

Research Article

A Sex Difference in the Specificity of Sexual Arousal

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ABSTRACT—*Sexual arousal is category-specific in men; heterosexual men are more aroused by female than by male sexual stimuli, whereas homosexual men show the opposite pattern. There is reason to believe that female sexual arousal is organized differently. We assessed genital and subjective sexual arousal to male and female sexual stimuli in women, men, and postoperative male-to-female transsexuals. In contrast to men, women showed little category specificity on either the genital or the subjective measure. Both heterosexual and homosexual women experienced strong genital arousal to both male and female sexual stimuli. Transsexuals showed a category-specific pattern, demonstrating that category specificity can be detected in the neovagina using a photoplethysmographic measure of female genital sexual arousal. In a second study, we showed that our results for females are unlikely to be explained by ascertainment biases. These findings suggest that sexual arousal patterns play fundamentally different roles in male and female sexuality.*

Male sexual arousal is category-specific; men show their greatest sexual arousal to the categories of people with whom they prefer to have sex. With respect to sexual orientation, heterosexual men experience much higher genital and subjective arousal to women than to men, whereas homosexual men show an opposite pattern (Freund, 1963). Category specificity is sufficiently reliable for forensic practitioners to use genital sexual arousal patterns to assess sexual preferences among men who are strongly motivated to conceal their preferences: Examples include pedophiles (e.g., Quinsey & Lalumière, 2001), in whom greatest sexual arousal occurs to sexual stimuli depicting prepubescent children. Moreover, sexual arousal patterns appear to be an important source of information for men as they formulate their sexual

identities in adolescence (Bell, Weinberg, & Hammersmith, 1981; Savin-Williams & Diamond, 2000).

Several lines of evidence suggest that women's sexual preferences may not be as strongly related to sexual arousal patterns as men's preferences are. First, sexual arousal appears to be a less important signal of nonheterosexual orientation in women than in men (Savin-Williams & Diamond, 2000). Second, female sexuality seems generally to be more flexible than male sexuality, with greater intra-individual variation in preferences, behavior, attitudes, and responsiveness to cultural influences (Baumeister, 2000). Baumeister argued that this partly reflects a weaker female sex drive. Greater flexibility in female sexual preferences may also be reflected in a less specific pattern of sexual arousal.

The most direct evidence that female sexual arousal is less category-specific than male sexual arousal comes from a study by Laan, Sonderman, and Janssen (1996). They measured the subjective and genital arousal patterns of self-identified lesbian and heterosexual women who viewed films depicting male-female and female-female sex. No effect for self-identification (as lesbian or heterosexual) was observed for either genital or subjective arousal: Both lesbians and heterosexual women experienced their highest genital and subjective arousal to male-female films.

Although the findings of Laan et al. (1996) are intriguing, their interpretation is not straightforward for three reasons. First, the sexual stimuli did not include a pure male stimulus. The literature on male sexual arousal suggests that the most effective contrast is between arousal to an intense, purely female stimulus (typically a film of female-female sex) and arousal to an intense, purely male stimulus (typically a film of male-male sex; Mavissakalian, Blanchard, Abel, & Barlow, 1975; Sakheim, Barlow, Beck, & Abrahamson, 1985). Sexual stimuli depicting male-female couples fail to elicit significant differences in sexual arousal patterns because they contain both men and women. Second, it is unclear whether the sexual orientation (as opposed to the sexual identity; see Mustanski, Chivers, & Bailey, 2002) of the self-identified lesbians was fully homosexual or bisexual. For example, Rust (1992) found that

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30% of women who identified themselves as lesbian reported some sexual attraction to men. A more specific measure of sexual orientation, one assessing degree of attraction to both men and women, would have been preferable for classifying participants. Third, although women's genital sexual arousal can be objectively measured by photoplethysmography (e.g., Janssen, 2002; Laan & Everaerd, 1995), research supporting construct validity is less abundant for photoplethysmographic measures than for male phallogometric measures (Janssen, 2002). Before concluding that women do not have a category-specific sexual arousal pattern, it would be desirable to demonstrate that vaginal measures are, in principle, capable of detecting such a pattern.

In the present study, we examined whether female sexual arousal is category-specific. We assessed sexual arousal patterns to male versus female sexual stimuli in women, men, and an identified subset of women (postoperative male-to-female transsexuals). Including male participants allowed us to compare male and female arousal patterns and to demonstrate that our stimuli were capable of eliciting a category-specific pattern of sexual arousal in men. Including male-to-female transsexuals allowed us to determine whether differences in arousal patterns between men and women merely reflect differences in the way that genital arousal is measured in men and women, or are due to a true sexual dimorphism.

STUDY 1

Method

Participants

We recruited heterosexual and homosexual men and women via advertisements in an alternative urban newspaper (*Chicago Reader*) and in publications from the gay and lesbian community. Participants were 69 men and 52 women. Mean ages were 32.1 ($SD = 6.0$) and 26.4 ($SD = 6.5$) years for the male and female samples, respectively. Transsexual participants were identified as a subset of women participants. The mean age of the transsexual sample ($n = 11$) was 42.9 ($SD = 10.5$) years. All participants were offered financial compensation for participation.

We used the Kinsey Sexual Fantasy Scale (Kinsey, Pomeroy, Martin, & Gebhard, 1953) to assess the sexual preferences of all participants. Only individuals indicating exclusive or nearly exclusive sexual feelings for either women or men during adulthood were included in the analyses. It was possible to identify male-to-female transsexuals with preferences for male or female sexual partners because there are two distinct subtypes of male-to-female transsexuals: One is exclusively sexually attracted to men, whereas the other is primarily sexually attracted to women (Blanchard, 1989, 1992).

Measures and Materials

Audiovisual Stimuli. Films of sexual stimuli elicit greater genital and subjective arousal than do either slides or audio-

tapes (Heiman, 1977; McConaghy, 1999). We chose films as our stimuli to ensure that participants experienced substantial genital arousal responses and thus avoid floor effects. We used films of male-male and female-female sex because men's sexual orientation is most reliably assessed by comparing penile responses to these stimuli (Mavissakalian et al., 1975; Sakheim et al., 1985). Although male-female stimuli are less discriminating, we included them to assess whether heterosexual participants' arousal to purely male or female stimuli might be diminished by the fact that purely male or female stimuli depict homosexual acts, which are stigmatized in mainstream American society. If so, arousal to male-female stimuli should exceed that to homosexual stimuli.

The sexual stimuli consisted of six 2-min films with sound. Content varied by the sex of the actors (male or female) and the type of sexual activity depicted (oral or penetrative sex). Each participant saw films featuring female-female oral sex, female-female penetration (with a strap-on dildo), male-female cunnilingus, male-female penetration (penile-vaginal), male-male fellatio, and male-male penetration (penile-anal). Thus, sex of actors and type of sexual activity were independent. Each participant viewed one of two exemplars from each stimulus category, with stimuli presented in a random order. A neutral stimulus, depicting landscapes or fauna, was also included, to provide a nonsexual comparison for genital and subjective responses to sexual stimuli. An 11-min adaptation film (depicting sexually neutral scenes accompanied by relaxing music) was used to assess baseline arousal.

Psychophysiological Assessment. All psychophysiological data were continuously recorded and digitized using an MP100WS data-acquisition unit (BIOPAC Systems Inc., Goleta, California) and AcqKnowledge software, Version 3.2.7 (BIOPAC Systems Inc.).

Male genital arousal was assessed with penile plethysmography (Janssen, 2002) using a mercury-in-rubber strain gauge to measure changes in the circumference of the penis as erection developed. The signal was low-pass filtered (to 0.5 Hz) and digitized (40 Hz). The gauge was calibrated over six 5-mm steps between sessions (Janssen, 2002). The penile plethysmograph signal was transformed into millimeters of circumference change from baseline.

Women's and male-to-female transsexuals' genital arousal was assessed via change in vaginal pulse amplitude (VPA), a measure of vaginal vasocongestion specific to sexual response (Laan, Everaerd, & Evers, 1995), using a vaginal photoplethysmograph (Sintchak & Geer, 1975). The VPA signal was band-pass filtered (0.5 Hz to 10 Hz) and digitized (40 Hz). VPA was measured as peak-to-trough amplitude for each vaginal pulse.

The neovagina of a postoperative male-to-female transsexual consists of a lined neovaginal cavity within the perineum. The lining is typically constructed from a penile skin flap, although it is sometimes constructed from scrotal skin, a segment of intestinal tissue, or a skin graft from another location (Karim, Hage, & Mulder, 1996). The neovagina is surrounded, in whole or in part,

by the highly vascular tissue of the male pelvis, including periurethral erectile tissue that is likely homologous to the erectile tissue surrounding the urethra in biological females. Although a prior study found detectable blood flow in the neovaginal lining (Schroder & Carroll, 1999), this was the first attempt to determine whether blood flow increases with psychological sexual stimulation.

Subjective Arousal. Subjective sexual arousal was assessed continuously via self-report using a lever moving through a 180° arc; 0° represented no subjective sexual arousal, and 180° represented the subjective sexual arousal associated with orgasm. The signal was low-pass filtered (to 0.5 Hz) and digitized (40 Hz). The lever signal was transformed into percentage deflection.

Procedure

Participants were assessed individually in a dimly lit, private room, seated in a comfortable recliner with a television monitor 5 ft away. Participants received instruction on how to use the genital gauge, and they fitted the gauge themselves. They watched the adaptation film and then the experimental stimuli (sexual and neutral), separated by return-to-baseline intervals. Participants completed distraction tasks during interstimulus intervals and, after assessment of sexual arousal, completed questionnaires assessing their sexual orientation, sexual experience, masturbation frequency, and orgasmic capacity.

Data Reduction

Both genital and subjective arousal measures were averaged, separately and within stimulus category, yielding mean genital and subjective arousal for responses to female-female, male-female, and male-male sexual stimuli. Mean scores were standardized within subjects (i.e., ipsatized) because within-subjects standardization appears to eliminate the effects of idiosyncratic variation in responsiveness (Harris, Rice, Quinsey, Chaplin, & Earls, 1992). An index of arousal to male relative to female sexual stimuli, the *male-female contrast*, was computed, separately for genital and subjective arousal, by subtracting arousal to female-female stimuli from arousal to male-male stimuli; positive scores indicated greater arousal to male stimuli, and negative scores indicated greater arousal to female stimuli. Genital and subjective arousal to females was computed as the difference between arousal to female-female stimuli and to the neutral stimulus; genital and subjective arousal to males and to male-female stimuli was computed analogously.

Because not all participants produce a discernible genital response to sexual stimuli, for all three samples we used an inclusion criterion of a minimum difference of 0.5 standard deviations between maximum genital arousal to either male or female stimuli and to the neutral stimulus. Additionally, on the basis of recommendations of other researchers (Seto et al., 2001), we excluded men whose maximum response to either male or female stimuli did not exceed their response to the

neutral stimulus by at least 2 mm. These criteria excluded 23 of 69 men, 9 of 52 women, and none of the 11 transsexuals. The difference in rates of exclusion was significant (Fisher's exact test, $p = .02$), probably owing to differences in the sensitivity of the penile plethysmograph and the photoplethysmograph. The exclusion rate in our male sample (approximately 1 in 3) is typical of phalometric assessments using circumferential measurement (e.g., Kuban, Barbaree, & Blanchard, 1999). Inclusion of nonresponders did not substantially affect the significance or direction of results.

Results

The relation between sexual orientation and patterns of genital sexual arousal to male versus female stimuli, by sample, is presented in Figure 1. Table 1 presents, for each sample, the correlations among dichotomous self-reported sexual preference, genital arousal (male-female contrast), and subjective arousal (male-female contrast). In general, the relation between self-reported preference and sexual arousal pattern was much weaker for women than for men and transsexuals, whose results were similar. For example, all transsexuals and nearly all men had stronger genital arousal to their preferred sex than to their nonpreferred sex, but 37% of women did not. The correlation between self-reported preference and genital arousal was significantly lower for women than for men ($z = 5.0, p < .001$) and for transsexuals ($z = 8.9, p < .001$). The analogous correlations for subjective arousal were also lower for women than for the other samples, although the difference was significant only for men ($z = 5.3, p < .001$; for transsexuals, $z = 1.1, p = .27$). Table 1 also shows that the association between genital and subjective arousal was lower for women than for men ($z = 3.9, p < .001$), replicating a commonly observed sex difference (Laan & Everaerd, 1995).

A plausible concern is that pure sexual stimuli depict homosexual interactions, which may be unusual or repugnant stimuli for some heterosexual people. Thus, heterosexual peoples' responses to pure male or female sexual stimuli might underestimate their arousability to members of the opposite sex. If this is true, then heterosexual participants might be expected to respond more strongly to stimuli depicting male-female acts than to pure opposite-sex stimuli depicting same-sex acts. The genital arousal data for men and women, however, do not show this pattern (Fig. 2). Heterosexual men were more aroused, genitally and subjectively, by films depicting female-female sex acts than by films depicting male-female sex acts, $t(21) = 3.0, p < .01, d = 1.08$, and $t(21) = 2.9, p < .01, d = 1.16$, respectively. Similarly, heterosexual women (see Fig. 2) were slightly, but not significantly, more genitally aroused by films depicting male-male sex acts than by films depicting male-female sex acts, $t(22) = 0.9, p = .4, d = 0.24$. With respect to subjective arousal, heterosexual women did report a strong preference for male-female stimuli: Their subjective sexual

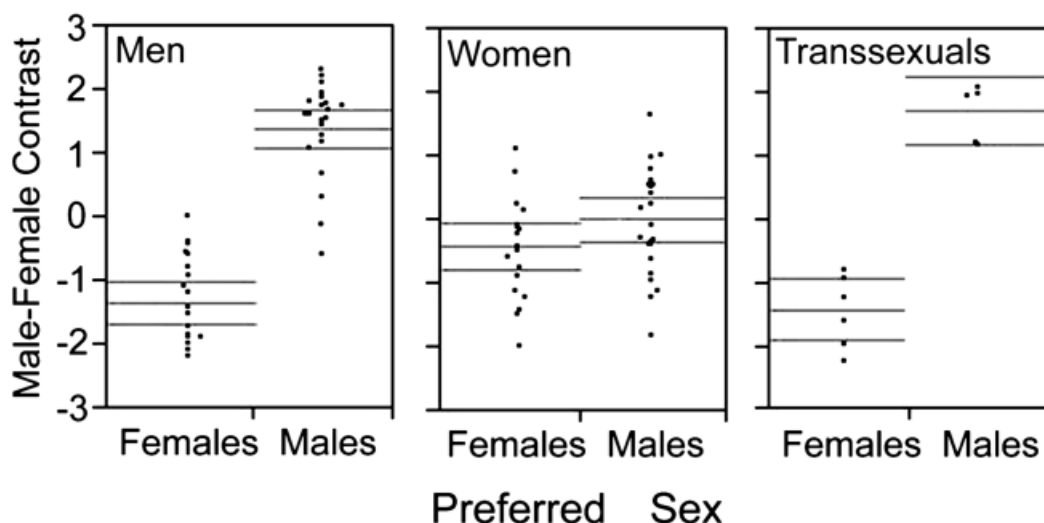


Fig. 1. Mean genital arousal to male versus female stimuli for men, women, and male-to-female transsexuals as a function of self-reported preferred sex (Study 1). The center horizontal lines of the distributions represent the respective means, and the upper and lower lines represent the boundaries of the 95% confidence intervals. Points represent individual participants. Units are within-subjects standard deviations.

arousal to the male-female stimuli was approximately three times greater than their subjective arousal to the male-male stimuli, $t(22) = 4.8, p < .001, d = 1.62$.

STUDY 2

Because many individuals, particularly women, are reluctant to be assessed genitally (Wolchik, Spencer, & Iris, 1983), it was impossible to recruit a random sample for Study 1. Therefore, it is plausible that the nonspecific arousal pattern observed in

TABLE 1

Within-Group Correlations Among Genital Arousal and Subjective Arousal Contrasts and Self-Reported Sexual Preference, Study 1

Variable	Genital arousal contrast	Subjective arousal contrast
Women ($n = 43$)		
Subjective arousal contrast	.48	—
	.21–.68	
Prefer men versus women	.26	.42
	–.04–.52	.13–.64
Men ($n = 46$)		
Subjective arousal contrast	.88	—
	.79–.93	
Prefer men versus women	.88	.92
	.79–.93	.86–.96
Transsexuals ($n = 11$)		
Subjective arousal contrast	.67	—
	.11–.90	
Prefer men versus women	.96	.70
	.84–.99	.17–.92

Note. Ranges represent 95% confidence intervals.

women was influenced by ascertainment bias. Several studies have examined ascertainment bias in female sexual psychophysiological research (e.g., Morokoff, 1986; Wolchik, Braver, & Jensen, 1985; Wolchik et al., 1983). Compared with refusers, volunteers for sexual arousal research masturbate more often, have more experience with sexual materials, and have had more sex partners. The fact that volunteers differ from refusers does not necessarily mean, however, that volunteers do not represent the general population with respect to their patterns of sexual arousal: That is a separate empirical question. If differences between volunteers and refusers are relevant to arousal patterns, then variables related to cooperation should be correlated with indices of sexual arousal. In Study 2, we examined whether the results for females in Study 1 were plausibly due to ascertainment bias. We invited a different sample of women to participate in a subsequent study of genital sexual arousal and examined the differences between women who refused to participate and those who agreed to participate on several variables identified in previous research as potentially relevant. We then correlated these variables with sexual arousal patterns among the women who participated in the sexual arousal study. We also sought to replicate the nonspecific pattern of arousal observed in heterosexual women in Study 1.

Method

We asked 232 women from undergraduate psychology classes to attend an information session describing a sexual arousal study, and 104 attended. After hearing the details of the study, these women completed an anonymous questionnaire assessing their sexual experiences and their interest in participating in the arousal study. Of the 104 women who attended the information session, 57 stated they were interested and 47 stated they were

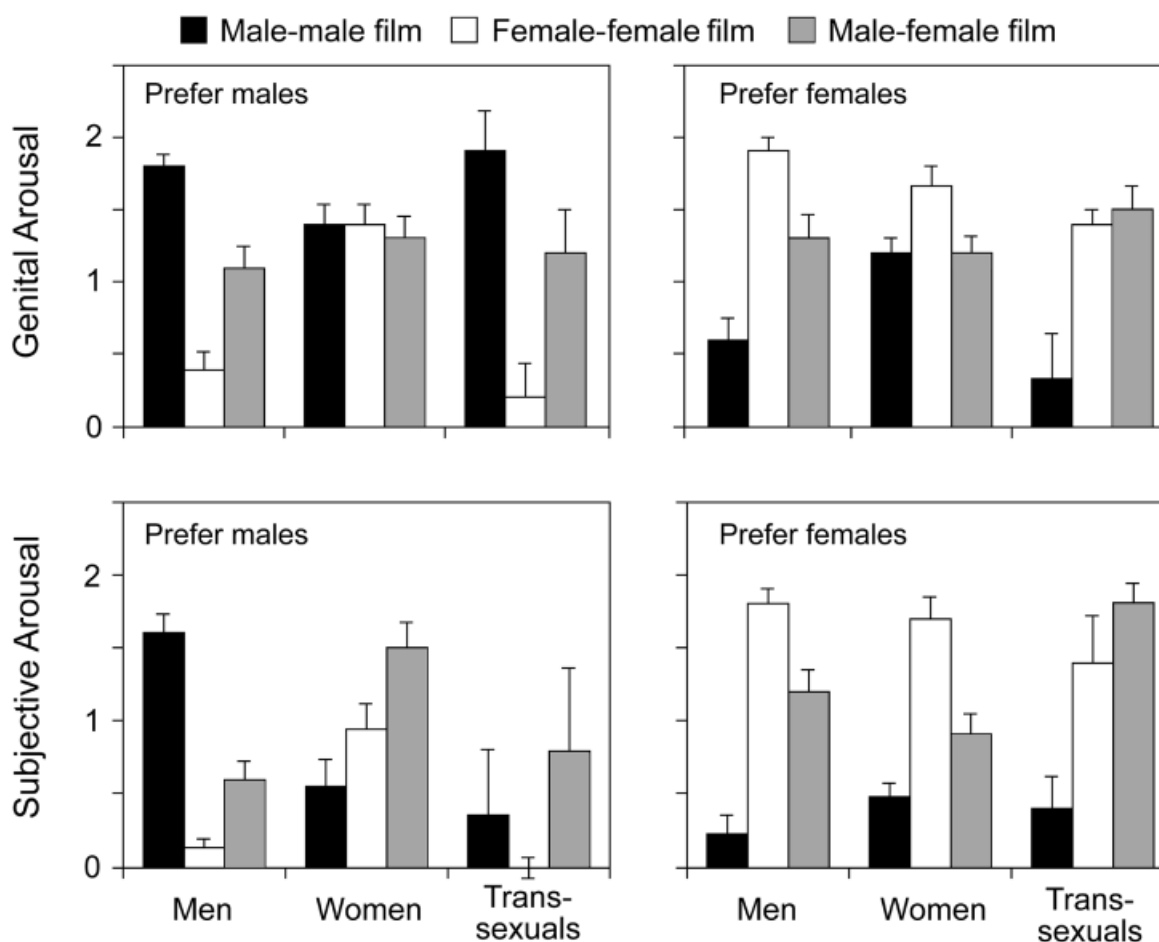


Fig. 2. Mean genital (upper graphs) and subjective (lower graphs) arousal to male-male, female-female, and male-female sexual stimuli (minus responses to the neutral stimulus), for men, women, and male-to-female transsexuals, as a function of self-reported preferred sex (Study 1). Units are within-subjects standard deviations. Error bars show standard errors of the mean.

not interested in participating in the study. Of the 57 women who indicated an interest during the information session, 29 participated in the sexual arousal study. (Six of these women were not included in the analyses because they either did not meet a minimum response criterion or reported a nonheterosexual sexual preference.) The 29 participants in the arousal study completed sexual-experience questionnaires twice, both in the information session and during the arousal study, but participant anonymity precluded our knowing which questionnaires from the information session came from women who eventually participated in the arousal study. All other methods and procedures were identical to those described for females in Study 1.

Results

The 23 heterosexual students whose data were included in the sexual arousal study were significantly younger ($M = 20.2$, $SD = 1.0$ vs. $M = 26.4$, $SD = 6.5$, respectively) than the heterosexual women from Study 1, $F(1, 22) = 20.7$, $p < .05$, and had significantly fewer male sexual partners ($M = 2.5$, $SD =$

1.9 vs. $M = 7.5$, $SD = 7.9$, respectively), $F(1, 22) = 8.5$, $p < .05$. All the women reported having sexual feelings almost exclusively toward men; their mean Kinsey Sexual Fantasy score was 0.1 ($SD = 0.1$).

The heterosexual students showed the same nonspecific arousal pattern (Fig. 3) that we found in the community sample of women. Although all Study 2 participants preferred male sex partners, their genital arousal was 19% higher to female-female stimuli than to male-male stimuli, $t(22) = 1.9$, $p = .07$, $d = 0.64$, and their subjective arousal to female-female stimuli was twice their subjective arousal to male-male stimuli, $t(22) = 4.9$, $p < .001$, $d = 1.54$. Similar to the heterosexual female participants from Study 1, the students were subjectively more aroused to the films depicting heterosexual acts than to the male-male stimuli, $t(22) = 8.4$, $p < .001$, $d = 3.31$, and the female-female stimuli, $t(22) = 7.1$, $p < .001$, $d = 2.37$. The strong subjective preferences for male-female stimuli did not translate into genital differences that were as strong. Genital arousal to the male-female stimuli was 22% higher than genital arousal to the male-male stimuli, $t(22) = 2.1$, $p = .04$,

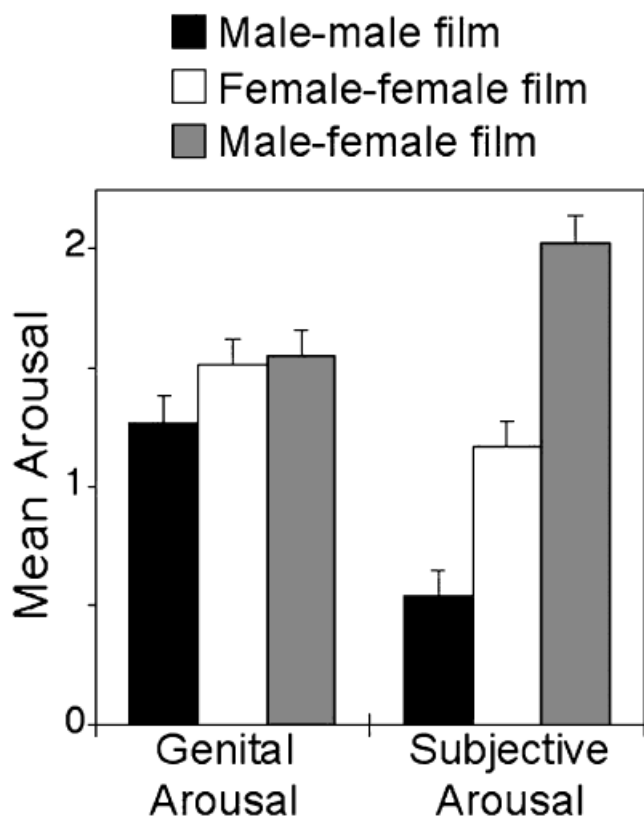


Fig. 3. Heterosexual female students' genital and subjective sexual arousal to male-male, female-female, and male-female sexual stimuli (minus responses to the neutral stimulus) in Study 2. Units are within-subjects standard deviations. Error bars show standard errors of the mean.

$d = 0.79$, and 3% higher than genital arousal to the female-female stimuli, $t(22) = 0.3$, $p = .76$, $d = 0.11$.

Several sexual-history variables were related to willingness to participate in a study requiring measurement of genital arousal (Table 2). To explore whether differences between students who participated in the arousal study and those who refused to participate influenced arousal patterns, we examined correlations between the variables related to willingness to participate and the arousal contrasts (Table 3). The correlations were generally small and revealed no clear pattern. Three significant correlations showed that higher frequency of orgasm during masturbation was associated with higher genital arousal to male-male stimuli, higher subjective arousal to female-female stimuli, and more subjective arousal to female-female relative to male-male stimuli. Thus, there is no convincing evidence that volunteer biases led to a misleading picture of female sexual arousal patterns.

DISCUSSION AND CONCLUSIONS

Our findings suggest that women have a nonspecific pattern of sexual arousal that is quite different from men's category-specific pattern. Men and postoperative male-to-female transsex-

uals preferring men showed substantially higher subjective and genital responses to male-male than to female-female stimuli, and men and transsexuals preferring women showed the opposite pattern. In contrast, women's subjective and genital responses were only modestly related to their preferred category: Heterosexual and lesbian women experienced genital and subjective arousal to both male-male and female-female stimuli. Our findings suggest that this result is not plausibly attributable to volunteer biases. Variables that distinguished female volunteers from females who refused to participate were unrelated to response patterns.

The difference between men's and women's sexual arousal patterns is unlikely to be due to measurement artifacts because women and transsexuals had different genital arousal patterns despite being measured by the same apparatus, and because transsexuals and men had similar genital arousal patterns despite being measured by a different apparatus. Other evidence for a fundamental difference between women's and men's sexual arousal patterns comes from their patterns of subjective sexual arousal. Regardless of sexual orientation, women reported more arousal to female-female than to male-male stimuli, on average, although this difference was not significant for heterosexual women. In contrast, men and transsexuals reported being more aroused by sexual stimuli corresponding to their preferred gender.

Although our results suggest that women have a nonspecific pattern of arousal to sexual stimuli, they do not imply that women's sexual orientation is inherently bisexual. For example, despite their capacity to become sexually aroused by both male and female sexual stimuli, women do not have higher rates of same-sex sexual activity than men (Laumann, Gagnon, Michael, & Michaels, 1994). The large majority of women in contemporary Western societies have sex exclusively with men (Bajos et al., 1995; Laumann et al., 1994). Similarly, the large majority of women in these societies report much higher attraction to men than to women (Bailey, Dunne, & Martin, 2000; Laumann et al., 1994). A self-identified heterosexual woman would be mistaken to question her sexual identity because she became aroused watching female-female erotica; most heterosexual women experience such arousal. A self-identified heterosexual man who experienced substantial arousal to male-male erotica, however, would be statistically justified in reconsidering his sexual identity.

Sex differences in the development (Bell et al., 1981; Diamond, 2000, 2003; Savin-Williams & Diamond, 2000) and expression (Baumeister, 2000) of same-sex attraction support our contention that the relation between sexual arousal and sexual orientation differs fundamentally between women and men. In the context of past research, our results suggest that patterns of sexual arousal to men versus women do not constrain women's sexual behavior, feelings, or identity to nearly the degree that they constrain men's.

Our results cannot directly address whether the sex difference in category specificity of sexual arousal is innate or learned. Our finding that male-to-female transsexuals show a

TABLE 2
Sexual-Experience Variables Significantly Discriminating Among Women Expressing Varying Levels of Interest in Study Participation

Sexual-experience variable	Women expressing no interest in participating (n = 47)	Women expressing interest in participating (n = 57)	Participants (n = 29)	F (p)
Number of male sexual partners (penile-vaginal intercourse)				
M (SD)	0.5 (0.7)	2.2 (2.3)	2.6 (2.5)	14.2 (<.001)
Range	0–2	0–12	0–11	
Masturbation frequency, per month				
M (SD)	1.7 (3.2)	5.8 (5.4)	6.8 (5.4)	13.1 (<.001)
Range	0–15	0–20	0–20	
Frequency of orgasm during masturbation ^a				
M (SD)	4.4 (2.5)	5.7 (1.9)	5.4 (2.1)	3.1 (.051)
Range	1–7	1–7	1–7	
Preferred frequency of sex ^b				
M (SD)	3.0 (1.3)	3.8 (1.1)	3.9 (1.0)	6.0 (.003)
Range	1–6	1–6	1–6	
Frequency of erotica use ^c				
M (SD)	1.9 (1.1)	2.9 (1.2)	3.3 (1.1)	15.6 (<.001)
Range	1–5	1–6	1–5	

^aFor this variable, *ns* = 21, 48, and 25, respectively. These values represent women who reported masturbating at least once in a 30-day period. The scale for this variable was as follows: 1 = never; 2 = < 20%; 3 = 20–39%; 4 = 40–59%; 5 = 60–79%; 6 = 80–99%; 7 = 100%. ^bThe scale for this variable was as follows: 1 = < 1 time/week; 2 = 1 time/week; 3 = 2 times/week; 4 = 3–5 times/week; 5 = daily; 6 = > 1 time/day. ^cThe scale for this variable was as follows: 1 = never; 2 = watched once; 3 = watched twice; 4 = 1 time/year; 5 = 1 time/month; 6 = 1 time/day.

male-typical pattern, however, helps to rule out some possible explanations. Women's nonspecific pattern might not be fully explained by their lack of visible genitalia because transsexuals show a category-specific pattern despite a similar lack. Transsexuals reject the male gender role into which they were socialized yet continue to show the category-specific pattern of arousal that is characteristic of their genetic sex. Moreover, the biological or social factors that cause some transsexuals to be

the most feminine of males (Bailey, 2003) do not affect their male-typical pattern of sexual arousal. This finding is consistent with other evidence that psychosexual differentiation is multi-dimensional (e.g., Bailey, 2003; Bailey, Gaulin, Agyei, & Gladue, 1994; Goy, Bercovitch, & McBrair, 1988).

One potential methodological limitation of our study concerns the nature of the sexual stimuli we used. The "pure" sexual stimuli depicted homosexual acts, which some heterosexual

TABLE 3
Correlations Among Potentially Relevant Sexual-Experience Variables and Arousal Contrasts for Study 2 Participants

Sexual-experience variable	Genital arousal contrast				Subjective arousal contrast			
	M-M vs. N	F-F vs. N	M-F vs. N	M-M vs. F-F	M-M vs. N	F-F vs. N	M-F vs. N	M-M vs. F-F
Number of male sexual partners (penile-vaginal intercourse)	-.31	.18	.12	-.31	.13	.07	-.27	.07
Masturbation frequency, per month	.23	-.31	.26	.35	.01	-.08	.24	.05
Frequency of orgasm during masturbation ^a	.49*	-.18	.03	.42	-.19	.59**	.07	-.45*
Preferred frequency of sex	.04	-.04	.11	.05	.11	.10	-.16	.04
Frequency of erotica use	.26	.02	.03	.14	.35	.05	.05	.25

Note. M-M = male-male stimuli; F-F = female-female stimuli; M-F = male-female stimuli; N = neutral stimulus.

^a*df* = 19.

p* < .05. *p* < .01.

people may find upsetting or even offensive. Although the comparison of arousal to homosexual versus female-male stimuli suggested that aversion to homosexual acts did not greatly diminish genital arousal, it would be desirable to replicate our study using sexual stimuli that do not include homosexual depictions. Films of individuals engaged in sexual acts, such as masturbation, would avoid this interpretative difficulty while retaining the sexual intensity necessary to elicit sufficient sexual arousal.

A second limitation is our assumption that participants did not consciously manipulate their genital responses. Past research has demonstrated that some men can control their genital arousal when they are motivated to do so (Adams, Motsinger, McAnulty, & Moore, 1992; Freund, 1963). Therefore, men's category-specific sexual arousal may be due to conscious inhibition of responses to nonpreferred sexual stimuli. Although the design of our study cannot rule out this possibility, we think it is unlikely for several reasons. First, in contexts where men are highly motivated to manipulate their sexual arousal, such as during phallometric assessment for pedophilia, category-specific sexual arousal usually occurs (Blanchard, Klassen, Dickey, Kuban, & Blak, 2001). Second, although heterosexual male participants might be motivated to suppress sexual arousal to male stimuli because homosexuality is stigmatized, gay men would not be similarly motivated to suppress arousal to female stimuli; yet gay men's sexual arousal was also category-specific. Third, research on the conscious manipulation of genital sexual arousal has shown that men are able to reduce, but not increase, the magnitude of their erections. Neither heterosexual nor homosexual men are able to increase erections to nonpreferred sexual stimuli, even when motivated to do so (Adams et al., 1992). This suggests that under typical conditions, men are not suppressing their genital responses to nonpreferred stimuli; if they were, they would also increase genital arousal to these stimuli, by ceasing their suppression efforts, when motivated to do so.

The sex difference reported here has important implications for future conceptualizations of women's sexuality. Sexual arousal, especially genital sexual arousal, likely plays a much smaller role in women's sexual-orientation development than it does in men's. Female sexuality, in general, may be more motivated by extrinsic factors, such as the desire to initiate or maintain a romantic relationship, than by intrinsic factors, such as genital sexual arousal (Baumeister, Catanese, & Vohs, 2001). This basic sex difference in the role of sexual arousal processes highlights the need to use distinct models when investigating the development and expression of female and male sexuality.

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