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Clitorally Stimulated Orgasms Are Associated With Better Control of Sexual Desire, and Not Associated With Depression or Anxiety, Compared With Vaginally Stimulated Orgasms

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ABSTRACT

Introduction: Most women report that clitoral stimulation is an integral aspect of their orgasm experience. Thus, recent claims that vaginal stimulation and vaginally generated orgasms are superior to clitoral stimulation and clitorally generated orgasms pathologize most women and maintain a clitoral vs vaginal dichotomy that might not accurately reflect the complexity of women's sexual experience.

Aim: To have women report on their experienced source of orgasm, including combinations of vaginal and clitoral stimulation, the solo or partnered context of the stimulation, and the intensity of the orgasms from different sources and to predict indicators of mental health and sexual health using the orgasm source.

Methods: Eighty-eight women 18 to 53 years old answered detailed questions about their usual and recent orgasm experiences, sexual history, depression, and anxiety. Then, they viewed a series of neutral and sexual films. They were instructed to increase or decrease their sexual arousal or respond "as usual" to the sexual films. They reported their sexual arousal after each film.

Main Outcome Measures: Outcomes assessed included mental health (depression and anxiety) and sexual health (orgasm quality, ability to regulate sexual response to sex films). Reported sexual arousal was analyzed for the regulation task.

Results: Most women (64%) reported that clitoral and vaginal stimulation contributed to their usual method of reaching orgasm. Women who reported that clitoral stimulation was primarily responsible for their orgasm reported a higher desire to self-stimulate and demonstrated greater control over their self-reported sexual arousal. The primary stimulation site for orgasm was unrelated to measurements of depression or anxiety despite sufficient statistical power.

Conclusion: Most women reported that clitoral and vaginal stimulation is important in orgasm. Women experience orgasms in many varied patterns, a complexity that is often ignored by current methods of assessing orgasm source. The reported source of orgasm was unrelated to orgasm intensity, overall sex-life satisfaction, sexual distress, depression, or anxiety. Women who reported primarily stimulating their clitoris to reach orgasm reported higher trait sexual drive and higher sexual arousal to visual sexual stimulation and were better able to increase their sexual arousal to visual sexual stimulation when instructed than women who reported orgasms primarily from vaginal sources.

Key Words: Orgasm; Clitoris; Self-Regulation; Anorgasmia; Depression; Anxiety

INTRODUCTION

Debate exists as to whether female orgasms can be generated separately by the vagina and by the clitoris and what advantages might exist to one type or the other.[1–3] These include difficulties making clear physiologic distinctions between clitoral and vaginal orgasm,[4–6] identification of better sexual health in those reporting clitorally induced orgasm,[7] and failures to replicate reported advantages of vaginal orgasms.[8] Specifically, it was hypothesized that "psychological immaturity (psychosexual immaturity, with its concomitant greater use of

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immature defense mechanisms) could lead to inhibition of frequency and appreciation (including vaginal orgasm) of penile-vaginal intercourse (PVI) in favor of other or no sexual behaviors, with noxious consequences for mental health and intimate relationships."[9(p339)] "Real vaginal orgasms" were distinguished from "masturbatory clitoral orgasms," including stimulation of the clitoris during coitus, and related to "a variety of psychiatric disorders" supported by "early psychoanalytic theories." Such reports have proved iatrogenic, because women who desire clitoral stimulation to reach orgasm during partnered interactions report feeling such stimulation with a partner is "embarrassing" and "uncomfortable" to request.[10] The present study tested the psychometric properties of women's self-reported orgasm and orgasm source. Then, the relations between self-reported orgasm source and different health indicators were tested. The hypothesis tested was that women who stimulate their clitoris to reach orgasm during coitus will exhibit poorer mental health than women who reach orgasm through vaginal stimulation alone.

The importance of clitoral stimulation for female orgasm has long been discussed.[11] When women are asked how they reach orgasm, they overwhelmingly report stimulating their clitoris.[12] Clitoral stimulation results in more consistent orgasms during solo masturbation, but the clitoral stimulation and orgasm consistency decrease when a male partner is introduced.[13,14] The investigators speculated that this was due to female reticence to request clitoral stimulation. Women who continue to stimulate their clitoris when with a partner are more likely to be orgasmic with their partner.[15] When masturbating for a laboratory study, all 26 women reported using clitoral stimulation as their primary means of reaching orgasm.[16] Intersex surgeries in children that involve the clitoris also increase their difficulty reaching orgasm as an adult.[17]

Vaginal and clitoral orgasms have not been differentiated physiologically. However, when the vaginal opening is extended by a phallus, the surrounding tissues are stretched and respond reflexively.[18] In other words, it appears impossible for the penis to enter the vagina without also moving structures of the clitoris. Of course, other structures such as the periurethral glans also are likely stimulated during vaginal penetration. The reverse, that is, whether any clitoral stimulation necessarily contributes to some vaginal stimulation, has not been investigated to our knowledge. Because intravaginal reflexive contractions increase during sexual arousal,[19] one could speculate that clitoral stimulation similarly promotes vaginal motility. Scientists disagree on the criteria for identifying female orgasm,[20] making it difficult to imagine any consensually acceptable physiologic test to differentiate the source of orgasm at this time.

The relation of the clitoris to the vaginal opening also differs among women and within individual women depending on their current state, which could affect women's ability to report on this experience in a consistent way. Women whose clitoris is closer to the vaginal opening are much more likely (moderate to large effect sizes) to report consistent (≥67% of occasions) orgasms from intercourse.[21] Also, anorgasmic women typically have a smaller glans clitoris.[22] Clitoral body volume also grows largest during the peri-ovulatory phase[23] of the cycle, probably reflecting higher estradiol levels. These individual anatomic differences could be important if, for example, some women experience orgasm during penetration from clitoral stimulation, whereas others experience orgasm during penetration from vaginal stimulation.

Women tend to agree that clitoral stimulation facilitates orgasm experience. In a large sample (N = 749) of women, 94% indicated clitoral stimulation could result in orgasm and 70% reported that deep vaginal stimulation could result in orgasm.[24] This is consistent with women's reports that stimulation of the clitoris is the easiest method for generating an orgasm.[25] In fact, vaginal intercourse ranks after manual clitoral stimulation or oral sex for its ability to contribute to an orgasm from a partner.[26] These reports are supported by structural evidence, in which the clitoral glans appears to be an analogous structure to the glans penis as characterized by the density of difference types of receptors (eg, mechanoreceptors).[27] In summary, most women report that clitoral stimulation is important to generate an orgasm.

Although there are objective tests for the presence of orgasm, there are no objective tests of orgasm source. However, women clearly are willing to answer questions about the source of their orgasm. Orgasm "source" is complex and might refer to different aspects of the sexual experience: the area of stimulation that triggers orgasm, the area that feels most sensitized during sexual arousal, the area in which orgasmic sensations are first felt, the area that feels like the epicenter of motor responses to orgasm, or something else. Also, although vaginal and clitoral differences are most commonly discussed, many areas of the body could be sensitized to provoke orgasm.[6] (Table 1) Women are typically asked to report what proportion of orgasms they have had after stimulation of different genital areas.[28] Even without clear physiologic correlates, these self-report data could reflect important subjective experiences of orgasm.

The present study had two goals. The first goal was to test some of the psychometric properties of questions that women are commonly asked to characterize their orgasm source. This included identifying the most common areas (if any) thought to contribute "most" and "next most" to orgasm, how strongly the most recent orgasm source corresponded with the most usual orgasm source, and women's confidence that they have had orgasms. The second goal was to test whether women who report experiencing orgasm primarily by clitoral stimulation, compared with women who report experiencing orgasm primarily by vaginal stimulation, exhibit superior mental health (anxiety, depression), sexual health (sexual satisfaction, distress about sex, ability to control sexual feelings), and/or subjective orgasm quality.

Table 1. Demographic characteristics of participants

Ethnicity, n (%)*	
Hispanic	40 (45.5)
White (not Hispanic)	34 (38.6)
Other	13 (14.8)
African American	1 (1.1)
Sexual orientation (self-identified), n (%)*	
Heterosexual	73 (83.0)
Bisexual	13 (14.8)
Asexual	2 (2.3)
Homosexual	0 (0)
No sexual intercourse partners to date, n (%)*	6 (6.8)
Relationship status, n (%)*	
Monogamous	31 (35.2)
Non-monogamous	11 (12.5)
No relationship	46 (52.3)
Orgasm recency, n (%)*	
Earlier today	6 (6.8)
Yesterday	12 (13.6)
Day before yesterday	8 (9.1)
3 d to 1 mo previously	30 (34.1)
>1 mo previously	14 (15.9)
Confidence experienced orgasm in lifetime, n (%)*	
Very sure	49 (55.7)
Pretty sure	12 (13.6)
Not sure	13 (14.8)
Probably do not experience orgasms	9 (10.2)
Definitely do not experience orgasms	4 (4.5)
Experiences multiple orgasms, n (%)*	25 (28.4)
Primary cause of most recent orgasm, n (%)*,†	
Vaginal penetration alone	29 (33)
Clitoral stimulation‡	40 (45.5)
Do not have orgasms	15 (17.0)
Another method	3 (3.4)
Stimulation area that usually contributes most to orgasm, n (%)*	
Very tip (glans) of clitoris	29 (14.9)
Skin over or above clitoris	20 (10.3)
Side of the vagina toward my belly (might include G-spot)	15 (7.7)
I don't know	6 (3.1)
Nipples	5 (2.6)
Labia	2 (1.0)
Side of the vagina toward my back	1 (0.5)
Opening of my vagina	2 (1.0)
Somewhere else	2 (1.0)
I don't experience orgasms	10 (5.2)
Age (y), mean (SD)	22 (7.3)
Sexual intercourse with partners (lifetime), mean (SD)	7.3 (9.5)
Sexual intercourse 1 time only (lifetime), mean (SD)	3.1 (6.9)
Sexual intercourse frequency, mean (SD)§	2.9 (1.5)
Masturbation frequency, mean (SD)§	2.2 (1.2)
Frequency of viewing erotica (h/wk), mean (SD)	1.7 (3.0)
Centers for Epidemiological Studies—Depression, mean (SD)‖	15.6 (10.3)
Sexual Desire Inventory, mean (SD)	1.0 (1.8)
Desire for sex with partner¶	43.1 (13.6)
Desire for solitary sex#	9.0 (6.0)
Female Sexual Function Index—Orgasm, mean (SD)**	3.1 (2.1)

*Values might not sum to total due to non-response.
†Analyses included only those who reported their most recent orgasm as caused primarily by clitoral or vaginal stimulation.
‡Includes clitoral stimulation alone or in combination with vaginal stimulation.
§2 = "one to three times a month"; 3 = "one time a week."
‖A suggested cutoff of 16 for depression has been suggested.[66]
¶Range = 8 to 70.
#Range = 3 to 26.
**Equivalent to a weighted score of 1.24, where 2.98 or lower was average in a sample with orgasmic dysfunction.[67]

One part of the protocol tested women's ability to change their own feelings of sexual arousal. In emotion research broadly, the ability to flexibly increase and decrease an emotion is a positive skill that supports a person effectively managing her affect[29,30] and is related to emotional intelligence.[31] Such flexibility also is related to better executive functions.[32] Relatedly, the ability to increase and decrease sexual arousal is associated with lower trait sexual drive,[33] suggesting that those with lower sex drive are better able to control their responses to visual sexual stimulation. Taken together, the ability to regulate one's own feelings of sexual arousal could be considered a desirable skill. Thus, a common emotion regulation task using sex films was included in the present study to assess whether orgasm source was related to better self-control of sexual arousal.

AIMS

The study had two aims. The first aim was to better characterize women's reports of their primary and secondary sources of their orgasms. The second aim was to test whether women who report mainly clitorally generated orgasms differed in mental health, sexual functioning, or orgasm occurrence from women who report mainly vaginally generated orgasms.

METHODS

Participants

Participants (N = 88) were recruited through a confidential web service from psychology classes at the University of New Mexico in Albuquerque. They were required to have normal

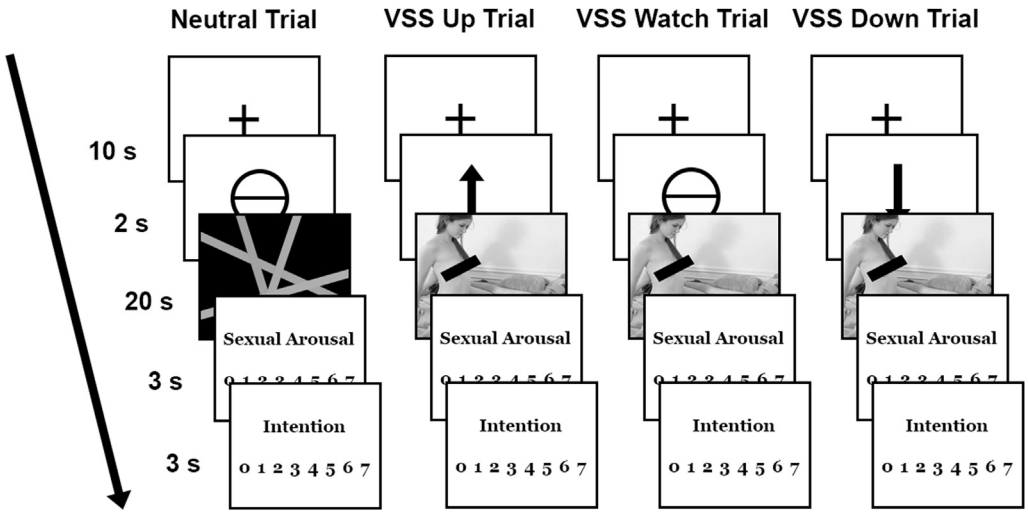

Figure 1. Protocol and four trial types in the sexual regulation task.

(or corrected-to-normal) vision and hearing appropriate for viewing films. Most participants identified as heterosexual, were sexually experienced, not currently in a relationship, and reflected the ethnic composition of the Albuquerque area, with mostly Hispanic and white (not Hispanic) participants (Table 1). No one declined to participate after reading the informed consent statement. All procedures were approved by the institutional review board at the University of New Mexico.

Regulation Task

Computerized training was provided on the regulation task using non-sexual stimuli (films of people eating, instructed to regulate hunger). Participants were instructed to view each film the entire time (20 seconds) it was on the screen and to refrain from stimulating themselves sexually. An instruction was given for 2 seconds immediately before each sexual film (Figure 1). Participants saw a circle, an upward arrow, or a downward arrow, which indicated that they should simply watch, increase their sexual arousal, or decrease their sexual arousal to the sexual film, respectively. They were not restricted to the cognitive or affective strategies they used to alter their responses, because the interest was in examining usual abilities to alter responses.

Films were shown on a 1,280 × 1,024 cathode ray tube monitor with a 75-Hz refresh rate and 32-bit color depth at a distance of 1 m using Presentation (Neurobehavioral Systems, Berkeley, CA, USA). Participants were shown 30 different sexual films. Regulation instruction was pseudo-randomized to ensure that preferences for certain films would not interact with regulation instruction. Furthermore, participants did not receive the same instructions more than three times consecutively. After watching every film, participants rated the level of how "sexually aroused" they felt on a seven-point Likert scale from "not at all" to "very." Self-rated sexual arousal was the primary dependent variable.

Film Stimuli

Two types of films were used: neutral and sexual. The neutral film was previously standardized[34] not to evoke any particular emotional state. It depicts neon lines appearing against a solid black background at a slow rate of speed in random directions. Sexual films were selected to be sexually arousing to men and women. Two films were used from a previous study for scientific continuity.[35–37] Twenty-eight additional sexual films were selected from the Adult Video Network Award winners for Best Film and Best Scene[38] for a total of 30 sexual film clips. All sexual films showed one man and one woman having consensual, vaginal intercourse, included their faces in the opening screen, and did not show kissing or oral sex. Sexual films did not include infrequent behaviors, such as bondage and anal intercourse.[39] All films were edited to 20 seconds in length. This brief presentation period was used to replicate previous studies of self-regulation to emotional films that ranged from 15[40] to 39[41] seconds. The same neutral film appeared after every sexual film, for a total of 60 film clips in the task.

Questionnaires

Questionnaires were included to assess mental health and sexual functioning. Specific questionnaires were included to assess the two most common Axis I problems, depression and anxiety. Sexual health was assessed as the presence of sexual problems and the level of sexual desire to characterize the sample.

Centers for Epidemiological Study—Depression Scale

The Centers for Epidemiological Study—Depression Scale (CES-D)[42] is a 20-item questionnaire that assesses symptoms of depression by asking participants to rate how often they had felt or behaved certain ways (eg, "I was bothered by things that usually don't bother me."). Response options ranged from "rarely or none of the time (less than one a day)" to "most or all of the time (5—7 days)." The CES-D is a very widely used measurement of depression in adolescents[43] to older adults.[44]

Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI)[45] is a 21-item questionnaire that assesses anxiety symptoms. Women were asked to rate how much they were bothered by each symptom (eg, "unable to relax," "fear of the worst happening") in the past month from "not at all" to "severely—it bothered me a lot." The BAI correlates with many other measurements of anxiety.[46] The BAI appears less contaminated with depression symptoms than other common measurements of anxiety[47] in non-symptomatic, college samples.[48] It is moderately reliable (r = 0.67) over an 11-day delay period.[34]

Personal and Sexual History

This questionnaire included questions about a participant's background, sexual behaviors, and sexual feelings. Sexual history questions (eg, number of lifetime sexual intercourse partners) were from the National AIDS Behavior Survey.[49]

Specifically relevant for the present study, participants answered many questions about their orgasm history and preferences. These included, "Which of these best describes what you were doing that caused this last orgasm?" Options included a list of sexual behaviors (eg, "with a partner during intercourse alone," "with a partner during intercourse while also stimulating myself with my hand," "another method not listed here," etc), which were recoded to "vaginal only" if the participant reported that she experienced orgasm through intercourse alone (Table 1). All other methods that included clitoral stimulation, including stimulating the clitoris during penetration, were coded as including "clitoral" stimulation.

To examine the relevance of questions sometimes used to characterize orgasm source,[28] women were asked, "When you experience orgasm, please select the top two body areas that contribute the most to your experiencing orgasm when they are stimulated." A labeled photograph of the vulva was provided to ensure that women were familiar with the available options (Figure 2). All response options are listed in Table 1. For analyses, the clitoral hood and clitoral glans were coded as a "clitoral" source, and any area of the vagina was coded as a "vaginal" source. All other responses were excluded from these analyses because they were too infrequent for analysis (Table 1). The vaginal "opening" was not coded as "vaginal" because of concerns that the opening might cause more obnubilation and pareidolia in contrast to the clitoris.

Women also were asked how sure they were that they experience orgasms. The language was, "Some people get very sexually aroused, but are not sure that they have ever had an orgasm. How sure are you that you experience orgasms?" They could respond "very sure," "pretty sure," "not sure," "probably do not experience orgasms," and "definitely do not experience orgasms." This question assesses whether the women themselves have confidence in describing their own orgasm experiences.

Female Sexual Distress Scale—Revised

The Female Sexual Distress Scale—Revised (FSDS-R)[50] consisted of 13 items and was used to compare the level of sexual distress between women with vaginally stimulated orgasms and women with clitorally stimulated orgasms (eg, "How often did you feel distressed about your sex life?" with responses from "always" to "never"). The scale exhibited a high internal consistency ($\alpha = 0.93$) and test-retest reliability (r = 0.80 for frequency and 0.83 for intensity) over 4 weeks.[50] The scale was used as a general measurement of satisfaction with sexual functioning.

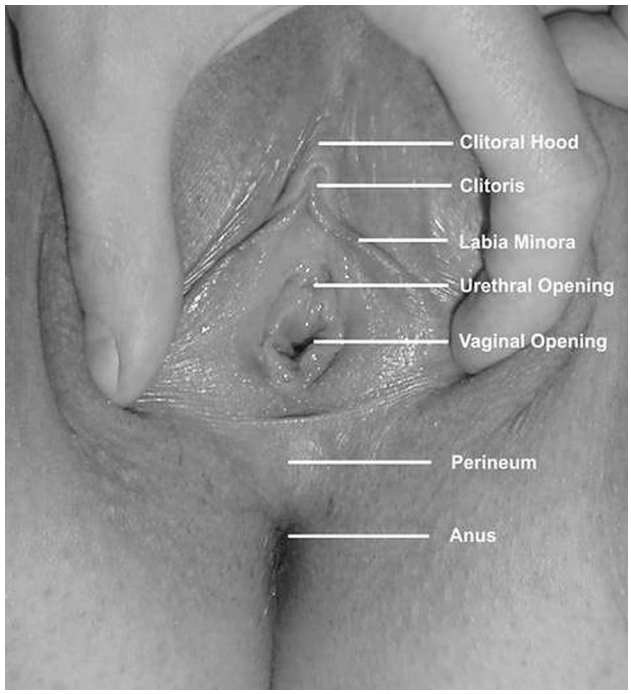

Figure 2. Labeled photograph shown to women to ensure a common understanding of genital anatomy (in color in study).

Sexual Desire Inventory

The Sexual Desire Inventory (SDI)[51] is a 14-item questionnaire that measures the strength and frequency of a person's sexual desire. It is composed of two subscales: solitary (eg, "How strong is your desire to engage in sexual behavior by yourself?") and dyadic (eg, "When you first see an attractive person, how strong is your sexual desire?"). They measure desire for masturbation and partnered sexual activity, respectively. The scale has a high internal consistency ($\alpha = 0.96$) and test-retest reliability (r = 0.76) over a 1-month period. The SDI is included as an indicator of the role of orgasm type in sexual motivation, where different types of stimulation might be pursued based on, or as a reflection of, the strength of the sex drive.

Procedure

The study was conducted in a private, windowless testing room at the Mind Research Network (Albuquerque, NM, USA). After completing the informed consent process, participants completed the questionnaires described earlier. At completion of the questionnaires, they completed the sexual arousal regulation

task. They wore headphones to listen to the videos and to increase their sense of privacy during the task. The participants received the instructions describing the task visually on the computer screen and audibly in the recording to ensure the participants' understanding. When the participants finished receiving the instructions, the experimenter verbally answered any other questions and then left the room. The participant was given a standard keyboard to record her level of sexual arousal and pleasantness during the tasks. After completing the regulation task, instructions appeared on the screen instructing the participant to alert the researcher. The researcher debriefed the participants, answered any questions they had, and awarded compensation in the form of participation credit for their coursework.

MAIN OUTCOME MEASURES

The data collected from the questionnaires and video tasks were analyzed in relation to the participants' most recent orgasm by clitoral or vaginal stimulation. Recall (see earlier) of the most recent orgasm was used, because state effects on the sexual arousal task were of interest. The relation between the most recent and the "usual" orgasm source is reported. A null-hypothesis testing approach was used ($\alpha = 0.05$). The exact P value is reported except when P values were less than .001.

RESULTS

Questionnaires exhibited high internal consistency using the Guttman $\lambda 6$,[52] a conservative estimate,[53] for the BAI (0.92), CES-D (0.92), SDI (0.94), and FSDS-R (0.92). Women reported significantly higher sexual arousal after viewing the sexual film (mean = 3.6 of 7, SD = 1.6) than the neutral film (mean = 1.8, SD = 0.8, $t_{65} = 11.45$, $P < .001$, d = 1.4). This indicated that the film task worked as intended; thus, the planned analyses for the film test were conducted (see below).

Validity and Reliability of Self-Report Measurement

Three aspects of self-reported orgasm source were examined. These included how often women indicated a primary and secondary source that contributed to their orgasm, how sure women were that they have orgasms, and reliability of the source reports (most recent vs usual orgasm source). First, women who reported that the primary area that usually caused their orgasms was vaginal or clitoral were significantly more likely to report that the secondary area of stimulation that contributed to their orgasm was the other (vaginal or clitoral) area ($\chi^2_1 = 7.58$, $P = .007$ by Fisher test, $\Psi = 0.42$; Table 2). Second, women's ratings of how sure they were that they had experienced orgasm in their lifetimes differed significantly from a rating of "sure" (women were classified as being "sure" if they responded that they were "very sure" they experience orgasms or "definitely do not experience orgasms"; $t_{86} = 6.58$, $P < .001$; Table 1), indicating that women are frequently not sure that they are correctly interpreting their orgasm experience (Table 1). Third, the area of stimulation that women said caused their most recent orgasm also was significantly likely to be the same area of stimulation that they reported contributed the most to their orgasms ($\chi^2_1 = 10.92$, $P = .002$ by Fisher test, $\Psi = 0.43$; Table 3). However, 16 women (27%) indicated a difference between their most recent and their usual orgasm source.

Table 2. Women who report usually experiencing clitoral or vaginal areas as a primary source are likely to identify the other area as a secondary source of their orgasm

	Primary source		
Secondary source	Clitoral	Vaginal	Total*
Clitoral	15	13	28
Vaginal	15	1	16
Total	30	14	44

*Missing data are due to women who report non-clitoral or non-vaginal sources of orgasm (eg, nipple).

Differences in Functioning by Primary, Last Orgasm Source Reported

Next, the relations of orgasm source with mental and sexual health indicators were tested. First, general indicators of mental health were examined. Neither depression (CES-D) nor anxiety (BAI) scores were predicted by the women's source of their most recent orgasm. Second, indicators of sexual health were examined. Women whose most recent orgasm was reached mainly by clitoral stimulation reported more sexual arousal to the sexual films that they were told to just watch ($t_{52} = -2.11$, $P = .04$, d = 0.59; clitoral mean = 4.02, SD = 1.5; vaginal mean = 3.11 of 7, SD = 1.6) than the women whose most recent orgasm was reached mainly by vaginal stimulation. However, women reporting primarily clitoral stimulation did report continued sexual arousal that also was higher after the neutral film that followed the sexual films (mean = 2.75, SD = 1.3) compared with women who reported their latest orgasm was from vaginal stimulation (mean = 2.06, SD = 1.0, $t_{53} = -2.19$, $P = .03$, d = 0.59). For films that elicited an increased sexual response, the clitoral group also reported higher sexual arousal levels ($t_{52} = -2.09$, $P = .04$, d = 0.59; clitoral mean = 4.28, SD = 1.5; vaginal mean = 3.33, SD = 1.7). The ability to

Table 3. Consistency of orgasm source comparing "most recent" with "usual" orgasm source

	Usual source		
Most recent source	Clitoral	Vaginal	Total*
Clitoral	32	3	35
Vaginal	13	11	24
Total	45	14	59

*Missing data are due to women who report non-clitoral or non-vaginal sources of orgasm.

decrease sexual response did not vary as a function of orgasm source. Women who reported that clitoral stimulation contributed more to their orgasm also reported a higher desire for solitary sexual activity than women who reported that vaginal stimulation contributed more to their orgasm (clitoral mean = 11.25, SD = 6.4 vs vaginal mean = 6.35, SD = 3.4, $t_{57} = -3.75$, $P < .001$, d = 0.96).

Characteristics of the orgasm that varied by their reported source were compared. Orgasm source (clitoral vs vaginal) did not predict self-reported orgasm intensity (clitoral mean = 3.91, SD = 1.4; vaginal mean = 3.18, SD = 1.7; $t_{55} = -1.70$, $P = .1$, d = 0.48), overall sex-life satisfaction (clitoral mean = 3.56, SD = 2.3; vaginal mean = 2.96, SD = 2.0; $t_{57} = 1.049$, $P = .3$, d = 0.28), or sexual distress scores (FSDS-R; vaginal mean = 11.05, SD = 8.7 vs clitoral mean = 10.85, SD = 7.9, $t_{53} = 0.085$, $P = .933$, d = 0.02).

DISCUSSION

Some have suggested that orgasms generated by clitoral stimulation are associated with inferior sexual, emotional, and relationship functioning.[1] The results from the present study suggest a more complex and nuanced picture of female orgasm that goes beyond the clitoral vs vaginal dichotomy in two key ways. First, these data clarify that the way in which orgasm source has been assessed ("clitoral or vaginal?") is misleading, because most of our participants who reported a vaginal or clitoral orgasm source as the primary site then reported the other as the secondary site. Women experience orgasms in many varied patterns, a complexity that is often missed by current methods of assessing orgasm source. Second, women whose most recent orgasm was caused primarily by clitoral stimulation indicated better sexual functioning in several domains. Specifically, these women reported higher levels of sexual arousal when watching sexual films, were better able to increase their sexual arousal when instructed, and reported a higher motivation to masturbate. Higher sexual arousal reports to films have been consistently linked to better sexual function.[54] They also did not differ in their general mental health (depression or anxiety).

Self-reported orgasm source data might be useful in women sure of their orgasm experience who have experience with clitoral and vaginal orgasms. However, these data suggest that women feel compelled to report a source for their orgasm when asked, including women who are unsure that they even experience orgasms. No physiologic data have yet demonstrated differences to support self-reported differences in orgasm source. However, most women still selected an area of stimulation to describe the source of their orgasm. In this rather complex picture, it is understandable that significant confusion could occur that would make attribution of orgasms to a particular area of stimulation difficult.

Reframing the vaginal vs clitoral distinction might be useful in future examinations of female sexual function. Most women in this study reported that vaginal and clitoral stimulation contributed to their orgasm(s). In fact, only one woman indicated that her vagina was the primary and secondary area that contributed to her orgasm. Put another way, asking women to make a forced choice between clitoral and vaginal orgasm might be similar to asking men to make a forced choice between a "penile glans" or a "penile shaft" orgasm.[8] Many men report that their shaft and glans are important in orgasm,[55] just as many women in our study reported that the clitoris and the vagina are important as primary or secondary sources of orgasm. Men also were surveyed in this study (full results to be reported elsewhere). Of those 99 men who reported having orgasms, the primary stimulation site was reported as the "very tip of my penis" by 35, "just under the tip of the penis" by 31, and the "shaft of the penis" by 24 (others cited other sites of stimulation, such as "testicles"). Also, the preference for the site of stimulation can change with the partner and the sexual activity. Furthermore, the preference might shift as perception changes with sexual arousal, such as the shifts seen in pain thresholds[16] and sensitivity[56] with increasing sexual arousal. Some have suggested shifting the discussion to distinguish whether the external or internal clitoral structures are involved, because evidence of uniquely "vaginal" stimulation could not be identified by sonography.[18] Others have suggested shifting to a description of "genital" orgasms, possibly distinguished from clitoral, given the many structures stimulated by intercourse.[6] The present data appear consistent with these views.

Although self-report data of orgasm were analyzed in this study, they appear of limited utility. In this study, a substantial number of women were unsure of whether they were experiencing orgasm. Physiologic studies of orgasm in women rarely verify the presence of orgasm through any objective means,[57] despite the availability of such physiologic methods as anal or vaginal pressure monitors,[58] or through the use of direct observation as in studies of men.[59] Surprisingly, even very invasive spinal surgery interventions to improve anorgasmia continue to rely on self-reported orgasm events alone as an outcome.[60] Studies claiming to analyze the locus of orgasm in women might not be tapping into real physiologic distinctions among orgasm types. In this study, self-reported orgasm source data were collected to attempt to replicate, extend, or challenge existing publications. Future studies should begin to verify the presence of other orgasm markers (eg, physiologic, behavioral) to ensure convergence between self-report and physiologic measurement of orgasm.

This study has limitations. The sample was a convenience sample of relatively young students who might differ from the general population of women. Also, Hispanic and non-Hispanic women were well-represented by chance, and they might have different experiences of orgasm that are unknown. Perhaps the most difficult limitation to address is that many of the differences in self-reported orgasm source can be attributable to the presence of a partner. For example, vaginal stimulation is more likely to occur in a partnered context, in which a male partner would

promote vaginal penetration where he receives direct physical pleasure. Ideally, analyses should be conducted in four cells: partner present with vaginal source, partner absent with vaginal source, partner present with clitoral source, and partner absent with clitoral source. Very few women reported that they experienced a vaginal orgasm source without having an intercourse partner (eg, using an inserted toy during solo masturbation). This suggests it might be difficult to identify women who masturbate using penetration alone, limiting even experimental options for testing the importance of the presence of the partner. The approach itself represents a challenge, because a self-report approach was used to demonstrate the limitations of a self-report approach. For example, these reports still cannot be linked to specific physiologic events that might distinguish them. Also, the study was conducted in a laboratory setting. Although research attempting to link laboratory responses to real-world sexual behaviors is increasing,[61–63] it is unclear how closely self-reports resemble behaviors and experiences at home. Further, institutional review boards have prevented the study of orgasms in the United States. Specifically, a protocol submitted to the Institutional Review Board of the University of New Mexico in Albuquerque was rejected after months of review when we refused to remove just the orgasm component of the study, although no safety, confidentiality, science, or similar concerns were identified as a problem.

CONCLUSION

Many women report feeling sexually inadequate, because they cannot experience orgasms by penile penetration alone (eg, "all real women do," "I am sure [clitoral stimulation during intercourse] doesn't look nice").[64] This dissatisfaction is so significant that methods purported to surgically enhance vaginal sensitivity are peddled.[65–67] This second failure to replicate previous reports of the superiority of women who experience vaginal orgasms[8] and contrary data patterns suggest that data suggesting the problems with clitoral stimulation to reach orgasm are not replicable. Some women already have shifted away from prioritizing orgasm as a neurophysiologic response to clitoral or vaginal stimulation essential to sexual satisfaction, such as this focus group participant: "I don't think that the act of sex is to have an orgasm. It's not the goal. The goal of sex is to be intimate with your partner and show them you care and that you love them."[10(p621)] The goal of sexual interactions is likely to shift with the social context, individual preferences, and the state of the individual. These data suggest that, when orgasm is a part of the sexual interaction, the superiority of one stimulation area or another is likely to change with the context and the desired outcome. Women who experience orgasm regularly during masturbation with good knowledge of their clitoris often cannot experience orgasm when they want to with a partner.[12] Such partnered anorgasmia can worsen if a woman's preferred method of stimulation is pathologized (for review, see Levin[5]). The study of orgasm will remain in its infancy stage until scientists successfully overcome scientific and moral challenges to strong empirical methods.

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