

Differences in Orgasm Frequency Among Gay, Lesbian, Bisexual, and Heterosexual Men and Women in a U.S. National Sample

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Abstract There is a notable gap between heterosexual men and women in frequency of orgasm during sex. Little is known, however, about sexual orientation differences in orgasm frequency. We examined how over 30 different traits or behaviors were associated with frequency of orgasm when *sexually intimate* during the past month. We analyzed a large US sample of adults ($N = 52,588$) who identified as heterosexual men ($n = 26,032$), gay men ($n = 452$), bisexual men ($n = 550$), lesbian women ($n = 340$), bisexual women ($n = 1112$), and heterosexual women ($n = 24,102$). Heterosexual men were most likely to say they usually-always orgasmed when sexually intimate (95%), followed by gay men (89%), bisexual men (88%), lesbian women (86%), bisexual women (66%), and heterosexual women (65%). Compared to women who orgasmed less frequently, women who orgasmed more frequently were more likely to: receive more oral sex, have longer duration of last sex, be more satisfied with their relationship, ask for what they want in bed, praise their partner for something they did in bed, call/email to tease about doing something sexual, wear sexy lingerie, try new sexual positions, anal

stimulation, act out fantasies, incorporate sexy talk, and express love during sex. Women were more likely to orgasm if their last sexual encounter included deep kissing, manual genital stimulation, and/or oral sex in addition to vaginal intercourse. We consider sociocultural and evolutionary explanations for these orgasm gaps. The results suggest a variety of behaviors couples can try to increase orgasm frequency.

Keywords Orgasm · Orgasm frequency · Communication · Relationship length · Sex differences · Sexual orientation

Introduction

A wide array of magazines and sex guides promise to help women achieve orgasm more reliably during sexual activity with their partners (Solot & Miller, 2007). This stream of tips, tricks, and strategies designed to elicit the “elusive female orgasm” suggests that people believe that the female orgasm is far more challenging to attain than the male orgasm (Cass, 2007). The research literature bears this out, with findings from several U.S. national studies showing men report experiencing orgasm during sexual activity much more frequently than women (Garcia, Lloyd, Wallen, Fisher, 2014; Herbenick et al., 2010; Laumann, Gagnon, Michael, & Michaels, 1994). Scientists and social commentators have offered a variety of explanations for this “orgasm gap” between men and women, ranging from sociocultural (Armstrong, England, & Fogerty, 2012; Gerhard, 2000) to biological (Lloyd, 2005, 2015; Puts, Dawood, & Welling, 2012; Wallen & Lloyd, 2011). There appear to be, however, multiple orgasm gaps: Lesbian women orgasm substantially more frequently than heterosexual women, and heterosexual men orgasm more frequently than lesbian women (Coleman, Hoon, & Hoon, 1983; Garcia et al., 2014). But these findings require further investigation, because nearly all research

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on the topic of orgasm has focused on heterosexual men and women.

Examining the factors linked to orgasm frequency has practical implications for understanding and promoting sexual health, and can also inform theoretical debates on the etiology of orgasm. Women report more satisfaction with their relationships when their orgasms were more frequent (Young, Denny, Luquis, & Young, 1998) and more consistent (Klapilová, Brody, Krejčová, Husárová, & Binter, 2015). Furthermore, people who orgasm more frequently report more sexual satisfaction (Haavio-Mannila & Kontula, 1997; Hurlbert, White, Powell, & Apt, 1993). The factors that promote and inhibit orgasm as a desired outcome of partnered sexual activity, particularly among women, have been hotly debated, especially by evolutionary scientists interested in whether or not orgasm is an adaptation (Lloyd, 2005) and by scholars interested in psychosocial barriers to women's sexual pleasure (Armstrong, England, & Fogarty, 2012; Basson, 2003).

The first goal of the current research was to use a broad U.S. national sample of adults to examine gender and sexual orientation differences in orgasm frequency. The second goal was to examine several of the factors and practices that are potentially linked to orgasm frequency, including sociodemographic characteristics, oral sex frequency, sexual communication strategies, mood setting, trying a greater variety of sexual practices with their partner, incorporating specific sex behaviors into their last sexual encounters, and relationship satisfaction.

Gender Differences and Sexual Orientation Differences in Orgasm Frequency

An orgasm is characterized by a series of muscle contractions in the genital area resulting in the release of sexual tension and is accompanied by the subjective experience of pleasurable sensations (Masters & Johnson, 1966). It has long been known that men report more frequent and more predictable orgasms than women (Kinsey, Pomeroy, Martin, & Gebhard, 1953; Laumann et al., 1994; Masters & Johnson, 1966). This difference in orgasm frequency has been shown repeatedly across different studies (for a review, see Lloyd, 2005). For example, the National Survey of Sexual Health and Behavior found that 91% of men and 64% of women aged 18–59 reported orgasm during their most recent sexual event (Herbenick et al., 2010). Heterosexual men do not necessarily recognize the extent to which they orgasm more frequently than women. Researchers have concluded that men systematically overestimate the orgasm frequency of their female partners (Laumann et al., 1994; Roberts, Kippax, Waldby, & Crawford, 1995; Von Sydow, 2002).

There has been substantial focus on the difference in orgasm frequency between heterosexual men and women, but how orgasm varies across sexual orientations is not well understood. In one recent large-scale national study of 6151 single men and

women in the U.S., participants were asked what percentage of the time they orgasm “when having sex with a familiar partner” (Garcia et al., 2014, p. 3). Lesbian women reported experiencing orgasms at a significantly higher rate (75%) than heterosexual (62%) or bisexual (58%) women. Among men, there were no significant differences between heterosexual (86%), gay (85%), or bisexual (78%) men. The current study provides the opportunity to further examine sexual orientation differences among men and women, with respect to the sexual practices they engage in with their current relationship partner.

Sexual Practices Linked to Orgasm Frequency

MacNeil and Byers (2005) proposed that communication about sexuality is elemental to the “development and maintenance of satisfying sexual relationships.” Communication allows couples to articulate and explore their sexual desires and interests. Sexual communication tends to be lacking among couples experiencing orgasmic difficulty (Kelly, Strassberg, & Turner, 2004), and communication skills are a part of cognitive-behavioral therapy in the treatment of anorgasmia (Meston, Hull, Levin, & Sipski, 2004). There has been relatively little empirical research, however, on the role of partner communication in promoting orgasm (Meston, Levin, Sipski, Hull, & Heiman, 2004). Nonetheless, researchers have proposed that communication helps couples promote behaviors that increase the likelihood of orgasm occurrence, such as manual stimulation and oral sex. In one national study of Australian women, participants were asked about the sexual practices they engaged in during their last sexual encounter and whether they orgasmed. Of women who had only vaginal intercourse during their last sexual encounter, 50% reported an orgasm. In contrast, orgasms were reported by 73% of women who reported vaginal intercourse and manual stimulation and by 86% of women who reported vaginal intercourse, manual stimulation, and oral sex (Richters, de Visser, Rissel, & Smith, 2006).

Behaviors that promote orgasm extend far beyond vaginal intercourse, oral sex, and manual stimulation. Neglected in most research are common behaviors that likely increase orgasm frequency, including acts of sexual variety (e.g., trying new sexual positions, wearing lingerie, anal stimulation) and mood setting (e.g., using candles or music to create a romantic mood). As people become habituated to sex with their partner, the feeling of novelty and accompanying arousal may diminish, and keeping things varied could promote more frequent orgasms. Furthermore, several recent studies have pointed to other intimate behaviors that promote sexual satisfaction, but whether that directly impacts orgasm is not yet known. For instance, kissing/cuddling is linked to sexual satisfaction for both men and women (Heiman et al., 2011). More generally, people report greater sexual satisfaction when they engage in more foreplay, have longer sexual encounters, and engage in more affectionate behaviors after sex (Muise, Giang, & Impett, 2014), but there

has been limited recent research on these aspects of people's sex lives.

In terms of personal characteristics, some research has found that women with more education have more frequent orgasm (González, Viáfara, Caba, Molina, & Ortiz, 2006). In two studies, relative to younger women in the samples, older women were more likely to orgasm (age range 18–44; Boroditsky, Fisher, & Bridges, 1999; age range 18–59; Herbenick et al., 2010). Older women may have become more comfortable with their sexuality and learned what works to make them orgasm with their partner(s). In contrast, younger men are more likely to report more frequent orgasms (Herbenick et al., 2010), possibly due to older men having age-related decreases in sexual motivation and more problems with erectile function (see Gray & Garcia, 2012). Finally, the association between orgasm frequency and relationship satisfaction is likely bidirectional: People who are more satisfied with their relationships are likely motivated to engage in more intimate practices that enhance sexual experiences and orgasm frequency, and more frequent orgasms enhance positive feelings about the relationship overall (Young, Denny, Luquis, & Young, 1998).

Aims and Hypotheses

The present study provided the opportunity to explore what differentiates gay, lesbian, bisexual, and heterosexual men and women who are relatively high and low in orgasm frequency in a large and diverse sample. Consistent with the existing literature, we hypothesized an overall gender difference, with men reporting more frequent orgasms, but that this gender difference was particularly likely to emerge among heterosexual participants (*H1a*). With respect to the effects of sexual orientation within each gender, we did not expect differences among men (*H1b*), but did hypothesize that lesbian women would report more frequent orgasms than heterosexual women (*H1c*). We also asked participants about their partner's orgasm frequencies. We expected that reports of male partner orgasm frequencies would be higher than female partner orgasm frequencies. Therefore, we expected that heterosexual women and gay men would report higher rates of orgasm for their partner than would heterosexual men and lesbian women (*H2*).

Further, this study extends the literature on sexual practices and demographic factors that are associated with greater orgasm frequency in men and women. One purpose of this study was to create a profile of what differentiates men and women who orgasm more or less frequently. Compared to people with less frequent orgasms, we predicted that people with more frequent orgasms would report: being younger (men only; *H3a*); being in a relationship with their partner for a longer period of time (women only; *H3b*); engaging in more oral sex, acts of sexual variety in their sexual lives, communication, and mood setting techniques (*H4*); combining multiple sexual activities during their last sexual encounter (e.g., vaginal intercourse, oral sex,

manual stimulation of genitals, and deep kissing) (*H5*); longer duration of their last sexual encounter (*H6*); and greater relationship satisfaction (*H7*).

Post hoc analyses were conducted to compare orgasm frequency between lesbian and heterosexual women.

Method

Participants

The present study was based on secondary analyses of anonymous data collected via a survey posted on the official Web site of NBC News for ten days. The sample included 52,588 men and women who fit the following criteria: aged 18–65 years; completed the full survey via the NBC News entry portal; indicated they were married, remarried, cohabiting, or dating/seeing one person; and reported being intimate in the past month in response to the question about orgasm frequency over the last month.

The average age in the analyzed sample ($N = 52,588$) was 37.2 years ($SD = 10.6$) for women and 42.4 years ($SD = 9.7$) for men. The sample included participants who identified as heterosexual men ($n = 26,032$), gay men ($n = 452$), bisexual men ($n = 550$), lesbian women ($n = 340$), bisexual women ($n = 1112$), or heterosexual women ($n = 24,102$). Table 1 shows key demographics for the overall sample and for men and women of different sexual orientations. Unfortunately, we did not have information on the gender of the person's partner. In a different dataset collected via the same Web site (Frederick & Fales, 2016), most bisexual men reported a female partner (83%), followed by no partner (9%) or male partner (8%). Most bisexual women reported a male partner (82%), followed by no partner (10%) or a female partner (8%).

The study was advertised as being on "Love and Sex" in order to attract a diverse group of men and women. Market research on NBCNews.com (formerly msnbc.com) shows that, at the time of the surveys, it routinely ranked among one of the most popular Web sites in the U.S. Its 58 million unique monthly visitors included a broad diversity of people in terms of age, income, and political orientation (NBCNews.com Media Kit, 2012). It is important to note that msnbc.com, the general news Web site, was a different entity than MSNBC TV and had substantially different demographics, including approximately equal numbers of Democrat and Republican visitors. Datasets on various topics garnered through this site between 2002 and 2012 have been used to examine mate preferences (Fales et al., 2016), sexual jealousy (Frederick & Fales, 2016), sexual regrets (Galperin et al., 2013), sexual experience (Frederick & Jenkins, 2015), sexual satisfaction (Frederick, Lever, Gillespie, & Garcia, 2016), gender differences in beliefs about who should pay for dates (Lever, Frederick, & Hertz, 2015), friendship (Gillespie, Frederick, Harari, & Grov, 2015; Gillespie,

Table 1 Demographics of sample

	Heterosexual women	Lesbian women	Bisexual women	Heterosexual men	Gay men	Bisexual men
Participants <i>N</i>	24,102	340	1112	26,032	452	550
Age <i>M</i> (SD)	33.8 (9.6)	36.5 (9.7)	31.1 (8.5)	40.5 (10.4)	37.2 (9.3)	42.1 (10.4)
Relationship length in years <i>M</i> (SD)	8.2 (8.5)	5.2 (5.8)	6.6 (7.2)	13.4 (10.3)	6.8 (7.5)	14.1 (10.4)
Relationship status (%)						
Dating one person	26	29	24	13	27	12
Living together	20	54	30	9	59	12
Married	49	15	41	72	14	70
Remarried	5	2	5	6	0	6
Education (%)						
<High school grad.	1	1	2	1	1	1
High school grad.	12	7	14	7	5	9
Some college/A.A.	40	33	46	30	27	35
College	34	35	27	38	44	36
Graduate degree	13	24	11	24	23	19
Ethnicity (%)						
White	84	84	79	88	89	90
Black	3	3	3	2	1	1
Hispanic	5	3	6	3	4	3
Asian	2	1	2	2	1	1
Native American	1	2	1	1	1	.5
Other	1	1	2	1	1	.5
Biracial	1	2	4	1	1	2
Prefer not to say	2	4	3	2	2	2
Children under 21 living in house (%)						
Yes	50	22	45	60	8	56

Lever, Frederick, & Royce, 2015), personality, attachment style, and body satisfaction (Frederick, Sandhu, Morse, & Swami, 2016), and aspects of body image (Frederick & Essayli, 2016; Frederick, Lever, & Peplau, 2007; Frederick, Peplau, & Lever, 2006, 2008; Lever, Frederick, Laird, & Sadeghi-Azar, 2007; Lever, Frederick, & Peplau, 2006; Peplau et al., 2009).

Outcome Variables

Own and Partner Orgasm Frequency in Past Month

Participants were asked, “During the past month, how often did [you]/[your partner] reach orgasm when you and he or she were intimate?” (1 = Never, 2 = Rarely, 3 = About half of the time, 4 = Usually, 5 = Always). Participants could also indicate “not applicable, we were not intimate,” and these participants were excluded from the dataset. The full continuous variable was used in the regression. A major goal of the study was to create a profile of the attitudes and behaviors of people who orgasm frequently versus rarely. We divided participants into those who have orgasms *Never-Rarely* (1–2; Never-Rarely),

Half of Time (3; Half of the Time), or *Usually-Always* (4–5; Usually-Always). These groupings enabled us to compare the practices and attitudes of people with differing orgasm frequencies.

Predictor Variables

Personal Characteristics

In order to retain the relative ordering of the education levels when using education as a predictor variable in regression analyses, education was coded from lower (1 = some high school education or less) to higher (5 = graduate degree). Participants indicated if their relationship length was less than 6 months, more than 6 months but less than one year, 1 year, 2 years, 3–5 years, 6–10 years, 11–20 years, >20 years. These were recoded into years as: .25, .75, 1, 2, 4, 8, 16, and 30 years, respectively. Participants indicated the number of children in their home under age 21 who lived in their home at least part of the month. Response options ranged from 0 to 6+.

Receiving and Giving Oral Sex

Participants were asked, “During your lovemaking in the past month, how often did you [*give oral sex to your partner*]/ [*receive oral sex from your partner*].” Responses options (1 = Never; 5 = Always) and treatment in analyses were the same as those for the orgasm items.

Sexual Communication

Participants were given a list of six different communication strategies and were asked “In the past month, have you and your partner talked about sex in any of these ways? Please select all that apply.” The full list of communication strategies are shown in Table 3. We coded affirmative responses as 1 and created a communication variable by summing the responses for the 6 items (range 0–6).

Acts of Sexual Variety

Participants were given a list of 17 different activities and were asked “Have you done any of the following in the past year to improve your sex life? If so, select all that apply.” The full list of activities are shown in Table 3. We coded each affirmative response as 1 and then created an acts of sexual variety variable by summing the responses for the 17 items (range 0–17, with 0 indicating doing none of these activities and 17 indicating doing all of these activities).

Relationship Satisfaction

Participants responded to the item “I feel happy with my relationship overall” using a four-point Likert scale (1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Somewhat Agree, 4 = Strongly Agree). The full continuous variable was used in regression analyses. To facilitate data presentation, we also identified the percentage of participants who disagreed (1–2) versus agreed (3–4) with the statement.

Activities During Last Sexual Encounter Variables

We also examined event-level data, which may be less prone to recall biases. Participants were asked about their activities during the last time they had sex. If these behaviors are representative of what couples typically do, they may provide information about which practices are linked to greater orgasm frequency. Consistent with the proposal that event-level data are informative about general practices, 87% of women and 92% of men in this dataset who received oral sex during their last sexual encounter reported usually-always receiving oral sex in the past month. Also consistent with this proposal, reports of oral sex during last encounter were lower if they reported oral sex half of the time (50% women; 60% men) and lowest if they reported

oral sex never-rarely (10% women; 12% men) during the past month. The full list of items are shown in Table 4.

Mood Setting During Last Sexual Encounter Five of the items described things people might have done to set the mood (e.g., by playing music in the background or lighting a candle), and they could check all that applied. We coded affirmative responses as 1 and created a mood setting variable by summing up the responses for the 5 items (range 0–5).

Specific Acts During Last Sexual Encounter Eight of the items described actions that people might have engaged in during their last sexual encounter, such as gentle kissing and receiving oral sex, and they could check all that applied. These were not summed but were examined individually.

Duration of Last Sexual Encounter One item assessed time spent for the last sexual encounter. Specifically, participants were asked “How much time was spent on that occasion, from time physical contact began until it ended (including kissing, petting, etc.)?” The options were less than 15 min, 15–30 min, 30–60 min, 1–2 h, or greater than 2 h. For regression analyses, these were recoded as 7.5, 22.5, 45, 90, and 120 min, respectively.

Data Analysis

Due to the large sample size, even minuscule effects emerged as statistically significant in the full sample (e.g., β s as small as .02 and percentage differences as small as 1 percentage point), making effect size relatively important to emphasize. For regression analyses, we present the standardized regression coefficients (β), and we elected to highlight statistically significant results in the text when they reflected β values greater than |.09|.

We conducted regression analyses examining the predictors of own orgasm frequency and of partner orgasm frequency (Table 2). Model 1 includes all of the relevant predictors, including relationship satisfaction. Model 2 again presents the links between the predictors and outcomes, but with relationship satisfaction removed. This is due to the fact that orgasm frequency might be a component of overall relationship satisfaction, and thus controlling for relationship satisfaction presents the logical problem of partially controlling for orgasm frequency when attempting to predict orgasm frequency. The pattern of results was generally similar in Model 1 and Model 2, except the effects of the other predictors generally became stronger when relationship satisfaction was removed. We show the results for both models in Table 2, but focus on the patterns found in Model 2 in the Results section. Skewness was low for all continuous variables (<|1.6| for all variables and <|1.0| for majority of variables), as was kurtosis (<|2.0|, except for sex frequency = 2.4). Collinearity diagnostics revealed that multicollinearity was low for all predictors (all tolerance values .50–1.0, all VIF values 1.0–2.0).

We also divided the participants into three groups of men and women who experienced orgasms never-rarely, half of

Table 2 Predictors of own orgasm frequency and partner orgasm frequency among heterosexual, gay, lesbian, and bisexual men and women

	Women			Men		
	Heterosexual women β	Lesbian women β	Bisexual women β	Heterosexual men β	Gay men β	Bisexual men β
Predictors of <i>own</i> orgasm frequency						
Age	.05***	.03	.07*	-.12***	-.17**	-.17**
Relationship length	.04***	.08	.06	.08***	.14**	.11*
Education	-.01	.05	-.01	.02**	-.02	.01
Children under 21	.06***	.02	.04	.07***	.00	.11*
Receive oral	.19***	.26***	.24***	.06***	.18***	.13**
Give oral	-.01	-.01	.01	.03***	.00	-.03
Communication (0–5)	.05***	-.05	.09**	.00	.09	-.01
Sexual variety (0–17)	.06***	.04	.08*	.03***	-.05	.07
Mood setting (0–5)	.09***	.11	.06	.06***	-.04	.02
Length of last sex	.14***	.08	.13***	-.06***	.01	-.02
Model 1 adj. R^2	.13***	.08***	.17***	.03***	.05***	.04***
Relationship satisfaction	.18***	.27***	.20***	.13***	.04	.08
Model 2 adj. R^2	.16***	.13***	.20***	.04***	.05***	.05***
Predictors of <i>partner</i> orgasm frequency						
Age	-.09***	.05	-.18***	.01	-.19***	-.04
Relationship length	.07***	.11	.13***	-.01	.09	.00
Education	.01*	.00	.01	-.02**	.06	.03
Children under 21	.07***	.01	.06*	.04***	-.04	.10*
Receive oral	.03***	-.07	.06	.07***	.05	.10*
Give oral	.03***	.29***	.03	.20***	.11*	.22***
Communication (0–5)	.03***	.00	.03	.00	.09	.04
Sexual variety (0–17)	.00	.06	.01	.04***	-.01	.02
Mood setting (0–5)	.04***	-.03	.01	.07***	-.02	.01
Length of last sex	-.06***	.09	-.03	.12***	.01	.11*
Model 1 adj. R^2	.02***	.07***	.03***	.12***	.04**	.12***
Relationship satisfaction	.12***	.07	.08*	.09***	.10	.07
Model 2 adj. R^2	.03***	.07***	.03***	.12***	.04***	.12***

Positive β s indicate that participants who scored higher on the predictor variables reported more orgasms

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

the time, or usually-always. We then conducted chi-square analyses (or Fisher's exact tests when appropriate) when examining the associations between orgasm frequency and other variables. This allowed us to create a profile of the behaviors that men and women who never-rarely versus usually-always experience orgasm (see Tables 3, 4). Finally, we present how orgasm frequency was associated with different combinations of behaviors for women (vaginal intercourse, oral sex, manual stimulation of genitals, deep kissing).

We do not present results separately by ethnicity because a series of one-way ANOVAs examining the effects of ethnicity on all of the continuous predictor and outcome variables showed that even when the effects were statistically significant, they were minuscule in size (all *partial* $\eta^2 < .01$, except for age, *partial* $\eta^2 = .013$).

Results

Hypothesis 1 Men Will Report More Frequent Orgasms than Heterosexual Women (1a), No Differences Are Hypothesized Among Men (1b), Lesbian Women Will Orgasm More Often than Heterosexual Women (1c)

The results were consistent with the hypotheses 1a–c (Fig. 1). Heterosexual men were more likely than heterosexual women to always orgasm (75% HM vs. 33% HW; $p < .001$) and usually-always orgasm (95% HM vs. 65% HW; $p < .001$) when “sexually intimate” during the past month. Lesbian women were less likely than heterosexual men to always orgasm (59% LW vs. 75% HM; $p < .001$) or usually-always orgasm (86% LW vs. 95% HM; $p < .001$). Lesbian

Table 3 Frequency of oral sex, relationship satisfaction, and communication according to orgasm frequency

	Men				Women			
	Usually-always	Half time	Never-rarely	χ^2	Usually-always	Half time	Never-rarely	χ^2
Freq. <i>receives</i> oral sex past month (% in each cat.)								
Usually-always	28	23	18	102	36	22	13	1690
About half of the time	22	23	13		25	27	17	
Never-rarely	50	54	69		38	51	71	
Communication (% yes)								
I asked for something I wanted in bed	46	38	28	99	45	39	25	585
One of us praised others about something they did in bed	41	32	17	170	58	48	32	1035
My partner asked for something they wanted in bed	30	26	18	54	51	48	36	322
One of us asked for feedback on how something felt	31	26	19	54	38	34	26	230
One of us called/mailed to tease doing something sexual	31	29	18	50	47	38	28	534
One of us gently criticized how others did something in bed	9	11	11	13	8	11	10	30
Acts of sexual variety past year (% yes)								
At least one of us got a mini-massage or backrub	67	64	50	91	69	65	56	284
One of us wore sexy lingerie/underwear	58	52	34	153	70	68	59	219
Took a shower or bath together	59	52	38	123	65	63	52	264
Made a "date night" to be sure we had sex	56	51	42	58	51	49	42	123
Tried a new sexual position	51	43	28	155	66	62	47	543
Went on a romantic getaway	46	42	35	37	44	41	33	190
Used a vibrator or sex toy together	42	37	30	49	45	42	33	208
Tried anal stimulation	37	30	23	70	39	35	25	285
Viewed pornography together	35	31	23	47	44	41	31	230
Talked about or acted out our fantasies	35	29	24	44	41	34	25	399
Had anal intercourse	23	20	16	20	27	26	20	95
Had sexual contact in a public place	21	19	11	40	25	23	16	185
Integrated foods into sex (chocolate sauce, whip cream)	20	20	13	16	24	20	14	198
Tried light S&M (e.g., restraints, spanking)	16	14	12	n.s.	24	21	15	188
One of us took Viagra or a similar drug	25	25	15	105	9	9	8	n.s.
Videotaped our sex or posed for pictures in the nude	14	12	9	17	15	14	10	79
Invited another person into bed with us	5	5	5	n.s.	4	4	3	13

Chi-square analyses test whether the proportion of people responding in each category differ depending on orgasm frequency. All analyses were significant at the $p < .001$ level unless noted with "n.s." for not significant

women were, however, more likely than heterosexual women to always orgasm (59% LW vs. 33% HW; $p < .001$) or usually-always orgasm (86% LW vs. 65% HW; $p < .001$). The patterns for bisexual women were similar to heterosexual women, and patterns for gay and bisexual men were similar to those of heterosexual men, except that they were slightly less likely to always orgasm when sexually intimate.

Hypothesis 2 People With Male Partners Will Report More Orgasms By Partners, and Lesbian Women Will Report More Frequent Partner Orgasms than Heterosexual Men

Consistent with the hypothesis, heterosexual women were more likely than heterosexual men to say their partners always orgasm (80% HW vs. 41% HM; $p < .001$) or usually-always orgasm (95% HW vs. 73% HM; $p < .001$; Fig. 2). Gay men were also more likely than heterosexual men to say their partners always orgasm (69% GM vs. 41% HM; $p < .001$) or usually-always orgasm (89% GM vs. 73% HM; $p < .001$). Also consistent with the hypotheses, lesbian women were more likely than heterosexual men to report that their partners always (66% LW vs. 41% HM; $p < .001$) or usually-always orgasm (87% LW vs. 73% HM; $p < .001$).

Table 4 Events during last sexual encounter (DLS) and relationship satisfaction according to orgasm frequency

	Men				Women			
	Usually-always	Half of time	Never-rarely	χ^2	Usually-always	Half of time	Never-rarely	χ^2
What happened DLS: mood setting (% yes)								
At least one of us said "I love you"	65	55	50	92	66	58	49	476
We engaged in sexy talk	35	30	20	73	49	37	25	916
Laughed about something funny happened during sex	24	24	18	n.s.	38	33	25	303
Lit a candle or dimmed the lights	20	19	16	n.s.	23	17	13	248
Played music in the background	13	14	12	n.s.	14	11	8	172
What happened DLS: acts (% yes)								
Vaginal intercourse	92	88	75	254	94	94	92	23
Manual stimulation of genitals	84	81	75	38	86	80	68	859
Gentle kissing	79	78	70	34	82	76	66	524
Deep kissing	65	60	53	51	74	64	52	779
Changed positions during sexual intercourse	57	41	43	66	71	62	52	601
Gave oral sex	47	46	41	n.s.	53	46	39	340
Received oral sex	45	40	36	26	48	38	25	844
Anal intercourse	6	6	6	n.s.	6	4	3	73
Length of sex DLS (% in each cat.)								
1+ h	11	17	12	104	13	8	6	2456
30–60 min	32	29	26		37	29	19	
15–30 min	40	34	33		35	40	35	
15 min or less	17	20	28		11	21	39	
Relationship satisfaction (% agree)								
I feel happy with my relationship overall	86	75	60	385	92	86	73	1249

Chi-square analyses tested whether the proportion of people responding in each category differed by orgasm frequency. Chi-square values are listed for all statistically significant effects. All analyses were significant at the $p < .001$ level unless noted with "n.s." For example, among men who usually-always orgasm, 65% reported saying I love you during sex (35% did not). For example, among women who usually-always orgasm, 13% say sex lasts 1+ h, 37% 30–60 min, 35% 15–30 min, and 11% 15 min or less

Heterosexual men's estimates of their partner's orgasm frequencies were somewhat higher than heterosexual women's own reported orgasm frequency. One-third (33%) of heterosexual women reported that they usually-always orgasm, whereas 41% of heterosexual men estimated that their partners orgasm usually-always ($p < .001$).

Hypothesis 3 Age and Relationship Length Will Relate to Orgasm Frequency

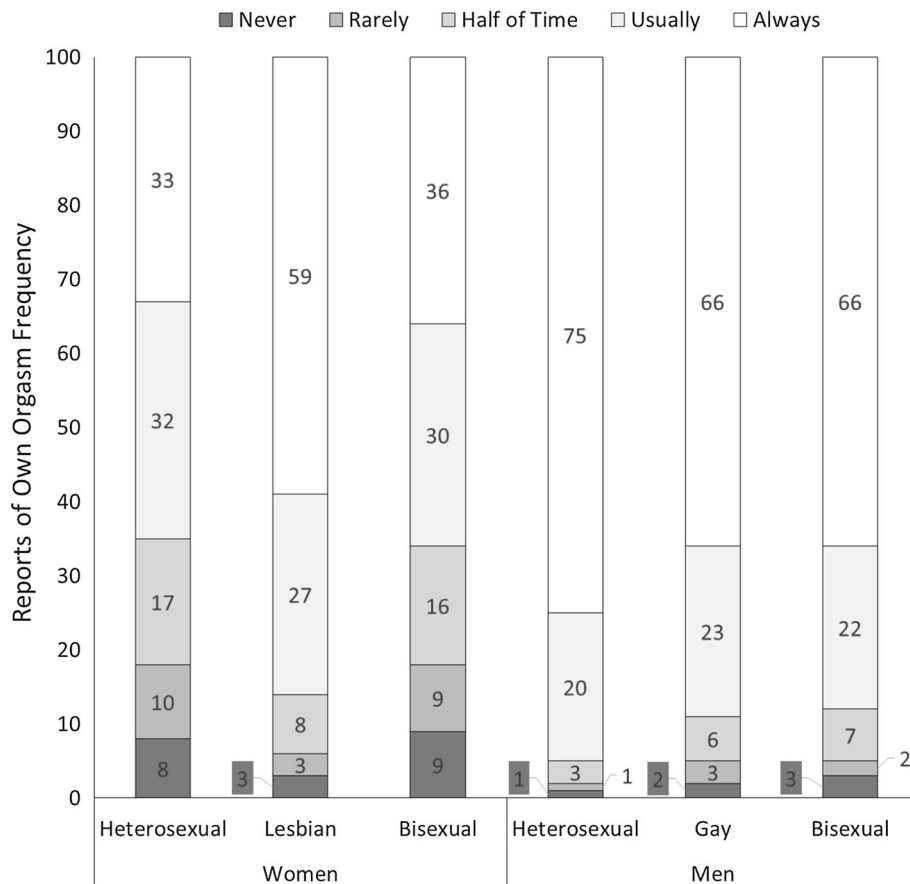
In the regression analyses (Table 2, top half), none of the associations between demographic characteristics and own orgasm frequency exceeded $\beta = 1.091$ for women. Consistent with the hypotheses, younger heterosexual, gay, and bisexual men were more likely to orgasm. Men who were in relationships longer were also more likely to orgasm, although this association did not exceed $\beta = 1.091$ for heterosexual men.

Hypothesis 4 People Who Have More Oral Sex, Acts of Sexual Variety, Communication, and Mood Setting Techniques Will Orgasm More Frequently

Oral Sex

Consistent with the hypotheses, regression analyses showed that people who received oral sex more frequently had orgasms more frequently (Table 2, top half). This was true for heterosexual women ($\beta = .19$), lesbian women ($\beta = .26$), bisexual women ($\beta = .24$), gay men ($\beta = .18$), and bisexual men ($\beta = .13$). The only association that did not exceed $\beta = 1.091$ was for heterosexual men ($\beta = .06$). In parallel, people who gave oral sex more frequently generally reported that their partner orgasmed more frequently (Table 2, bottom half). This was true for lesbian women ($\beta = .29$), heterosexual men ($\beta = .20$), gay men ($\beta = .11$), and bisexual men ($\beta = .22$). As shown in Table 3, women who usually-always orgasm were more likely than women who never-rarely orgasm to report that they usually-always receive oral sex (36% vs. 13%; $p < .001$). In contrast, women who usually-always orgasm were much less likely to report that they never-rarely receive oral sex (38%) than women who never-rarely orgasm (71%; $p < .001$).

Fig. 1 Reports of *own orgasm frequency* during past month for gay, lesbian, bisexual, and heterosexual men and women



Communication Techniques

The association between number of communication strategies and orgasm frequency did not exceed $\beta = 1.091$ for any group when controlling for other variables (Table 2). As shown in Table 3, women and men who orgasmed more frequently were more likely to engage in five of the six communication strategies. In particular, men and women who orgasmed more frequently were more likely to ask for something they wanted in bed, praise their partner for something they did in bed, and call/email to tease about doing something sexual.

Acts of Sexual Variety

Although the associations between number of acts of sexual variety and orgasm frequency were generally in the predicted direction, none exceed $\beta = 1.091$ when controlling for other variables (Table 2). As shown in Table 3, women and men who orgasmed more frequently were more likely to engage in almost all of the acts of sexual variety. Women who usually-always orgasm were especially more likely than women who never-rarely orgasm say that they involved the following in their sex lives: wearing sexy lingerie (+21%), trying a new sexual position (+19%), talking or acting out fantasies (+16%), or trying anal stimulation (+14%). Men who usually-always

orgasm were more likely than men who never-rarely orgasm say that they involved the following in their sex lives: lingerie/underwear (+24%), mini-massage or backrub (+17%), taking shower/bath (+21%), or a date night to make sure they had sex (+14%).

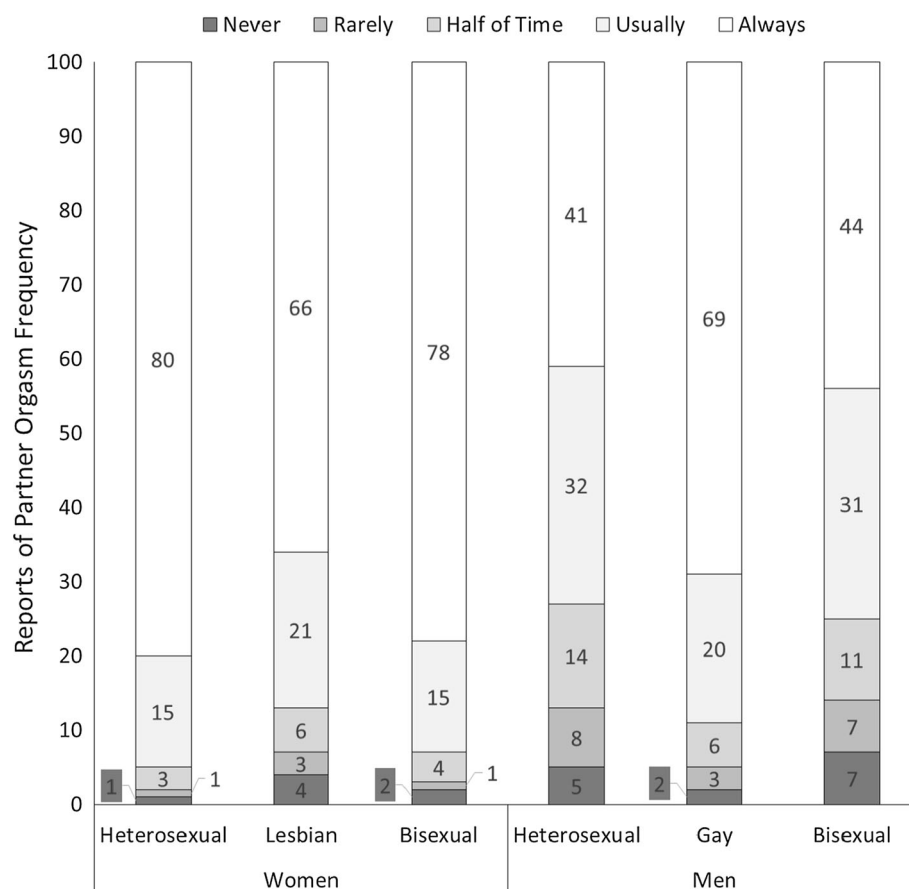
Mood Setting

There were no statistically significant associations between number of mood setting techniques and orgasm frequency that exceeded $\beta = 1.091$ (Table 2). As shown in Table 4, men who orgasmed more frequently were more likely to engage in two of the mood setting strategies, and women were more likely to engage in all of them. Women who usually-always orgasm were especially more likely than women who never-rarely orgasm to report saying “I love you” (+17%) or engaging in sexy talk (+24%) during their last sexual encounter. The same was true for men (“I love you,” +15%; engaging in sexy talk, +15%).

Hypothesis 5 Women Who Had Longer Duration of Sex During Their Last Sexual Encounter Will Orgasm More Frequently

Consistent with the hypothesis, heterosexual women ($\beta = .13$) and bisexual women ($\beta = .17$) who had longer sex sessions were

Fig. 2 Reports of *partner orgasm frequency* during past month for gay, lesbian, bisexual, and heterosexual men and women



more likely to orgasm (Table 2, top half). The same did not hold true for lesbian women ($\beta = .08$). Consistent with this pattern, heterosexual men ($\beta = .12$) and bisexual men ($\beta = .11$) who had longer sex sessions reported that their partners were more likely to orgasm. As shown in Table 4, women who usually-always orgasm were more likely than women who never-rarely orgasm to report that their last sexual encounter lasted 1+ h (13 vs. 6%) or 30–60 min (37 vs. 19%). In contrast, women who usually-always orgasm compared with women who never-rarely orgasm were much less likely to report that sex lasted 15 min or less (11 vs. 39%). Men who usually-always orgasm were also less likely than men who never-rarely orgasm to report that sex lasted 15 min or less (17 vs. 28%).

Hypothesis 6 People with Greater Relationship Satisfaction Will Orgasm More Frequently

When we added relationship satisfaction to the regression model (Model 2), relationship satisfaction became one of the strongest predictors for women (Table 2, top half). Consistent with the hypothesis, heterosexual women ($\beta = .18$), lesbian women ($\beta = .27$), bisexual women ($\beta = .20$), and heterosexual men ($\beta = .13$) who had higher relationship satisfaction orgasmed more frequently. The same pattern did not hold for gay and bisexual men. Heterosexual women who were more

satisfied with their relationships also reported that their partner orgasmed more frequently ($\beta = .12$) (Table 2, bottom half). These findings should be interpreted with caution, however, because orgasm frequency may be an element that makes up relationship satisfaction. As shown in Table 4, women who usually-always orgasm were more likely than women who never-rarely orgasm to be satisfied with their relationship, as were men.

Hypothesis 7 Women Who Combine Multiple Sexual Acts Will Orgasm More Frequently

Women who incorporated multiple behaviors into their last sexual encounter reported higher overall orgasm frequency over the last month (Table 4). Women who received oral sex during their last sexual encounter were systematically more likely to report more frequent orgasms than women who did not, regardless of what other behaviors they engaged in (Table 5). Relatively few heterosexual women who engaging orgasmed usually-always (35%) compared to 62% of women who engaged only oral sex. Most heterosexual women who combined oral sex, manual genital stimulation, and deep kissing reported usually-always orgasming (80%), as did women who added vaginal intercourse to that combination (77%).

Lesbian women were more likely than heterosexual women to orgasm when they engaged in comparable behaviors,

Table 5 Orgasm frequency according to combinations of behaviors engaged in during last sexual encounter

Behaviors during last sex				Orgasm frequency over past month					
Receive oral sex	Vaginal sex	Genital stimulation	Deep kissing	Usually-always			Rarely-never		
				Heterosexual women %	Lesbian women %	Bisexual women %	Heterosexual women %	Lesbian women %	Bisexual women %
Yes	No	Yes	Yes	80	91	71	7	5	19
Yes	Yes	Yes	Yes	77	90	78	8	3	9
Yes	No	Yes	No	73	–	–	10	–	–
Yes	Yes	No	Yes	71	–	73	14	–	15
Yes	Yes	Yes	No	69	–	73	13	–	17
Yes	No	No	Yes	69	–	–	22	–	–
No	Yes	Yes	Yes	67	79	71	16	9	13
Yes	No	No	No	62	–	–	18	–	–
Yes	Yes	No	No	60	–	67	17	–	14
No	No	Yes	Yes	60	80	70	21	6	22
No	Yes	Yes	No	59	–	53	22	–	24
No	Yes	No	Yes	57	–	59	25	–	24
No	No	No	Yes	54	–	–	25	–	–
No	No	Yes	No	52	74	–	28	13	–
No	No	No	No	37	–	–	51	–	–
No	Yes	No	No	35	–	29	44	–	54

The values represent the percentage of women who usually-always and rarely/never orgasm during sex according to what behaviors they engaged in during their last sexual encounter. For example, 77% of heterosexual women who received oral sex, had vaginal sex, had genital stimulation, and had deep kissing during their last sexual encounter reported usually-always orgasming when sexually intimate during the past month. Values are only presented in cells for which there were at least 20 participants

including oral sex, manual genital stimulation, and deep kissing (91 vs. 80%; $p = .003$), genital stimulation and deep kissing (80 vs. 60%; $p = .007$), or only manual genital stimulation (74 vs. 52%; $p = .050$). For some combinations of behaviors, the patterns were in the direction of lesbian women reporting more frequent orgasms, but the differences did not reach statistical significance: oral–vaginal–genital–kissing (90 vs. 77%; $p = .056$); vaginal–genital–kissing (79 vs. 67%; $p = .077$).

Further Comparisons of Lesbian and Heterosexual Women

The differences between lesbian and heterosexual women are worth further investigation. We conducted a linear regression examining the size of differences between heterosexual and lesbian women in orgasm frequency when covariates were added to the model (all predictors listed in Table 2). Heterosexual women were coded as 0 and lesbian women as 1. We also conducted a logistic regression examining the likelihood of reporting always orgasming. Even with all of these additional predictors in the model, lesbian women reported more frequent orgasms than heterosexual women in the linear regression ($\beta = .05, p < .001$). In the logistic regression, lesbian women had

three times greater odds than heterosexual women of always experiencing orgasm (OR 2.98, $p < .001$).

Discussion

Who Experiences Orgasm More Frequently When Sexually Intimate?

The results of the current study provide a clear picture of who is most likely to orgasm during partnered sexual activity and which factors predict orgasm frequency. Overall, men were more likely to orgasm than women, which replicates a wide body of existing literature (Garcia et al., 2014; Herbenick et al., 2010; Laumann et al., 1994; Lloyd, 2005). Consistent with the findings of Garcia et al., we found multiple orgasm gaps across sexual orientations: Lesbian women reported more frequent orgasms than heterosexual women, and men reported more frequent orgasms than lesbian women. People's reports of their partner's orgasm frequencies mirrored these patterns: People with male partners report more frequent orgasm for their partners than people with female partners, and lesbian women report higher orgasm frequency for their partners than heterosexual men report for their partners.

Women who orgasmed more frequently reported receiving more oral sex, having sex for longer durations, and being more satisfied with their relationships. Of particular importance for women was incorporating oral sex along with other activities during a sexual encounter. Some of the other behaviors that most strongly differentiated women who orgasmed frequently from women who did not were: asking for what they wanted in bed, praising their partner for something they did in bed, calling or emailing to tease about doing something sexual, wearing sexy lingerie, trying new sexual positions, anal stimulation, and talking about or acting out sexual fantasies, engaging in sexy talk, and expressions of love during sex.

Consistent with past research, older men reported less frequent orgasms than younger men, which may reflect men's age-related declines in health and in androgen levels (Gray & Garcia, 2012). Some of the behaviors most strongly differentiated men who orgasm frequently from men who did not included incorporating a mini-massage or backrub, taking shower/bath with a partner, and a date night to make sure they had planned sexual activity.

One interesting finding of note was that 41% of heterosexual men reported that their partner orgasms usually-always compared to 33% of heterosexual women reporting that they usually-always orgasm. Part of this difference in perception could be due to women "faking" orgasms, which research has suggested women will do for a variety of reasons, including out of love for their partner, to protect their partner's self-esteem, intoxication, or to bring the sexual encounter to an end (Cooper, Fenigstein, & Fauber, 2014; Kaighobadi, Shackelford, & Weekes-Shackelford, 2012; Muehlenhard & Shippee, 2010). It is promising, however, considering sexual double standards surrounding sexual pleasure (e.g., Armstrong, England, & Fogarty, 2012), that the difference in heterosexual men's perceptions and heterosexual women's reports was small (8 percentage points), suggesting most men have good awareness of women's orgasm frequency.

Limitations and Strengths

Self-selection into surveys is a typical problem in studies conducted with college and community samples. The study was advertised as being on "sex and love" in an attempt to draw in a diverse range of people. Internet samples, however, have the advantage of being more diverse with respect to gender, sexual orientation, age, socioeconomic status, and geographic region than most convenience samples (Gosling, Vazire, Srivastava, & John, 2004). Surveys can be completed with ease from the privacy of respondents' homes or workplaces, reaching individuals who would not otherwise have the opportunity to participate in research.

Another limitation of the current study was the reliance on one-item measures of orgasm frequency. Furthermore, when supplementing the regression analyses with reports of percent-

ages, we divided the orgasm measure into three categories, which has the benefit of reducing the amount of information displayed but at some cost of precision in describing the results. Confidence in our measures was gained from the fact that we replicated and extended the gender and sexual orientation differences identified in the study by Garcia et al. (2014).

Despite these limitations, a unique aspect of the present study was inclusion of measures for a wide variety of personal characteristics and behaviors, and testing the relative strength of these as predictors of orgasm frequency. Furthermore, we assessed behaviors not routinely measured in past research, such as acts of sexual variety, mood setting techniques, expressions of love during sex, and specific communication strategies. Future research should examine a broader set of communication strategies beyond the specific positive communication styles we assessed. The large sample size provided sufficient power to include a variety of predictors in the regression models and to segment women into different groups in order to examine how different combinations of behaviors during sexual activity were linked to orgasm frequency.

Explaining Gender Differences in Orgasm Frequency

A range of hypotheses have been advanced to explain the difference in men's and women's orgasm rates. These can be characterized as "sociocultural," "byproduct," and "adaptationist." We present these perspectives and then discuss implications of the current study for reducing the orgasm discrepancy between heterosexual men and women.

Sociocultural Explanations for the Male-Female Orgasm Gap

Sociocultural researchers have emphasized how different societal attitudes, such as sexual double standards and inconsistent practices during sexual encounters, produce the orgasm gap between heterosexual men and women (Rudman, Fetterolf, & Sanchez, 2013). The stigma against women expressing sexual desire and the pressure on men to take an active role during sexual activity can prevent couples from engaging in the behaviors that are most likely to elicit orgasm in women. This stigma can lead women to not explore their own sexuality, to learn what brings them to orgasm, or to express to their partners what their sexual preferences are.

Due to stigma against female pleasure, some people place greater importance on men's orgasm than women's orgasm (Fahs & Frank, 2014). In interview studies, however, college men reported feeling it was their responsibility to bring their female partner to orgasm, that this is very satisfying for men, and that the absence of female orgasm is distressing (Salisbury & Fisher, 2014). Some men and women, however, have mistaken beliefs about the underlying physiological causes of orgasm. Nearly one-third of men incorrectly assume that most

women will orgasm from penile–vaginal intercourse alone (Wade, Kremer, & Brown, 2005).

Many women are dissatisfied with their appearance (Forbes & Frederick, 2008; Frederick, Kelly, Latner, Sandhu, & Tsong, 2016) and weight (Frederick, Forbes, & Berozovskaya, 2008; Gray & Frederick, 2012; Swami et al., 2010), are less satisfied with their appearance than men (Frederick, Forbes, Grigorian, & Jarcho, 2007; Frederick, Jafary, Daniels, & Gruys, 2011), and are more likely than men to be self-conscious about their bodies during sex (Peplau et al., 2009). More generally, popular media promote stigmatization of heavier men and women (Frederick, Saguy, Sandhu, & Mann, 2016; Frederick, Saguy, & Gruys, 2016; Saguy, Frederick, & Gruys, 2014) and sexualization of slender women (Roberts & Muta, 2017), and women internalize these thin ideals as important to attain (Schaefer et al., 2015). Body dissatisfaction interferes with ability to orgasm (Erbil, 2013; Satinsky, Reece, Dennis, Sanders, & Bardzell, 2012) and body image interventions to improve body satisfaction and counteract the effects of thin ideal media could help increase orgasm frequency.

Adaptationist Explanations for the Male–Female Orgasm Gap

Evolutionary perspectives have been widely applied to understand human sexuality and mate preferences (Gallup & Frederick, 2010), and multiple evolutionary explanations for understanding orgasm have been advanced. For males, insofar as male orgasm and ejaculation are tightly linked, orgasm rewards men for ejaculating and for seeking intercourse with one or more partners. A motivational system that promotes seeking a greater number or variety of reproductive opportunities can be adaptive because men's reproductive lives are not constrained by long periods of gestation and lactation, as well as biologically limiting inter-birth intervals (Trivers, 1972; but see Brown, Laland, & Mulder, 2009).

Some evolutionary researchers propose that female orgasm also serves an adaptive function (for reviews, see Puts et al., 2012; Wheatley & Puts, 2015). One possible adaptive function is that orgasm in women facilitates bonding with a long-term romantic partner. A second hypothesis is that orgasm in women functions to promote reproduction with males with heritable traits associated with attractiveness or health, which can then be passed onto offspring. For example, women exhibit preferences for relatively taller partners (Salska et al., 2008) and for men who are muscular and toned (Frederick, Fessler, & Haselton, 2005; Frederick & Haselton, 2007; Gray & Frederick, 2012), traits that are heritable. The female orgasm, therefore, is expected to be more sensitive to context and partner characteristics than male orgasm. This perspective would explain why orgasm frequency varies across women and why orgasm frequency is lower among women than among men.

Byproduct Explanations for the Male–Female Orgasm Gap

An alternative evolutionary explanation for the lower orgasm frequency in women is that orgasm has little or no adaptive value in females: It does not promote survival or reproduction. Rather, it is an evolutionary byproduct of the male orgasm, much like male nipples are a byproduct of the female nipple (Lloyd, 2005; Symons, 1979). Consistent with the byproduct perspective, the clitoris is not necessarily directly stimulated during sexual intercourse, few women reliably achieve orgasm through penile–vaginal intercourse, there is substantial variation between women in orgasm rates, and most orgasm has not been clearly linked to fitness-relevant outcomes such as survival or number of offspring (for reviews, see Lloyd, 2005, 2015).

One proximate biological explanation consistent with the byproduct hypothesis has been offered to explain women's substantial variation in orgasm rates. The distance between the clitoris and the urinary meatus (clitoris–urinary–meatus–distance; CUMD) places the clitoris farther from the vaginal opening for some women than others (Wallen & Lloyd 2011). Women with longer CUMDs do not reliably have orgasms with intercourse, whereas women with shorter CUMDs (2.0 cm or less) have more reliable orgasms. These findings are consistent with the view that a woman's likelihood of orgasm arises from hormonal mechanisms that direct the development of the penis (and therefore clitoris) in the fetus and infant, rather than female orgasm providing an adaptive benefit for reproduction.

Explaining Differences in Orgasm Rate Between Lesbian and Heterosexual Women

Lesbian women were more likely to orgasm than heterosexual women, even when controlling for important contributors to orgasm frequency that might vary by sexual orientation (oral sex frequency, acts of sexual variety, communication, etc.). This raises the question of why lesbian women orgasm more frequently. One possibility is that lesbian women are in a better position to understand how different behaviors feel for their partner (e.g., stimulating the clitoris) and how these sensations build toward orgasm. It is quite possible that lesbian women are less likely than heterosexual men to believe that orgasms are elicited primarily by vaginal sex. Lesbian women may be more likely to hold sexual script norms regarding equity in orgasm occurrence, including a “turn-taking culture” where lesbian women are more likely to take turns receiving pleasure until each is satiated (insofar as orgasm is a desired outcome).

If men desire sex more frequently than women (Lippa, 2007), then there could be more sexual encounters in heterosexual relationships explicitly intended to satisfy the desires of the male partner. As a result, higher rates of orgasm in heterosexual men reflect, in part, couples creating equality in their sexual relationships by engaging in activities designed to satiate the

partner experiencing intense sexual desire, rather than having a tit-for-tat expectation for orgasm.

Conclusions

Consistent with both feminist and evolutionary perspectives, orgasm frequency was lower among women than men. Relatively few heterosexual women orgasmed through vaginal sex alone. Orgasm frequencies for heterosexual women only approached those for men when other behaviors were added to sexual intercourse (e.g., oral sex, manual stimulation). These findings are consistent with the view that there are biological differences between men and women in likelihood of orgasm during intercourse. The findings, however, indicate that this orgasm gap can be reduced by addressing sociocultural factors and by encouraging a wider variety of activities when men and women are sexually intimate. The fact that lesbian women orgasmed more often than heterosexual women indicates that many heterosexual women could experience higher rates of orgasm.

Compliance with Ethical Standards

Conflict of interest David Frederick declares that he has no conflict of interest. H. Kate St. John declares that she has no conflict of interest. Justin Garcia declares that he has no conflict of interest. Elisabeth Lloyd declares that she has no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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