

Are There Different Types of Female Orgasm?

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Abstract In attempt to identify and validate different types of orgasms which females have during sex with a partner, data collected by Mah and Binik (2002) on the dimensional phenomenology of female orgasm were subjected to a typological analysis. A total of 503 women provided adjectival descriptions of orgasms experienced either with a partner ($n=276$) or while alone ($n=227$). Latent-class analysis revealed four orgasm types which varied systematically in terms of pleasure and sensations engendered. Two types, collectively labelled “good-sex orgasms,” received higher pleasure and sensation ratings than solitary-masturbatory ones, whereas two other types, collectively labelled “not-as-good-sex orgasms,” received lower ratings. These two higher-order groupings differed on a number of psychological, physical and relationship factors examined for purposes of validating the typology. Evolutionary thinking regarding the function of female orgasm informed discussion of the findings. Future research directions were outlined, especially the need to examine whether the same individual experiences different types of orgasms with partners with different characteristics, as evolutionary theorizing predicts should be the case.

Keywords Female orgasm · Evolution

Introduction

There remains great debate about the biological function of female orgasm. The fact that many sexual species reproduce successfully in the absence of (apparent) female orgasm certainly suggests that female orgasm is not necessary for reproduction. Yet some evolutionary scholars contend that female orgasm is an adaptation sculpted by natural selection to increase reproductive fitness in some way (Baker & Bellis, 1993a, 1993b; Thornhill, Gangestad, & Comer, 1995), with fitness defined in terms of the dispersion of genes in future generations (Cronin, 1991). Others argue that female orgasm exists as a mere by-product of another (male) adaptation; whereas strong selection created the sensitive male penis, the clitoris is simply its (inadvertent) physical homologue (Gould, 1987; Lloyd, 2005; Symons, 1979). By this latter account, female orgasms only exist because males were selected to have orgasms as a proximate reward for sexual activity.

There has been much debate about whether female orgasm is an evolutionary adaptation directly designed by natural selection to promote (individual) reproductive fitness (e.g., Barash, 2005; Puts, 2006; Zuk, 2006). In appreciation of this, Judson (2005) suggested that consideration and investigation of different types of orgasm might shed light on this issue. As it turns out, females, in contrast to males, report their orgasms differ not only in intensity but also in location, phenomenology, and emotional components (Hite, 1976). Indeed, this insight is widely appreciated by sex researchers (Bentler & Peeler, 1979; Levin, 1981, 1998, 2001, 2004; Levin & Wagner, 1985; Singer & Singer, 1972) and sex therapists (Fisher, 1973; Sundahl, 2003). It provides one basis for the work presented herein which sought to (1) identify and (2) validate

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different types of female orgasm in hopes of advancing understanding of the female sexual experience and the evolutionary basis of female orgasm.

Regardless of whether female orgasm is considered from an adaptationist perspective (Baker & Bellis, 1993a, 1993b; Thornhill et al., 1995), an anti-adaptationist position (Gould, 1987; Lloyd, 2005), or some other frame of reference (Masters & Johnson, 1965, 1966), it remains the case that many scholars implicitly or explicitly embrace the notion that all female orgasms are essentially the same. Even if brought about by different means (Masters & Johnson, 1965, 1966), female orgasms have been held to vary only in terms of timing relative to male partner orgasm (Baker & Bellis, 1995; Thornhill et al., 1995). But Masters and Johnson's (1965, 1966) conclusion that all female orgasms are more or less the same may have been a result of their methods of inquiry. Not only did they use a rigid glass insertable to allow for internal filming, but in many experiments they inserted metal specula. This, crucially, covered areas of the anterior vaginal wall now regarded as especially sensitive and important in orgasm (Komisaruk & Sansone, 2003; Komisaruk et al., 2004).

Limited understanding of the anatomy may also have contributed to the view that all female orgasms are much the same. Research reveals that the clitoris is a much larger and more complex organ than commonly assumed (Dickinson, 1949; O'Connell, Hutson, Anderson, & Plenter, 1998; O'Connell, Sanjeevan, & Hutson, 2005). Unlike intercourse, masturbation typically only involves stimulation of what should be more properly termed the glans of the clitoris (O'Connell et al., 1998). This area is typically reported by females as the most sexually sensitive and is a key area to be retained during genitoplasty to preserve such sexual sensitivity (Schober, Meyer-Bahlburg, & Ransley, 2004). But, the visible external tip of the clitoris is not the only site of female sexual sensitivity. Even women who have had all the outer labia and clitoris removed still, surprisingly, experience orgasm (Lightfoot-Klein, 1984, 1989).

As many have noted, while it is certainly true that stimulation of the glans of the clitoris is typically the fastest and most reliable way to produce a female orgasm, it is by no means the only way to do so; nor is it the only site at which or by which females can experience orgasm (e.g., Bentler & Peeler, 1979; Komisaruk et al., 2004; Schober et al., 2004; Singer & Singer, 1972). A variety of neural pathways in the vaginal area, including deep inside as far as the cervix, can also trigger orgasm, quite independent of the clitoral pathway. Indeed, this can occur even in (human and animal) cases where the spinal cord has been completely severed (Komisaruk et al., 1996, 2004; Komisaruk & Sansone, 2003). Researchers have also pointed out that the Ferguson reflex, the release of oxytocin through vagino-cervical stimulation (Ferguson, 1941), is a key feature of sexual intercourse in mammals (Komisaruk et al., 2004). Penises curve to fit the

crucial areas of the vagina during intercourse (Schultz, van Andel, Sabelis, & Mooyaart, 1999).

In sum, it is unsurprising that Masters and Johnson (1965, 1966) did not detect any uterine peristalsis effect, regarded by some as a distinguishing feature of some orgasms (Fox, Wolff, & Baker, 1970) having effectively sidelined potentially crucial evolved physiologies of males and females. The fact that research into copulatory orgasms by Fox et al. (1970) revealed a peristaltic-related insuck effect, however, leads to the hypothesis that different types of orgasms will prove detectable, even in the context of intercourse. The insuck effect involves a pressure change in the uterus via peristaltic action which could conceivably enable females to "select" sperm preferentially from particular mates and thus serve a fitness (i.e., evolutionary) function (Fox et al., 1970; Fox & Fox, 1971; Wildt, Kissler, Licht, & Becker, 1998; Zervomanolakis et al., 2007). Baker and Bellis' (1993b) related and often-cited work chronicling upsuck following masturbation (rather than intercourse) has defied replication (Pound & Daly, 2000). For this reason, this article retains the original; Fox et al. (1970) term insuck to emphasize continuity with that earlier line of research.

Wildt et al. (1998) have shown how this insuck might be related to sperm transport in the uterus in mammals. Their work raises the possibility that some orgasms will be experienced differently than others. Oxytocin is a well-known correlate of female orgasm (Anderson & Dennerstein, 1994, 1995; Blaicher et al., 1999; Carmichael et al., 1987; Carmichael, Warburton, Dixen, & Davidson, 1994); producing anaesthetic, floating sensations while making one more trusting of others (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005; Marazziti et al., 2006; Zak, Kurzban, & Matzner, 2005). Oxytocin also contributes to uterine contractions as experienced in orgasm or in childbirth (Russell, Leng, & Douglas, 2003). Vagino-cervical stimulation has been shown to prompt oxytocin, via the Ferguson reflex, to generate a range of sexually important neurological effects (Ferguson, 1941; Komisaruk et al., 1996, 2004; Komisaruk & Sansone, 2003). Wildt et al. (1998) described the entire system as a peristaltic pump for transporting sperm with clear links to fertility (Zervomanolakis et al., 2007). Zervomanolakis et al. found, during administration of oxytocin, insuck of suitable material into that fallopian tube ipsilateral to the dominant ovary. They further observed that pregnancy rate was higher in those women in whom such ipsilateral transport could be demonstrated; this clearly suggests that this system is functional and could contribute to fitness, just as would be expected of an evolutionary adaptation. Thus, there is a good case for a proximate mechanism for potential differential sperm selection via oxytocin-rich female orgasms, orgasms which would seem fundamentally different from ones that do not involve as much oxytocin and thus do not induce, psychologically, floating sensations and physiologically, peristaltic action.

In seeking to identify different types of female orgasms, the present effort draws on data collected by Mah and Binik

(2002) on the phenomenology of female orgasms, obtained by asking women about the extent to which adjectival descriptors (e.g., general spasming, ecstasy) accurately characterized their orgasmic experience. Although they did not collect these data with the aim of identifying different types of orgasms or to advance understanding of the possible adaptive function of female orgasms, here we use their data to test the proposition that there are different types of female orgasms, with some characteristics to be associated with oxytocin release, insuck, and sperm selection. Thus, in the present study, after subjecting the Mah and Binik data to latent-class analysis in hopes of identifying interpretable types of orgasms, we conducted two sets of validation analyses. First, we asked whether any types of the heterosexually-induced orgasms identified differed phenomenologically from what is orgasmically experienced during masturbation. Because Mah and Binik only obtained data from each respondent on orgasms experienced during intercourse or during masturbation (rather than during each), this comparison, like the subsequent one, is necessarily a between-subjects one. Next, we determined whether different types of orgasms experienced during intercourse differed with respect to select aspects of heterosexual activity; we tested specific hypotheses—which are delineated when analyses and results are presented—based on thinking about oxytocin effects and sperm selection. These hypotheses involved orgasmic sensations, emotions, sexual behavior, and location of orgasm.

Method

Participants

Participants in the original Mah and Binik (2002) research, some of whose data were re-analyzed for this report, were undergraduate and graduate students. After carrying out a pilot study to develop measurements of orgasm experience, 503 women were enrolled in a subsequent investigation, most of whom were young, unmarried, and heterosexual. These women were recruited through in-class solicitation (from a

wide range of university disciplines), a psychology subject pool, and adverts posted on Internet list-servs which were likely to have student members. They were administered a questionnaire concerning either solitary masturbation ($n = 227$) or sex with a partner ($n = 276$). The solitary-masturbatory and sex-with-partner groups averaged, respectively, 23.0 ($SD = 7.3$) and 22.2 ($SD = 5.6$) years of age; 77.5/76.1% described themselves as undergraduates, 9.3/10.5% as graduates; 79.7/83.0% described themselves as primarily heterosexual, 3.1/2.5% as primarily homosexual, and 4.9/6.2% as primarily bisexual; 12.3/8.3% did not answer this question. Solitary-masturbatory and sex-with-partner group members described themselves, respectively, as 30.4/29.4% single, 36.6/47.1% with a partner but not living together, and 14.5/12.7% as living together or married, while 7.5/2.9% fitted none of these relationship categories. Further sample details can be found in the original Mah and Binik report.

Procedure and Measures

Whether assigned to one group or another, participants were asked to rate a list of 27 adjectives in terms of the extent to which each characterized their most recent (1) solitary (i.e., masturbatory) orgasm or (2) orgasm with partner, however attained. Each adjective was rated on a 6-point scale (0: does not describe it; 5: describes it perfectly). An initial list of 60 adjectives was reduced by means of a series of conceptual and empirical methods, including multiple principal component analyses presented in the original Mah and Binik (2002) report, resulting in a final list of 27 adjectives that were then used to create 10 constructs displayed in Table 1. A (mean) score (also displayed in Table 1) for each construct, which could range from 0 (lowest) to 5 (highest), was created by summing ratings given to each component item and dividing the resultant sum by the number of items included in the construct. These 10 summary orgasm-experience composite scores were used in this study.

In addition to having participants characterize their orgasm, Mah and Binik (2002) queried them about their

Table 1 Adjectival component items and composite constructs of Mah and Binik's (2002) 10 dimensions of female orgasm

Composite dimensions	Building sensations	Flooding sensations	Flushing sensations	Shooting sensations	Throbbing sensations	General spasms	Pleasurable satisfaction	Relaxation	Emotional intimacy	Ecstasy
Component adjectives	Swelling Building	Flowing Flooding	Spreading Flushing	Spurting Shooting	Pulsating Throbbing	Quivering Trembling Shuddering	Pleasurable Fulfilling Satisfying	Soothing Relaxing Peaceful	Loving Tender Unifying Close Passionate	Elated Ecstatic Euphoric Rapturous
<i>M</i>	2.44	2.44	2.57	1.52	3.33	2.99	4.08	2.53	2.36	2.72
<i>SD</i>	1.39	1.45	1.3	1.34	1.34	1.43	0.89	1.49	1.49	1.25
Absolute range	0–5	0–5	0–5	0–5	0–5	0–5	0–5	0–5	0–5	0–5

sexual behavior and relationships, with each question being responded to using a 6-point scale (0 = very low; 5 = very high). Of importance for this report were questions relating to happiness ($M = 4.31$, $SD = 0.91$), satisfaction ($M = 4.14$, $SD = 0.94$), and emotional closeness ($M = 4.47$, $SD = 0.94$) regarding the sexual relationship. Participants were asked to rate the subjective length of the orgasm on a 6-point scale (0 = very short; 5 = very long time; $M = 2.87$, $SD = 1.07$). Using a different 6-point scale (0 = very weak, 5 = very strong), participants also rated the intensity of both physical ($M = 3.65$, $SD = 1.04$) and non-physical sensations ($M = 3.65$, $SD = 1.21$) of the orgasm. Additional questions concerned how the orgasm was brought about—irrelevant for the solitary context which constituted 45.1% of the total, otherwise through oral sex (9.7%), intercourse (18.5%), masturbation by self (1.4%), masturbation by partner (11.5%) or other (13.0%). Of interest, too, were questions about where in the body the orgasm was generated; participants were offered nine (non-mutually-exclusive) binary, yes/no options (with per cent answering yes indicated): centered around outer genitals (31.8%); started in outer genitals, spread deeper (47.3%); centered deep inside (16.5%); centered in whole pelvic area only (2.8%); spread to whole pelvic area (22.5%); centered in other parts of the body only (2.6%); spread to other parts of the body (37.2%); centered in whole body (4.4%); and spread to whole body (27.2%).

Results

Identifying Types of Female Orgasm During Sex with Partner

In an effort to identify types of orgasms experienced *in the partner context*, scores on the 10 composite measures of participants in the sex-with-partner group were subject to latent class analysis, using the latent class analysis software *Latent Gold* (Vermunt & Magidson, 2000). Latent-class analysis can be considered a probabilistic extension of K-means cluster analysis, with the advantages that it is model-based, thereby affording use of statistical criteria for determining various different cluster solutions. The analyst can choose between solutions by using the Bayesian Information Criterion (BIC). The model with the lowest BIC is generally preferred because it indicates a good balance between model fit and parsimony, defined as having relatively few parameters. Models can be created through sequentially relaxing assumptions regarding the covariance structure of the indicators. Given that it had the lowest BIC of alternatives, a four-class model appeared to be the best fit for the data (see Table 2).

Table 3 presents the mean scores of the four identified orgasm types on each of the 10 composite orgasm-experience constructs. Figure 1 presents the mean scores for each of

Table 2 BIC model fit statistics for latent-class analysis of orgasmic typology in sex with partner context

No. clusters	BIC(LL)	BIC(L2)
1	14729.72	10078.80
2	14458.46	9807.54
3	14361.46	9710.54
4	14344.76	9693.84
5	14346.32	9695.40
6	14363.77	9712.85

Note: LL refers to log likelihood

component per orgasm type graphically. The 41 cases whose orgasms qualified as Type I, labelled “High Pleasure and Sensations,” described them as manifesting the most building, flooding, flushing, spurring, and throbbing sensations, as well as involving the most general spasm, relaxation, and emotional intimacy. The Type II orgasms of 159 participants were labelled “High Pleasure, Medium Sensations” and defined by high scores on components relating to pleasure but noticeably lower on scores relating to internal sensations and feelings of relaxation. Next, there were 46 Type III, labelled “Medium Pleasure and Sensations,” defined by relatively low scores in areas relating to internal sensations and in components describing pleasure and satisfaction. Finally, 30 cases described their orgasms as manifesting the least of these attributes and were labeled Type IV, “Low Pleasure and Sensation.”

Validating Orgasm Typology

Two sets of analyses were conducted to validate the fourfold typology of orgasms. The first sought to determine whether any or all the types of sex-with-partner orgasms identified in the latent-class analysis differed from solitary-masturbatory orgasms in terms of how they were described; the second set of analyses compared the four orgasms subtypes which emerged from the latent class analysis of data from the sex-with-partner group on a set of external correlates.

Partnered Orgasms Versus Solitary/Masturbatory Orgasms

Presumably, if the types of partnered orgasms have any validity, they should differ from those achieved by solitary masturbation. To test this proposition, a MANOVA was conducted to determine whether the *average* solitary masturbatory orgasm differed from the average partnered orgasm (i.e., averaged across the composite of the four types) across the 10 composite orgasm-experience constructs; ANOVAs were carried out following the MANOVA. After comparing average solitary with average partnered orgasms, we examined how each of the four identified types of partnered orgasm differed from the average solitary masturbatory orgasms on

Table 3 Means of orgasm subgroups on adjectival composite constructs

Adjectival constructs	Partner orgasms				Solitary orgasms					
	Type I		Type II		Type III		Type IV		Masturbation	
	High pleasure/sensation	High pleasure/medium sensation	Medium pleasure/sensation	Low pleasure/sensation	High pleasure/sensation	High pleasure/medium sensation	Medium pleasure/sensation	Low pleasure/sensation	M	SD
	<i>n</i> = 41	<i>n</i> = 159	<i>n</i> = 46	<i>n</i> = 30	<i>n</i> = 227					
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Building sensations	3.68 ^a	1.14	2.68 ^b	1.10	1.22 ^c	1.06	1.38 ^c	1.50	2.43 ^b	1.39
Flooding sensations	3.74 ^a	1.04	2.72 ^b	1.26	1.60 ^c	1.33	0.87 ^c	1.14	2.39 ^b	1.41
Flushing sensations	3.94 ^a	0.98	2.79 ^b	0.99	1.77 ^c	1.19	1.67 ^c	1.24	2.44 ^d	1.33
Spurting sensations	2.77 ^a	1.37	1.78 ^b	1.26	0.70 ^c	0.90	0.57 ^c	0.91	1.40 ^d	1.30
Throbbing sensations	4.18 ^a	1.05	3.69 ^{a,d}	1.01	1.99 ^c	1.38	2.20 ^c	1.44	3.35 ^d	1.30
General spasms	3.97 ^a	0.88	3.58 ^a	1.05	1.79 ^b	1.10	1.51 ^b	1.15	2.84 ^c	1.48
Pleasurable satisfaction	4.88 ^a	0.21	4.13 ^b	0.63	4.53 ^a	0.51	3.10 ^c	1.17	3.93 ^b	0.97
Relaxation	3.56 ^a	1.33	2.20 ^b	1.36	2.56 ^{b,c}	1.52	0.92 ^d	1.17	2.78 ^c	1.42
Emotional intimacy	4.40 ^a	0.60	2.81 ^b	1.13	3.54 ^c	1.06	1.15 ^d	1.03	1.59 ^d	1.28
Ecstasy	4.25 ^a	0.71	2.96 ^b	0.87	3.22 ^b	0.91	0.99 ^c	0.67	2.41 ^d	1.26
Absolute range	0–5		0–5		0–5		0–5		0–5	

Means in the same row that do not share superscripts differ at $p < .05$ in the Bonferroni post hoc test of difference

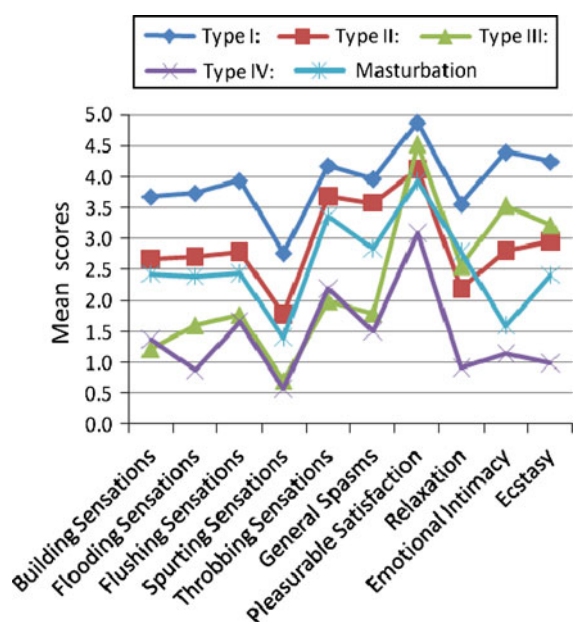


Fig. 1 Comparison of the component mean scores of the orgasm types each of the 10 composite orgasm-experience constructs. Means scores included in all comparisons are displayed in Table 3, with Table 4 presenting results of significance tests of specific group comparisons across the 10 orgasm-experience dependent constructs.

Average Solitary-Masturbatory Versus Average Sex-with-Partner Orgasms

MANOVA revealed a significant overall difference across the 10 dependent constructs reflective of orgasms experience between average solitary-masturbatory and average sex-with-

partner orgasms, $F(10, 502) = 21.03, p < .001, \eta^2 = .30$ using Wilks' lambda as a statistic. Comparisons of the average orgasm with partners and the average solitary masturbatory orgasm indicated that the latter yielded significantly less flushing sensation, general spasming, pleasurable satisfaction, emotional intimacy, and ecstasy, but more relaxation (see Tables 3, 4). No significant differences were found with respect to building, flooding, spurting, or throbbing sensations.

Comparing each Type of Sex-with-Partner Orgasm with Solitary-Masturbatory Orgasms

In order to determine whether each specific type of orgasm with a partner differed from solitary masturbatory ones on these (and other) phenomenological characterizations, four MANOVAs were conducted comparing each type with solitary masturbation across the 10 dependent constructs before carrying out follow-up ANOVAs (see Table 4) and follow-up Bonferroni comparisons across all five groups (see Table 3). MANOVAs revealed a significant overall difference across the 10 dependent constructs reflective of orgasmic experience between average solitary-masturbatory and (1) Type I orgasms, $F(10, 267) = 20.53, p < .001, \eta^2 = .44$, (2) Type II orgasms, $F(10, 385) = 14.88, p < .001, \eta^2 = .28$, (3) Type III orgasms, $F(10, 272) = 23.68, p < .001, \eta^2 = .48$, and (4) Type IV orgasms, $F(10, 256) = 9.75, p < .001, \eta^2 = .28$, all using Wilks' lambda as a statistic.

As displayed in Table 3, Bonferroni comparisons yielded many significant pairwise differences between each of the four orgasm types identified by means of latent-class analysis and the average solitary masturbatory one. Inspection of means displayed in Table 3 reveals the following differences, among many identified: High-pleasure/high-sensation orgasms with a

Table 4 Comparison of orgasm subgroups on adjectival composite constructs

Adjectival composite constructs	Type I high pleasure/sensation with partner ($n = 41$) vs. solitary ($n = 227$)			Type II high pleasure/med sensation with partner ($n = 159$) vs. solitary ($n = 227$)			Type III medium pleasure/low sensations with partner ($n = 46$) vs. solitary ($n = 227$)			Type IV low pleasure & sensation with partner ($n = 30$) vs. solitary ($n = 227$)			Solitary ($n = 227$) vs. partner ($n = 276$)		
	$F(1, 267)$	η	p	$F(1, 385)$	η	p	$F(1, 272)$	η	p	$F(1, 256)$	η	p	$F(1, 502)$	η	p
Building sensations	29.65**	.10	.01	3.52	.01	ns	31.65**	.11	.01	14.95**	.06	.01	<1	.00	ns
Flooding sensations	34.40**	.12	.01	5.71*	.02	.02	12.19**	.04	.01	32.12**	.11	.01	<1	.00	ns
Flushing sensations	46.89**	.15	.01	7.84**	.02	.01	10.04**	.04	.01	9.12**	.04	.01	3.82*	.01	.05
Spurting sensations	37.82**	.12	.01	8.33**	.02	.01	12.17**	.04	.01	11.49**	.04	.01	3.26	.01	ns
Throbbing sensations	14.75**	.05	.01	7.69**	.02	.01	40.91**	.13	.01	20.14**	.07	.01	<1	.00	ns
General spasms	22.18**	.08	.01	29.39**	.07	.01	20.84**	.07	.01	22.23**	.08	.01	4.61*	.01	.03
Pleasurable satisfaction	39.08**	.13	.01	5.57*	.01	.02	16.76**	.06	.01	18.41**	.07	.01	11.71**	.02	.01
relaxation	10.76**	.04	.01	15.89**	.04	.01	<1	.00	ns	46.63**	.16	.01	11.75**	.02	.01
Emotional intimacy	190.42**	.42	.01	94.48**	.20	.01	94.60**	.26	.01	3.17	.01	ns	141.53**	.22	.01
Ecstasy	82.88**	.24	.01	23.07**	.06	.01	17.43**	.06	.01	36.56**	.13	.01	28.03**	.05	.01

* $p < .05$, ** $p < .01$

partner were rated on all composite component variables consistently and significantly higher than solitary masturbatory ones. High-pleasure/medium-sensation orgasms were also rated significantly higher than solitary-masturbatory ones on all composite measures, with the single exception of building sensations. Interestingly, medium-pleasure/medium-sensation orgasms with a partner scored significantly lower than the solitary masturbatory ones on all measures except relaxation, with the same being true of low-pleasure/low-sensation orgasms with partner, though the exception this time involved emotional intimacy.

Further, and not surprisingly, orgasms achieved through solitary masturbation were rated as significantly less emotionally intimate than the high-pleasure/high-sensation orgasms. More interesting perhaps was that low-pleasure/low-sensation orgasms with a partner were characterised as no more emotionally intimate than those achieved by oneself. Indeed, low-pleasure/low-sensation orgasms achieved with partners (Type IV) were rated as less relaxing and ecstatic than solitary masturbatory orgasms. Additionally, in terms of spasming, both the low- and medium-pleasure orgasms achieved with partners (Types III and IV) were rated lower than solitary masturbation orgasms.

In sum, whereas some orgasms achieved with a partner—Types I and II—proved to be of higher quality than those achieved on one's own, perhaps meriting the label “good-sex orgasms,” other, seemingly “not-as-good-sex” orgasms achieved with a partner—Types III and IV—proved to be of lower quality than those experienced all by oneself. The latter observation was based also on the fact that solitary masturbation orgasms scored fairly high in terms of pleasurable satisfaction compared to high-pleasure/medium-sensation orgasms, falling only a little short of the high-pleasure/high-sensation orgasms on this measure. In short, solitary masturbatory orgasms fell roughly in the middle of the range on most measures relative to the four-class model of orgasm with a partner identified by means of latent-class analysis.

Further Validation Analyses

On the basis of the results just reported, it was concluded that rather than validating each of four distinct types of orgasms to emerge from the latent-class analysis, the most confident conclusion that could be drawn was that two more general types of orgasms during sex with a partner could be distinguished, putative “good-sex” and “not-as-good-sex” ones. Thus, Types I and II were combined to create Type A (i.e., good-sex orgasms) and Types III and IV were combined into Type B (i.e., not-as-good-sex orgasms) for use in the second stage of orgasm-typology validation. The validation analysis focusing on the additional measurements of sexual behavior and relationship characteristics involved a series of comparisons of good-sex and not-as-good-sex groups based

on hypotheses pertaining to the role of oxytocin in facilitating sperm-selecting orgasms; depending on the nature of the dependent variable, either MANOVA/ANOVA or χ^2 were used to make these comparisons.

Measures of Sensations

The first set of comparisons focused on three sensations—subjective orgasm length and intensity of physical and non-physical sensations. Subjectively long-lasting orgasms, as distinct from ones that take a long time to bring about, were predicted to occur disproportionately when orgasms were classified as “good sex.” The second prediction was that women experiencing good-sex orgasms would report higher intensity of physical sensations based on the theoretical premise that such orgasms involve internal sensations related to the peristalsis of insuck creation (Fox et al., 1970; Wildt et al., 1998; Zervomanolakis et al., 2007). The third prediction was less commonsensical, namely, that good-sex orgasms would be associated with higher ratings of intensity of non-physical sensations. The reasoning behind this prediction was that if sperm-selecting orgasms are mediated by oxytocin release, then along with the uterine contractions associated with the action of oxytocin, specific non-physical dreamy, floaty sensations that also accompany oxytocin should also be intensely experienced following these orgasms. A MANOVA showed a significant effect for orgasm type (good sex vs. not as good sex) across the three dependent variables, $F(3, 270) = 12.54, p < .001, \eta^2 = .12$ using Wilks' lambda as a statistic. Individual ANOVAs provided empirical support for all three predictions (see Table 5).

Measures of Emotions

The emotional and affective aspects of the sexual relationship in which the orgasm occurred were the focus of the next three comparisons. Commonsensically and in line with what is known about the affiliative effects of oxytocin, it was expected that good-sex orgasms would occur in the context of (1) greater happiness in and (2) satisfaction with the current relationship, and would (3) engender feelings of greater emotional closeness to the sex partner than would not-as-good-sex orgasms. A MANOVA showed a significant effect for orgasm type (good sex vs. not as good sex), $F(3, 165) = 4.063, p < .01, \eta^2 = .07$ using Wilks' lambda as a statistic. Individual ANOVAs provided empirical support for all three predictions (see Table 6).

Sexual Behavior During Orgasm

In contrast to expectations perhaps derived from Masters and Johnson's (1965) conclusion that there is one type of female orgasm brought about by stimulation of the outer genitalia, it was predicted that fewer good-sex orgasms would be brought

Table 5 Comparison of means and ANOVA of external correlates of orgasm sensation descriptions by orgasm type

External correlate:	Orgasm type (sex with a partner context)				ANOVA results		
	Type A, good-sex (<i>n</i> = 84)		Type B, not-as-good-sex (<i>n</i> = 187)		<i>F</i> (1, 269)	η	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
How long orgasm seemed to last	3.35	1.01	2.89	1.09	10.39**	0.04	.001
Intensity of physical sensations	4.04	0.87	3.70	1.00	7.06**	0.03	.008
Intensity of non-physical sensations	4.49	0.69	3.73	1.12	32.76**	0.11	.001
Absolute range	0–5		0–5				

** *p* < .01**Table 6** Comparison of means and ANOVA of external correlates of relationship descriptions by orgasm type

External correlate	Orgasm type (sex with a partner context)				ANOVA results		
	Type A, good-sex (<i>n</i> = 61)		Type B, not-as-good-sex (<i>n</i> = 105)		<i>F</i> (1, 164)	η	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Happiness with current relationship	4.64	0.58	4.26	0.86	9.379**	0.05	.003
Satisfaction with current relationship	4.49	0.65	4.07	0.89	10.612**	0.06	.001
Emotional closeness to sexual partner	4.70	0.53	4.36	0.97	6.478*	0.04	.012
Absolute range	0–5		0–5				

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

about through stimulation of outer genitalia, that is, through oral sex or masturbation (in the presence of a partner) rather than via intercourse. To test this hypothesis, the variable pertaining to type of sex associated with orgasm was recoded, distinguishing all those resulting from intercourse from all others, after dropping the “other” category. Thus, the three orgasm-through-non-intercourse conditions (i.e., oral stimulation, masturbation by self or by other) were combined on the presumption that they involved stimulation to outer genitalia only. As each participant was only reporting on a single orgasm, χ^2 analysis was appropriate. A 2 (Orgasm Type: A vs. B) \times 2 (Sexual behavior: Intercourse vs. Non-intercourse) χ^2 analysis with the 207 (of 276) cases of partnered orgasm on whom data were available revealed no significant difference in the mode of bringing the orgasm about, $\chi^2(1, n = 207) < 1$. Thus, it did not prove to be the case that good-sex orgasms were more likely to occur in the context of intercourse than those classified as not-as-good-sex orgasms. It is worth mentioning that a number of orgasms (*n* = 69) could not be coded as intercourse/non-intercourse because the mode of bringing the orgasm about was only described as *other* than those listed.

Location of Orgasm

If it is true that some orgasms occur through activation of sensory tissue deep inside, then it follows that questions about where the orgasm was centered should follow a predictable pattern, with good-sex orgasms more likely to be centered on the whole body. This would be consistent with the action of

oxytocin in terms of creating general well being and deep peristaltic effects. The data proved consistent with the prediction, $\chi^2(1, n = 276) = 19.46, p = .005$. Whereas 15% of good-sex orgasms proved to be centered on the whole body (13/87), this was true of only 1.6% of not-as-good-sex orgasms (3/189).

Discussion

Although it is widely appreciated that female orgasms are not all the same, varying in a number of ways, little systematic evidence of such has been published to date. Thus, the first goal of the present study was to determine whether, using data collected for another purpose, distinct *types* of orgasms experienced during sex with a partner could be identified. It was expected that orgasms suggested by an evolutionary analysis to discriminatively select sperm might prove identifiable and distinct from others not shaped by natural selection for this specific purpose. The second aim of the research reported herein was to validate the different types of orgasms identified by means of latent-class analysis, using data collected on partner relationships and others aspects of the sexual experience.

Identifying Types of Orgasms with Partner

The fact that four types of orgasms emerged from the atheoretical latent-class analysis should not be read to mean that these are the only types of orgasms with a partner that are

experienced. Because the analysis was based on data collected for another purpose, it cannot be presumed that the same four-class typology would emerge were other studies done using lists of orgasm descriptors different than those considered here. In sum, it would be a mistake to reify the four types of orgasm identified, at least until they are replicated in future work.

Of interest nevertheless was that the four types discerned seemed meaningfully interpretable in terms of their face validity. Most important, perhaps, is that two merited the label “good sex” and two the label “not-as-good-sex,” though it needs to be remembered that this work did not focus upon sex with partner that did not result in an orgasm. Thus, the two high pleasure and high or medium sensation orgasms, Types I and II, would qualify for the former term and the two medium and low pleasure orgasms for the latter.

Validating Orgasm Typology

Because, as indicated above, the types of orgasm identified were constrained by the data available for analysis, it was essential to validate the typology before perhaps importing too much meaning into it beyond what could be inferred in terms of face validity. Toward this end, the first such effort involved determining whether the four types of orgasm with partners differed, first collectively, then individually, from how solitary masturbatory orgasms were characterized. The second set focused on external correlates of two higher-order sets of orgasms with partner.

Validating Typology of Orgasms: With Partner Versus by Oneself

Not only did it prove to be the case, as common sense would lead one to expect, that, on average, orgasms achieved with partners scored more highly in terms of pleasure and sensation than orgasms without partners but, far more interesting, perhaps, was that this was not entirely the case. Recall that those two types of orgasms (I, II) that could be regarded as evidence of “good sex” consistently outscored solitary masturbatory orgasms on nine of the ten composite measures of orgasm experience, clearly showing them to be more pleasurable. But, at the same time, orgasm types III and IV scored lower on nine of 10 adjective ratings than solitary masturbatory orgasms. Apparently, at least in terms of the orgasm experience itself, sometimes sex with oneself is more physically pleasurable than sex with a male partner, even when the latter provides sufficient sexual arousal to generate an orgasm. Fundamentally, these data would seem to contradict the Masters and Johnson (1965) view that masturbatory orgasms are the same as those achieved through intercourse, especially in terms of pleasure and sensation.

Validating Typology of Orgasms: External Correlates

The first stage of empirical validation of the four-type typology derived from the latent-class analysis and involving comparison with masturbatory orgasms suggested that it made more sense to work with two types of orgasms with partner (good sex, not as good sex) rather than all four when it came to further validation analysis. Therefore, a series of predictions were tested using data collected by Mah and Binik (2002) on features of the sexual encounters and relationships that were not included in the latent-class analysis of adjectives describing the orgasms experienced. These were informed by common sense as well as the evolutionary view that orgasms shaped by natural selection for purposes of sperm selection—and likely involving oxytocin release—should be distinguishable from others, especially in terms of the psychological and physiological sensations associated with them.

Women reported significant variation in their orgasms in terms of emotional and physiological components in addition to their scaling them in terms of pleasure. Some of the phenomenology described, especially in terms of general spasming, whether the whole body was involved, and intense non-physical sensations proved consistent with known effects of oxytocin. Such good-sex orgasms could not be distinguished, however, from less-good-sex ones in terms of whether the orgasms occurred in the context of intercourse.

Even though the fact that spasming proved more characteristic of good-sex (Type A) than less-good-sex orgasms (Type B) is consistent with insuck (Fox et al., 1970; Wildt et al., 1998), it would be mistaken to infer that this research has documented insuck per se or the hypothesized effects of oxytocin—or confirms an evolutionary interpretation of certain orgasms as potential sperm selecting ones. Nevertheless, the fact that women described their orgasms with such variability might be one reason why scholars have hitherto been divided regarding the nature and function of female orgasm. There is now reason to suspect that scholars have not always been describing the same thing.

Now that a prima facie case for the distinguishing of different types of female orgasms during sex with a partner has been made, with some consistent with, though not confirming, a sperm-selecting insuck process perhaps shaped by natural selection and involving oxytocin release, additional work is needed to determine whether variation in female orgasms is linked to qualities of the partner, especially fitness-related ones (e.g., bilateral symmetry). It will also be important to determine, with more precise measurements than available in this inquiry, whether insuck or oxytocin release is actually involved. Dating back as far as Freud (1932), much research has focussed on female inability to orgasm, especially through sexual intercourse. An evolutionary analysis would seem to shift the focus to female orgasm as a potential response to male quality. A key

area of interest is therefore whether women experience different types of orgasm with different partners. Research addressing this issue would complement and extend that showing that the frequency of female orgasm is associated with partner genetic quality (Thornhill et al., 1995) or resources (Pollet & Nettle, 2009). Indeed, just because there exists evidence that orgasmic capacity is heritable (Dawood, Kirk, Bailey, Andrews, & Martin, 2005; Dunn, Cherkas, & Spector, 2005) and related to enduring psychological characteristics of females (Burri, Cherkas, & Spector, 2009; Cohen & Belsky, 2008) does not mean that partner characteristics are unimportant.

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