions of external ejaculations include the sexual strategies individuals are following, sexual orientation, as well as one's own mate value. Sexual strategies are relevant in that individuals pursuing short-term mating are more likely to be interested in consuming pornography in general (Braithwaite et al., 2015; Krejčová et al., 2017; Salmon et al., 2019) as the world of heterosexual male pornography, or pornotopia, is largely a male fantasy of low-cost casual sex with an endless supply of easily aroused interested females (Salmon & Symons, 2001). Interestingly, in one study (Sevi et al., 2018) low sexual disgust and high sociosexuality (a measure of

sexual strategies) predicted the motivation to use Tinder for casual sex. In general, high sexual disgust would be expected to interfere with following a short-term sexual strategy of casual sex for males and females as it deters individuals from engaging in risky sexual behavior. Low sexual disgust would be associated with more openness to short-term sexual encounters and the likelihood of finding external ejaculations less aversive. Varying degrees of sexual disgust are hypothesized to exist because of different levels of interest in sexual variety (O'Shea et al., 2019) and low sexual disgust is typically reported in those seeking sexual variety, a component of short-term mating (Al-Shawaf et al., 2015, 2018).

A number of previous studies have indicated frequent consumption of pornography on the part of heterosexual and homosexual men compared to heterosexual and lesbian women (Hald & Štulhofer, 2016; Træen & Daneback, 2013). Focusing on the role of external ejaculations, Salmon and Diamond's (2012) content analysis of heterosexual and homosexual pornography indicated greater numbers of external ejaculations in homosexual pornography compared to heterosexual, though more landed on the body than the face of the recipient. This greater frequency of facial cum shots in heterosexual pornography might reflect heterosexual males greater concern with visual evidence of female approval and/or enjoyment of the activity. Homosexual males might also enjoy such images (despite other visual evidence of enjoyment being present in homosexual pornography such as erect or ejaculating partners), even if facial cum shots are less frequent features of homosexual male pornography. However, it might be especially relevant to heterosexual males if female positive affect increases their pleasure and negative female affect inhibits their pleasure as some studies have suggested (Bernat et al., 1999; Gardos & Mosher, 1999).

Mate value may also be relevant to how sexual images are perceived, in particular whether explicit images are seen as a threat or not. Sexual images as a threat to relationships or self-esteem is often an underlying theme in studies that examine the effects of partner use of pornography on females. A number of studies indicate more negative views about self and/or partner for some but not all women associated with male partner pornography use (Bechara et al., 2003; Bergner & Bridges, 2002; Staley & Prause, 2013). It may be that individuals with self-assessed low mate value (i.e., perceive themselves to be less attractive as mates) might find pornographic images more distressing as they may feel threatened by images of attractive women who are open to casual sex and accepting of a wide range of male sexual behaviors (Salmon & Fisher, 2018). Examinations of self-perceived mate value suggest, for example, that the frequency of sending unsolicited nude photographs is positively predicted by self-perceived mate value which was also a positive predictor of a measure of attitudes toward sending such photographs (March & Wagstaff, 2017). High mate value women appear less likely to be threatened by the attractiveness and sexual availability of other women and thus may perhaps have more positive, or at least less negative, responses to images of facial ejaculations.

## Current Study

The purpose of the current study was to examine factors that may influence individuals' perceptions of explicit images, particularly the depiction of external ejaculations. These factors included demographic characteristics (i.e., sex and sexual orientation of the person viewing the stimuli), stimulus-based factors (i.e., sex and emotional affect of the person receiving the cum shot), and individual difference factors (i.e., self-perceived mate value, disgust sensitivity, and sociosexuality). There are theoretical reasons to expect sex differences in perceptions as well as to expect individuals' sexual orientation, self-perceived mate value, sexual strategies, and disgust sensitivity to predict their perceptions. In addition, one would expect that the facial expression of the recipient of the external ejaculation would influence perceptions such that positive expressions would elicit more positive perceptions while negative facial expressions would be associated with more negative perceptions, particularly for males if positive expressions are indicators of acceptance or approval/arousal. Our predictions were as follows:

1. Females will rate the images more negatively than males.
2. Sexual orientation will influence perceptions, such that, particularly for male participants, perceptions of external cum shots to the preferred sex will be rated more positively.
3. Images in which the target has positive affect will be rated more positively than those displaying negative affect.
4. Individuals with higher disgust sensitivity will have more negative perceptions.
5. Individuals with higher sociosexuality inventory scores will have more positive perceptions.
6. Individuals with higher self-perceived mate value will have more positive perceptions.

## Method

### Participants

Participants included 380 adults (107 females, 273 males) who were recruited from Amazon Mechanical Turk (M-Turk) and received \$2 (USD) in compensation for completing an online survey. Participants' ages ranged from 20 to 72 ( $M = 32.23$ ,  $SD = 8.86$ ). Approximately 56% of participants self-reported their ethnicity as being white or Caucasian, 30% Asian or Asian American, 7% Hispanic or Latino, 5% black or African-American, 1% American Indian or Native American, and 2% "other." For current relationship status, approximately 46% of the participants self-reported being in a committed romantic relationship, 39% self-reported being single, and 15% self-reported dating casually. Approximately 46% of participants self-reported their sexual orientation as heterosexual, 30% bisexual, 24%

homosexual, and less than 1% "other." Participants who reported "other" sexual orientation were excluded from analyses.

## Measures

### Demographics

Participants were asked to self-report their age, sex, ethnicity, sexual orientation, and current relationship status.

### Disgust

Disgust sensitivity was measured using the Three Domains of Disgust Scale (TDDS) (Olatunji et al., 2012). This scale consists of 21 questions on a 7-point Likert scale (0 = "not at all disgusting" and 6 = "extremely disgusting") and yields three subscores (pathogen disgust, sexual disgust, and moral disgust). The possible range of scores for the subscores is from 0 to 42 with higher scores indicating greater levels of disgust. Cronbach's alphas indicated there was good internal consistency for the pathogen disgust ( $\alpha = 0.85$ ), sexual disgust ( $\alpha = 0.89$ ), and moral ( $\alpha = 0.91$ ) subscales within the sample.

### Mate Value

Self-perceived mate value was measured using the brief Mate Value Scale (MVS) (Edlund & Sagarin, 2014). The scale consists of four questions on a 7-point Likert scale, yielding a possible range of scores from 4 to 28 with higher scores indicating greater self-perceived mate value. Analysis of the MVS relative to other measures of mate value has indicated the MVS is both a reliable and valid measure of self-perceived mate value.

### Sociosexuality

Sociosexuality was measured using the Revised Sociosexual Orientation Inventory (SOI-R) (Penke & Asendorpf, 2008). This scale consists of nine questions on a 9-point scale and yields three subscores (behavior, attitude, and desire). The range of possible scores for the subscores is from 3 to 27, with higher scores indicating greater casual sex behavior, more open/approving attitudes about casual sex, and greater desire for short-term mating (respectively). Cronbach's alphas indicated there was good internal consistency for the behavior ( $\alpha = 0.86$ ), attitude ( $\alpha = 0.75$ ), and desire ( $\alpha = 0.90$ ) subscales within the sample.

### Sexual Images

A total of 18 explicit sexual images were used. All of the images were selected to include a penis, ejaculate, and a close-up of the

face of the person receiving the cum shot (hereafter referred to as the “target”). Half of the targets were male, and half of the targets were female. All of the targets were Caucasian/Hispanic in appearance. Within each target sex, three targets displayed positive affect, three targets displayed negative affect, and three targets displayed neutral affect. A pilot study consisting of 20 participants (5 females, 9 males, and 6 declined to answer) was used to confirm the affect of the targets matched the experimental assignment as being positive, negative, or neutral. For the pilot study, participants were asked to rate the facial affect of the target in each picture on how positive, neutral, and negative they believed the affect to be using a 7-point Likert scale (1 = “not at all” to 7 = “very positive/neutral/negative”). The pilot stimuli included four pictures of female targets displaying positive affect, four pictures of female targets displaying negative affect, four pictures of female targets displaying neutral affect, five pictures of male targets displaying positive affect, four pictures of male targets displaying negative affect, and seven pictures of males displaying neutral affect. For the final study, three images for each experimental condition were selected based on having the highest rating consistent with that specific affect.

### Perceptions of Sexual Images

Participants were asked to rate their perception of each sexual image on a 7-point Likert scale from 1 = “very negative” to 7 = “very positive.” Scores were created by summing the ratings across the stimuli for perception scores as a function of target sex as well as target affect.

### Procedure

Participants completed an online survey. Participants first responded to the demographic questions, followed by the mate value questions, sociosexuality questions, the disgust questions, and finally the perceptions of the sexual images questions. Participants rated each of the 18 sexual images, and each sexual image was presented on a separate page with the question below the image. To control for order effects, each participant received the images in a randomized order. After completion of the survey, participants were compensated for their time.

All procedures and measures were approved by the investigators’ Institutional Review Board. Participants gave informed consent before participating in the study, and no deception was used.

### Results

The means (and standard deviations) for disgust, self-perceived mate value, sociosexuality, and perceptions of the sexual images as a function of sex appear in Table 1. Inspection of the independent samples *t*-tests indicates that there was no significant sex difference in self-perceived mate value, pathogen disgust, or

moral disgust. However, females did report significantly greater sexual disgust than males; and males had significantly greater sociosexual behavior, attitudes, and desire scores than females. In addition, overall, females perceived the sexual images to be more negative than did males.

### Effect of Demographic Characteristics (Respondents’ Sex and Sexual Orientation) and Stimulus-Based Factors (Sex and Emotional Affect of Target) on Perceptions

A mixed factor repeated measures ANOVA was used to test whether target and/or participant factors influenced perceptions of the sexual images. Emotional affect of the target (positive, neutral, or negative) and target sex (male vs. female) were entered as within-subject variables; respondent sex (male vs. female), sexual orientation (heterosexual, bisexual, or homosexual), and relationship status (single, dating casually, or in long-term committed romantic relationship) were entered as between-subject variables.

Results of the mixed factor repeated measures ANOVA with a Greenhouse–Geisser correction revealed a significant main effect of emotional affect of the target on perceptions of the sexual images,  $F(1.69, 608.32) = 25.58, p < 0.001$ . Tukey’s post hoc comparison tests indicated that the negative affect targets ( $M = 3.77, SD = 1.69, p < 0.001$ ) were rated significantly less positively than both the positive affect targets ( $M = 4.33, SD = 1.60$ ) and the neutral affect targets ( $M = 4.13, SD = 1.83, p < 0.001$ ), but there was no significant difference in the ratings of the positive and neutral affect targets ( $p = 0.18$ ). Overall, the emotional affect of the target accounted for approximately 16% of the variance in the perceptions of the sexual images ( $\eta^2 = 0.161$ ). There was also a significant main effect of target

**Table 1** Means (and SDs) for disgust, self-perceived mate value, sociosexuality, and overall perceptions of the sexual images as a function of respondents’ sex

Measure	Males	Females	<i>t</i> ( <i>p</i> value)
	Mean ( <i>SD</i> )	Mean ( <i>SD</i> )	
Pathogen disgust	24.13 (8.69)	25.24 (8.18)	− 1.40 ( <i>p</i> = .26)
Sexual disgust	16.42 (11.47)	19.33 (9.05)	− 2.60 <sup>a</sup> ( <i>p</i> = .01)
Moral disgust	22.72 (10.33)	23.57 (10.98)	− 0.96 ( <i>p</i> = .34)
Mate value	19.55 (5.21)	19.05 (5.25)	0.85 ( <i>p</i> = .40)
SOI behavior	11.30 (6.81)	8.63 (6.49)	3.48 ( <i>p</i> = .001)
SOI attitude	18.14 (6.05)	15.37 (6.81)	3.88 ( <i>p</i> < .001)
SOI desire	16.62 (5.89)	10.90 (6.57)	7.84 <sup>a</sup> ( <i>p</i> < .001)
Overall perceptions	4.27 (1.35)	3.15 (1.29)	3.20 ( <i>p</i> = .002)

<sup>a</sup>The degrees of freedom for this *t*-test were corrected to account for unequal variances based on Levene’s test for equality of variances

sex such that images with female targets were rated significantly more positively ( $M=4.54$ ,  $SD=1.64$ ) than those with male targets ( $M=3.44$ ,  $SD=1.83$ ),  $F(1, 360)=5.82$ ,  $p=0.02$ . Overall, sex of the target accounted for approximately 7% of the variance in the perceptions of the sexual images ( $\eta^2=0.067$ ). Relevant to the sex differences prediction, there was a significant main effect of respondents' sex such that males rated the sexual images significantly more positively ( $M=4.27$ ,  $SD=1.35$ ) than the females ( $M=3.15$ ,  $SD=1.29$ ),  $F(1, 360)=4.95$ ,  $p=0.03$ . Overall, this was a small effect with respondents' sex explaining only about 1% of the variance in the perceptions of the sexual images ( $\eta^2=0.014$ ). There was also a significant main effect of respondents' sexual orientation,  $F(2, 360)=16.58$ ,  $p<0.001$ . Tukey's post hoc comparisons indicated that heterosexual participants rated the sexual images as significantly less positive ( $M=3.25$ ,  $SD=1.56$ ) than both bisexual participants ( $M=4.64$ ,  $SD=1.53$ ,  $p<0.001$ ) and homosexual participants ( $M=4.47$ ,  $SD=1.48$ ,  $p<0.001$ ). There was no significant difference in the ratings, however, between bisexual and homosexual participants ( $p=0.48$ ). Overall, sexual orientation explained approximately 12% of the variance in the perceptions of the sexual images ( $\eta^2=0.120$ ). Finally the results indicated no significant main effect of relationship status on perceptions of the sexual images,  $F(2, 360)=2.66$ ,  $p=0.07$ .

Investigation of interaction terms indicated a significant interaction between target sex and respondent sex,  $F(1, 360)=12.98$ ,  $p<0.001$ . While there was not much difference in how females rated the male ( $M=3.85$ ,  $SD=1.56$ ) and female targets ( $M=4.01$ ,  $SD=1.56$ ), males rated the female targets significantly more positively ( $M=4.98$ ,  $SD=1.61$ ) than they rated the male targets ( $M=3.69$ ,  $SD=1.93$ ). Overall, the interaction between sex of the target and respondent sex explained approximately 4% of the variance in the perception scores ( $\eta^2=0.035$ ).

Relevant to the prediction that sexual orientation would particularly influence males' perceptions such that they would show a greater positive bias toward the target consistent with their preferred sex, there was a significant three-way interaction between target sex, respondent sex, and sexual orientation,  $F(2, 360)=6.93$ ,  $p=0.001$ . For homosexual men, there was not much difference in their ratings of male vs. female targets; bisexual men rated the male targets as less positive than the female targets, but the largest difference in the ratings for the male and female targets was for the heterosexual men who largely preferred the female targets (see Fig. 1). Lesbians, however, rated the male targets as more positive than the female targets, bisexual women rated the female targets as more positive than the male targets, and heterosexual women also rated the female targets as more positive than the male targets, but not as positive as the bisexual women rated the targets (see Fig. 2). Overall, the interaction between target sex, respondent sex, and sexual orientation explained approximately 4% of the variance in perceptions of the sexual images ( $\eta^2=0.037$ ).

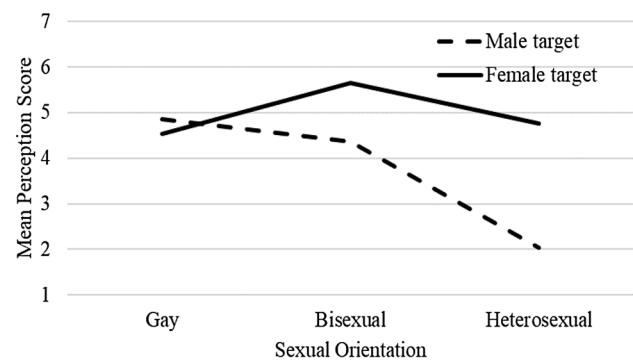


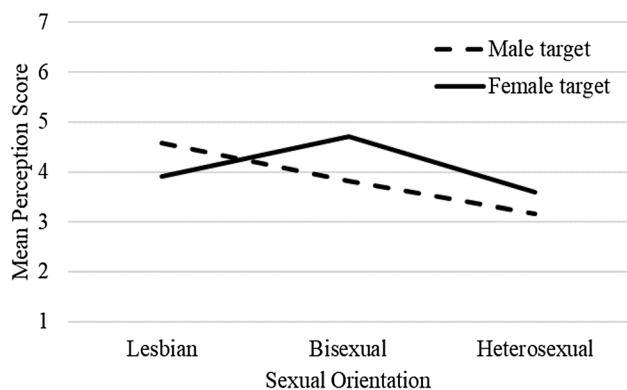
Fig. 1 Interaction between sexual orientation and sex of target on male participants' mean perception scores

### Effect of Individual Difference Factors (Self-Perceived Mate Value, Disgust Sensitivity, and Sociosexuality) on Perceptions

A hierarchical linear regression analysis was used to investigate whether individual differences in disgust sensitivity, self-perceived mate value, and sociosexuality predict perceptions of the sexual images. In order to control for the main effects identified in the earlier analysis, respondent sex (coded as 0 = male, 1 = female), sexual orientation (coded as 0 = heterosexual, 1 = bisexual/homosexual), emotional affect (coded as 0 = negative, 1 = positive/neutral), and target sex (coded as 0 = male, 1 = female) were entered in step 1; the main effects of self-perceived mate-value, disgust (sexual, pathogen, and moral), and sociosexuality (behavior, attitudes, and desire) were entered in step 2; and the two-way interactions between sex and the individual different predictor variables were entered in step 3. Results from this analysis are summarized in Table 2.

In step 1, respondent sex, sexual orientation, emotional affect, and target sex explained approximately 25% of the variance in perception of sexual image scores,  $F(4, 2263)=183.63$ ,  $p<0.001$ . Inspection of the standardized regression coefficients ( $\beta$ s) indicates that all four control variables were significant unique predictors of perceptions of the sexual images. Consistent with the previous analysis, the main effect of sex indicates that males perceived the images more positively than the females. The main effect of sexual orientation indicates that both bisexual and homosexual individuals perceived the images more positively than heterosexual individuals. The main effect of sex of target indicates that images of female targets were perceived more positively than images of male targets. The main effect of emotional affect indicates that targets with positive affect were rated more positively than those with neutral affect, which were also rated more positively than those with negative affect.

In step 2, the addition of the individual difference measures of self-perceived mate value, disgust, and sociosexuality explained an additional 6% of the variance in perception of sexual image



**Fig. 2** Interaction between sexual orientation and sex of target on female participants’ mean perception scores

scores,  $F(7, 2256) = 27.45, p < 0.001$ . Inspection of the standardized regression coefficients ( $\beta$ s) indicates that although moral disgust and sociosexual behavior were not predictors, the other individual difference measures were significant unique predictors of perceptions of the sexual images. The main effect of self-perceived mate value indicates that as self-perceived mate value increased, the sexual images were perceived as being more positive. The main effects of sexual and pathogen disgust indicate that as those types of disgust increase, the positive perception of the images decreases. The main effects of sociosexual attitudes and desire indicate that as attitudes and desire increase, so do positive perceptions of the images.

In step 3, the addition of the interaction terms explained an additional 1% of the variance in perception of the sexual image scores,  $F(7, 2249) = 3.90, p < 0.001$ . Inspection of the standardized regression coefficients ( $\beta$ s) indicates that only three interactions (respondents’ sex \* sexual disgust; sex \* sociosexual attitudes; and sex \* sociosexual desire) were significant unique predictors of perceptions of the sexual images. As can be seen in Fig. 3, whereas sexual disgust levels did not seem to influence males’ perceptions of the sexual images too much, it had a much larger effect on females’ perceptions such that as their sexual disgust scores increased, the positivity of their ratings decreased. While sociosexual attitudes did not seem to influence females’ perceptions of the images ( $M_{LOW} = 2.69; M_{HIGH} = 2.73$ ), males with high SOI attitudes rated the images more positively ( $M_{HIGH} = 3.95$ ) than males with low SOI attitudes ( $M_{LOW} = 3.44$ ). With regard to sociosexual desire, an increase in SOI desire resulted in a much larger increase in positivity ratings of the females ( $M_{LOW} = 3.33; M_{HIGH} = 4.38$ ) than it did for males ( $M_{LOW} = 3.31; M_{HIGH} = 3.79$ ).

Overall, approximately 32% of the variance in perception of the sexual images was explained by the model,  $F(18, 2249) = 56.83, p < 0.001$ .

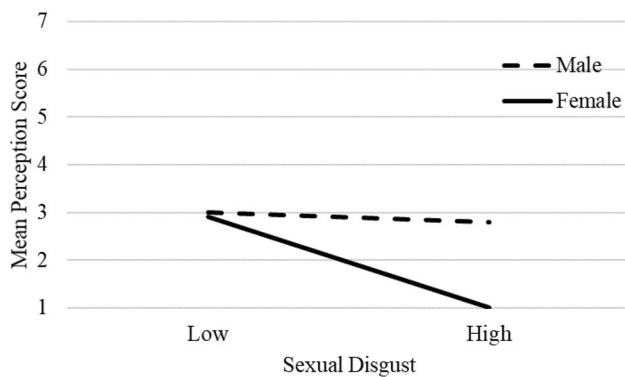
**Table 2** Hierarchical regression analysis predicting perceptions of sexual images as a function of respondent sex and sexual orientation, target sex and affect, individual differences factors of self-perceived mate value, disgust sensitivity, and sociosexuality, and interactions between respondents’ sex and the individual difference factors

Step	Variable	B	SE(B)	$\beta$	$\Delta R^2$
Step 1					.245***
	Respondent sex	-.33	.08	-.08***	
	Sexual orientation	1.35	.07	.37***	
	Target sex	1.10	.07	.30***	
	Emotional affect	.35	.07	.09***	
Step 2					.059***
	MVS	.03	.01	.07***	
	TDDS—sexual	-.02	.01	-.10**	
	TDDS—pathogen	-.02	.01	-.14**	
	TDDS—moral	.006	.01	-.03	
	SOI—behavior	-.004	.02	-.01	
	SOI—attitude	.12	.02	.13***	
	SOI—desire	.11	.02	.13***	
Step 3					.010***
	Sex * MVS	-.001	.02	-.004	
	Sex * TDDS—sexual	-.07	.02	-.27***	
	Sex * TDDS—pathogen	.01	.01	.04	
	Sex * TDDS—moral	.02	.01	.09	
	Sex * SOI behavior	.04	.05	.04	
	Sex * SOI attitude	-.11	.04	-.16**	
	Sex * SOI desire	.13	.05	.14**	

\*\* $p < .01$ . \*\*\*  $p < .001$

### Discussion

We investigated the impact of a number of factors on perceptions of external ejaculations in explicit images, the results confirming a number of our predictions. Viewers’ own sex and sexual orientation and the targets’ sex and affect all influenced perceptions. In general, females viewed the images more negatively, images with female targets were rated more positively than those with male targets, and images with positive target affect were rated more positively than those displaying negative affect. Sexual orientation played a role as well, particularly for males who rated the external ejaculations more positively when they were on their preferred sex (homosexual males having the highest ratings for male faces, heterosexual males for female faces). These sex differences echo the suggestion that men and women perceive the images differently (Glascock, 2005; Salmon & Diamond, 2012) and that males see them more positively than females, especially when directed toward someone they are attracted to. In addition, the fact that faces displaying positive affect were rated more positively suggests that approval or enjoyment of the external ejaculation on the part of the receiver may be a better



**Fig. 3** Interaction between respondents' sex and sexual disgust on mean perception scores

interpretation of the appeal of the facial ejaculation than that they are enjoyed because most men enjoy degrading women (Salmon & Diamond, 2012). We note that some men and women do enjoy the subjugation of their partners or being subjugated/degraded themselves but research suggests it is not a majority of the population that finds this particularly arousing (Joyal & Carpentier, 2017; Richters et al., 2008) and some studies have suggested that non-sexually coercive men experience decreased arousal to degrading or demeaning language in pornographic vignettes (Gardos & Mosher, 1999).

Individuals with higher self-perceived mate value also had more positive perceptions of the images while those with lower self-perceived mate value had more negative perceptions. This may reflect low mate value individuals being more threatened by attractive others and those that are sexually available as seen in the willingness to engage in such sexual behaviors (March & Wagstaff, 2017). This could be tested in more detail in future studies through multiple assessments of mate value and more targeted questions about the images.

Our final two predictions were partially supported. Pathogen and sexual disgust predicted lower image scores but moral disgust did not, while the attitude and desire subscales of the sociosexuality inventory, not the behavior subscales, were associated with more positive perceptions of the images. The connection between pathogen and sexual disgust and bodily fluid cues as disease avoidance seems clear and previous studies have also reported links between short-term sexual strategies and reduced sexual disgust, though not with moral or pathogen disgust (Al-Shawaf et al., 2018). Similarly, Lee et al's., (2014) study of the effects of sexual arousal on disgust indicated that sexual arousal inhibits sexual disgust in order to facilitate short-term mating strategies, those same strategies that are indicated by higher sociosexuality scores. The difference seen here between behavior and attitudes/desires is one that has been noted elsewhere (Penke & Asendorpf, 2008; Salmon, 2015; Zheng & Zheng, 2014) in that actual behavior is constrained in a way that attitudes and desires are not. In this study, reactions to the images were more

closely tied to attitudinal and desire indicators than to their own behavioral choices based on the statistical results.

### Strengths, Limitations, and Future Directions

One of the strengths of this study is that we focused on the influence of context on factors that shape people's perceptions of sexually explicit images rather than focusing on general perceptions of pornographic content. Our findings suggest that the context matters. If there was no effect of context on perceptions of the external ejaculation images, one would expect no differences in the evaluations of the different images. However, a number of context factors did influence participant perceptions. Rather than the act itself, this suggests that individuals' interpretation of the context, including the recipient of the ejaculation's reaction, as well as individual differences in disgust sensitivity, mate value, and their own sexual strategies play a major role. In addition, a static image with no dialogue allows for the evaluation of the act by itself (without any dialogue that could be interpreted positively or negatively based on individual differences between participants).

While much research on pornography perceptions focuses on differences between males and females as does much work on sexual behavior from an evolutionary perspective, the current study looked beyond sex differences to identify factors that account for within sex variation which allows us to explain more of the overall variability in perceptions. We also chose to use both male and female cum shot recipients as stimuli for both male and female participants across different sexual orientations in the same study which better allowed for the investigation of the contextual and individual difference factors. In addition, the within subject design allowed us to test for differences in perceptions within individuals as a function of context.

One limitation of the methodology is that the sample was self-selected. One might assume that individuals willing to view sexually explicit images for relatively little compensation might be different from those that would not be willing to do so. However, we doubt that this played a substantial role in influencing the results as many of the variables assessed, including sociosexuality, mate value, and disgust showed values for males and females consistent with expectations from previous research. In addition, the wide range of variability in all collected measures mitigates concerns about a biased sample. There was also an imbalance in the number of male and female participants with a larger number of males responding to the study advertisement. We see this as a reflection not only of males' greater willingness to view sexual images but also of the primary role males have as consumers for the pornography industry as whole. A recent study investigating the "porn gap" (i.e., sizable sex difference in pornography consumption) in couples found across all relationship status categories (casually dating, seriously dating, engaged, and married) men reported consuming significantly more porn than women (Carroll et al., 2016). Therefore, the male

consumers are presumably the ones that external ejaculations are there for in the first place.

Another limitation of our sample was that it was collected via Mechanical Turk (MTurk) and the majority of participants are likely to be members of so called WEIRD (Western, Educated, Industrialized, Rich, and Democratic) nations. From our perspective, using MTurk was an advantage over an undergraduate population as our MTurk population here was more diverse in age, ethnicity, sexual orientation, and relationship status than our own institutions' students. We would encourage other researchers interested in exploring these issues in non-WEIRD nations to contact us if they would like access to our stimuli as we would be interested in whether the results generalize across a wider range of non-western populations.

In addition, there was one aspect of our stimuli that may have played a role in our results, particularly for one group of participants. All of the images used contained a face with some volume of external ejaculate on it and a penis, typically held by the person receiving or providing the ejaculation. The majority of images had such content and we wanted to keep the images relatively consistent in terms of overall composition. However, it may be that the presence of a penis itself might have also increased the appeal of the image to our homosexual male participants and this may also account for their somewhat unexpectedly high ratings of the female images as well. In future studies, it might be desirable to include images without a penis in order to assess whether this was making the female face images more attractive than one might expect to the homosexual male participants.

Future work could also explore the role played by the location of the ejaculation. Previous work (Salmon & Diamond, 2012) suggested that facial external ejaculations were more common in heterosexual than homosexual pornography. If viewers are given the choice, do they prefer faces and if so what is the special appeal of the facial cum shot? We would also like to explore more individual differences factors, going beyond sex differences to focus more on within sex variation in preferences for sexually explicit materials. Some variables influenced perceptions for one sex but not the other. For example, individual differences in sexual disgust influenced male perceptions of the images but not female perceptions. Our model explained 32% of the variance, so there is substantial variance left to be explored.

As a result, it is worth considering some additional variables that might contribute to the model for future study. For example, religiousness has been shown to influence views about the censorship of pornography (Droubay et al., 2021; Lambe, 2004) and the belief that it is morally wrong to consume it even when they may do so (Perry, 2018). Individuals scoring high in religiousness might be more inclined to view sexual images negatively across the board. As this study used a within subject design to examine the facial expression effects, it would not likely influence the relative perceptions of different pictures by the same participant but it certainly could contribute to overall

less positive views and might interact with other variables such as disgust sensitivity. An interesting question for future research would also be to investigate perhaps not what is degrading but rather who finds what degrading and what influences those differences in perceptions.

## Conclusions

This exploration of the factors influencing individuals' reactions to external ejaculations in sexually explicit images reveals a number of relevant variables. Not only does the sex of the viewer matter, but so does the sex of target, whether the target is showing a positive or negative response, the sexual orientation of the viewer along with their sexual and pathogen disgust sensitivity, their self-perceived mate value, and their sociosexuality attitudes and desires. In general, the theoretical implications of these results suggest that perceptions of facial external ejaculations are better captured by the target's reaction and the individual's own sexual strategies rather than by a uniform reaction to the act itself.

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## Declarations

**Conflict of interest** The authors have no conflicts of interest to declare that are relevant to the content of this article.

**Human and Animal Rights** All procedures performed in this study were approved and in accordance with the ethical standards of the University of Redlands' Institutional Review Board for research involving human participants.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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