

A critical examination of the relationship between vaginal orgasm consistency and measures of psychological and sexual functioning and sexual concordance in women with sexual dysfunction

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A substantial body of research supports the hypothesis that vaginal orgasm is associated with overall better health outcomes for women. The primary aim of this study was to examine correlates of orgasm consistency with intercourse (OCI) in a sample of women with sexual dysfunction to see whether these findings held in a clinical sample. Study 1 ($n = 255$) focused on demographic and psychological correlates of OCI and Study 2 ($n = 81$) focused on the association between sexual arousal concordance and OCI. A longer relationship length and higher orgasm scores predicted OCI whereas mood, sexual abuse history, and relationship satisfaction did not. In Study 2, sexual arousal concordance, as measured with vaginal photoplethysmography and a continuous self-report measure of sexual arousal, was not associated with OCI. These findings challenge the conclusions of Brody et al. that vaginal orgasm is a sign of psychological, sexual, and relational health.

KEY WORDS: Sexual functioning, orgasm consistency, penile-vaginal intercourse, sexual arousal concordance, vaginal orgasm

INTRODUCTION

The role of women's orgasm as a predictor of overall health has been a topic of debate for some time (Brody, 2010, 2012; Prause, 2012). There has been immense scientific and clinical interest in the different types of women's orgasms since Freud (1962) published his essays on the theory of sexuality in the 1920s. Freud was among the first to postulate the existence of different types of orgasms (Freud, 1962), and he divided women's orgasms into two major groups: immature and mature. The clitoral orgasm was considered immature since it was the erotogenic zone providing pleasure in childhood through clitoral genital exploration and masturbation. In contrast, the vaginal orgasm represented a mature stage, and Freud believed that as a woman engaged in heterosexual intercourse and was penetrated by a penis, the erotic zone was hypothesized to move from the clitoris to the vagina through vaginal stimulation—a key developmental process in sexual maturation. The inability to experience vaginal orgasms was deemed to reflect psychosexual immaturity in women (Freud, 1962).

Since Freud's original writing, there has been long-standing dissent of this view from multiple perspectives (Kinsey,

Pomeroy, Martin, & Gebhard, 1953; Masters & Johnson, 1966; Tiefer, 1991). However, a small cadre of researchers continue to support the hypothesis that vaginal orgasm represents a superior form of sexual capacity (Brody, 2006, 2007a; Brody, Laan, & van Lunsen, 2003), and posit that an orgasm resulting from penile-vaginal intercourse (PVI), as opposed to an orgasm arising from other sexual behaviours, is associated with better health outcomes for women (Brody, 2006). As a result of largely correlational and cross-sectional research, Brody and colleagues have concluded that women who are more likely to reach orgasm during PVI have better indicators of psychological, physical, and sexual health (Brody, 2006, 2007a, 2007b, 2010, 2012; Brody et al., 2003; Weiss & Brody, 2009). However, these findings have not been replicated by independent groups of researchers.

In support of his view that vaginal orgasms are associated with better psychological functioning and psychological health, Brody (2007a,b) found that vaginally orgasmic women had higher satisfaction with their sex life, partnerships, friendships, mental health, and life generally, and were less likely to masturbate (a purported sign of sexual maturity) than vaginally anorgasmic women. Similarly, both men and women who have reported greater PVI frequency reported more sexual,

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health, partnership, mental health, and life satisfaction, lending further support for this assertion that PVI is an indicator of health (Brody & Costa, 2005, 2009; Brody & Weiss, 2011; Costa & Brody, 2007; Weiss & Brody, 2009). The association between vaginal orgasm and better psychological health was also explored by comparing defence styles of anorgasmic non-clinical women to the defence styles of “neurotic-level” Portuguese outpatients. Using the Defence Style Questionnaire, Brody and Costa (2005) found that women experiencing vaginal orgasm showed less somatization, dissociation, displacement, autistic fantasy, devaluation, and isolation of affect. The researchers concluded that anorgasmic and infrequently orgasmic with PVI women used immature psychological defence styles, such as depression, and they interpreted their findings as supporting their claim that women who prefer masturbation over intercourse were more likely to have symptoms of depression (Brody & Costa, 2005). On the other hand, PVI orgasm consistency was found not to be associated with demographic variables such as current relationship status, education level, or years of intercourse experience (Brody, 2006, 2007a).

Within their series of correlational studies, Brody and colleagues also have found that a lower waist-to-hip ratio; prominent upper lip tubercle; lower alexithymia; greater tactile sensitivity; sex education on the importance of vaginal orgasm; mental focus during PVI; a woman’s preference for longer penises; and duration of penile-vaginal intercourse were associated with higher rates of PVI orgasm consistencies (Brody, 2003, 2004, 2006; Brody & Costa, 2011; Brody, Houde, & Hess, 2010; Brody & Weiss, 2010; Costa, Miller, & Brody, 2012; Weiss & Brody, 2009). Given their cross-sectional and correlational nature, it is impossible to verify the authors’ speculation that there is a causative relationship between low PVI and these psychological, behavioural, and health-related variables. Furthermore, given the implications of concluding that vaginally anorgasmic women are sexually “inferior,” there is a dire need for independent replication of these findings.

The relationship between vaginal intercourse orgasm rates and other indices of sexual response, including genital sexual arousal, has also been examined. There has been a small body of research showing that women with higher PVI orgasm frequency have higher concordance between genital and subjective sexual arousal (Brody et al., 2003; Brody, 2012). Sexual concordance is defined as the association, typically measured with a correlation, between genital and self-reported sexual arousal in response to erotic stimuli (Suschinsky & Lalumière, 2012). In women, genital sexual arousal can be measured with a vaginal photoplethysmograph, and the Vaginal Pulse Amplitude (VPA) signal is typically used given its sensitivity and specificity to sexual stimuli (Chivers, Seto, Lalumière, Laan, & Grimbos, 2010; Suschinsky, Lalumière, & Chivers, 2009). Subjective sexual arousal can be measured either with discrete (measured before and after presentation of an erotic stimulus) or continuous (measured throughout presentation of the erotic stimulus) measures (Chivers et al., 2010). An “arousometer,” which consists of an optic mouse mounted to

a hand rest on a reclining chair, is an easily used measure of continuous sexual arousal, and involves having the participant move the mouse back and forth along a track pad corresponding with her level of self-reported mental arousal as she is watching a video stimulus (Rellini, McCall, Randall, & Meston, 2005). Concordance is usually calculated as the amount of agreement between VPA and either the discrete or continuous measure of sexual arousal, though experts tend to favour a within-subjects statistical approach and the continuous measure of sexual arousal, given that it produces higher concordance estimates (Rellini et al., 2005). Ample research comparing men and women’s sexual arousal concordance demonstrates that women have significantly lower sexual concordance between self-reported and genital response compared to men (Chivers et al., 2010).

Among the various variables speculated to be associated with concordance, age has not been found to be associated (Chivers et al., 2010). However, some have suggested that women with more sexual experience might be more psychologically and physiologically aware of their level of sexual arousal, hence better able to self-report these changes when probed in laboratory setting (Adams, Haynes, & Brayer, 1985; Chivers et al., 2010). To test this, 24 undergraduate students with high orgasm frequency during masturbatory and PVI activities were compared to women with low orgasm frequency (defined as being orgasmic <50% of the time) with masturbatory and PVI activities. Women with higher orgasm frequency had significantly higher concordance between genital and subjective sexual arousal ($r = .641$) compared to women with low orgasm frequency ($r = .381$) (Adams et al., 1985). In another study, Brody, Laan and van Lunsen (2003) found a similar pattern of results in a non-clinical sample of 38 postmenopausal women, showing that higher rates of PVI orgasm consistency were associated with higher concordance estimates, leading the authors to conclude that PVI orgasm rates play an integral part of physical arousal appraisal during exposure to sexual stimuli (Brody et al., 2003). These results were later replicated with a sample of 27 undergraduate students (Brody, 2007b). Women with greater PVI orgasm frequencies showed higher concordance than women who were orgasmic from other forms of sexual activities, leading to their conclusion that women who are vaginally orgasmic may be more capable of integrating sensory information as a result of being “physiologically healthier” (Brody, 2007b).

Purpose of the Study

To date, the literature examining the relationship between psychological, physiologic and sexual functioning variables and PVI has focused exclusively on sexually healthy women. The primary aim of the present study was to examine correlates of PVI orgasm rates claimed to be associated with overall health among a heterogeneous clinical sample of women with sexual dysfunction. Given the prior speculation that low PVI orgasm rates may be associated with sexual dysfunction (Brody, 2006), we reasoned that women with sexual difficulties

would have especially low rates of PVI orgasms. Nonetheless, it remains an open question the extent to which a woman's overall psychological, physiologic and sexual health can be inferred from her orgasm consistency with intercourse. Second, in light of prior findings of a positive association between PVI orgasm rates and sexual arousal concordance in sexually healthy women, we aimed to explore this association in a clinical sample of women seeking treatment of sexual dysfunction.

To address these aims, we drew from the data from five existing data sets of research participants who took part in a study of women with sexual difficulties in our laboratory, over the past eight years. Study 1 focused on demographic (age, ethnicity, relationship duration) and psychological (depressive symptoms, history of sexual abuse) correlates of orgasm consistency with intercourse (OCI). Study 2 focused on the association between OCI and sexual arousal concordance.

METHODS: STUDY 1

Participants

Participants were a subset of women who participated in one of five treatment outcome studies ($n = 255$) for women with reported sexual difficulties. Only women with self-reported intercourse vaginal orgasm rate data were included in these analyses. The five studies from which the current data were obtained were conducted at the University of British Columbia Sexual Health Laboratory and all participants met criteria for one of the DSM-IV-TR (American Psychiatric Association, 2000) Sexual Dysfunctions. Some women experienced significant sex-related distress due to a history of sexual abuse; another subset of women were seeking treatment of hypoactive sexual desire disorder or female sexual arousal disorder (clinically significant absent or reduced vaginal lubrication or swelling response); and another subset were cancer survivors with sexual dysfunction (Brotto & Basson, 2014; Brotto, Basson, & Luria, 2008; Brotto, Erskine, et al., 2012; Brotto, Seal, & Rellini, 2012; Brotto, Chivers, Millman, & Albert, 2016). Participants received a psychological treatment for their sexual difficulties, but only pre-treatment data were used in the present set of analyses.

Measures

Demographic information such as age, ethnicity, sexual orientation, education level, history of sexual abuse, age of first sexual intercourse, relationship status, and length of current relationship was collected. Information on whether participants had previously sought treatment of their sexual difficulty was also included. Also, self-report of whether the women were satisfied with the level of closeness within their present relationship (yes, no, or not applicable) was explored. Lastly, women were asked, in each study, to self-report "When/if you have intercourse, how many times out of 10 do you have an orgasm?" The question about orgasm consistency did not ask participants to exclude instances where there may have been

Table 1. Participant Demographic Characteristics from Study 1

Variables	N (%)
Ethnicity (n = 249)	
Caucasian	205 (82.3%)
African-Canadian/American	2 (0.8%)
Hispanic	4 (1.6%)
First Nation	1 (0.4%)
Asian	28 (11.2%)
Mixed	4 (1.6%)
Other	5 (2%)
Education Level (n = 254)	
High School	22 (8.7%)
College	46 (18.1%)
Undergraduate Degree	100 (39.4%)
Graduate Degree	35 (13.8%)
PhD	7 (2.8%)
Some College/University	44 (17.3%)
Relationship Status (n = 251)	
Married/Common Law/Living Together	183 (72.9%)
Single	22 (8.8%)
Separated/Divorced	11 (4.4%)
Dating	35 (13.9%)
Relationship Satisfaction (n = 237)	
Satisfied with level of closeness	114 (48.1%)
Not Satisfied with Level of closeness	42 (17.7%)
N/A	81 (34.2%)
Experienced Unwanted or non-consensual sex (n = 251)	
Yes	98 (39%)
No	153 (61%)
Have you ever received treatment of sexual difficulties? (n = 249)	
Yes	84 (33.7%)
No	165 (66.3%)

simultaneous stimulation of the clitoris during vaginal intercourse and orgasm. Of note, experts still do not agree on whether women's orgasms originate from a single source of stimulation or whether different orgasmic experiences arise from vaginal versus clitoral orgasms (Jannini, Rubio-Casillas, Whipple, Buisson, Komisaruk, & Brody, 2012).

Each of the following standardized measures were administered at the beginning of each study and were included for analysis. The Beck Depression Inventory (BDI), a validated 21-item self-report questionnaire designed to assess the severity of depressive symptoms (Beck & Beamesderfer, 1974). The BDI is rated along a 4-point scale with total score range from 0 to 63 and with higher numbers reflecting increasing depressive severity. A score ≥ 15 denotes probable depression. The BDI has a high test-retest reliability (Pearson $r = 0.93$) and thus is insensitive to daily fluctuations in mood (Beck, Steer, Ball, & Ranieri, 1996).

The Female Sexual Function Index (FSFI), a validated 19-item measure of sexual desire, arousal, orgasm, lubrication, pain, and satisfaction is assessed with a 5-point Likert scale (Rosen et al., 2000). Scores can range from 2 to 36 with

higher scores reflecting greater levels of sexual function. The FSFI has excellent discriminant validity between women with and without sexual dysfunction (Meston, 2003).

We included the Female Sexual Distress Scale (FSDS), a 12-item self-report questionnaire assessing sexually-related distress. Scores can range from 0 to 48 with higher scores representing higher levels of sex related distress (Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). Like the FSFI, the FSDS has good discriminant validity for differentiating women with and without a sexual dysfunction (Derogatis et al., 2002).

Statistical Analysis

We conducted a one-way between subjects ANOVA to determine if there were differences in women's mean OCI rates across the five studies. There were no significant differences, $F(4,250) = 1.431, p = .224$, in OCI across the different samples, nor any significant differences associated with education levels, ethnicity and relationship status or, demographic variables, therefore we combined samples into a single database for all subsequent analyses (Table 1). We carried out Pearson product-moment correlation coefficients with OCI and each of these demographic and health-related variables separately. Finally, we conducted a multivariate linear regression analysis to test the extent to which a woman's overall psychological, physiologic, and sexual health predict OCI.

RESULTS

Sample Characteristics

The average age of the women in this sample was 41.9 years ($n = 253, SD = 11.66$, range 22–65) with the average age of first sexual intercourse being at 18.6 years old ($n = 255, SD = 4.59$, range 4–54). The mean length of current relationship duration within this sample was 12.6 years ($n = 245, SD = 10.95$). The mean BDI score was 10.61 ($n = 247, SD = 7.50$) corresponding to minimal levels of depressive symptoms. The FSDS mean score was 28.35 ($n = 248, SD = 10.53$) and corresponds to clinically significant sex-related distress. The average FSFI total score was 19.42 ($n = 150, SD = 6.19$), and falls within the range previously found for women with a sexual dysfunction. FSFI subscales were also in the range found for previous samples of women with sex-related difficulties; namely, Desire ($n = 249, M = 2.23, SD = 1.23$); Arousal ($n = 196, M = 2.98, SD = 1.40$); Lubrication ($n = 191, M = 3.69, SD = 1.65$); Orgasm ($n = 193, M = 3.02, SD = 1.70$); Satisfaction ($n = 188, M = 3.13, SD = 1.32$); and Pain ($n = 152, M = 4.31, SD = 1.90$). Lastly, OCI, out of the last 10 vaginal intercourse encounters, was, on average, 2.80 ($n = 255, SD = 3.46$); in other words, participants were vaginally orgasmic on approximately 28% of their recent intercourse encounters. Finally, OCI was found not to be significantly associated with current age ($r = -.015, p = .809$), age of first intercourse ($r = -.119, p = .060$), or FSDS total score ($r = -.114, p = .073$).

Correlations of Orgasm Consistency with Sexual Functioning, Sexual Distress, and Mood

A Pearson product-moment correlation was carried out and revealed OCI to be significantly and positively associated with: higher FSFI arousal $r = .274, p < .001$; orgasm $r = .491, p < .001$; satisfaction $r = .149, p = .042$; total sexual functioning $r = .405, p < .001$; and lower levels of sexual pain, $r = .217, p = .007$. On the other hand, OCI was not significantly associated with mood, $r = .017, p = .793$.

Predictors of Orgasm Consistency

Multiple regression analysis, where all variables were entered into the equation in one step, was carried out to test if demographic variables, mood, and sex-related distress predicted OCI. The results of the regression indicated that there were two predictors that explained 44.4% of the total variance in OCI scores, $R^2 = .520, F(17,106) = 6.77, p < .001$. Specifically, length of current relationship significantly predicted OCI ($\beta = .065, p = .028$), as did the orgasm domain scores on the FSFI ($\beta = 1.375, p < .001$).

Impact of Relationship Satisfaction on Orgasm Consistency with Intercourse

Only women currently in a relationship were included in this analysis ($n = 156$). An independent samples *t*-test compared women who reported being satisfied in their current relationship ($n = 114, M = 3.38, SD = 3.46$) to women who reported not being satisfied in their current relationship ($n = 42, M = 2.33, SD = 3.369$) and there was no significant difference in OCI rates between these two groups, $t(154) = 1.68, p = .095$.

Effects of Reported Sexual Abuse on Orgasm Consistency with Intercourse

An independent samples *t*-test was carried out to compare women who did to those who did not self-report a history of sexual abuse, on OCI rates. Women who reportedly had experienced sexual abuse ($n = 98, M = 2.48, SD = 3.25$) did not significantly differ from women who reported to not have had a history of sexual abuse ($n = 153, M = 3.02, SD = 3.59$) on OCI rates, $t(249) = 1.217, p = .225$.

METHODS: STUDY 2

Participants

Participants were a subset of women from the five data sets used in Study 1 who had data from a baseline sexual arousal assessment (Brotto, Erskine, et al., 2012; Brotto, Seal, et al., 2012; Brotto et al., 2016). From the original sample of $n = 255$, a total of $n = 81$ women participated in a sexual arousal assessment, had complete OCI data, and met criteria for one of the DSM-IV-TR defined sexual dysfunctions.

Measures

Psychophysiological Recording. The vaginal photoplethysmograph was used to measure genital sexual response. A single vaginal probe (Behavioural Technology Inc., Salt Lake City, UT) measured vaginal pulse amplitude (VPA), which was monitored throughout exposure to neutral and erotic audio video film segments. VPA was recorded on a personal computer (HP Pentium M Laptop), which collected, converted (from analogue to digital, using a Model MP150WSW data acquisition unit [BIOPAC Systems, Inc.]), and transformed data, using the software program AcqKnowledge III, Version 3.8.1 (BIOPAC Systems, Inc., Santa Barbara, CA). The signal was band-pass filtered (0.5–30 Hz) and a sampling rate of 200 samples/s was used for VPA throughout both the neutral and erotic film exposure and data were subsequently analyzed in 30-s segments. Although most participants participated in two to three similar sexual psychophysiological assessments (before and after their respective treatments), for the purpose of this study and analysis, we only used data obtained at baseline, before treatment.

Assessment of Self-Reported Sexual Arousal. Self-reported sexual arousal was measured in two ways. Continuous subjective sexual arousal was measured during presentation of neutral and erotic films with an arousometer that was constructed by a local engineer after the one described by Rellini, McCall, Randall, and Meston (2005). This device consisted of a computer optic mouse mounted on a plastic track with 10 intervals, and it was affixed to the armrest of the recliner so that the participant could easily move the mouse while reclining and watching the erotic film. Following an initial calibration and training session, women were instructed to move the mouse up and down the track over the course of the film to indicate their level of subjective sexual arousal ranging from 7 (*highest level of sexual arousal*) to -2 (*sexually turned off*). This measure has been shown to be significantly and positively correlated with measures of subjective sexual arousal assessed with retrospective self-reported scales, and with physiologic measures of sexual arousal (Rellini et al., 2005).

Discrete self-reported sexual arousal was measured with the Film Scale (Heiman & Rowland, 1983), a 34-item self-report questionnaire that assesses perception of genital sexual arousal (e.g., warmth in genitals, genital pulsing or throbbing), subjective sexual arousal (e.g., feeling turned on), autonomic arousal (e.g., faster breathing, faster heart beat), anxiety, positive affect (e.g., pleasure, interested, excited), negative affect (e.g., worried, angry, disgusted), and sensuality-sexual attraction (e.g., sensuous, a desire to be close to someone, sexually attractive) in response to viewing sexual stimuli. Items were rated on a 7-point Likert scale from 1 (*not at all*) to 7 (*intensely*) in which participants indicated how much they endorsed each item at the present moment. We used only the perception of genital arousal and subjective sexual arousal domains in this analysis for the calculation of between-subjects concordance estimates.

Procedure

Participants completed the Film Scale in the private psychophysiology room and were provided with further instructions about the vaginal photoplethysmograph via intercom. Once inserted, they were asked to recline comfortably in the chair for about five minutes, while the word “relax” appeared on the television screen. They were also reminded to move the arousometer to a setting that corresponded with their current level of subjective sexual arousal. Next, the researcher operated the film stimuli from the adjacent room. On the screen, participants watched a 3-minute neutral film followed by a 10-minute erotic film. They were asked to move the arousometer during the film to correspond with their current level of subjective sexual arousal. The audio component was delivered via wireless headphones. Immediately after the video sequence, participants filled out a second Film Scale, which asked them to evaluate how they felt during the last (erotic) film. They were then instructed to remove the probe and meet the researcher in a separate room for debriefing.

Statistical Analysis

Concordance was assessed in two ways. First, between-subjects analyses using both subjective sexual arousal and perception of genital arousal (separately) from the Film Scale were correlated with VPA. We calculated difference scores (neutral to erotic) for the two self-report measures, and percent change scores (neutral to erotic) in VPA. Second, concordance was assessed using within-subjects analyses using the arousometer data obtained during the erotic segments of the film only (as per Clifton, Seehuus, & Rellini, 2015). As fewer women had complete arousometer data than Film Scale data, within-subjects analyses were available for $n = 62$ women. Each of these concordance estimates (both between-subjects and within-subjects) were then correlated with OCI scores using a Pearson product-moment correlation coefficient.

RESULTS

Sample Characteristics

The average age of the 81 women in this sample was 40.9 years ($SD = 10.44$, range 22–63) with the average age of first sexual intercourse of 18.5 years old ($n = 80$, $SD = 5.47$, range 7–54). The average OCI within this sample of women was 3.17 ($n = 81$, $SD = 3.51$). The average Beck Depression Inventory score was 11.37 ($SD = 12.12$) corresponding with minimal depressive symptoms. The Female Sexual Distress Scale total score ($n = 81$, $M = 27.84$, $SD = 9.46$) and the FSFI total score ($n = 58$, $M = 20.94$, $SD = 5.72$) corroborated women's self-reports of clinically significant distress and sexual difficulties. A one-way ANOVA failed to find any significant difference in mean OCI scores across the different samples, $F(2,78) = 0.291$, $p > .05$, therefore, demographic characteristics are presented for the entire sample (Table 2).

Table 2. Participant Demographic Characteristics from Study 2

Variables	N (%)
Ethnicity (n = 81)	
Caucasian	63 (77.8%)
African-Canadian/American	1 (1.2%)
Hispanic	1 (1.2%)
Asian	9 (11.1%)
Mixed	3 (3.7%)
Other	4 (4.9%)
Education Level (n = 81)	
High School	6 (7.4%)
College	18 (22.2%)
Undergraduate Degree	32 (39.5%)
Graduate Degree	12 (14.8%)
PhD	3 (3.7%)
Some College/University	10 (12.3%)
Relationship Status (n = 80)	
Married/Common Law/Living Together	65 (81.3%)
Single	3 (3.8%)
Separated/Divorced	1 (1.3%)
Dating	11 (13.8%)
Relationship Satisfaction (n = 77)	
Satisfied with level of closeness	40 (51.9%)
Not Satisfied with Level of closeness	2 (2.6%)
N/A	35 (45.5%)
Experienced Unwanted or non-consensual sex (n = 80)	
Yes	42 (52.5%)
No	38 (47.5%)
Have you ever received treatment of sexual difficulties? (n = 80)	
Yes	19 (23.8%)
No	61 (76.3%)

Association of OCI and Concordance using Between-Subjects Analyses

Between-subjects concordance between VPA percent change and change in perception of genital arousal was $r = .084$, $p = .453$. A partial correlation controlling for OCI remained non significant, $r = .065$, $p = .566$. Using self-reported subjective sexual arousal, concordance was also non-significant, $r = .112$, $p = .318$, and controlling for OCI did not significantly change this association, $r = .101$, $p = .375$. Whether self-reported perception of genital arousal or subjective sexual arousal were used, both estimates of concordance were very small (in both cases, $r < .11$).

Association of OCI and Concordance using Within-Subjects Analyses

Using within-subjects analyses, the correlation between VPA and continuously measured subjective sexual arousal during the erotic film was $r = .308$ ($SD .51$, range $-0.90-0.91$). The correlation between within-subjects concordance and OCI was $r = -.017$, $p = .897$.

Association of OCI with Genital Sexual Arousal and Self-Reported Sexual Arousal

As an exploratory analysis, we examined the association between vaginal orgasm consistency and VPA (measured as the percent change in VPA from neutral to erotic film segments). This analysis was not statistically significant, $r(62) = .084$, $p = .457$. We also explored the association between orgasm consistency and change in subjective sexual arousal from the neutral to the erotic film, and this was similarly not significant, $r(62) = .159$, $p = .156$.

DISCUSSION

Overall, the findings revealed that orgasm consistency with intercourse (OCI) was not associated with women's overall psychological, physical, or sexual health in a sample of women with sexual difficulties. The Beck Depression Inventory showed that women within this study had minimal levels of depressive symptoms, which were not significantly associated with or a predictor of OCI. Unlike Brody (2007a) who reported a strong association between psychological functioning and orgasm consistency, our data, using the BDI as a measure of mood, do not support this conclusion. By the same token, our findings are counter to earlier claims that vaginally anorgasmic women have higher rates of psychopathology (Brody, 2007a).

Orgasm consistency with intercourse was not associated with current age, age of first intercourse, education levels, whether women were previously treated for sexual difficulties, or sex-related distress, even in this sample of women with sex-related difficulties. Ethnicity was also examined and results failed to show any differences in OCI rates between women of different ethnicities. These findings suggest that the reported differences between ethnicities in sexual functioning and pleasure (Brotto, Chik, Ryder, Gorzalka, & Seal, 2005; Cain et al., 2003; Laumann et al., 2005) may not be related to differences in orgasm consistency rates. Interestingly, women who reported having experienced sexual abuse did not differ in OCI compared to women who denied a history of unwanted sexual activity. Taken together, these findings suggest that several demographic characteristics previously speculated to be predictors of a woman's vaginal orgasm consistency with intercourse are not tenable predictors among women with sexual difficulties.

We used the Female Sexual Function Index to explore several domains of sexual functioning and their association with orgasmic consistency. Women with higher levels of OCI had significantly higher scores on the FSFI domains of arousal, orgasm, and sexual satisfaction, as well as scored lower on the domain of sexual pain. That OCI was associated with some domains of sexual functioning and not with total score of the FSFI warrants further exploration. It may be that the association between FSFI domain scores and OCI is an artifact of a third variable, and that is recent sexual activity. Given that the FSFI domains are only valid among women

who are regularly engaging in sexual activity (Meyer-Bahlburg & Dolezal, 2007), and women regularly engaging in sexual activity may be more likely to recall orgasm with vaginal intercourse, it may be that memory of recent sexual events may account for the relationship between these variables. Similarly, couples who regularly engage in sex, regardless of the quality of the relationship or the partner's level of sexual functioning, may have more opportunities to understand and refine the contexts that would give rise to her vaginal orgasms. Of note, however, the total FSFI score was unrelated to OCI, suggesting that a broad snapshot of sexual functioning may not be related to orgasm consistency, but rather, future research should explore characteristics of the relationship and the type of sexual activities employed, as possible predictors of OCI.

Using a multiple regression analysis to predict OCI, only length of the relationship and the orgasm domain of the FSFI predicted OCI in women. That scores on the orgasm domain of the FSFI predicted orgasm consistency is perhaps not surprising, since women may have rated orgasm intensity on the basis of vaginal orgasms. In other words, it is possible that the orgasm domain of the FSFI and vaginal orgasm consistency may be tapping into the same construct even though different time frames were given for both questions. It may also be the case that women in a longer-term relationship may feel more comfortable asking for particular forms of stimulation that are more likely to give rise to vaginal orgasm, thus accounting for the significant association between relationship length and vaginal orgasm consistency. Relationship satisfaction, on the other hand, was not associated with OCI rates, in contrast to the findings of Brody and Costa (2009), given that whether women were or were not satisfied with their relationship was not associated with orgasm consistency. Taken together, our findings suggest that women in longer term relationships, regardless of the level of relationship satisfaction, may be more likely to experience vaginal orgasms, and that some third variable explanation related to relationship length and orgasm consistency, but unrelated to relationship satisfaction, may be accounting for this association. As noted, it may be that the ability to ask for particular forms of stimulation more likely to give rise to vaginal orgasm is a feature of those longer-term relationships, regardless of how satisfied the woman is with that relationship. Future studies should explore the extent to which comfort in asking for one's sexual needs to be met through various forms of stimulation, may account for the higher rates of vaginal orgasm consistency that seem to accompany relationships of longer duration.

Our findings in Study 2 explored the association between vaginal orgasm consistency and sexual arousal concordance. What makes our analyses different from previous similar explorations by Brody et al. (2003) and Brody (2007b) is that we carried out our analyses using both between-subjects as

well as within-subjects concordance estimates. In both cases, there was no significant association between sexual arousal concordance and OCI. Our within-subjects concordance estimate ($r = .308$) was very similar to that obtained from a large meta-analysis of 2,505 women, who showed an average concordance estimate of $r = .26$ (Chivers et al., 2010). Given how similar these concordance estimates are, we are confident in the representativeness of the current sample studied. Although we cannot rule out the possibility that sexual arousal concordance may be an indicator of some aspect of sexual health or well-being, our findings do not support the conclusions of Brody et al. (2003) and Brody (2007b) that higher levels of concordance predict higher vaginal orgasm consistency, and that this association predicts better sexual functioning.

Notable in the current study is that women with sexual difficulties had similar OCI rates to women in non-clinical samples, with approximately 30% of vaginal intercourse encounters leading to orgasm (Lloyd, 2009). Women in the first study had an average OCI of 28% meanwhile women in study 2 had an average of OCI of 32%. Even among women who have a diagnosed sexual dysfunction, over a quarter of recent vaginal intercourse experiences were associated with vaginal orgasm. Thus, our findings do not support the myth that women with sexual difficulties would have especially lower rates of vaginal OCI. That said, we acknowledge that sexual difficulties are often comorbid (Sjögren Fugl-Meyer & Fugl-Meyer, 2002), and that women with difficulties in the domain of desire and arousal also often experience difficulties with orgasm; however, the latter tends to be quantified in terms of overall reduced orgasms, rather than a specific impairment with vaginal versus clitoral orgasms.

This study challenges the assumptions that consistency of vaginal orgasms with intercourse is an indicator of sexual health. We are greatly concerned with the inherent implications of this view, which infer that in order for women to be sexually healthy, an orgasm during vaginal intercourse is the imperative. In line with Metz and McCarthy's (2007) "Good-Enough Sex" model of sexual satisfaction, our findings suggest that even women with a diagnosed sexual dysfunction can be vaginally orgasmic on 30% of vaginal intercourse attempts, and that many psychosocial and sexual health variables are not related to their orgasm consistency, whereas a woman's duration of her relationship is a better predictor. Having realistic sexual expectations and having pleasure oriented sex rather than goal oriented sex as a marker of sexual health provides a much-needed positive model (Metz & McCarthy, 2007) for both women with and without sexual difficulties. The outdated theory that only vaginally orgasmic women are "sexually healthy" should be discarded to make way for a healthier discourse surrounding women's orgasm, given that despite considerable science on the nature of women's orgasms, experts still have differing viewpoints on its origins and elicitors (e.g., Jannini et al., 2012). Due to the lack of

evidence that OCI is an indicator of health, efforts to categorize vaginally anorgasmic women as “dysfunctional” should be abandoned.

Several limitations pertain to the current set of analyses and these should be considered. Although our assessment of OCI asked women to consider how orgasmic they were during penile-vaginal intercourse, we did not ask women to exclude situations in which they may have received some (indirect or direct) clitoral stimulation, unlike the work of Brody et al. who often ask research participants to exclude situations in which clitoral stimulation was applied (Brody, 2006, 2007a, 2007b, 2010, 2012; Brody et al., 2003; Weiss & Brody, 2009). We believe that this distinction, within an intercourse encounter, may be difficult for women to make, and experts in the area of orgasm science similarly cannot agree on whether these represent distinct or similar types of orgasm (Jannini et al., 2012). Second, our analyses focus on a highly selective clinical sample of women with sexual difficulties, which may not be representative of all women with sexual difficulties. The data extracted from five previous studies were based on women who were interested in seeking treatment of a sex-related difficulty, and we acknowledge that not all women with a sexual complaint actively seek treatment (Laumann, Glasser, Neves, Moreira, & GSSAB Investigators' Group, 2009; Moreira, Hartmann, Glasser, & Gingell, 2005). Due to the selectivity of our participants, the small sample size of the current study limits the generalizability of these results. In addition, most of women were of Euro-Canadian descent (with a sizable number of East Asian participants), thus making it difficult to generalize these findings to other ethno-cultural groups. Lastly, as is the case with all correlational study designs, we cannot infer causation in the association between orgasmic consistency with these various domains of psychological, physiologic, and sexual variables. A host of potential other confounding variables must be considered that could account for our findings.

CONCLUSION

We set out in this research to explore, in a sample of women with reported sexual difficulties, the claim that women with lower vaginal OCI have poorer psychological, physical, and sexual functioning. Our overall findings did not support this hypothesis. We urge other researchers to independently examine claims about the nature of and predictors of women's orgasm, so that fiction can, once and for all, be replaced with factual data.

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