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Validation of the Multidimensional Model of the Subjective Orgasm Experience in the Context of Masturbation

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ARTICLE INFO

Received: 14/09/2023

Accepted: 20/11/2023

Keywords:

Model of subjective orgasm experience

Masturbation

Sexual arousal

Genital response

ABSTRACT

Background/Objective: The multidimensional model of the subjective orgasm experience has been validated only in the sexual relationship context, with no evidence for its validity in the solitary masturbation context. This study aims to provide validity evidence for this model in the solitary masturbation context by examining the association of its dimensions (affective, sensory, intimacy, and rewards) with different sexual arousal measures. **Method:** Thirty men and thirty women viewed content-neutral and sexually explicit masturbation films. Subjective orgasm experience, propensity for sexual excitation/inhibition, rating of sexual arousal, rating of genital sensations and genital response (penile erection or vaginal pulse amplitude) were assessed. Regression models were conducted to explain the subjective orgasm experience from sexual arousal measures. **Results:** Propensity for sexual excitation, propensity for sexual inhibition, and the rating of sexual arousal was associated with the different dimensions of the orgasm experience in men, while in women, the rating of sexual arousal and the rating of genital sensations was associated with the sensory dimension. **Conclusions:** Validity evidence is provided for the multidimensional model of the subjective orgasm experience in the solitary masturbation context.

Validación del Modelo Multidimensional de la Experiencia Subjetiva del Orgasmo en el Contexto de la Masturbación

RESUMEN

Antecedentes/objetivos: El modelo multidimensional de la experiencia subjetiva del orgasmo ha sido validado en el contexto de las relaciones sexuales, sin evidencias de validez en la masturbación en solitario. Este estudio pretende proporcionar evidencias de validez del modelo en el contexto de la masturbación en solitario examinando la asociación de sus dimensiones (afectiva, sensorial, intimidad y recompensa) con medidas de excitación sexual. **Método:** Treinta hombres y treinta mujeres visionaron filmes neutros y sexuales explícitos de masturbación. Se evaluó la experiencia subjetiva orgásmica, propensión a la excitación/inhibición sexual, valoración de la excitación sexual, valoración de las sensaciones genitales y respuesta genital (erección peniana o amplitud del pulso vaginal). Se realizaron modelos de regresión para explicar la experiencia subjetiva orgásmica a partir de las medidas de excitación sexual. **Resultados:** La propensión a la excitación sexual, la propensión a la inhibición sexual y la valoración de la excitación sexual se asociaron con diferentes dimensiones de la experiencia subjetiva orgásmica en hombres. En mujeres, la valoración de la excitación sexual y la valoración de las sensaciones genitales se asociaron con la dimensión sensorial. **Conclusiones:** Se aportan evidencias de validez al modelo multidimensional de la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario.

Introduction

Orgasm is a critical indicator of pleasure and sexual health (Kontula & Miettinen, 2016) with psychological, physiological, and social backgrounds associated with its experience (Levin & van Berlo, 2004). It is defined as a sensation of intense pleasure combined with changes in the pelvis muscles and resolution of sexual vasocongestion (Meston et al., 2004). Recent works have shown an interest in studying the subjective orgasm experience, which refers to the psychological perception and evaluation of an orgasm (Arcos-Romero & Sierra, 2020; Mah & Binik, 2020; Mollaioli et al., 2018; Muñoz-García et al., 2023).

Mah and Binik (2001) proposed a multidimensional model of the subjective orgasm experience. It included sensorial (i.e., associated with perception of psycho-physiological events), evaluative (i.e., implying an evaluation of an orgasm) and affective (i.e., related to the emotions felt during or immediately following an orgasm) aspects. By taking the basic conceptions of this model as a reference, Arcos-Romero et al. (2018) considered a model of the subjective orgasm experience in the sexual relationship context by integrating four dimensions: affective, sensory, intimacy and rewards. The affective dimension refers to emotional experience during an orgasm, which can be described with adjectives like “fulfilling” or “pleasurable”. The sensory dimension denotes the feelings perceived during an orgasm, described as “uncontrolled” or “exploding”. The intimacy dimension is related to aspects linked with the intimate orgasm experience, and is described by adjectives like “loving” or “tender”. Finally, the rewards dimension is associated with the most rewarding component of an orgasm, described as “soothing” or “relaxing”.

Sexual arousal is defined as an emotional/motivational state that can be activated by internal and/or external stimuli, expressed at both physiological (e.g., genital response), and psychological (e.g., rating of sexual arousal) levels (Bancroft & Janssen, 2000; Janssen, 2011). The assessment of sexual arousal at the psychological level can be measured either as a state in response to a specific situation or stimulus, such as the rating of sexual arousal/genital sensations, or as a trait characterized by a propensity for sexual excitation/inhibition, according to the Dual Control Model (Bancroft & Janssen, 2000). This model conceptualizes sexual arousal as the result of a balance between excitatory and inhibitory mechanisms (i.e., propensity for sexual excitation/sexual inhibition).

Based on evidence about the relation of an orgasm with sexual arousal (Brody, 2007; Brody et al., 2013; Paterson et al., 2014; Stoléru et al., 2012), Arcos-Romero et al. (2019) associated the four dimensions of the subjective orgasm experience in the sexual relationships context with propensity for sexual inhibition/excitation, genital response and self-reported sexual arousal when viewing a film in which a couple have heterosexual relationships. In men, propensity for sexual excitation was associated with the affective, sensory and rewards dimensions of the orgasm experience, whereas genital response was a significant variable associated with the intimacy dimension. In women, the sensory dimension of the orgasm experience was associated with subjective sexual arousal. This validated the multidimensional model of the subjective orgasm experience in the sexual relationships’ context.

Recently, Cervilla et al. (2022) psychometrically backed this multidimensional model of the subjective orgasm experience by

finding a similar factorial structure of its measure, the Orgasm Rating Scale, in the solitary masturbation context. In other words, the subjective orgasm experience in the masturbation context groups the same four dimensions that characterized it in sexual relationships: affective, sensory, intimacy and rewards. This similar multidimensional proposal for both contexts shapes a useful conceptual framework from the clinical and research viewpoints (Cervilla et al., 2022).

It has been pointed out that the subjective orgasm experience can differ according to the context in which it takes place and is more intense in the sexual relationships context than in the solitary masturbation one (Muñoz-García et al., 2023; Sierra et al., 2021). The interest in distinguishing the context in which the subjective orgasm experience occurs arises from the initial evidence that approached orgasm from a psychological perspective (Mah & Binik, 2001, 2002). Control and autonomy tend to characterize solitary sexual activity, while mutuality and closeness are more prominent in the context of sexual relationships (Foust et al., 2022; Goldey et al., 2016; Rowland et al., 2019). This highlights the importance of having a valid model that allows for distinguishing between contexts, as they can provide valuable information for sexual health. Thus, following the proposal of Arcos-Romero et al. (2019) in the sexual relationships context, it is important to back the multidimensional model of the subjective orgasm experience in masturbation by relating its dimensions with sexual arousal (i.e., propensity for sexual excitation/inhibition, rating of sexual arousal, rating of genital sensations and genital response) to more profoundly understand the subjective orgasm experience. Previous evidence has shown an association between sexual arousal in response to videos depicting sexual relationships and previous orgasmic consistency reported within sexual relationships (Brody, 2007; Brody et al., 2003). In this way, the objective of the present study was to provide validity evidence for the multidimensional model of the subjective orgasm experience in the solitary masturbation context based on its association with sexual arousal measures as related variables. To do so, the associations of the scores of the four dimensions of the subjective orgasm experience (affective, sensory, intimacy, rewards) will be examined by means of sexual arousal and, more specifically, by propensity for sexual inhibition and excitation (Bancroft et al., 2009), and by the rating of sexual arousal and genital response experienced when faced with the visual sexual stimuli that show masturbation behavior. Thus, as observed in the context of sexual relationship (Arcos-Romero et al., 2019), the different sexual arousal measures are expected to have significant associations with the dimensions of the subjective orgasm experience in the solitary masturbation context (Arcos-Romero et al., 2019).

Method

Participants

The sample consists of 60 Spanish heterosexual young adults (30 men, 30 women) aged 18-29 years. The mean age of participants was 23.23 years for men ($SD = 3.05$) and 22.43 years for women ($SD = 3.13$), with no significant differences between the two groups ($t = 1.00, p < .32$). All the participants reported previous solitary masturbation and sexual relationships

experience. The exclusion criteria were: (a) having medical problems, sexual dysfunction and/or psychological disorders; (b) taking medication that could interfere with sexual functioning (e.g., antidepressants, antihypertensive); (c) drugs/alcohol use; and (d) history of sexual abuse.

Instruments and Materials

The Socio-demographic and Sexual History Questionnaire

It assesses sex, age, nationality, sexual orientation, sexual activity, medical/psychological/sexual problems, pharmacological treatments, drugs/alcohol use and sexual victimization history.

Spanish Version of the Orgasm Rating Scale (Mah & Binik, 2020) Validated in the Masturbation Context by Cervilla et al. (2022)

Its 25 adjectives, answered on a 6-point Likert scale (0 = *does not describe it at all*; 5 = *describes it perfectly*), quantify the intensity of the subjective orgasm experience in the solitary masturbation context. This instrument is referred to the most recent orgasm experienced in the masturbation context with the following instructions: “Try to recall to the best of your ability the most recent orgasm you experienced during solitary masturbation. This may include any sexual activity you engaged in while alone. [...]. Next to each adjective, rate how well it describes your most recent orgasm through solitary masturbation”. The scale is distributed on four dimensions (affective, sensory, intimacy, rewards), whose internal consistency reliability ranges from .71 (Intimacy) to .95 (Sensory). In addition, its measures are invariant by sex and it has adequate validity evidence (Cervilla et al., 2022). Cronbach’s alpha in the present study was .92.

The Spanish Version of the Sexual Inhibition/Excitation Scales-Short Form (Carpenter et al., 2011) by Moyano and Sierra (2014)

Based on the Dual Control Model (Bancroft et al., 2009), it assesses self-reported propensity for sexual excitation and inhibition with 14 items distributed in three subscales: Sexual excitation, Sexual inhibition due to threat of performance failure, and Sexual inhibition due to threat of performance consequences of sexual activity. It has adequate internal consistency reliability with values between .66 and .85 (Sierra et al., 2024), and shows adequate validity evidence (Sierra et al., 2019). In the present study, a Cronbach’s alpha of .55 was obtained for sexual excitation, .84 for sexual inhibition due to threat of performance failure and .62 for sexual inhibition due to threat of performance consequences of sexual activity.

The Spanish Version of the Rating of Sexual Arousal (Mosher, 2011) by Sierra et al. (2017)

It has five items with varying Likert-type responses from 1 (*no arousal at all*) to 7 (*extremely sexually stimulated*). It evaluates self-perception of the overall level of sexual arousal, intensity of genital sensations, sensations of warmth experienced, nongenital physical sensations and level of sexual concentration. It has adequate internal consistency reliability (Cronbach’s alpha of .90). In this study, a coefficient of .92 was obtained.

The Spanish Version of the Rating of Genital Sensations (Mosher, 2011) by Sierra et al. (2017)

It has a list of 11 descriptions about genital sensations from no genital sensation to multiple orgasms. Its validity evidence is adequate (Sierra et al., 2017).

The Biopac Model MP150 Polygraph With 16 Channels (Biopac Systems Inc., Goleta, CA, USA) With the AcqKnowledge 5.0 Software is Used for Data Acquisition and Processing

To measure genital response, a penile plethysmograph module (Biopac amplifier DA100C and indium/gallium plethysmograph sensors) and a vaginal photoplethysmography module (Biopac amplifier PPG100C and vaginal transducers) are used. Genital response is calculated from the difference between the scores of the sexual stimulus and the baseline stimulus according to previous laboratory studies (Álvarez-Muelas et al., 2022; Arcos-Romero et al., 2019; Granados et al., 2021).

Visual stimuli

Two 3-minute content-neutral (nature documentary) and two sexually explicit films with a man or woman engaged in solitary masturbation. The sexual films were previously validated by demonstrating the ability to elicit sexual arousal (Cervilla et al., 2021).

Procedure

The study was previously approved by the Ethics Committee on Human Research of the University of Granada (n. 682/CEIH/2018). Young adults were invited to participate voluntarily and without compensation through distribution lists of university students, posters and posts on social networks. The recruitment of participants was carried out between October 2021 and July 2022. Interested volunteers accessed an online survey previous to the experimental laboratory task that included screening instruments, used to ensure the inclusion and exclusion criteria. It included informed consent, the Socio-Demographic and Sexual History Questionnaire, and the Spanish versions of the Orgasm Rating Scale and Sexual Inhibition/Excitation Scales-Short Form. Eligible participants were contacted and invited to the Human Sexuality Laboratory. Women were not evaluated during menstruation. To avoid potential sources of variation in physiological response, the participants were asked to refrain from consuming caffeine, alcohol and engaging in sexual activity, either alone or with a partner, during the 24-hour period prior to the experiment.

During the experimental laboratory task, the participants accepted informed consent with the purpose of the experiment, which ensured their anonymity and data confidentiality. After they were explained what their participation would consist in and placing devices to record their genital response, the man or woman researcher (who coincided with the participant’s sex) left the experimental room. After placing devices and checking for a good signal, they were allowed a 5-minute adaptation time. Temperature and lighting of the experimental room were stable. Genital response was recorded while the participants viewed two blocks of videos: (a) neutral video 1 and sexual video 1; (b) neutral video 2 and sexual video 2. Sequences were counterbalanced among the participants to control

a possible effect of the order of stimuli (Álvarez-Muelas et al., 2022; Granados et al., 2021). According to their heterosexual orientation, men viewed sexual videos of a masturbating woman, and women viewed a masturbating man. When each sexual video ended, the participants answered the Rating of Sexual Arousal and Rating of Genital Sensations. During the laboratory task, the objective was to assess genital response and self-reported sexual arousal elicited by visual sexual stimuli depicting masturbation behavior. For hence, no masturbation occurred in the laboratory task.

Data Analysis

By considering a power calculation ($\alpha = .05$, power = .80, effect size = 0.55, number of predictors = 5) performed using the G*Power program (Faul et al., 2007), for multivariate regression models it was established that a minimum of 30 participants per group was necessary. First, descriptive statistics of the evaluated variables were compared between men and women using the Student's *t*-test. The association among the four dimensions of subjective orgasm experience and all sexual arousal measures was analyzed using Pearson correlations. Multiple regression models by the stepwise method were proposed to explain the variance of the orgasm dimensions, separately in men and women. The predictor variables were divided into two blocks: (1) propensity for sexual

excitation/inhibition and (2) rating of sexual arousal, rating of genital sensations, and genital response.

Results

The descriptive statistics of the variables evaluated are shown in Table 1. Significant differences between men and women were observed only in the rating of genital sensations ($t = -2.71, p < .01$). No differences were found in the affective, sensory, intimacy and reward orgasm dimensions, propensity for sexual excitation/inhibition, and rating of sexual arousal.

Bivariate Correlations

Regarding correlations (see Table 2), an association was observed between propensity for sexual excitation and the affective ($r = .43, p < .05$), sensory ($r = .39, p < .05$) and rewards dimensions ($r = .49, p < .01$) for men. Propensity for sexual inhibition due to threat of performance consequences correlated with the affective ($r = -.61, p < .001$), sensory ($r = -.52, p < .01$) and rewards dimensions ($r = -.40, p < .05$). The rating of sexual arousal was significantly related to the affective ($r = .44, p < .05$), sensory ($r = .38, p < .05$) and intimacy dimensions ($r = .44, p < .05$). The rating of genital sensations and genital response were associated with the intimacy dimension of orgasm ($r = .37, p < .05; r = .37, p < .05$, respectively).

Table 1
Descriptive Statistics of the Evaluated Variables

Variables	Total N = 60	Men n = 30		Women n = 30		t
	M (SD)	Range	M (SD)	Range	M (SD)	
Affective	24.53 (4.84)	5-30	24.07 (5.48)	14-30	25 (4.16)	-0.74
Sensory	31.22 (12.60)	1-55	30.97 (14.53)	2-51	31.47 (10.57)	-0.15
Intimacy	6.33 (3.22)	0-15	6.67 (3.67)	1-13	6 (2.73)	0.79
Rewards	11.03 (3.27)	1-15	11.33 (3.51)	2-15	10.73 (3.05)	0.70
Propensity for sexual excitation	15.92 (2.82)	9-22	15.97 (3.37)	11-19	15.87 (2.19)	0.13
Propensity for sexual inhibition to the threat of performance failure	7.75 (2.15)	5-16	7.17 (2.26)	5-13	8.33 (1.90)	-2.16
Propensity for sexual inhibition to the threat of performance consequences	11.23 (2.38)	5-16	11.17 (2.74)	9-16	11.30 (2.00)	-0.21
Rating of sexual arousal	9.28 (6.26)	0-20	8.10 (5.11)	0-23	10.47 (7.13)	-1.47
Rating of genital sensations	2.13 (1.40)	0-4	1.67 (1.12)	0-6	2.60 (1.51)	-2.71**
Genital response	-	0.65-28.70	10.21 (7.03)	0-0.09	0.04 (0.02)	-

Note. ** $p < .01$.

Table 2
Correlations Between the Subjective Orgasm Experience Dimensions (Affective, Sensory, Intimacy and Rewards) and Propensity for Sexual Excitation, Propensity for Sexual Inhibition due to Threat of Performance Failure, Propensity for Sexual Inhibition due to Threat of Performance Consequences, Rating of Sexual Arousal, Rating of Sexual Arousal and Genital Response

Variable	1	2	3	4	5	6	7	8	9	10
1. Affective	-	.43*	.22	-.05	-.08	-.13	-.16	.01	.07	-.22
2. Sensory	.70***	-	.36	.18	.03	.40*	-.19	.59**	.38*	-.10
3. Intimacy	.55**	.51**	-	-.07	.11	.19	-.28	.25	.10	.29
4. Rewards	.72***	.59**	.63***	-	-.17	.03	.32	.32	.23	-.05
5. Propensity sexual excitation	.43*	.39*	.29	.49**	-	.34	-.11	.04	.21	-.14
6. Propensity for sexual inhibition to the threat of performance failure	.00	-.06	-.04	-.15	-.02	-	-.06	.38*	.30	.06
7. Propensity for sexual inhibition to the threat of performance consequences	-.61***	-.52**	-.32	-.40*	-.50**	.22	-	.05	.10	.08
8. Rating of sexual arousal	.44*	.38*	.44*	.33	.41*	-.18	-.48**	-	.82***	.17
9. Rating of genital sensations	.19	.18	.37*	.20	.12	-.15	-.11	.69**	-	-.04
10. Genital response	.18	.14	.37*	.10	.13	-.20	-.21	.69**	.64***	-

Note. Values below the diagonal are based on men scores. Values above the diagonal are based on women scores.* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3
Multiple Regression Models for Subjective Orgasm Experience Dimensions in men

Predictors	B	SE	β	95% CI	t	p	R ²	VIF
Affective							.35	
Propensity for sexual inhibition due to the threat of performance consequences	-1.03	0.34	-.51	-1.72, -0.33	-3.02	.005		1.30
Rating of sexual arousal	0.21	0.18	.19	-0.17, 0.58	1.14	.265		1.30
Sensory							.24	
Propensity for sexual inhibition due to the threat of performance consequences	-2.35	0.98	-.44	-4.35, -0.35	-2.41	.023		1.30
Rating of sexual arousal	0.46	0.52	.16	-0.61, 1.54	0.88	.385		1.30
Intimacy							.16	
Rating of sexual arousal	0.32	0.12	.44	0.07, 0.57	2.59	.015		1.00
Rewards							.21	
Sexual excitation	0.51	0.17	.49	0.16, 0.86	2.96	.006		1.00

Notes. B: non-standardized beta; SE: standard error; β : standardized beta; 95% CI: 95% confidence interval; R²: adjusted R-squared value; VIF: Variance inflation factor.

Table 4
Multiple Regression Models for Subjective Orgasm Experience Dimensions in Women

Predictors	B	SE	β	95% CI	t	p	R ²	VIF
Sensory							.33	
Rating of sexual arousal	1.23	0.39	.83	0.41, 1.34	3.16	.004		1.00
Rating of genital sensations	-2.05	1.83	-.29	0.16, 5.17	-1.12	.274		1.00

Notes. B: non-standardized beta; SE: standard error; β : standardized beta; 95% CI: 95% confidence interval; R²: adjusted R-squared value; VIF: Variance inflation factor.

For women, correlations were observed between propensity for sexual inhibition due to threat of performance failure ($r = .40, p < .05$), rating of sexual arousal ($r = .59, p < .01$) and rating of genital sensations ($r = .38, p < .05$) with the sensory dimension.

Regression Models

Regarding regression models, in men propensity for sexual excitation was positively correlated with the rewards dimension, $R^2 = .24, F(1, 28) = 8.78, p < .01$. Propensity for sexual inhibition due to threat of performance consequences was significantly associated in the negative sense with the affective, $R^2 = .35, F(1, 28) = 8.89, p < .01$, and sensory dimensions, $R^2 = .25, F(1, 28) = 5.58, p < .01$. The rating of sexual arousal was positively associated with the intimacy dimension of orgasm, $R^2 = .16, F(1, 28) = 6.70, p < .05$ (see Table 3).

In women, only the sensory dimension was associated with the positive sense with the rating of sexual arousal, $R^2 = .33, F(1, 28) = 8.13, p < .01$ (see Table 4).

Discussion

The present study aimed to provide validity evidence of the multidimensional model of the subjective orgasm experience in the solitary masturbation context by relating the measures of its four dimensions with sexual arousal measures (i.e., propensity for sexual excitation, propensity for sexual inhibition due to threat of performance failure, propensity for sexual inhibition due to threat of performance consequences, and the rating of sexual arousal, the rating of genital sensations and genital response when viewing videos showing masturbation behavior).

The relations found between orgasm and sexual arousal measures were congruent with previous findings (Arcos-Romero et al., 2019; Brody, 2007; Brody et al., 2013; Paterson et al., 2014; Stoléru et

al., 2012). In men, propensity for sexual excitation correlated with the rewards dimension, and propensity for sexual inhibition due to threat of performance consequences was correlated with the affective and sensory dimensions. Also, the rating of sexual arousal was a significant correlate of the intimacy dimension of orgasm. In women, only the sensory dimension correlated with the rating of sexual arousal. The differences that appeared between the sexual arousal variables involved in men and women's subjective orgasm experience also fall in line with previous results which suggest that an orgasm is experienced differently depending on subjects being men or women (Arcos-Romero & Sierra, 2020; Mangas et al., 2022; Tavares et al., 2018).

First of all, propensity for sexual excitation was related in men with the affective, sensory and rewards dimensions of orgasm. Despite these correlations being moderate, only propensity for sexual excitation was capable of explaining 21% of variance for the rewards dimension. The association of propensity for sexual excitation with orgasm in men, but not in women, has already been previously reported (Arcos-Romero et al., 2019; Carpenter et al., 2011; Moyano & Sierra, 2014). Explanations related to gender differences have been put forward because men show greater propensity for sexual excitation than women (Arcos-Romero & Sierra, 2020; Carpenter et al., 2011; Moyano & Sierra, 2014). This is consistent with results that have related this trait to more frequent masturbation (Janssen et al., 2002), with men showing more frequency (e.g., Cervilla et al., 2022; Mercer et al., 2013). In the sexual relationships context, it has also been reported that women do not always expect to have an orgasm after sexual arousal (Salisbury & Fisher, 2014), which suggests a relative independence between sexual arousal and an orgasm in women. While previous studies have linked propensity for sexual excitation with orgasm (Quinta Gomes et al., 2018), there is also evidence where no differences in propensity for sexual excitation were observed in women with and without orgasmic difficulties (Moura et al., 2020),

suggesting some independence of this dimension of excitation from the subjective orgasm experience in women. Future works should more profoundly analyze these findings in the masturbation context. It has also been hypothesized that the items making up this scale might be more representative of the sexual arousal of men than women (Graham et al., 2004; Granados et al., 2017).

Moreover, propensity for sexual inhibition due to threat of performance failure was correlated positively with the sensory dimension of the last orgasm in the masturbation context. Despite not being a variable significantly associated with this dimension of orgasm in the regression model, the correlation could be counterintuitive. It has been previously described how sexual inhibition is associated with orgasm problems (Moura et al., 2020) by propensity for sexual inhibition due to threat of performance failure playing a relevant role in difficulties with female orgasm (Tavares et al., 2018). Nonetheless, those women who have more difficulty in having an orgasm during sexual relationships consider masturbation more satisfactory (Rowland et al., 2019), which could explain the association between propensity for sexual inhibition due to threat of performance failure and more intense sensorial experience with an orgasm obtained by masturbation, where clitoris stimulation is more frequent than vaginal penetration (Fahs & Frank, 2014; Rowland et al., 2020).

Propensity for sexual inhibition due to threat of performance consequences was correlated in men negatively with the affective, sensory and rewards dimensions, but only explained variance negatively on the affective and sensory dimensions. The previous literature reveals how propensity for inhibition due to threat of performance failure is more relevant in sexual dysfunctionality for men (Bancroft et al., 2009; Moyano & Sierra, 2014; Sierra et al., 2019) and women (Tavares et al., 2018) comparing to propensity for sexual inhibition due to threat of performance consequences. However, our results suggest that the role of sexual inhibition propensity due to the threat of performance consequences might be more relevant in the context of masturbation than inhibition due to the threat of performance failure. This pattern is contrary to what was observed in the context of sexual relationships, where inhibition due to the threat of performance failure appears to be more relevant to sexual functioning difficulties than sexual inhibition propensity due to the threat of performance consequences (Bancroft et al., 2009; Sierra et al., 2019; Tavares et al., 2018). This would suggest that the role of sexual inhibition might differ according to the type of sexual activity. Future work should address this question in greater depth. In line with this, previous results have pointed out that inhibition for fear of sexual activity consequences would be a more related dimension to external threats than to sexual difficulties (Bancroft et al., 2009). Indeed, one of the items of this dimension refers to inhibition associated with being discovered while masturbating: "If I am masturbating on my own and I realize that someone is likely to come into the room at any moment, I will lose my erection/my sexual arousal". Practicing masturbation in men could be seen as behavior that compensates unsatisfactory sexual relationships or not participating in them (Regnerus et al., 2017). So it is possible to expect inhibition by the presence of an external threat during such practice might affect the intensity with which an orgasm is experienced.

The associations of the sexual arousal and genital sensation ratings with the subjective orgasm experience in both men and women are congruent with former studies (Paterson et al., 2014; Stoléru et al.,

2012). The rating of sexual arousal explained, on the one hand, 33% of the variance on the sensory dimension for women, and congruently with that observed in the sexual relationships context (Arcos-Romero et al., 2019) and, on the other hand, 16% of the variance on the intimacy dimension of orgasm for men. These results fall in line with former findings showing a relation between either an increase or accumulation of the sexual arousal rating and having an orgasm after masturbation in the laboratory context for men and women (Paterson et al., 2014). The relation between genital sensations and the sensory dimension in women (Arcos-Romero et al., 2019) is congruent with the hypothesis which indicates that women can better describe orgasm sensations than men when considering physical, affective and emotional aspects (Rowland et al., 2018; Sierra et al., 2021), while men are more focused on their own genital reactions (Mah & Binik, 2002). The association between the rating of sexual arousal and the intimacy dimension of masturbation in men could be expected because they use explicit sexual material more frequently during masturbation than women (Hald et al., 2014), which could favor the sexual arousal experienced in the laboratory being correlated with intimate aspects of men's last orgasm.

Finally, genital response (penile circumference) correlated with the intimacy dimension for men. This association coincides with that encountered in the sexual relationships context (Arcos-Romero et al., 2019). Unlike this cited work, genital response in the present study was not a significant variable associated in the regression model with orgasm experience. Recent results point out how people with sexual dysfunction in the sexual relationships context reveal better functioning in the masturbation context (Rowland et al., 2021). This suggests that men's subjective orgasm experience could be relatively independent of genital response unlike the sexual relationships context.

Worth mentioning, in terms of sexual concordance, the differences in the intercorrelation patterns between men and women. These differences reveal that rating of sexual arousal and genital response correlate more weakly in women than in men, which is consistent with prior findings (see Chivers et al., 2010). In women, subjective sexual arousal and subjective genital sensations are correlated with each other, whereas they do not correlate with genital response. However, these two measures are the only ones correlated with the sensory dimension (except for sexual inhibition due to the threat of performance failure). In women, higher sexual concordance in response to sexual relationship stimuli has been associated with a more frequent experience of orgasm (consistency) in sexual relationships but not in masturbation (Brody et al., 2003). These results would suggest that, in women, sexual concordance would be independent of both orgasmic consistency and the subjective orgasm experience in masturbation. On the other hand, in men, congruence is observed between rating of sexual arousal and genital response, but these measures are not the strongest variables correlated with the sensory dimension. Despite finding greater sexual concordance, sexual inhibition would have a greater impact on the orgasmic experience during masturbation. Taken together, these results suggest that sexual concordance would not be associated with the orgasmic sensory dimension during masturbation. Future research should more specifically test this hypothesis by considering variables related to traditional sexual scripts (Bonilla-Algobia & Rivas-Rivero, 2022) and sexual double standard (Álvarez-Muelas et al., 2022, 2023). Moreover, there are no differences between men

and women in most measures of sexual arousal. This suggests that the distinct association patterns between sexes are unlikely to be explained by different score distributions. However, these findings should be approached with caution, as previous work has indicated that the applied analytical methods may be linked to observed sexual concordance (Suschinsky et al., 2009) and the type of device used could also be implicated in this lack of concordance, as the rating of sexual arousal is more strongly associated with vulvar blood flow than with vaginal vasocongestion (Bouchard et al., 2017).

This study has some limitations. The sample was formed by a young heterosexual university population, which should be considered when generalizing the results. Due to the sample size and the differences between men and women in internal consistency -especially in the measures of the intimacy dimension-, interpretations should be considered with caution. This design type might not allow causality relations to be established. Future research should include a population with a wider age range, and different gender identities or sexual orientations. Due to the different observed relationships of sexual inhibition with the subjective orgasm experience, future studies should include additional measures of propensity for sexual inhibition/excitation to enrich the results.

Conclusion

The results of this study contribute evidence to validity of the multidimensional model of the subjective orgasm experience in solitary masturbation, confirming its usefulness. It is worth highlighting the relation between sexual arousal measures and the subjective orgasm experience in masturbation, especially for men, where its dimensions are correlated with more sexual arousal measures than women. Similarly, as observed in the sexual relationships context, the variables related to propensity for sexual inhibition/excitation would be more relevant for men, while for women the rating of sexual arousal would be more relevant. In conclusion, studying orgasm experience from a multidimensional perspective offers a conceptual framework that allows orgasm to be evaluated by including differential nuances in the psychological qualities of the sexual response in men and women. This model helps us to gain a deeper understanding of the different patterns observed in both men and women and highlights the importance of considering orgasm not only in the context of sexual relationships. The findings of this study contribute to a more intricate viewpoint, contributing to the essential exploration of orgasm from a psychological perspective. These ideas could potentially guide sex therapy by shedding light on the roles of arousal and the mechanisms that contribute to heightened orgasm experiences.

References

- Álvarez-Muelas, A., Mateo, V., & Sierra, J. C. (2023). Comparison of the components of the Interpersonal Exchange Model of Sexual Satisfaction between different typologies of adherence to the sexual double standard. *Revista Iberoamericana de Psicología y Salud*, 14, 1-9. <https://doi.org/10.23923/j.rips.2023.01.060>
- Álvarez-Muelas, A., Sierra, J. C., Gómez-Berrocal, C., Arcos-Romero, I., Calvillo, C., & Granados, R. (2022). Study of sexual concordance in men and women with different typologies of adherence to the sexual double standard. *International Journal of Clinical and Health Psychology*, 22, Article 100297. <https://doi.org/10.1016/j.ijchp.2022.100297>
- Arcos-Romero, A. I., Granados, R., & Sierra, J. C. (2019). Relationship between orgasm experience and sexual excitation: Validation of the model of the subjective orgasm experience. *International Journal of Impotence Research*, 31, 282-287. <https://doi.org/10.1038/s41443-018-0095-6>
- Arcos-Romero, A. I., Moyano, N., & Sierra, J. C. (2018). Psychometric properties of the Orgasm Rating Scale in context of sexual relationship in a Spanish sample. *Journal of Sexual Medicine*, 15, 741-749. <https://doi.org/10.1016/j.jsxm.2018.03.005>
- Arcos-Romero, A. I., & Sierra, J. C. (2020). Factors associated with subjective orgasm experience in heterosexual relationships. *Journal of Sex & Marital Therapy*, 46, 314-329. <https://doi.org/10.1080/0092623X.2019.1711273>
- Bancroft, J., Graham, C. A., Janssen, E., & Sanders, S. A. (2009). The Dual Control Model: Current status and future directions. *Journal of Sex Research*, 46, 121-142. <https://doi.org/10.1080/00224490902747222>
- Bancroft, J., & Janssen, E. (2000). The dual control model of male sexual response: A theoretical approach to centrally mediated erectile dysfunction. *Neuroscience & Biobehavioral Reviews*, 24, 571-579. [https://doi.org/10.1016/S0149-7634\(00\)00024-5](https://doi.org/10.1016/S0149-7634(00)00024-5)
- Bonilla-Algovia, E., & Rivas-Rivero, E. (2022). Influence of sexism, romantic myths and adverse life events on gender-based violence: A study with partner aggressors. *Revista Iberoamericana de Psicología y Salud*, 13, 112-119. <https://doi.org/10.23923/j.rips.2022.02.057>
- Bouchard, K. N., Chivers, M. L., & Pukall, C. F. (2017). Effects of genital response measurement device and stimulus characteristics on sexual concordance in women. *Journal of Sex Research*, 54, 1197-1208. <https://doi.org/10.1080/00224499.2016.1265641>
- Brody, S. (2007). Intercourse orgasm consistency, concordance of women's genital and subjective sexual arousal, and erotic stimulus presentation sequence. *Journal of Sex & Marital Therapy*, 33, 31-39. <https://doi.org/10.1080/00926230600998458>
- Brody, S., Klapilova, K., & Krejčová, L. (2013). More frequent vaginal orgasm is associated with experiencing greater excitement from deep vaginal stimulation. *Journal of Sexual Medicine*, 10, 1730-1736. <https://doi.org/10.1111/jsm.12153>
- Brody, S., Laan, E., & van Lunsen, R. H. (2003). Concordance between women's physiological and subjective sexual arousal is associated with consistency of orgasm during intercourse but not other sexual behavior. *Journal of Sex & Marital Therapy*, 29, 15-23. <https://doi.org/10.1080/713847101>
- Carpenter, D. L., Janssen, E., Graham, C. A., Vorst, H., & Wicherts, J. (2011). The Sexual Inhibition/Sexual Excitation Scales-Short Form (SIS/SES-SF). In T. D. Fisher, C. M. Davis, W. L. Yarber, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (3rd ed., pp. 236-239). Routledge.
- Cervilla, O., Granados, R., Álvarez-Muelas, A., Calvillo, C., Muñoz-García, L., Mangas, P., & Sierra, J. C. (2021, September 9-12). *Films para validar el modelo multidimensional de la experiencia subjetiva orgásmica en la masturbación* [Poster presentation]. 25th Congress of the World Association for Sexual Health.
- Cervilla, O., Vallejo-Medina, P., Gómez-Berrocal, C., de la Torre, D., & Sierra, J. C. (2022). Validation of the Orgasm Rating Scale in the context of masturbation. *Psicothema*, 34, 151-159. <https://doi.org/10.7334/psicothema2021.223>
- Chivers, M. L., Seto, M. C., Lalumiere, M. L., Laan, E., & Grimbos, T. (2010). Agreement of self-reported and genital measures of sexual arousal in men and women: A meta-analysis. *Archives of Sexual Behavior*, 39, 5-56. <https://doi.org/10.1007/s10508-009-9556-9>

- Fahs, B., & Frank, E. (2014). Notes from the back room: Gender, power, and (in) visibility in women's experiences of masturbation. *Journal of Sex Research, 51*, 241-252. <https://doi.org/10.1080/00224499.2012.745474>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. <https://doi.org/10.3758/BF03193146>
- Foust, M. D., Komolova, M., Malinowska, P., & Kyono, Y. (2022). Sexual subjectivity in solo and partnered masturbation experiences among emerging adult women. *Archives of Sexual Behavior, 51*, 3889-3903. <https://doi.org/10.1007/s10508-022-02390-9>
- Goldey, K. L., Posh, A. R., Bell, S. N., & van Anders, S. M. (2016). Defining pleasure: A focus group study of solitary and partnered sexual pleasure in queer and heterosexual women. *Archives of Sexual Behavior, 45*, 2137-2154. <https://doi.org/10.1007/s10508-016-0704-8>
- Graham, C. A., Sanders, S. A., Milhausen, R. R., & McBride, K. R. (2004). Turning on and turning off: A focus group study of the factors that affect women's sexual arousal. *Archives of Sexual Behavior, 33*, 527-538. <https://doi.org/10.1023/B:ASEB.0000044737.62561.f0>
- Granados, M. R., Salinas, J. M., & Sierra, J. C. (2017). Spanish version of the Sexual Excitation/Sexual Inhibition Inventory for Women: Factorial structure, reliability and validity evidences. *International Journal of Clinical and Health Psychology, 17*, 65-76. <https://doi.org/10.1016/j.ijchp.2016.09.003>
- Granados, R., Carvalho, J., & Sierra, J. C. (2021). Preliminary evidence on how the dual control model predicts female sexual response to a bogus negative feedback. *Psychological Reports, 124*, 502-520. <http://doi.org/10.1177/0033294120907310>
- Hald, G. M., Seaman, C., & Linz, D. (2014). *Sexuality and pornography* (Vol. 2). American Psychological Association.
- Janssen, E. (2011). Sexual arousal in men: A review and conceptual analysis. *Hormones and Behavior, 59*, 708-716. <https://doi.org/10.1016/j.yhbeh.2011.03.004>
- Janssen, E., Vorst, H., Finn, P., & Bancroft, J. (2002). The Sexual Inhibition (SIS) and Sexual Excitation (SES) Scales: I. Measuring sexual inhibition and excitation proneness in men. *Journal of Sex Research, 39*, 114-126. <https://doi.org/10.1080/00224490209552130>
- Kontula, O., & Miettinen, A. (2016). Determinants of female sexual orgasms. *Socioaffective Neuroscience & Psychology, 6*, Article 31624. <https://doi.org/10.3402/snp.v6.31624>
- Levin, R., & van Berlo, W. (2004). Sexual arousal and orgasm in subjects who experience forced or non-consensual sexual stimulation: A review. *Journal of Clinical Forensic Medicine, 11*, 82-88. <https://doi.org/10.1016/j.jcfm.2003.10.008>
- Mah, K., & Binik, Y. M. (2001). The nature of human orgasm: A critical review of major trends. *Clinical Psychology Review, 21*, 823-856. [https://doi.org/10.1016/S0272-7358\(00\)00069-6](https://doi.org/10.1016/S0272-7358(00)00069-6)
- Mah, K., & Binik, Y. M. (2002). Do all orgasms feel alike? Evaluating a two-dimensional model of the orgasm experience across gender and sexual context. *Journal of Sex Research, 39*, 104-113. <https://doi.org/10.1080/00224490209552129>
- Mah, K., & Binik, Y. M. (2020). The orgasm rating scale. In R. R. Milhausen, J. K. Sakaluk, T. D. Fisher, C. M. Davis, & W. L. Yarber (Eds.), *Handbook of sexuality-related measures* (4th ed., pp. 503-507). Routledge.
- Mangas, P., Granados, R., Cervilla, O., & Sierra, J. C. (2022). Validation of the Orgasm Rating Scale in context of sexual relationships of gay and lesbian adults. *International Journal of Environmental Research and Public Health, 19*, Article 887. <https://doi.org/10.3390/ijerph19020887>
- Mercer, C. H., Tanton, C., Prah, P., Erens, B., Sonnenberg, P., Clifton, S., Macdowall, W., Lewis, R., Field, N., Datta, J., Copas, A. J., Phelps, A., Wellings, K., & Johnson, A. M. (2013). Changes in sexual attitudes and lifestyles in Britain through the life course and over time: Findings from the National Surveys of Sexual Attitudes and Lifestyles (NATSAL). *Lancet, 382*, 1781-1794. [https://doi.org/10.1016/S0140-6736\(13\)62035-8](https://doi.org/10.1016/S0140-6736(13)62035-8)
- Meston, C. M., Hull, L., Levin, R. J., & Sipski, M. (2004). Disorders of orgasm in women. *Journal of Sexual Medicine, 1*, 66-68. <https://doi.org/10.1111/j.1743-6109.2004.10110.x>
- Mollaioli, D., Sante, S. D., Limoncin, E., Ciocca, G., Gravina, G. L., Maseroli, E., Fanni, E., Vignozzi, L., Maggi, M., Lenzi, A., & Jannini, E. A. (2018). Validation of a Visual Analogue Scale to measure the subjective perception of orgasmic intensity in females: The Orgasmometer-F. *Plos ONE, 13*, Article e202076. <https://doi.org/10.1371/journal.pone.0202076>
- Mosher, D. L. (2011). Multiple indicators of subjective sexual arousal. In T. D. Fisher, C. M. Davis, W. L. Yarber, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (3rd ed., pp. 59-61). Routledge.
- Moura, C. V., Tavares, I. M., & Nobre, P. J. (2020). Cognitive-affective factors and female orgasm: A comparative study on women with and without orgasm difficulties. *Journal of Sexual Medicine, 17*, 2220-2228. <https://doi.org/10.1016/j.jsxm.2020.08.005>
- Moyano, N., & Sierra, J. C. (2014). Validation of the Sexual Inhibition/Sexual Excitation Scales-Short Form (SIS/SES-SF). *Terapia Psicológica, 32*, 87-100. <http://teps.cl/index.php/teps/article/view/48/51>
- Muñoz-García, L. E., Gómez-Berrocal, C., & Sierra, J. C. (2023). Evaluating the subjective orgasm experience through sexual context, gender, and sexual orientation. *Archives of Sexual Behavior, 52*, 1479-1491. <https://doi.org/10.1007/s10508-022-02493-3>
- Paterson, L. Q., Jin, E. S., Amsel, R., & Binik, Y. M. (2014). Gender similarities and differences in sexual arousal, desire, and orgasmic pleasure in the laboratory. *Journal of Sex Research, 51*, 801-813. <https://doi.org/10.1080/00224499.2013.867922>
- Quinta Gomes, A. L., Janssen, E., Santos-Iglesias, P., Pinto-Gouveia, J., Fonseca, L. M., & Nobre, P. J. (2018). Validation of the Sexual Inhibition and Sexual Excitation Scales (SIS/SES) in Portugal: Assessing gender differences and predictors of sexual functioning. *Archives of Sexual Behavior, 47*, 1721-1732. <https://doi.org/10.1007/s10508-017-1137-8>
- Regnerus, M., Price, J., & Gordon, D. (2017). Masturbation and partnered sex: Substitutes or complements? *Archives of Sexual Behavior, 46*, 2111-2121. <https://doi.org/10.1007/s10508-017-0975-8>
- Rowland, D. L., Cempel, L. M., & Tempel, A. R. (2018). Women's attributions regarding why they have difficulty reaching orgasm. *Journal of Sex & Marital Therapy, 44*, 475-484. <https://doi.org/10.1080/0092623X.2017.1408046>
- Rowland, D. L., Donarski, A., Graves, V., Caldwell, C., Hevesi, B., & Hevesi, K. (2019). The experience of orgasmic pleasure during partnered and masturbatory sex in women with and without orgasmic difficulty. *Journal of Sex & Marital Therapy, 45*, 550-561. <https://doi.org/10.1080/0092623X.2019.1586021>
- Rowland, D. L., Hamilton, B. D., Bacys, K. R., & Hevesi, K. (2021). Sexual response differs during partnered sex and masturbation in men with and without sexual dysfunction: Implications for treatment. *Journal of Sexual Medicine, 18*, 1835-1842. <https://doi.org/10.1016/j.jsxm.2021.09.005>

- Rowland, D. L., Kolba, T. N., McNabney, S. M., Uribe, D., & Hevesi, K. (2020). Why and how women masturbate, and the relationship to orgasmic response. *Journal of Sex & Marital Therapy*, 46, 361-376. <https://doi.org/10.1080/0092623X.2020.1717700>
- Salisbury, C. M., & Fisher, W. A. (2014). "Did you come?" A qualitative exploration of gender differences in beliefs, experiences, and concerns regarding female orgasm occurrence during heterosexual sexual interactions. *Journal of Sex Research*, 51, 616-631. <https://doi.org/10.1080/00224499.2013.838934>
- Sierra, J. C., Arcos-Romero, A. I., Granados, M. R., Sánchez-Fuentes, M. M., Calvillo, C., & Moyano, N. (2017). Ratings of Sexual Arousal and Ratings of Genital Sensations: Psychometric properties in Spanish sample. *Revista Internacional de Andrología*, 15, 99-107. <https://doi.org/10.1016/j.androl.2016.10.008>
- Sierra, J. C., Cervilla, O., Álvarez-Muelas, A., & Sánchez-Fuentes, M. M. (2024). Validity and reliability evidence and norms of the Spanish version of the Sexual Inhibition/Sexual Excitation Scales-Short Form. Advance online publication. *Psicothema*.
- Sierra, J. C., de la Rosa Centella, M. D., Granados, R., Calvillo, C., Arcos-Romero, A. I., Sánchez-Fuentes, M. M., & Moyano, N. (2019). Validity evidences of the Spanish Version of the Sexual Inhibition/Sexual Excitation Scales-Short Form. *Revista Iberoamericana de Diagnóstico y Evaluación - e Avaliação Psicológica* 50, 173-184. <https://doi.org/10.21865/RIDEP50.1.14>
- Sierra, J. C., Ortiz, A., Calvillo, C., & Arcos-Romero, A. I. (2021). Subjective orgasm experience in the context of solitary masturbation. *Revista Internacional de Andrología*, 19, 93-101. <https://doi.org/10.1016/j.androl.2019.10.001>
- Stoléru, S., Fonteille, V., Cornélis, C., Joyal, C., & Moulrier, V. (2012). Functional neuroimaging studies of sexual arousal and orgasm in healthy men and women: A review and meta-analysis. *Neuroscience & Biobehavioral Reviews*, 36, 1481-1509. <https://doi.org/10.1016/j.neubiorev.2012.03.006>
- Suschinsky, K. D., Lalumière, M. L., & Chivers, M. L. (2009). Sex differences in patterns of genital sexual arousal: Measurement artifacts or true phenomena? *Archives of Sexual Behavior*, 38, 559-573. <https://doi.org/10.1007/s10508-008-9339-8>
- Tavares, I. M., Laan, E. T., & Nobre, P. J. (2018). Sexual inhibition is a vulnerability factor for orgasm problems in women. *Journal of Sexual Medicine*, 15, 361-372. <https://doi.org/10.1016/j.jsxm.2017.12.015>

Funding: This work was supported by the Ministerio de Ciencia, Innovación y Universidades under Research Project RTI2018-093317-B-I00 and the Bursary FPU18/03102 for University Professor Training as part of the first author's thesis (Psychological Doctoral Program B13 56 1; RD 99/2011).

Institutional Review Board Statement: This study was approved by the Ethics Committee on Human Research of the University of Granada (n. 682/CEIH/2018).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data is available upon request from the corresponding author.

Conflicts of Interest: The authors declare that there is no conflict of interest.