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**ESTUDIO SOBRE LA MASTURBACIÓN: ACTITUDES, EXPERIENCIA
ORGÁSMICA SUBJETIVA Y SU RELACIÓN CON LA SATISFACCIÓN
SEXUAL**

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RESUMEN / SUMMARY

RESUMEN

La masturbación se puede definir como la estimulación de los genitales propios o de otra persona. Puede tener lugar en un contexto diádico, aunque un aspecto característico es su práctica en solitario. Esta conducta está presente a lo largo del ciclo vital, es relevante para la salud sexual y es reconocida como una fuente de placer sexual. En los últimos años, el estudio de la masturbación está recibiendo mayor atención en el ámbito científico; sin embargo, las evidencias sobre su papel en contextos como el de las relaciones sexuales y la pareja siguen siendo limitadas. Por ello, los objetivos generales de la presente Tesis Doctoral fueron, en primer lugar, enriquecer el estudio de la masturbación ofreciendo diferentes medidas que permitan evaluar parámetros de esta conducta, como son la actitud negativa hacia la masturbación y la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario y, en segundo lugar, analizar la relación entre masturbación en solitario y relaciones sexuales, concretamente, examinando la asociación entre diferentes parámetros de la masturbación en solitario con la satisfacción orgásmica, y explorando en hombres y en mujeres con pareja que presentan distintos patrones de actividad sexual (i.e., frecuencia de masturbación en solitario y de relaciones sexuales) un perfil psicosexual en el que se incluye la satisfacción sexual. Para lograr estos dos grandes objetivos, se plantean seis estudios independientes y secuenciales correspondientes con los siguientes objetivos específicos:

1. Realizar una revisión sistemática de los artículos científicos que han relacionado masturbación y satisfacción sexual.
2. Validar en población adulta española el *Negative Attitudes Toward Masturbation Inventory* (NATMI; Abramson y Mosher, 1975) para evaluar la actitud negativa hacia la masturbación.
3. Validar en población adulta española la *Orgasm Rating Scale* (ORS; Mah y Binik, 2002, 2005, 2020) en el contexto de la masturbación en solitario para evaluar la experiencia subjetiva del orgasmo en este contexto.

4. Proporcionar evidencias de validez al Modelo de la Experiencia Subjetiva del Orgasmo, en el contexto de la masturbación en solitario, examinando la relación de sus cuatro dimensiones (afectiva, sensorial, íntima y recompensa) con diferentes medidas de excitación sexual: propensión a la excitación e inhibición sexual, valoración de la excitación sexual y de las sensaciones genitales, y respuesta genital.
5. Comparar entre hombres y mujeres diferentes parámetros de la masturbación (i.e., edad de inicio, frecuencia, actitud negativa, deseo sexual solitario y experiencia subjetiva del orgasmo) y analizar la relación de estos con la satisfacción orgásmica en las relaciones sexuales.
6. En el contexto de pareja, describir un perfil psicosexual en hombres y mujeres con diferentes patrones de frecuencia de masturbación en solitario y de relaciones sexuales.

Para alcanzar el primer objetivo de la Tesis Doctoral se realizó una revisión sistemática de la literatura científica con el objeto de examinar la relación entre la masturbación en solitario y la satisfacción sexual. Para ello, se consultaron las bases de datos *APA PsycInfo*, *Medline*, *Scopus* y *Web of Science*. Se seleccionaron 22 artículos que reunían los criterios de inclusión y cumplían los estándares de calidad. De forma general, se observó en los hombres una relación predominantemente negativa entre la masturbación en solitario y la satisfacción sexual, mientras que en las mujeres los resultados fueron menos consistentes, encontrándose más evidencias a favor de una relación positiva que en el hombre. La heterogeneidad de los resultados puede deberse a las diferentes covariables consideradas en los estudios, a la evaluación de la masturbación atendiendo a diferentes rangos temporales y a la diversidad de medidas para evaluar la satisfacción sexual.

Esta revisión sistemática puso de manifiesto la importancia de contar con medidas de masturbación que permitan ampliar su estudio. Ante la ausencia de

instrumentos con garantías psicométricas en población adulta española para evaluar la actitud negativa hacia la masturbación, el segundo objetivo de esta Tesis Doctoral fue validar el *Negative Attitudes Toward Masturbation Inventory* (NATMI; Abramson y Mosher, 1975). Para ello, se evaluaron 4.116 personas heterosexuales de la población general española. Además del NATMI, se aplicó un cuestionario Sociodemográfico y de la Historia Sexual, y las versiones de diferentes escalas validadas en España para evaluar erotofilia, actitud positiva hacia las fantasías sexuales, deseo sexual solitario, propensión a la excitación e inhibición sexual y funcionamiento sexual. La versión final del NATMI resultó en una versión breve de diez ítems con un buen ajuste de su estructura unidimensional y una adecuada fiabilidad de consistencia interna. Además, aquellas personas que informaban una actitud más negativa hacia la masturbación presentaban menos frecuencia de masturbación, más frecuencia de rezo, menos erotofilia, una actitud más negativa hacia las fantasías sexuales, más inhibición sexual y peor funcionamiento sexual, en general. Se concluye que esta versión española breve del NATMI es un instrumento que aporta medidas válidas y fiables de la actitud negativa hacia la masturbación. Véase el Apéndice F.

Con respecto al tercer objetivo específico, con el propósito de contar con una escala que permitiese evaluar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario, se validó la *Orgasm Rating Scale* (ORS; Mah y Binik, 2002, 2005, 2020) en este contexto. Para ello, se contó con la participación de 1.171 hombres y 1.424 mujeres de 18 a 83 años a los que se les aplicó la versión de la ORS previamente validada para el contexto de las relaciones sexuales por Arcos-Romero et al. (2018), consistente en 25 ítems distribuidos en cuatro dimensiones (afectiva, sensorial, íntima y recompensa). Además de un cuestionario sociodemográfico, se aplicaron escalas para evaluar la actitud negativa hacia la masturbación, la erotofilia, la actitud hacia las fantasías sexuales, el deseo sexual solitario, la propensión a la excitación e inhibición sexual y el funcionamiento sexual. Los resultados revelaron un buen ajuste de la estructura tetrafactorial de la escala, integrada por los factores Afectivo, Sensorial,

Intimidad y Recompensa. Además, la ORS alcanzó el nivel estricto de invarianza de sus medidas por sexo y edad, presentando también adecuada fiabilidad de consistencia interna, con un alfa ordinal que osciló entre 0,71 de la dimensión afectiva y 0,95 de la dimensión sensorial. También se aportaron evidencias de validez por la relación de sus medidas con constructos afines, ya que las cuatro dimensiones de la ORS se asociaron, acorde a lo esperado, en sentido negativo, con la actitud negativa hacia la masturbación y, en sentido positivo, con erotofilia, actitud positiva hacia las fantasías sexuales y propensión a la excitación sexual. Además, se encontró que las personas con dificultad para alcanzar el orgasmo en las relaciones sexuales presentaban menor intensidad en la experiencia subjetiva del orgasmo en la masturbación, lo que revela la capacidad de las puntuaciones de la ORS para el contexto de masturbación para discriminar entre personas con y sin dificultades con el orgasmo. En conclusión, la ORS en el contexto de la masturbación en solitario es un instrumento con adecuadas propiedades psicométricas para evaluar la experiencia subjetiva del orgasmo en la masturbación. Véase el Apéndice G.

Para alcanzar el cuarto objetivo, se diseñó un estudio de laboratorio para aportar evidencias de validez al Modelo de la Experiencia Subjetiva del Orgasmo, en el contexto de la masturbación en solitario. Para ello, se examinó la relación entre las cuatro dimensiones de la experiencia subjetiva del orgasmo (afectiva, sensorial, intimidad y recompensa) con medidas de excitación sexual como propensión a la excitación o rasgo (excitación/inhibición sexual) y como excitación estado (valoración de la excitación sexual y las sensaciones genitales, y respuesta genital) ante vídeos con contenido sexual explícito en el contexto de laboratorio. Participaron 30 hombres y 30 mujeres jóvenes heterosexuales de la población española. En primer lugar, se evaluó la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario y la propensión a la excitación e inhibición sexual. A continuación, los sujetos visualizaban dos bloques de vídeos contrabalanceados con contenido neutro y contenido sexual explícito. Durante la visualización de los vídeos, se registró la respuesta genital mediante pletismografía

peniana para medir los cambios en el diámetro de la circunferencia del pene o fotopleletismografía vaginal para identificar los cambios en la amplitud del pulso vaginal. Al finalizar cada bloque de vídeos, los sujetos autoinformaban de su excitación sexual general y de sus sensaciones genitales en particular. Se observaron relaciones significativas entre la excitación sexual y la experiencia subjetiva del orgasmo, aportándose así evidencias de validez al Modelo de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación en solitario.

El quinto objetivo fue examinar las diferencias entre hombres y mujeres en distintos parámetros de la masturbación (i.e., edad de inicio, frecuencia actual, actitud negativa, deseo sexual solitario y experiencia subjetiva del orgasmo) y analizar su relación con la satisfacción orgásmica en las relaciones sexuales. Participaron 738 hombres y 597 mujeres con edades comprendidas entre los 18 y 83 años. Además de informar de los distintos parámetros de la masturbación mediante un cuestionario sociodemográfico y distintas escalas, los participantes contestaron al ítem referido a la satisfacción orgásmica del *Arizona Sexual Experience Scale* (Sánchez-Fuentes et al., 2019). Controlando los efectos de la edad, tener pareja y la frecuencia de rezo, los hombres, en comparación con las mujeres, comienzan a masturbarse antes, lo hacen con más frecuencia e informan más deseo sexual solitario, mientras que ellas experimentan el orgasmo en la masturbación a nivel subjetivo de manera más intensa que los hombres en las dimensiones afectiva, sensorial e íntima. A continuación, se propusieron modelos de regresión para explicar la satisfacción orgásmica en las relaciones sexuales a partir de los parámetros de la masturbación y la edad. La satisfacción orgásmica fue explicada en hombres y en mujeres, en sentido positivo, por la dimensión afectiva del orgasmo en la masturbación. Además, en hombres, la frecuencia de masturbación en sentido negativo y, en mujeres, la edad y el deseo sexual solitario, en sentido positivo, y la actitud negativa hacia la masturbación, en sentido negativo, explicaron la satisfacción orgásmica en las relaciones sexuales. En conclusión, se ponen de manifiesto las diferencias entre hombres

y mujeres en los parámetros de la masturbación y la relevancia de estos para explicar la satisfacción orgásmica en las relaciones sexuales.

En el último objetivo de la Tesis Doctoral, se planteó estudiar el papel de la masturbación en solitario en el contexto de la pareja y su convivencia con las relaciones sexuales. Para ello, se describió en hombres y mujeres con diferentes patrones de actividad sexual (i.e., frecuencia de masturbación en solitario y de relaciones sexuales) un perfil psicosexual. La muestra estuvo compuesta por 1.028 adultos heterosexuales con pareja de la población española, con edades comprendidas entre los 18 y 75 años. El perfil psicosexual estaba integrado por variables sociodemográficas (i.e., edad, nivel educativo, edad de la primera relación sexual, duración de la relación y convivencia con la pareja), variables relacionadas con la masturbación (i.e., edad de la primera masturbación, actitud negativa, razones para masturbarse, deseo sexual solitario, experiencia subjetiva del orgasmo, frecuencia de consumo de pornografía y motivos de consumo de pornografía), variables relacionadas con el funcionamiento sexual (i.e., funcionamiento sexual general, deseo sexual diádico hacia la pareja, deseo sexual diádico hacia una persona atractiva, propensión a la excitación sexual, propensión a la inhibición sexual debido a la amenaza por fallo en el rendimiento, propensión a la inhibición sexual debido a la amenaza por las consecuencias de la actividad sexual, excitación sexual, erección/lubricación, facilidad orgásmica, satisfacción orgásmica y experiencia subjetiva del orgasmo en las relaciones sexuales), y la satisfacción sexual y satisfacción con la relación de pareja. Mediante análisis de clúster se distribuyeron los participantes en tres grupos en función de la frecuencia de relaciones sexuales y de masturbación: (1) grupo que informa valores elevados en la frecuencia de relaciones sexuales y de masturbación en solitario (RS + M), (2) grupo que informa valores elevados en la frecuencia de relaciones sexuales, pero bajos en masturbación (RS) y (3) grupo que indica valores elevados en la frecuencia de masturbación, pero bajos en relaciones sexuales (M). Los resultados mostraron que los hombres y las mujeres pertenecientes al grupo RS + M, en comparación con el RS, conviven menos con su pareja, informan mayor deseo sexual

solitario, experimentan el orgasmo en la masturbación de manera más intensa y consumen pornografía con más frecuencia y lo hacen más por búsqueda de placer. Las mujeres del grupo RS + M presentan indicadores positivos de funcionamiento sexual y de salud sexual en comparación con el grupo RS, mientras que en los hombres no se observan tales diferencias. Por último, hombres y mujeres pertenecientes al grupo M informaron insatisfacción sexual y con la relación de pareja. En conclusión, este estudio pone de manifiesto el papel de la masturbación en el contexto de la pareja, encontrándose que, la práctica de masturbación en convivencia con las relaciones sexuales se asocia a un mejor funcionamiento sexual y más satisfacción sexual en mujeres, pero no en hombres. Además, aquellos hombres y mujeres cuya actividad sexual más frecuente es la masturbación, presentan peor funcionamiento sexual y más insatisfacción sexual.

En definitiva, esta Tesis Doctoral amplía el conocimiento sobre la masturbación en solitario y da respuesta a las limitadas evidencias sobre el papel que puede tener en el contexto de la pareja. En primer lugar, aporta dos instrumentos validados en población adulta española, el *Negative Attitudes Toward Masturbation Inventory* (NATMI) para medir la actitud negativa hacia la masturbación y la *Orgasm Rating Scale* (ORS) para evaluar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario. Además, se proporcionan evidencias de validez al Modelo Multidimensional de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación en solitario, sirviendo como marco teórico que conceptualiza y describe la experiencia orgásmica desde una perspectiva psicológica y multidimensional. Finalmente, se examina la asociación entre masturbación y relaciones sexuales. Por un lado, se pone de manifiesto la relación entre diferentes parámetros de la masturbación y la satisfacción orgásmica en el contexto de las relaciones sexuales, con un papel más compensatorio de esta conducta en hombres. Por otra parte, se observa que practicar relaciones sexuales en convivencia con masturbación en solitario, en hombres, revela pocos cambios en términos de funcionamiento sexual; es más, la convivencia de estas dos conductas en hombres se asocia con dificultades en la erección, lo que sugiere un patrón compensatorio. Sin

embargo, esta práctica combinada de masturbación en solitario y relaciones sexuales en mujeres se ha relacionado con mejor funcionamiento sexual y más satisfacción sexual. En su conjunto, los resultados de esta Tesis Doctoral revelan la importancia de la masturbación en solitario para la salud sexual y su implicación en el contexto de la pareja.

SUMMARY

Masturbation can be defined as the stimulation of one's own or another person's genitals. It can take place in a dyadic context, although a characteristic aspect is its practice alone. This behavior is present throughout the life cycle, is relevant to sexual health and is recognized as a source of sexual pleasure. In recent years, the study of masturbation has been receiving more attention in the scientific field; however, its role in contexts such as sexual relationships and couples remains limited. Therefore, the general objectives of this Doctoral Thesis were, firstly, to enrich the study of masturbation by offering different measures that allow us to evaluate parameters of this behavior, such as the negative attitude towards masturbation and the subjective orgasm experience in the solitary masturbation context and, secondly, to analyze the relationship between solitary masturbation and sexual relationships, specifically, by examining the association between different parameters of solitary masturbation and orgasm satisfaction, and by exploring a psychosexual profile, including sexual satisfaction, in men and women with partners who present different patterns of sexual activity (i.e., frequencies of solitary masturbation and relationships). To achieve these two general objectives, six independent and sequential studies corresponding to the following specific objectives are proposed:

1. To carry out a systematic review of scientific articles that have related masturbation and sexual satisfaction.
2. To validate in the Spanish adult population the Negative Attitudes Toward Masturbation Inventory (NATMI; Abramson & Mosher, 1975) to assess the negative attitude toward masturbation.
3. To validate the Orgasm Rating Scale (ORS; Mah and Binik, 2002, 2005, 2020) in the solitary masturbation context in the Spanish adult population to assess the subjective orgasm experience in this context.

4. To provide validity evidence for the Model of the Subjective Orgasm Experience, in the context of solitary masturbation, by examining the relationship of its four dimensions (affective, sensory, intimacy and rewards) with different measures of sexual arousal: propensity for sexual excitation and sexual inhibition, ratings of sexual arousal and genital sensations, and genital response.
5. To compare men and women on different parameters of masturbation (i.e., age of first experience, frequency, negative attitude, solitary sexual desire, and subjective orgasm experience) and to analyze their associations with orgasm satisfaction in sexual relationships.
6. In the couple context, to describe a psychosexual profile of men and women with different patterns of frequency of solitary masturbation and sexual relationships.

To achieve the first objective of the Doctoral Thesis, a systematic review of the scientific literature was carried out to examine the relationship between solitary masturbation and sexual satisfaction. For this purpose, the APA PsycInfo, Medline, Scopus and Web of Science databases were consulted. Twenty-two articles were selected that met the inclusion criteria and fulfilled the quality standards. In general, a predominantly negative relationship between solitary masturbation and sexual satisfaction was observed in men, while in women the results were less consistent, with more evidence in favor of a positive relationship than in men. The heterogeneity of the results may be due to the different covariables considered in the studies, the evaluation of masturbation in different time ranges and the diversity of measures to assess sexual satisfaction.

This systematic review highlighted the importance of having measures of masturbation that allow its study to be expanded. In the absence of instruments with psychometric guarantees in the Spanish adult population that assess the negative attitude towards masturbation, the second objective of this Doctoral Thesis was to validate the Negative Attitudes Toward Masturbation Inventory (NATMI; Abramson and

Mosher, 1975). With this objective, a total of 4,116 people of the general Spanish population of heterosexual orientation were evaluated. In addition to the NATMI, a Sociodemographic and Sexual History questionnaire was applied, as well as the versions of different scales validated in Spain to evaluate erotophilia, positive attitude towards sexual fantasies, solitary sexual desire, propensity for sexual excitation and inhibition, and sexual functioning. The final version of the NATMI resulted in a brief 10-item version with a good unidimensional structural fit and adequate internal consistency. In addition, those who reported a more negative attitude toward masturbation presented less frequency of masturbation, more frequency of prayer, less erotophilia, a more negative attitude toward sexual fantasies, more sexual inhibition, and worse sexual functioning in general. It is concluded that this brief Spanish version of the NATMI is an instrument that provides valid and reliable measures of negative attitudes towards masturbation. See Appendix F.

Concerning the third specific objective, with the aim of obtaining a scale to evaluate the subjective orgasm experience in the solitary masturbation context, the Orgasm Rating Scale (ORS; Mah and Binik, 2002, 2005, 2020) was validated. For this purpose, 1,171 men and 1,424 women aged 18 to 83 years responded to the ORS, previously validated for the context of sexual relationships by Arcos-Romero et al. (2018), consisting of 25 items distributed in four dimensions (affective, sensory, intimacy and rewards). In addition to a sociodemographic questionnaire, scales were applied to assess negative attitude toward masturbation, erotophilia, attitude toward sexual fantasies, solitary sexual desire, propensity for sexual excitation and inhibition, and sexual functioning. The tetra-factorial structure of the scale results revealed a good fit, composed of the factors Affective, Sensory, Intimacy, and Rewards. In addition, the ORS reached the strict level of invariance of its measures by sex and age, also presenting adequate internal consistency, with an ordinal alpha ranging between .71 in the affective dimension and .95 for the sensory dimension. Validity evidence was also provided by the relationship of its measures with related constructs, since the four dimensions of the ORS

were associated, as expected, in a negative sense with the negative attitude towards masturbation and, a positive sense, with erotophilia, positive attitude towards sexual fantasies and propensity for sexual arousal. In addition, it was found that people with difficulty reaching orgasm in sexual relationships presented lower intensity in the subjective orgasm experience during masturbation, revealing the ability of the ORS in the solitary masturbation context scores to discriminate between people with and without difficulties with orgasm. In conclusion, the ORS in the solitary masturbation context is an instrument with adequate psychometric properties to assess the subjective orgasm experience of masturbation. See Appendix G.

To achieve the fourth objective, a laboratory study was designed to provide validity evidence for the Model of the Subjective Orgasm Experience in the context of solitary masturbation. To do so, the relationship between the four dimensions of the subjective orgasm experience (affective, sensory, intimacy, and rewards) and measures of sexual arousal, such as propensity or trait (sexual excitation/inhibition) and excitation state (ratings of sexual arousal and genital sensations and genital response) towards videos with explicit sexual content in the laboratory setting was examined. Thirty young heterosexual men and 30 young heterosexual women from the Spanish population participated. First, the subjective orgasm experience was assessed in the solitary masturbation context and the propensity for sexual excitation and inhibition. Next, subjects viewed two counterbalanced blocks of videos with neutral and explicit sexual content. During the viewing of the videos, genital response was recorded by penile plethysmography to measure changes in penile circumference diameter or vaginal photoplethysmography to identify changes in vaginal pulse amplitude. At the end of each block of videos, subjects self-reported their general sexual arousal and their genital sensations in particular. Significant relationships were observed between sexual arousal and the subjective orgasm experience, thus providing validity evidence for the Model of the Subjective Orgasm Experience in the solitary masturbation context.

The fifth objective was to examine differences between men and women in masturbation parameters (i.e., age of first experience, current frequency, negative attitude, solitary sexual desire and subjective orgasm experience), and to analyze their relationship with orgasmic satisfaction in sexual relations. A total of 738 men and 597 women between the ages of 18 and 83 years participated. In addition to reporting the different parameters of masturbation by means of a sociodemographic questionnaire and different scales, the participants responded to the item referring to orgasmic satisfaction of the Arizona Sexual Experience Scale (Sánchez-Fuentes et al., 2019). Controlling for the effects of age, having a partner and frequency of prayer, men compared to women start masturbating earlier, masturbate more frequently and report more solitary sexual desire, while women experience orgasm in masturbation at the subjective level more intensely in the affective, sensory and intimate dimensions than men. Regression models were then proposed to explain orgasm satisfaction in sexual relationships from the masturbation parameters and age. In men and women, orgasm satisfaction was positively explained by the affective dimension of orgasm in masturbation. In addition, in men, the frequency of masturbation in the negative sense, and in women, age and solitary sexual desire, in the positive sense, and negative attitude towards masturbation, in the negative sense, explained orgasm satisfaction in sexual relationships. In conclusion, the differences between men and women in the masturbation parameters and their relevance in explaining orgasm satisfaction in sexual relationships are highlighted.

In the last objective of the doctoral dissertation, it was proposed to study the role of solitary masturbation in the context of the couple and its coexistence with sexual relations. For this purpose, a psychosexual profile was described in men and women with different patterns of sexual activity (i.e., frequency of solo masturbation and sexual intercourse). The sample were composed of of 1,028 heterosexual adults with partners from the Spanish population, aged 18 to 75 years. The psychosexual profile was composed of sociodemographic variables (i.e., age, educational level, age at first sexual

relationship, duration of relationship and cohabitation with a partner), variables related to masturbation (i.e., age of first masturbation, negative attitude, reasons for masturbation, solitary sexual desire, subjective orgasm experience, frequency of pornography consumption, and reasons for pornography consumption), variables related to sexual functioning (i.e., general sexual functioning, dyadic sexual desire, sexual desire, and sexual activity), and variables related to sexual activity (i.e., general sexual functioning, partner-focused dyadic sexual desire, attractive person-focused dyadic sexual desire, propensity for sexual excitation, propensity for sexual inhibition due to the threat of performance failure, propensity for sexual inhibition due to the threat of performance consequences of sexual activity, sexual arousal, erection/lubrication, facility to reach orgasm, orgasm satisfaction, subjective orgasm experience in the context of sexual relationships), and sexual satisfaction and satisfaction with the relationship. Using cluster analysis, the sample was distributed into three groups according to the frequencies of sexual relationships and masturbation: (1) a group with a higher frequency of sexual relationships and solitary masturbation, (2) a group with a higher frequency of sexual relationships, and (3) a group with a higher frequency of solitary masturbation. The results showed that men and women belonging to the SR + M group, versus the SR group, informed less cohabitation with their partner, reported more solitary sexual desire, experienced orgasm during masturbation more intensely, and consumed pornography more frequently and do so more for pleasure-seeking. Women from the SR + M group present positive indicators of sexual functioning and sexual health compared to the SR group, while no such differences are observed in men. Finally, men and women belonging to the M group reported more sexual and relationship dissatisfaction. In conclusion, this study highlights the role of masturbation in the couple context, finding that the practice of masturbation in coexistence with sexual relationships is associated with better sexual functioning and more sexual satisfaction in women, but not in men.

In addition, men and women whose most frequent sexual activity is masturbation present worse sexual functioning and more sexual dissatisfaction.

Ultimately, this Doctoral Thesis expands the knowledge on solitary masturbation and responds to the limited evidence on its role in the couple context. First, it provides two instruments validated in the Spanish adult population, the Negative Attitudes Toward Masturbation Inventory (NATMI) to measure negative attitudes toward masturbation, and the Orgasm Rating Scale (ORS) to assess the subjective orgasm experience in the solitary masturbation context. In addition, validity evidence is provided for the Model of the Subjective Orgasm Experience in the solitary masturbation context, serving as a theoretical framework that conceptualizes and describes the orgasmic experience from a psychological and multidimensional perspective. Finally, the association between masturbation and sexual relationships is examined. On the one hand, the relationship between different parameters of masturbation and orgasm satisfaction in the context of sexual relationships is revealed, with a more compensatory role of this behavior in men. On the other hand, it is observed in men that practicing sexual relations in combination with solitary masturbation few changes in terms of sexual functioning, even showing an association with erection difficulties, which suggests a compensatory pattern. However, in women, practicing solitary masturbation and sexual relationships has been associated with better sexual functioning and more sexual satisfaction. Together, the results of this Doctoral Thesis reveal the importance of solitary masturbation for sexual health and its implications in the context of the couple.

INTRODUCCIÓN

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El término *masturbación* tiene un origen incierto, aunque la hipótesis más apoyada se sitúa en el siglo XVIII con el término *manu stuprare* (Laqueur, 2007), combinación de *manus* (mano) y *stuprare* (corromper). Otras expresiones empleadas también para hacer referencia a esta conducta son *onanismo* o *autoerotismo*. La masturbación, en un sentido amplio, hace referencia a la estimulación manual, o mediante algún objeto, de los genitales propios o de otra persona (Shibley y DeLamater, 2024). A pesar de que las conductas que pueden considerarse como masturbación han sido objeto de discusión, es más probable que sea considerada como tal cuando no hay una pareja presente y cuando se alcanza el orgasmo (Kirschbaum y Peterson, 2018).

Recorrido histórico de la masturbación

La revisión histórica de Laqueur (2007) permite comprender por qué la masturbación ha sido estigmatizada y penalizada a lo largo de los siglos. En la Antigüedad, esta conducta, a pesar de ser considerada un desvío inadecuado, no era un tema al que se le concediese mucha importancia. Incluso, en la medicina galénica, se sugería la expulsión de los fluidos para que no se corrompiesen. En las discusiones griegas y romanas sobre lo adecuado de su práctica, la masturbación aparece mínimamente. En la Edad Media, se daba más relevancia a los aspectos relacionados con el matrimonio, la moderación del sexo y la elección de una pareja acorde al propio estatus y honor, que a la masturbación en sí misma. Un caballero no debía masturbarse teniendo opciones de esclavos/as o prostitución, no por la conducta en sí. La masturbación en las mujeres era mayormente ignorada o eludida; el castigo por su práctica surgía de la preocupación por el desplazamiento del rol del hombre, desafiando las normas religiosas y sociales (Clark, 2017).

En la religión judía, el primer antecedente que alude a la masturbación se remite al Génesis 38. En este pasaje de la Biblia, el padre de Onán pide a este que se case con la

mujer de su hermano fallecido con el fin de procrear hijos en su nombre. Él no acepta esta función porque sabía que no iba a ser su descendencia, y cuando estaba con su mujer “derramaba en la tierra la simiente para no dar prole a su hermano” (Génesis 38.9). En las primeras etapas de la religión judía, la masturbación no está apenas presente en los textos religiosos, de modo que los primeros rabinos consideraban la autoexcitación como una preocupación menor: no era algo bueno, pero relativamente banal. Así, el pecado de Onán no recaía tanto en el acto de la masturbación sino en la interrupción de la procreación. Posteriormente, fue surgiendo una condena más firme de la eyaculación no procreadora, promulgándose que cualquiera que se llevase las manos a los genitales debía ser excomulgado.

El cristianismo hereda una visión similar a la de la Antigüedad clásica, de modo que la masturbación fue considerada irrelevante, sin diferenciarla de otros pecados menores. A esta primera etapa sigue un periodo de silencio en la que los pecados estaban más centrados en lo que atentaba contra el matrimonio y el celibato. Por mucho tiempo, la masturbación fue un tema evitado al que no se hacía referencia por temor a que fuese promovida. Será a partir del año 1100, coincidiendo con un gran movimiento reformista de la Iglesia, cuando la masturbación se empieza a relacionar con otros castigos como el bestialismo o la sodomía, llegando a alcanzar el nivel de pecado inmoral. Santo Tomás de Aquino, en su obra *Suma Teológica*, define la masturbación como un vicio antinatural.

La masturbación era condenada moralmente, pero no se encuentran referencias a las supuestas consecuencias físicas perjudiciales de esta conducta hasta el siglo XVIII (Stolberg, 2000). Alrededor del 1712, se publica en Londres la obra *Onania*. Este texto anónimo, atribuido a John Martin, aborda los peligros físicos y morales de la masturbación, y plantea remedios para evitar el mal que suponía su práctica. Su éxito comercial se expandió por toda Europa, coincidiendo con los primeros medios de comunicación masiva.

En un contexto en el que proliferaban diferentes documentos denostando la masturbación, surgió una obra de un prestigioso médico, Samuel Auguste David Tissot: “*L’Onanisme; ou, Dissertation physique sur les malades produits par la masturbation*” publicada en 1760. La consideración de la masturbación como una conducta sexual particularmente dañina se propagó hasta principios del siglo XX. Así, la discusión sobre la masturbación se extendió del ámbito religioso al médico. Durante todo este periodo se publican numerosos trabajos “científicos” alertando acerca de los supuestos efectos nocivos atribuidos a esta conducta. La masturbación era considerada como una condición patológica con supuestas consecuencias adversas como hipocondría, epilepsia, ceguera o problemas de memoria, entre otras (Deanda-Camacho, 2024). No obstante, diversos profesionales de la salud y editores de prestigiosas revistas como *The Lancet* o *The British Medical Journal* denunciaron el problema que suponía los anuncios de charlatanes que aprovechaban para vender curas (Zachar y Kendler, 2023).

A partir del siglo XX, comenzó a predominar la concepción de la masturbación como una forma de expresión sexual natural apropiada en las primeras etapas del desarrollo, pero que debía abandonarse en la adultez. Freud comenta que la masturbación podría ser un sustituto por falta de satisfacción sexual (Masson, 1985). En los años 50, el Informe Kinsey, en un contexto más científico, apostó por la normalidad de esta práctica. En 1966, se publica la obra *Respuesta sexual humana* de William Masters y Virginia Johnson, que pone de manifiesto la importancia de la masturbación femenina. En defensa de la masturbación se unió el movimiento feminista, junto con la comunidad LGBT, que comenzó a considerar la masturbación como un medio de autoexpresión sexual. A nivel social, la masturbación femenina ha llegado a considerarse como un medio de resistencia a las normas tradicionales (Bowman et al., 2014).

A pesar de la evolución hacia una visión positiva de esta conducta, hoy día siguen existiendo posturas contrarias a la práctica de la masturbación. Ejemplos de ello es “*¿Por qué la masturbación es mala?*” (Nash, s.f.), blog en el que se defiende que la

masturbación es un pecado, o “*NoFap Movement*”, movimiento social desde el que se promueve la abstención de practicar esta conducta. En consecuencia, se llega a poner de manifiesto que el estigma sobre la masturbación en algunos contextos podría haber vuelto (Prause y Ley, 2024).

Masturbación y salud

La masturbación es una conducta sexual con un componente evolutivo importante relacionado con el desarrollo sexual (Shibley Hyde y DeLamater, 2024). Se han observado conductas de autoestimulación desde edades muy tempranas. Durante los 6-12 primeros meses es habitual que los bebés descubran sus genitales mediante el tacto inintencionado (de Graaf y Rademakers, 2006), observándose incluso durante el periodo fetal (Meizner, 1987). Así, la masturbación se inicia generalmente como respuesta al placer aprendido asociado con el contacto de los genitales (Leung y Robson, 1993). A los 3-4 años, los niños y niñas comienzan a aprender que la estimulación genital les produce una sensación de placer, y sobre los 5 años, aproximadamente el 50% ya han tocado sus genitales (Shibley Hyde y DeLamater, 2024), intensificándose a partir de la adolescencia la actividad de autoestimulación (Gerressu et al., 2008; Hegde et al., 2022; Leung y Robson, 1993; Mercer et al., 2013). En la pubertad, un incremento en las hormonas sexuales predispone a la masturbación como parte del desarrollo normal (Ajlouni et al., 2010; Fortenberry, 2013; Robbins et al., 2011). La masturbación alcanzaría su máxima prevalencia entre los 25-34 años (Gerressu et al., 2008), estando presente hasta edades avanzadas (Træen et al., 2019; American Association of Retired Persons, 1999). Por tanto, la edad es una variable relevante en el estudio de la masturbación, observándose un descenso en su frecuencia con el avance de los años (American Association of Retired Persons, 1999; Das, 2007; Fischer et al., 2022; Fischer y Træen, 2022; Lee et al., 2016; Lindau et al., 2007; Mercer et al., 2013; Palacios-Ceña et al., 2012; Schick et al., 2010).

La masturbación es una fuente de placer (Ford et al., 2021) independiente de la disponibilidad de una pareja (Dekker y Schmidt, 2003; Kontula y Haavio-Mannila, 2003; Leistner et al., 2023). De hecho, la World Association for Sexual Health (2019) defiende el derecho a la salud y el placer sexual a través de experiencias sexuales entre las que se encuentra la masturbación. En este sentido, el placer sexual destaca como uno de los principales motivos para masturbarse (Herbenick et al., 2023; Leistner et al., 2023). Estos tienden a ser similares en hombres y mujeres: sentir excitación, reducir el estrés, relajarse, dormir, darse afecto, experimentar un orgasmo o aprender sobre el propio cuerpo (Bowman, 2014; Fahs y Frank, 2014; Herbenick et al., 2023; Regnerus et al., 2017). Entre otros motivos se incluye también la insatisfacción sexual (Hevesi et al., 2023; Rowland, Hevesi et al., 2020); por ejemplo, hombres con relaciones sexuales menos frecuentes de lo deseado informan que se masturban para obtener placer (Hevesi et al., 2023). Así, la masturbación es una conducta de índole personal que podría estar relacionada con la satisfacción sexual (Hurlbert y Whittaker, 1991; Fischer y Træen, 2022), considerada como un importante indicador de salud sexual (Henderson et al., 2009; Sánchez-Fuentes et al., 2014; World Health Organization, 2010). Sin embargo, las evidencias científicas que ponen de manifiesto esta asociación no han sido examinadas e integradas de manera sistemática.

Se han descrito diferentes beneficios relacionados con la masturbación. La práctica de esta conducta está asociada a una mejora en la percepción del inicio y la calidad del sueño (Lastella et al., 2019), con mejor capacidad para recordar en mujeres (Wright et al., 2020) y con el mantenimiento de la calidad del esperma (Levin, 1975). También se asocia con una percepción de salud en hombres (Ramanathan et al., 2014) y con un uso del condón más frecuente en chicos adolescentes (Robbins et al., 2011). En mujeres, se ha asociado con más aceptación del cuerpo (Burri y Carvalheira, 2019), más empoderamiento (Bowman et al., 2014), más sentido de la independencia, confianza y un mayor aprendizaje sexual (Hite, 1976).

La masturbación también se ha vinculado con indicadores negativos de salud (Brody et al., 2010), por ejemplo, con ansiedad o síntomas somáticos (Jiao et al., 2022). Se ha descrito una asociación entre el estado de ánimo negativo y mayor probabilidad de masturbarse en hombres y mujeres (Cyranski et al., 2004; Fischer et al., 2022; Frohlich y Meston, 2002; Rowland, Kolba et al., 2020), aunque esta relación no es consistente (Jiao et al., 2022). En mujeres se ha encontrado una relación positiva entre frecuencia de masturbación y malestar psicológico general, sin embargo, las que experimentan emociones más negativas asociadas a la masturbación no expresan más malestar psicológico general que las que tienen una visión más positiva, lo que sugiere que esta conducta solitaria sería más una estrategia de afrontamiento (Wehrli et al., 2024). En edades avanzadas, hombres y mujeres con peor salud percibida informan masturbarse con más frecuencia (Lindau et al., 2007; Schick et al., 2010), aunque las evidencias no son concluyentes (Lee et al., 2016). En resumen, los hallazgos que asocian la masturbación con diferentes problemas psicológicos son escasos y muestran resultados contradictorios, informando tanto una relación positiva, como negativa o ausencia de relación (Jiao et al., 2022). Uno de los aspectos más criticados es que son estudios que, en su mayoría, no han sido diseñados para explorar tales relaciones, y están basados en muestras fundamentalmente clínicas (véase Jiao et al., 2022).

En el ámbito de la salud sexual, la masturbación adquiere gran relevancia. Por ejemplo, se ha observado que su práctica está vinculada a la presencia de fantasías sexuales y a un repertorio sexual más amplio (Driemeyer, 2013). En mujeres, facilita el autoconocimiento, puede fomentar el aprendizaje sobre el tipo de estimulación que lleva al orgasmo (Matsick et al., 2016) y se ha asociado con mayor facilidad para alcanzarlo (Carvalho y Leal, 2013). Además, masturbarse en la infancia y adolescencia se ha relacionado con experiencias sexuales positivas en la adultez (Reynolds et al., 2003) y con mejor autoimagen (Shulman y Horne, 2003). Su práctica también podría mejorar el ajuste y generalización de la respuesta sexual en solitario al contexto de las relaciones sexuales (Marchand, 2021). En hombres con disfunción eréctil o problemas de

eyaculación se ha observado también una mejor respuesta de erección en la masturbación en comparación con las relaciones sexuales, lo que sugiere que el funcionamiento sexual en la masturbación podría estar más preservado (Rowland et al., 2021).

En el ámbito de la terapia sexual, el empleo de la masturbación como herramienta terapéutica es algo habitual (Christensen, 1995), incluyéndose en el repertorio de intervenciones para abordar disfunciones sexuales (Barbach, 1974; Nobre, 2017; Zamboni y Crawford, 2003). El entrenamiento en la masturbación es recomendado para el tratamiento de la eyaculación precoz (Tiefer, 1998) y para el postoperatorio del tratamiento de cáncer de próstata (Wassersug et al., 2017). Además, la técnica de la masturbación dirigida es una importante herramienta para abordar los problemas con el orgasmo (Kingsberg et al., 2017; Shibley Hyde y DeLamater, 2024; Zamboni y Crawford, 2003). Por ello, la práctica de la masturbación es recomendada como primera línea de intervención para el trastorno orgásmico femenino (Laan et al., 2013; Marchand, 2021; Stinson, 2009).

Parámetros de la masturbación

El estudio de la masturbación en el contexto de la salud sexual se ha enfocado en su frecuencia de práctica como parámetro principal (Kirschbaum y Peterson, 2018), utilizando preguntas como “¿Con qué frecuencia se masturba?” (Favez y Tissot, 2017) o “¿Con qué frecuencia se masturbó el mes pasado?” (Fischer y Træen, 2022). Sin embargo, es importante considerar una perspectiva más amplia para avanzar en la comprensión de la relación entre masturbación y salud sexual, considerando otros parámetros como la edad de inicio de masturbación, la actitud negativa hacia esta conducta, el deseo sexual solitario o la experiencia subjetiva del orgasmo.

Edad de la primera masturbación

El inicio de la masturbación, es decir, la edad de la primera experiencia consciente con esta conducta, podría ser una variable incluso más relevante que la primera relación sexual para el desarrollo psicosexual, ya que es un hito que suele ocurrir antes (Peragine et al., 2022). El inicio de la masturbación podría estar relacionado con el balance entre mecanismos neurofisiológicos excitatorios e inhibitorios que regulan la excitación sexual, propuesto por el Modelo de Control Dual (Bancroft y Janssen, 2000), al igual que ocurriría con el inicio de las relaciones sexuales (Granados et al., 2020). Socialmente, y en el ámbito de la investigación, se ha prestado mayor atención al debut sexual alcanzado a través de las relaciones sexuales, sin embargo, aunque es más probable que las mujeres respecto a los hombres inicien su actividad sexual con una pareja, hombres y mujeres en su mayoría alcanzan el orgasmo por primera vez en un contexto solitario (Peragine et al., 2022).

Habitualmente, para la evaluación de este parámetro es considerada la edad a la que se comienza a practicar esta conducta. La edad de inicio varía entre estudios, pero en general su práctica comienza durante la adolescencia, con un inicio más temprano en los hombres que en las mujeres (Estrada-Carmona et al., 2023; Herbenick et al., 2010a, 2010b, 2023; Janus y Janus, 1993; Robbins et al., 2011; Smith et al., 1996). El inicio de su práctica se produce antes de los 14 años aproximadamente en el 87% de los hombres y el 19% de las mujeres (Ballester Arnal y Gil-Lario, 2006). Entre los 14-19 años, al menos el 84% de los hombres y el 40% de las mujeres de la población española se ha masturbado (Malo de Molina et al., 1988). Recientemente, estos porcentajes se han visto incrementados, observándose que el 90% de hombres y el 57% de mujeres se han masturbado antes de los 16 años (Diversual, 2022). En promedio, los hombres se inician en la masturbación entre los 11-13 años y las mujeres entre los 13-16 años, aproximadamente (Carrión y Blanco, 2012; Cervilla et al., 2023).

El estudio de las implicaciones del inicio de la masturbación para la salud sexual es limitado. Un inicio más temprano se relaciona en hombres y mujeres con actitudes

más positivas hacia la masturbación y hacia las fantasías sexuales, y con mayor frecuencia de fantasías sexuales (Driemeyer et al., 2017). Además, en mujeres se ha asociado con el uso más frecuente de juguetes eróticos (Driemeyer et al., 2017). El inicio antes de los 19 años, en hombres y mujeres, se ha relacionado con mayor frecuencia de masturbación en la adultez (Das et al., 2009). Los chicos adolescentes que comienzan a masturbarse a edades más tempranas presentan más interés sexual, más deseo, más fantasías sexuales, más consumo de pornografía y comportamientos sexuales más atípicos (e.g., voyerismo o froteurismo) (Spearson Goulet y Tardif, 2018). En mujeres, el inicio más tardío se ha relacionado con más insatisfacción corporal (Wiederman y Pryor, 1997). En ellas, la práctica de la masturbación durante la adolescencia también se ha vinculado con menos dificultades para la excitación sexual y para alcanzar el orgasmo en las relaciones sexuales en la adultez (Carvalho y Leal, 2013).

Por tanto, la edad de la primera masturbación es un parámetro relevante, ya que suele marcar la primera experiencia con la actividad sexual y el primer orgasmo. El inicio de la práctica de la masturbación de manera más temprana se ha relacionado con actitudes sexuales más positivas, más interés sexual, y con un repertorio sexual más amplio. Por ello, su estudio es importante para seguir ampliando el conocimiento sobre la masturbación y su relación con la salud sexual.

Frecuencia de masturbación

La mayoría de los estudios que se interesan por la masturbación inciden en su frecuencia (e.g., Baćaka y Štulhofer, 2011; Fischer y Træen, 2022; Hald, 2006; Miller et al., 2019; Sierra et al., 2023; Velten y Margraf, 2017). Es habitual el uso de ítems *ad hoc* para su evaluación, observándose una limitación importante en el hecho de que el periodo temporal al que hacen referencia es muy variable, lo que dificulta la comparación y generalización de los resultados. No obstante, de manera sistemática, se observa más frecuencia de masturbación en hombres que en mujeres (e.g., Driemeyer et al., 2017; Gerressu et al., 2008; Herbenick et al., 2010b, 2023; Laumann et al., 1994; Leistner et

al., 2023; Mercer et al., 2013; Oliver y Hyde, 1993; Richters et al., 2014; Sierra et al., 2023), planteándose que estas diferencias podrían reflejar las normas de comportamiento sexual (Petersen y Hyde, 2010), de manera que el hombre tendría más libertad para buscar el placer y una actitud hacia la sexualidad más positiva que la mujer (Kaestle y Allen, 2011).

La relación entre la frecuencia de masturbación y la salud sexual resulta compleja, ya que esta variable ha sido asociada tanto a indicadores positivos como negativos. En hombres, se ha observado que más frecuencia de masturbación se relaciona con mejor respuesta eréctil en solteros (Huang et al., 2022); sin embargo, también se ha asociado con más dificultades en la erección y con eyaculación precoz (Niu et al., 2023) y, en el contexto de la pareja, con más dificultad para mantener el deseo sexual (Carvalho et al., 2015) y más síntomas de eyaculación retardada (Huang et al., 2022). En mujeres, se ha reportado que la frecuencia de masturbación no se asocia con el funcionamiento sexual (Soares et al., 2024) o que la relación es negativa en las que tienen pareja (Huang et al., 2022). Sin embargo, destacan las evidencias acerca del papel positivo de la frecuencia de masturbación en la salud sexual. Concretamente, más frecuencia se ha relacionado con menos dificultades en la excitación sexual durante el sexo en pareja (Rowland, Hevesi et al., 2020), mejor capacidad orgásmica (Huang et al., 2022), más frecuencia de orgasmos tanto en la masturbación como en las relaciones sexuales (Rowland, Kolba et al., 2020), más satisfacción con la respuesta orgásmica (Csako et al., 2022) y, en definitiva, con mejor funcionamiento sexual general en solteras (Huang et al., 2022).

Una variable estrechamente asociada con la frecuencia de masturbación, con implicaciones para la salud sexual, es el consumo de pornografía (Böhm et al., 2014; Carvalho et al., 2015; Prause, 2019). La literatura ha relacionado en sentido positivo el consumo de pornografía con la frecuencia de masturbación (Bačaka y Štulhofer, 2011; Hald, 2006; Miller et al., 2019). En hombres, además, una mayor frecuencia de

masturbación acompañada con consumo de pornografía se ha relacionado con más dificultades en la erección y la eyaculación (Niu et al., 2023).

Estos hallazgos sugieren que la frecuencia de la masturbación podría tener implicaciones diferentes en hombres y mujeres, encontrándose que mayor frecuencia se asocia a mejor respuesta sexual en las mujeres, pero a más dificultades en los hombres. No obstante, masturbarse con más frecuencia, en hombres y mujeres sin pareja (vs. con pareja), se ha asociado con mejor funcionamiento sexual, por lo que esta es una variable importante para tener en cuenta en su estudio. Con todo, es necesario seguir ampliando el conocimiento sobre este parámetro por sus implicaciones para la salud sexual.

Actitud negativa hacia la masturbación

Las actitudes sexuales son creencias evaluativas que afectan a la experiencia, la expectativa, los comportamientos sexuales (Sierra et al., 2020) y al funcionamiento sexual (Sierra et al., 2021). La trayectoria histórica de la masturbación ha estigmatizado a esta conducta como inmoral y perjudicial para la salud (Clark, 2017; Das, 2009; Deanda-Camacho, 2024; Laqueur, 2007; Stengers y Van Neck, 2001). En este sentido, históricamente se ha ido cimentando una actitud negativa hacia la masturbación (Laqueur, 2007), a pesar de ser una práctica saludable. Esta contradicción social en la percepción de la masturbación como una conducta estigmatizada y, a su vez, saludable ha sido informada en hallazgos previos (Kaestle y Allen, 2011).

Una de las grandes limitaciones en el estudio de la actitud hacia la masturbación ha sido la escasez de adecuados instrumentos de medida, aspecto fundamental para garantizar una adecuada evaluación (Hernández et al., 2020; Muñoz et al., 2020). Se han empleado desde preguntas como: “¿Cómo te hace sentir el hecho de masturbarte?” (Bowman, 2014) hasta instrumentos estandarizados para tal fin. Algunas de las escalas disponibles se han centrado en aspectos específicos, como por ejemplo la estimulación del clítoris en el contexto de las relaciones sexuales (*Clitoral Self-Stimulation Scale*; McIntyre-Smith y Fisher, 2020), han sido desarrolladas en contextos culturales no

occidentales (e.g., *Masturbation Beliefs Scale*; Ren et al., 2022) o requieren una gran inversión de recursos y tiempo por su extensión (e.g., *Attitudes Toward Masturbation Scale*; Young y Muehlenhard, 2020).

Entre los instrumentos para medir la actitud negativa hacia la masturbación destaca por su empleo (e.g., Garcia et al., 2019; lo Presto et al., 1985; Mosher y Vonderheide, 1985; Robinson et al., 2003; Sierra et al., 2010, 2013) el *Negative Attitudes Toward Masturbation Inventory* (NATMI) de Abramson y Mosher (1975). Su versión original, agrupa tres factores: Actitud positiva hacia la masturbación, Falsas creencias sobre la naturaleza dañina de la masturbación y Experiencia personal de afectos negativos asociados con la masturbación. Esta versión ha mostrado adecuadas evidencias de validez de sus medidas (Abramson y Mosher, 1975; Mosher y Abramson, 1977).

El NATMI se ha adaptado a población adolescente taiwanesa (Wang et al., 2007) y ha sido validado en población adolescente hispana (Sierra et al., 2010, 2013). En adolescentes salvadoreños, Sierra et al. (2010) aislaron los tres factores de la escala original con adecuadas propiedades psicométricas. En adolescentes peruanos, Sierra et al. (2013) propusieron una versión reducida de 21 ítems distribuidos en dos factores: Actitudes negativas hacia aspectos positivos de la masturbación y Afectos negativos en experiencias personales con la masturbación. Las medidas de esta versión mostraron adecuadas evidencias de validez y fiabilidad. Por tanto, el NATMI es un instrumento que cuenta con adecuadas propiedades para medir la actitud negativa hacia la masturbación (Muñoz-García, Gómez-Berrocal et al., 2023), y se ha reportado un buen funcionamiento en diversas culturas (Sierra et al., 2010, 2013; Wang et al., 2007). A pesar de esto, no se cuenta con una versión validada en población adulta española, lo que plantea la necesidad de llevar a cabo dicha validación.

La actitud negativa hacia la masturbación ha sido poco investigada (Hogarth e Ingham, 2009). La percepción social de esta conducta se asocia con su frecuencia de práctica (Pinkerton et al., 2003), siendo la actitud negativa hacia la masturbación un

importante predictor del deseo de masturbarse (Kelly et al., 1990). Esta actitud podría variar en función de diferentes factores como el nivel educativo, ser hombre o mujer, la edad o la religión. En relación con la asociación entre la actitud negativa y el nivel educativo se ha descrito que poseer estudios superiores podría influir en los hábitos de masturbación disminuyendo los miedos y la culpa sobre esta conducta (Kontula y Haavio-Mannila, 2003). Con respecto al sexo, se ha encontrado una actitud más negativa en hombres (e.g., Blanc, 2024; Sierra et al., 2023; Sierra, Gómez-Carranza et al., 2021), chicos adolescentes (Sierra et al., 2022), mujeres (Kaestle y Allen, 2011; Phuah et al., 2023; Sümer, 2015; Wang et al., 2007), pero también ausencia de diferencias entre hombres y mujeres (Driemeyer et al., 2017; Petersen y Hyde, 2010). Factores como las normas de comportamiento sexual de hombres y mujeres (Petersen y Hyde, 2010), aspectos culturales (Mushy et al., 2021) o diferentes estilos parentales (Klukas et al., 2021) podrían estar explicando esta diversidad de hallazgos. Respecto a la religión, se ha descrito que la frecuencia de asistencia a actos religiosos es un predictor de la actitud negativa hacia la masturbación (Sümer, 2015). Así, más religiosidad estaría asociada con actitud más negativa hacia la masturbación (Davidson et al., 1995; Sümer, 2015).

La actitud hacia la masturbación, por su relación con otras variables psicosexuales, es importante para la salud sexual. La actitud positiva hacia esta conducta se asocia con más frecuencia de práctica (Ortega et al., 2005; Sierra et al., 2013; Zimmer e Imhoff, 2020) y más capacidad orgásmica (Abramson et al., 1981). En este sentido, se ha señalado que la masturbación por sí misma no está asociada a malestar psicológico, salvo que su práctica se acompañe con sentimientos de culpa (Castellini et al., 2016; Corona et al., 2010). Kaestle y Allen (2011) observaron en jóvenes adultos que el descubrimiento del placer sexual solitario con frecuencia podía ir acompañado por sentimientos de culpa y de incomodidad.

Por otro lado, la actitud negativa hacia la masturbación se ha relacionado con menos frecuencia de masturbación en hombres y mujeres (Abramson y Mosher, 1975), menos excitación sexual y más afecto negativo hacia vídeos explícitos de masturbación

(Mosher y Abramson, 1977), menos erotofilia o actitud positiva hacia la sexualidad en general (Sierra et al., 2010), actitud menos positiva hacia las fantasías sexuales (Sierra et al., 2013), experiencia sexual negativa (Hogarth e Ingham, 2009), menos fantasías durante la masturbación y menos orgasmos (Driemeyer et al., 2017), más dificultades en la erección en hombres y más insatisfacción orgásmica en las relaciones sexuales (Sierra, Gómez-Carranza et al., 2021), más motivación para abstenerse de la masturbación, menos confianza en la ciencia, más conservadurismo y más religiosidad (Zimmer e Imhoff, 2020), peor funcionamiento sexual en mujeres (Soares et al., 2024), menos sentido de la independencia y menos compulsividad sexual (Ren et al., 2022), y sentimientos de culpa y vergüenza (Carvalheira y Leal, 2013; Castellini et al., 2016; Ortega et al., 2005; Sierra et al., 2011), pudiendo acompañarse de alteraciones psicológicas y problemas relacionales (Corona et al., 2010).

Dada la implicación para la salud sexual, la actitud hacia la masturbación ha sido incluida en programas de educación sexual (Kriofske Mainella et al., 2023; Lameiras Fernández et al., 2004; Ruiz et al., 2019). Estos programas tendrían un efecto en las emociones implicadas en la masturbación, reduciendo la carga afectiva y la actitud negativa hacia la práctica de esta conducta (Heras et al., 2016).

En definitiva, la actitud negativa hacia la masturbación está asociada con otras actitudes sexuales negativas, sentimientos de culpa y vergüenza, peor funcionamiento sexual y, en general, con peor salud sexual. Estos hallazgos ponen de relieve la importancia de considerar esta actitud específica en el estudio de la masturbación.

Deseo sexual solitario

El deseo sexual se define como el interés por la actividad sexual, ya sea en solitario o con otra persona (Arcos-Romero et al., 2022; Spector et al., 1996). Spector et al. (1996) propusieron dos dimensiones del deseo sexual: diádica (i.e., interés en participar en relaciones sexuales con alguien, incluyendo la intimidad y el deseo de compartir con otras personas) y solitaria (i.e., interés por participar en conductas sexuales en solitario,

como la masturbación, pudiendo implicar un deseo de abstenerse de intimar y compartir con otras personas). Posteriormente, esta propuesta fue ampliada por Moyano et al. (2017) a un modelo tridimensional en el que el deseo sexual diádico fue dividido en deseo sexual hacia la pareja y deseo sexual hacia una persona atractiva. Evidencias previas ponen de manifiesto que cada tipo de deseo es relativamente independiente del otro (Cervilla et al., 2023, 2024; de Oliveira et al., 2022, 2023; Makarenko et al., 2022; Peixoto, 2023; Peixoto et al., 2020; Wiczorek et al., 2022).

Para la evaluación de estas tres dimensiones del deseo sexual, se emplea el *Sexual Desire Inventory* (SDI; Spector et al., 1996) validado en población española por Moyano et al. (2017). El deseo sexual solitario se evalúa con ítems del tipo “¿Cómo de fuerte es su deseo con respecto a comportamientos autoeróticos (e.g., masturbación, acariciarse los genitales, etc.)?”.

El deseo sexual solitario destacaría por su implicación en la masturbación (Cervilla et al., 2023), siendo una variable asociada a más frecuencia de esta conducta (Burri y Carvalheira, 2019; Vowels et al., 2021). Se han puesto de manifiesto diferencias entre hombres y mujeres, informando los hombres más deseo sexual solitario que las mujeres (Baumeister et al., 2001; Carvalheira et al., 2015; de Oliveira et al., 2023; Dosch, Belayachi et al., 2016; Hyde, 2005; Oliver y Hyde, 1993; Peixoto, 2023; Stark et al., 2015; van Anders, 2012).

El papel del deseo sexual solitario es complejo por su relación con indicadores positivos y negativos de salud sexual. Por una parte, se ha relacionado positivamente con excitación sexual (Carvalheira y Leal, 2013; Cervilla et al., 2023; Peixoto et al., 2020; Winters et al., 2009), con experiencias orgásmicas más intensas en la masturbación (Cervilla et al., 2023), actitudes hacia la sexualidad más liberales y más práctica de mindfulness (Vowels et al., 2021), cogniciones sexuales exploratorias (Moyano et al., 2016, 2017; Peixoto et al., 2020) y con una percepción más positiva de la imagen corporal (Dosch, Ghisletta et al., 2016). No obstante, también se ha relacionado con mayor inhibición sexual por el miedo a ser descubierto manteniendo actividad sexual o a

contraer una infección de transmisión sexual (Peixoto et al., 2020; Winters et al., 2009), con más insatisfacción sexual en hombres (Peixoto, 2019, 2023) y mujeres (Peixoto, 2023), y peor autopercepción de salud (Wieczorek et al., 2022). Más deseo sexual solitario también se ha relacionado con otras variables psicosexuales como más aburrimiento sexual (de Oliveira et al., 2023), más visionado de pornografía (Dubray et al., 2017) y más estrés en el contexto de tránsito hacia la paternidad (Tavares et al., 2019).

Considerando las evidencias expuestas, el deseo sexual solitario se asocia con indicadores positivos de salud sexual como la excitación y el orgasmo, pero también con indicadores negativos, como la inhibición sexual y la insatisfacción sexual. Estos hallazgos ponen de manifiesto que este parámetro de la masturbación requiere un mayor análisis para seguir profundizando en su estudio y en su relación con la salud sexual.

Experiencia subjetiva del orgasmo

Tradicionalmente, el estudio del orgasmo se ha centrado en analizar su dimensión fisiológica, prestando escasa atención a su dimensión psicológica (Arcos-Romero et al., 2018). La experiencia subjetiva del orgasmo alude a la percepción y valoración del orgasmo desde un punto de vista psicológico (Arcos-Romero et al., 2018; Mah y Binik, 2001). Tradicionalmente, la investigación en el orgasmo se ha centrado en la facilidad/dificultad para experimentarlo o en su frecuencia (e.g., Bancroft et al., 2003), sin incidir en la valoración de la intensidad de su experiencia. Por tanto, el estudio de la experiencia subjetiva del orgasmo ofrece una novedosa perspectiva de este componente de la respuesta sexual (Mah y Binik, 2001), siendo explorada en mayor medida en el contexto de las relaciones sexuales (e.g., Arcos-Romero et al., 2019, 2022; Mangas et al., 2022).

Para la evaluación de la experiencia subjetiva del orgasmo se han desarrollado diferentes escalas como el *Orgasmometer* (Mollaioli et al., 2018), la *Orgasmic Consistency Scale* (Hurlbert et al., 1993), el *Bodily Sensations of Orgasm Questionnaire* (Dubray et al., 2017) o el *Orgasmic Perception Questionnaire* (Panzeri et al., 2023).

Entre estas escalas, destaca la *Orgasm Rating Scale* (ORS; Mah y Binik, 2002, 2005, 2020), instrumento diseñado para evaluar la experiencia subjetiva del orgasmo en el contexto de las relaciones sexuales y de la masturbación. Su versión original se fundamenta en una perspectiva multidimensional de la experiencia psicológica del orgasmo: sensorial, referida a la percepción de eventos psicofisiológicos del orgasmo; evaluativa, relativa a la evaluación de un orgasmo (positiva, negativa o indiferente); y afectiva, relacionada con las emociones experimentadas durante o tras el orgasmo (Mah y Binik, 2002, 2005). Sus autores han informado adecuadas evidencias de validez y fiabilidad de sus medidas (Mah y Binik, 2002, 2005).

Arcos-Romero et al. (2018) adaptaron y validaron la ORS para el contexto de las relaciones sexuales en personas heterosexuales españolas. Esta adaptación resultó en una escala compuesta por 25 adjetivos distribuidos en cuatro dimensiones: afectiva, referida a los sentimientos experimentados durante el orgasmo (e.g., “gozoso”); sensorial, aludiendo a la percepción de la respuesta fisiológica o sensaciones (e.g., “eufórico”); íntima, relacionada con los aspectos de intimidad experimentados (e.g., “tierno”); y recompensa, incluyendo aspectos reforzantes y/o reconfortantes del orgasmo (e.g., “tranquilizante”). Esta versión constituye un instrumento con adecuadas propiedades psicométricas que cuenta con invarianza factorial por sexo, edad, estatus de pareja, duración de la relación de pareja, orientación sexual y nivel educativo (Arcos-Romero y Sierra, 2019). Asimismo, ha demostrado capacidad para diferenciar entre personas con y sin dificultades orgásmicas. Su estructura ha sido confirmada en población adulta de gays y lesbianas, con buenas propiedades psicométricas (Mangas et al., 2022; Muñoz-García, Gómez-Berrocal y Sierra, 2023).

A partir de las medidas de la ORS, Arcos-Romero et al. (2019) propusieron el Modelo Multidimensional de la Experiencia Subjetiva del Orgasmo, un marco conceptual para evaluar y estudiar la experiencia subjetiva del orgasmo en el contexto de las relaciones heterosexuales. Partiendo de las relaciones teóricas entre la excitación sexual y el orgasmo (Brody, 2007; Brody et al., 2013; Paterson et al., 2014; Stoléru et al., 2012),

el modelo fue validado mediante una tarea experimental en la que las cuatro dimensiones de la experiencia subjetiva del orgasmo en las relaciones sexuales fueron asociadas con diferentes medidas de excitación sexual (i.e., propensión a excitarse sexualmente, valoración de la excitación sexual y de las sensaciones genitales, y respuesta genital) ante la visualización de un filme sexual explícito en el que un hombre y una mujer mantienen relaciones sexuales. En hombres, la propensión a excitarse sexualmente se asoció positivamente con las dimensiones afectiva, sensorial y recompensa de la experiencia subjetiva orgásmica, mientras que la respuesta genital se relacionó con la dimensión de intimidad. En mujeres, la dimensión sensorial de la experiencia orgásmica se asoció con la percepción de excitación sexual. Así, se ofrecieron evidencias de validez al modelo multidimensional de la experiencia subjetiva del orgasmo en el contexto de las relaciones sexuales.

El desarrollo de un modelo teórico de la experiencia subjetiva del orgasmo pone de relieve su importancia, ya que se ha relacionado con otras dimensiones del funcionamiento sexual, como el deseo sexual (Arcos-Romero et al., 2022; Cervilla et al., 2023), la excitación (Arcos-Romero et al., 2019), la satisfacción orgásmica (Sierra et al., 2023) o la satisfacción sexual (Arcos-Romero y Sierra, 2020; Mangas, Sierra et al., 2024). Contar con este modelo ha permitido profundizar en el estudio de la experiencia subjetiva del orgasmo en el contexto de las relaciones sexuales, observándose diferencias entre hombres y mujeres, siendo ellas las que experimentan el orgasmo de manera más intensa que los hombres (Arcos-Romero y Sierra, 2018, 2023; Arcos-Romero et al., 2018, 2019; Mah y Binik, 2002; Mangas, Sierra et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023; Sierra et al., 2024). En hombres y mujeres, la edad, en sentido negativo, y la búsqueda de sensaciones sexuales, el deseo sexual hacia la pareja y la satisfacción sexual, en sentido positivo, se han asociado con la experiencia subjetiva del orgasmo en las relaciones sexuales (Arcos-Romero y Sierra, 2020; Arcos-Romero et al., 2022). En este contexto, las descripciones más representativas del orgasmo forman parte de la

dimensión afectiva: placentero, satisfactorio, excitante, gratificante y gozoso (Arcos-Romero y Sierra, 2023; Mangas, da Silva Alves et al., 2024; Sierra et al., 2024).

La experiencia subjetiva del orgasmo puede diferir en función del contexto en el que se produce, percibiéndose como más intensa en las relaciones sexuales que en la masturbación en solitario (Levin, 2007; Mah y Binik, 2002; Muñoz-García, Gómez-Berrocal y Sierra, 2023; Pinkerton et al., 2003; Santtila et al., 2008; Sierra, Ortiz et al., 2021). Sin embargo, la ORS no ha sido validada en el contexto de la masturbación en solitario en población española heterosexual.

En definitiva, se pone de manifiesto la importancia de contar con un instrumento con adecuadas garantías psicométricas, fundamentado en un modelo teórico, que permita estudiar la experiencia subjetiva del orgasmo como un parámetro de la masturbación en solitario, considerando las importantes aportaciones que puede ofrecer para el ámbito de la salud sexual.

Masturbación en solitario y relaciones sexuales

La convivencia entre la masturbación en solitario y las relaciones sexuales es un tema que ha suscitado el interés de la investigación (e.g., Fischer y Træen, 2022; Gerressu et al., 2008; Regnerus et al., 2017), recibiendo mayor atención en los últimos años. El placer sexual es un denominador común compartido por la masturbación y las relaciones sexuales; sin embargo, se han descrito diferencias entre ambos contextos (Goldey et al., 2016). La masturbación se caracteriza por la focalización propia, la autonomía, el control, y mayor atención a aspectos físicos y recompensantes (Foust et al., 2022; Goldey et al., 2016; Mangas, da Silva Alves et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023; Rowland et al., 2019). En el contexto de las relaciones sexuales, la mutualidad, la cercanía emocional y la percepción más intensa de aspectos afectivos, sensoriales e íntimos del orgasmo son más relevantes (Foust et al., 2022; Goldey et al., 2016; Mangas, da Silva Alves et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023; Rowland et al., 2019).

En el estudio de la relación entre la masturbación en solitario y las relaciones sexuales, se han propuesto dos modelos explicativos: compensatorio y complementario. El modelo compensatorio propone una relación negativa entre la masturbación y las relaciones sexuales, es decir, la masturbación podría incrementar su frecuencia cuando no hay disponibilidad de la pareja, si el sexo en pareja no es satisfactorio o si hay menos frecuencia de relaciones sexuales que la deseada (Das et al., 2009; Regnerus et al., 2017). A favor de este modelo se ha observado una asociación negativa entre la masturbación y el bienestar sexual (Bancroft et al., 2011; Bell y Reissing, 2017; Lee et al., 2016; Štulhofer et al., 2019) y el funcionamiento sexual en personas con pareja (Huang et al., 2022). Que los hombres con dificultades en la eyaculación informen más frecuencia de masturbación también es una evidencia a favor de este modelo (Niu et al., 2023). En mujeres, también se ha observado que más frecuencia de masturbación se relaciona con más insatisfacción en las relaciones sexuales (e.g., Brody y Costa, 2009; Das et al., 2009; Velten y Margraf, 2017). Por otra parte, el modelo complementario plantea una relación positiva entre la masturbación y las relaciones sexuales, de modo que la masturbación incrementa y mejora las relaciones sexuales en pareja, y estas estimulan a su vez actividades sexuales adicionales, como puede ser la masturbación (Pinkerton et al., 2003; Regnerus et al., 2017). Evidencias a favor de este modelo se encuentran, por ejemplo, en mujeres con más interés sexual que complementan la actividad sexual con masturbación (Carvalho y Leal, 2013; Das et al., 2009).

La presencia de un patrón compensatorio o complementario podría ser independiente de ser hombre o mujer (Das, 2007; Das et al., 2009; Robbins et al., 2011). Sin embargo, también se han sugerido diferencias en el apoyo a estos modelos según el género, planteándose que el modelo compensatorio es más característico en hombres y el complementario en mujeres (Gerressu et al., 2008) o a la inversa (Hessellund, 1976). A favor de un patrón específico asociado al género se observa que, en hombres, una mayor frecuencia de relaciones sexuales disminuye la probabilidad de informar masturbación, mientras que en mujeres este patrón fue a la inversa (Fischer y Træen,

2022; Fischer et al., 2022; Gerressu et al., 2008; Sierra et al., 2023). En hombres, además, se ha encontrado que la masturbación podría ser contemplada como innecesaria si hay sexo frecuente y una vida sexual satisfactoria (Fischer y Træen, 2022), lo que refleja que ellos se involucrarían con mayor frecuencia en la masturbación como compensación (Dekker y Schmidt, 2003; Huang et al., 2022; Niu et al., 2023; Regnerus et al., 2017). Por su parte, en mujeres, la masturbación parece complementar la actividad sexual en pareja dentro de un repertorio sexual más amplio (Burri y Carvalheira, 2019; Carvalheira y Leal, 2013). En el contexto de la pareja, tras masturbarse, los hombres informan un estado de ánimo más negativo y perciben a su pareja como menos receptiva, mientras que las mujeres, tras masturbarse, muestran un estado de ánimo más positivo y una relación positiva con la actividad sexual (Dewitte et al., 2015).

Los hallazgos expuestos ponen de manifiesto que la relación entre la masturbación en solitario y las relaciones sexuales es compleja, requiriéndose más estudios. Las evidencias previas están centradas en las relaciones sexuales, pero en su mayoría no están contextualizadas en el ámbito de la pareja, aspecto que podría determinar esta asociación (Huang et al., 2022; Jiao et al., 2022; Park y MacDonald, 2022). Así, la masturbación es una conducta presente incluso en personas casadas con oportunidad de tener sexo (Shibley Hyde y DeLamater, 2024). Por una parte, se ha observado que la masturbación es una fuente de placer independiente del estatus de pareja (Abramson, 1973; Kontula-Havio y Mannila, 2003), la satisfacción con la relación (Dekker y Schmidt, 2003) o la duración de la relación (Kontula y Haavio-Mannila, 2003), mientras que, otros hallazgos muestran que la frecuencia de masturbación podría verse reducida si la persona está en pareja (e.g., Regnerus et al., 2017; Rowland, Kolba et al., 2020; Schick et al., 2010), tiene una relación más larga (Grøntvedt et al., 2020; McNulty y Fisher, 2008; Træen y Kvaem, 2023) o cohabita (Brody et al., 2000). A pesar de que la masturbación es una variable relevante en el contexto de la pareja, su estudio ha sido simplificado. Una limitación que presentan los trabajos que han abordado el papel de la masturbación y las relaciones sexuales en el contexto de la pareja es que se fundamentan

mayoritariamente en el análisis de la frecuencia de masturbación sin tomar en consideración otros parámetros relevantes de esta conducta para la salud sexual, como los expuestos previamente: la edad de inicio de su práctica, la actitud hacia esta conducta, el deseo sexual solitario o la experiencia subjetiva del orgasmo.

**ESTRUCTURA
DE LA TESIS DOCTORAL**

ESTRUCTURA DE LA TESIS DOCTORAL

En la Introducción se destaca la importancia de abordar diferentes parámetros en el estudio de la masturbación por su implicación en la salud sexual. Sin embargo, se ponen de manifiesto ciertas limitaciones que han acompañado el estudio de esta conducta como, por ejemplo, el interés centrado en su frecuencia y las escasas investigaciones que han abordado su papel en el ámbito de las relaciones de pareja. Por ello, en esta Tesis Doctoral se plantea ampliar el conocimiento de esta conducta a través de dos objetivos generales (1) enriquecer el estudio de la masturbación ofreciendo medidas que permitan evaluar dos parámetros de esta conducta: la actitud negativa hacia la masturbación y la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario; y (2) analizar la relación entre masturbación en solitario y relaciones sexuales, examinando en primer lugar la relación entre diferentes parámetros de la masturbación y la satisfacción orgásmica en las relaciones sexuales, y explorando, en segundo lugar, un perfil psicosexual -en el que se incluye la satisfacción sexual- en hombres y mujeres con distintos patrones de actividad sexual en cuanto a relaciones sexuales y masturbación en solitario, en el ámbito de la pareja. Con estos objetivos, se proponen seis estudios independientes y secuenciales.

1. Revisión sistemática sobre la relación entre masturbación y satisfacción sexual

El objetivo de la revisión sistemática es examinar los artículos científicos originales que han abordado la relación entre masturbación en solitario y satisfacción sexual, siguiendo las recomendaciones internacionales PRISMA (Page 2021). Para ello, se consultan las bases de datos *APA PsycInfo*, *Medline*, *Scopus* y *Web of Science*. De los trabajos seleccionados se extraen características de la muestra (país, tamaño muestral, sexo y orientación sexual), métodos de evaluación de masturbación y de satisfacción sexual, y los resultados de interés. Esta revisión sistemática supone el primer paso de la

presente Tesis Doctoral en el estudio del papel de la masturbación para la salud sexual, tomando la satisfacción sexual como un indicador relevante.

2. Adaptación española del *Negative Attitudes Toward Masturbation Inventory* (NATMI)

Con el propósito de disponer de una medida con adecuadas garantías psicométricas para evaluar la actitud negativa hacia la masturbación, se adapta y valida el *Negative Attitudes Toward Masturbation Inventory* (NATMI) a partir de su versión original de Abramson y Mosher (1975). Para ello, se siguen las directrices internacionales recomendadas (Hernández et al., 2020; Muñiz y Fonseca-Pedrero, 2019) y se explora la validez de constructo, la fiabilidad de sus medidas y se aporta evidencia de validez basada en la relación de sus puntuaciones con constructos afines.

3. Adaptación española de la *Orgasm Rating Scale* (ORS)

Con el objetivo de contar con un instrumento que permita evaluar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario, se valida la ORS (Mah y Binik, 2002, 2005, 2020) en este contexto. Se parte de la versión previamente validada en población heterosexual española para el contexto de las relaciones sexuales (Arcos-Romero et al., 2018) que consta de 25 ítems distribuidos en cuatro dimensiones (Afectiva, Sensorial, Intimidad y Recompensa). Se examina su invarianza factorial por sexo y por grupos de edad, la fiabilidad de sus puntuaciones y se aportan evidencias de validez basadas en la relación de sus medidas con constructos afines.

4. Validación del Modelo de la Experiencia Subjetiva del Orgasmo: su asociación con la excitación sexual

El objetivo del cuarto estudio es aportar evidencias de validez al Modelo de la Experiencia Subjetiva del Orgasmo (MESO) en el contexto de la masturbación en solitario, marco conceptual que permite describir la experiencia orgásmica a nivel psicológico desde una perspectiva multidimensional. Para ello, se proponen modelos de

regresión en hombres y mujeres para examinar la asociación de las cuatro dimensiones del MESO (afectiva, sensorial, intimidad y recompensa) con la excitación sexual, concretamente, con la excitación sexual como propensión (i.e., propensión a la excitación/inhibición sexual) y como estado (i.e., excitación sexual autoinformada y respuesta genital evaluada mediante pletismografía peniana o fotopletismografía vaginal) en un contexto de laboratorio, en el que se les presentan a los participantes vídeos contrabalanceados con contenido sexual explícito.

5. Parámetros de la masturbación asociados a la satisfacción orgásmica en las relaciones sexuales

El quinto estudio aborda la relación entre la masturbación en solitario y la satisfacción orgásmica en las relaciones sexuales. En primer lugar, se examinan las diferencias en parámetros de la masturbación (i.e., edad de inicio de la masturbación, frecuencia de masturbación, actitud negativa hacia la masturbación, su frecuencia actual, el deseo sexual solitario y la experiencia subjetiva del orgasmo) entre hombres y mujeres, controlando la edad, tener pareja y la religiosidad (frecuencia de rezo). Considerando las diferencias observadas, se plantean modelos de regresión por separado para hombres y mujeres con el propósito de explicar a partir de los parámetros de la masturbación, y la edad, la satisfacción orgásmica.

6. Perfil psicosexual en personal con pareja y diferentes frecuencias de actividad sexual (i.e., masturbación en solitario y relaciones sexuales)

Finalmente, el último estudio aborda el papel que tiene la masturbación en solitario cuando se practica en convivencia con las relaciones sexuales en el contexto de la pareja. Para ello, mediante análisis de clúster se establecen tres grupos con distintas frecuencias de masturbación y de relaciones sexuales, y se describe en hombres y en mujeres un perfil psicosexual compuesto por variables de tipo sociodemográfico, variables relacionadas con la masturbación, variables relacionadas con el funcionamiento sexual, la satisfacción sexual y con la relación de pareja.

Estudio 1: Relationship Between Solitary Masturbation and Sexual Satisfaction: A Systematic Review

Artículo publicado en *Healthcare*

Referencia (Apéndice A):

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Abstract: Masturbation is a healthy sexual behavior associated with different sexual functioning dimensions, which highlights sexual satisfaction as an important manifestation of sexual wellbeing. This review aims to systematically examine studies that have associated masturbation with sexual satisfaction, both in individuals with and without a partner. Following the PRISMA statement, searches were made in the APA PsycInfo, Medline, Scopus, and Web of Science databases. The search yielded 851 records, and twenty-two articles that examined the relation between solitary masturbation and sexual satisfaction were selected. In men, a negative relation between masturbation and sexual satisfaction was observed in 71.4% of the studies, 21.4% found no such relation, and 7.2% observed a positive association. In women, 40% reported no relation, 33.3% a negative relation, and 26.7% a positive one. The negative association between solitary masturbation and sexual satisfaction is consistent with the previously proposed compensatory role of masturbation, especially for men. In women, compared to men, the complementary role of masturbation in relation to sexual relationships is observed to a greater extent and is associated more closely with sexual health. The importance of including different parameters beyond the masturbation frequency in future studies to explore its relation with sexual satisfaction is emphasized. This systematic review is registered in PROSPERO (CRD42023416688).

Keywords: solitary masturbation; sexual satisfaction; sexual health; sexual functioning; sexual relationships; systematic review

1. Introduction

Masturbation is a healthy sexual behavior practiced with others (e.g., a partner) or individually [1]. Solitary masturbation is defined as erotic self-stimulation without anyone else being present or participating [2]. Its practice is present from very early development phases to old age [3]. This behavior favors self-exploration and sexual learning in a context in which the presence of sexual difficulties might be less prevalent [4]. Previous studies have stressed the importance of solitary masturbation for the adjustment and generalization of the sexual response to the context of sexual relationships [5], acting as a therapeutic tool to deal with some sexual difficulties [6,7].

The relation of solitary masturbation with sexual relationships has been studied mostly by two models: compensatory and complementary. The compensatory model hypothesizes that masturbation frequency could increase for the purpose of substituting unsatisfactory or insufficient sexual relationships [8,9]. The complementary model considers a positive relation between masturbation behavior and sexual relationships, implying that practicing one would be associated with the other one being practiced more frequently [9]. Previous pieces of evidence suggest that the compensatory pattern would be more present in men, with the complementary pattern in women [9–14], despite some studies showing the independence of gender in both of these models [15,16].

Masturbation has been related to different sexual functioning dimensions, although very few results have been obtained. Positive associations have been described with sexual desire [17], sexual arousal [11], or orgasm [5], which evidences the positive implication of this behavior in sexual response. One of the most interesting dimensions is sexual satisfaction, which is an important indicator of sexual health [18–20].

Sexual satisfaction could be considered the last phase of the sexual response cycle according to Basson's model [21,22] and is defined as “an affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship” [23] (p. 268). Its study requires a multidimensional approach that contemplates personal, interpersonal, and social factors [19,24]. In line with this, the

Ecological Theory of Human Development [25] has served as a guide to study it by bearing in mind the different associated relevant variables, which range from the closest to the most distant to an individual [19]. Of the variables associated with sexual satisfaction, solitary masturbation falls under personal-type factors [13,26,27].

As far as we are aware, the pieces of evidence that have associated solitary masturbation with sexual satisfaction have not been integrated, despite its importance for sexual health. Thus, considering that previous literature reviews on this are missing, the objective of the present study is to systematically analyze the results obtained in the scientific literature about the relation between solitary masturbation (i.e., its presence/absence and/or frequency) and sexual satisfaction, including a comparison of this relation in men and women.

2. Materials and Methods

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Guidelines (PRISMA) [28]. The protocol of this review is registered in PROSPERO (registration number: CRD42023416688).

2.1. Eligibility Criteria

To fulfill the objectives of this systematic review, the considered studies had to address the relation between solitary masturbation and sexual satisfaction. Eligible studies had to meet all the following inclusion criteria: (a) original research articles; (b) solitary masturbation (as presence/absence or frequency); (c) sexual satisfaction was assessed using standardized instruments, ad hoc items, or derived from scales, questionnaires, or interviews; (d) they had examined the direct and indirect relation, considering mediators and/or covariates between solitary masturbation and sexual satisfaction.

There was no limitation for publication year, and the English and Spanish languages were considered.

2.2. Information Sources

The literature search was conducted on APA PsycInfo, Medline, Scopus, and Web of Science. The last database query date was 30 October 2023.

2.3. Search Strategy

Following the recommendations by Quevedo-Blasco [29] and using the terms related to sexual satisfaction as employed in the systematic review by Sánchez-Fuentes et al. [19], the search strategy integrated the following terms: (masturb* OR self-stimulat* OR onanism* OR “solitary sexual activit*”) AND (“satisfac* sex*” OR “sex* satisfact*” OR “satisfaction with sex*”), using the truncation “*” to include any variant of words.

To validate the search strategy, a peer review was conducted by proofreading the syntax, spelling, and structure and ensuring that the search formula identified articles that were relevant to the search. The formula was applied to the title, abstract, and/or keywords, or, if applicable, to the topic, to narrow down the search on the topic of masturbation and sexual satisfaction.

2.4. Selection Process

The search results were exported on the Rayyan online platform, a web-based automated screening tool developed by the Qatar Computing Research Institute (QCRI) that is accessible at www.rayyan.ai (accessed on 15 November 2023) [30]. This export included the title, authors, publication date, abstract, and keywords. Two authors (AÁM and OC) independently reviewed the documents based on their title, abstract, and keywords by categorizing articles as included, doubtful, or rejected. The studies labeled as doubtful underwent a full-text review, and discrepancies were solved by consensus. Final decisions, if necessary, were made by a third researcher (JCS).

2.5. Data Collection Process

The articles that met the inclusion criteria were comprehensively read independently by two reviewers to guarantee the objectivity and rigor of the results. A data collection form was designed, and the extracted data were compared to any

discrepancies resolved by discussion. The extracted data included: (a) authors, (b) country, (c) sample, (d) participants' sexual orientation, (e) instrument used to assess solitary masturbation, (f) instrument applied to assess sexual satisfaction, and (g) results about the association between masturbation and sexual satisfaction. The true Kappa value was employed to assess the reliability of coding [31,32]. Inter coding was evaluated by indicating agreement or disagreement in the analyses of the categories extracted during the article selection process [33]. A true Kappa value of 0.91 was obtained when considering the agreement between coders to be satisfactory with a Kappa value above 75%.

2.6. Data Items

Outcome measures that assess (a) solitary masturbation and (b) sexual satisfaction were extracted. The results can be reported as the presence/absence of solitary masturbation by dichotomous items, a frequency scale of solitary masturbation, or interviews. Likewise, an overall test score to provide a general measure of sexual satisfaction (e.g., general sexual satisfaction) or subscales/specific items to provide a measure of domain-specific sexual satisfaction (i.e., physical sexual satisfaction) was/were considered.

2.7. Study Risk of Bias Assessment

The risk of bias in the included studies was assessed using the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (QATOCSS) [34] for those studies that indicated a quantitative methodology and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) [35] tool for the studies that indicated an observational analytical methodology. These tools provided a standardized framework for assessing the scientific rigor of all the reviewed studies through a checklist of requirements (e.g., definition of the study population, the research question, control definition, inclusion criteria, blindness, and the reporting of confounders). The evaluation ensured the studies' robustness and the results' reliability. To do so, two

authors independently applied the tools to the included studies. If discrepancies arose, they were solved by consensus.

2.8. Synthesis Methods

Table 1 shows the individual results of the studies and the synthesis. For better visualization purposes, the authors, publication year, country, sample size, assessment of masturbation and sexual satisfaction, and the main findings about the relation between both variables were tabulated.

Table 1. Summary of study reviews about the relationship between solitary masturbation and sexual satisfaction.

Authors	Country	Participants	Orientation	Instrument to Assess Masturbation	Instrument to Assess Sexual Satisfaction	Results
Bridges et al. [36]	United States	2632 women with a partner aged from 19 or younger to 70 or older.	Not specified.	Ad hoc item to ask about the number of times the participant has masturbated in the last month.	Four single-item ad hoc questions rated on a Likert scale of 1 (strongly disagree) to 7 (strongly agree) to assess four dimensions of sexual satisfaction: (a) "I have been satisfied with quality of genital stimulation and/or intercourse I've had with a partner" (stimulation/intercourse), (b) "I have been satisfied with the quality of sexual/erotic contact I've had with a partner that did not include or lead to sustained genital stimulation or intercourse" (sexual/erotic contact), (c) "I have been satisfied with my sex life in the last three months" (3 months), and (d) "On the whole, I have been satisfied with my sexual life" (overall satisfaction).	The frequency of masturbation is not associated with satisfaction with sexual/erotic contact, satisfaction in the last three months, or overall satisfaction (lifetime sexual satisfaction). Masturbation in the last 30 days is negatively related to satisfaction with stimulation/intercourse or genital stimulation. Covariates in regression models include family affection, partner initiation, and communication.
Brody and Costa [37]	Sweden	2810 (1255 men and 1129 women) with or without a partner, from 18 to 74 years old (M men = 40.9; M women = 40.8).	Not specified.	Ad hoc item para frequency of masturbation in the past 30 days.	Satisfaction scale comes from different versions of the Life Satisfaction Scale: LiSat-8 [38] and LiSat-11 [39]. They assess their satisfaction with their sex life on a six-point Likert-type scale, anchored with 1 = very unsatisfying and 6 = very satisfying.	The frequency of masturbation was inversely related to nearly all indices of sexual satisfaction in both men and women, with a small to medium effect size. Covariates: age, penile–vaginal intercourse, anal sex, and oral sex.
Darling and Davidson [40]	-	202 single women (M age = 21.6).	-	Ad hoc item: Have you ever engaged in masturbation?	Ad hoc item using a Likert-scaled response.	In both sexually active and inactive women, masturbation is not associated with sexual satisfaction (psychological and physiological). No covariates.
Das [45]	United States	Subsample with a stable partner of a larger sample of 3116 individuals (1347 men and 1769 women) aged	Not specified.	Ad hoc item. Frequency of masturbation was assessed: "On average, in the past 12 months how often did you masturbate?"	Dummy was included for emotional and/or physical satisfaction in sex (with the partner): <ul style="list-style-type: none">Physical yes; emotional yes (reference group);	Men with a stable partner who engage in sexual relationships, as well as those who find them physically but not emotionally satisfying and those who are dissatisfied both physically and emotionally report less masturbation than those who are emotionally and physically satisfied.

18 to 60 years old.	A dummy variable was used to recode the responses: any (1) or no (0) masturbation.	<ul style="list-style-type: none"> Physical yes; emotional no (indicating the participant was physically but not emotionally satisfied); Physical no; emotional yes; Physical no; emotional no. 	<ul style="list-style-type: none"> Women with a stable partner who have had sex in the last year, and women who find sex physically but not emotionally satisfying, report less masturbation than those who are emotionally and physically satisfied. 	Covariate: age.
DeLamater and Moorman [41]	<p>Ad hoc item to assess the frequency of masturbation.</p> <p>“During the past 6 months, how often, on average, have you engaged in the following sexual activities?”</p> <p>The behaviors included masturbation, and the response options for all items were 1 = not at all, 2 = less than once a month, 3 = once or twice a month, 4 = about once a week, 5 = more than once a week, and 6 = daily.</p> <p>99% of the members of the sample were in heterosexual relationships.</p> <p>1384 people (745 women and 639 men) aged 45 and older. A subsample with a partner (447 women and 505 men)</p> <p>United States</p>	Two ad hoc items to assess the emotional and physical facets of sexual satisfaction.	Men who are less physically satisfied with their partners masturbate more often than men who are more physically satisfied with their partners. This is not observed in women.	Covariates in the regression model: age and biopsychosocial variables.
De Lima et al. [42]	<p>Ad hoc.</p> <p>Masturbation frequency was assessed with an item with 9 options: less than once a year, once a year, once every 6 months, once every 3 months, once or twice a month, once a week, 2 to 3 times a week, once a day, and more than once a day.</p> <p>All options on the Kinsey scale were considered.</p> <p>2408 women ranging from 18 to 69 years old (<i>M</i>age = 27.78) with or without a relationship.</p> <p>Brazil</p>	The Female Sexual Quotient instrument designed and validated in a previous project [43]. It contains 10 questions covering different areas of women’s sexual activity. The options for the 10 items are on a Likert-type scale of 5 points. The scores divide sexual performance into five categories: highly dissatisfied (0–20 points), dissatisfied (22–40 points), average (42–60 points), partially satisfied (62–80 points), and highly satisfied (82–100 points).	There is a positive correlation between masturbation frequency and sexual satisfaction.	
Favez and Tissot [44]	<p>Ad hoc item: “How often do you masturbate?”</p> <p>Responses employed a 9-point rating scale from 1</p> <p>Not specified.</p> <p>244 men and 246 women aged 25–45 years old (<i>M</i> men = 36.3; <i>M</i> women = 36.3) in a</p> <p>Switzerland</p>	The French version of the Multidimensional Sexuality Questionnaire [45].	The frequency of solitary sex was negatively correlated with sexual satisfaction.	Structural equation modeling: attachment, representation of sexuality, frequency of sexual activities and desire, and sexual satisfaction.

	committed relationship. (more than once a day) to 9 (never).				Covariates: age, duration of the relationship, and marital satisfaction.
Fischer [46]	4148 people (2181 men, 1967 women) from 30 to +60 years old (M men = 48.4; M women = 44.4). A subsample of single (507 men, 568 women) and partnered adults (1668 men, 1395 women).	Heterosexual (87.9%), homosexual/1 esbian (4.3%), bisexual/pansexual (6.5%), asexual/other (1.3%).	Ad hoc item. Masturbation frequency was assessed by a one-item indicator [47]: "How often did you masturbate in the past month?" Responses ranged from 1 = no times to 7 = more than once a day.	Ad hoc item. "All things considered, how satisfied are you with your sexual life?" with response options ranging from 1 = very dissatisfied to 5 = very satisfied.	In single men, there was no relationship between masturbation and sexual satisfaction, while in single women, a positive relationship was observed. In both men and women with a partner, there was no relationship between the frequency of masturbation and sexual satisfaction. Regression models included sociodemographic factors (age, education, self-estimated health), sexual behavioral factors (intercourse and masturbation frequency), evaluative factors (satisfaction with the relationship, contentment with sexual frequency, body image, genital image, level of sexual distress), and relationship factors (relationship duration, sexual avoidance, inclusion of the other in the self).
Fischer et al. [12]	3814 people (1875 men and 1939 women) with or without a relationship, between 60 and 75 years (Mage 67 years).	Not specified.	Ad hoc. One-item indicator previously used to measure reported masturbation frequency (ELSA) [47]. "How often did you masturbate in the past month?" Response alternatives were 1 = none, 2 = once in the past month, 3 = 2 or 3 times in the past month, 4 = once a week, 5 = 2 or 3 times a week, 6 = once a day, and 7 = more than once a day.	Ad hoc item. "How satisfied are you with the current level of sexual activity in your life, in a general way?" Responses, which ranged from 1 = very satisfied to 5 = very dissatisfied, were reverse-recorded, so that higher scores reflected higher sexual satisfaction.	In men, greater satisfaction predicts lower levels of masturbation across all four countries (Portugal, Denmark, Norway, and Belgium). In women, being more satisfied with one's level of sexual activity is negatively related to masturbation across all four countries (Denmark, Belgium, and Norway). Regression models included sociodemographic factors (age, education, religiosity, and relationship status), health factors, sexual behavior, and satisfaction, as well as attitudes toward sexuality.
Klapilová et al. [48]	86 long-term cohabiting couples, Mage from 20 to 40	Heterosexual.	Ad hoc item. The frequency of masturbation was assessed using a scale that ranged	Ad hoc item.	No relationship is observed between the frequency of masturbation and sexual satisfaction, neither in correlations nor in regression models, while controlling for the frequency of other variables under consideration.

<p>years old (<i>M</i> men = 26.5; <i>M</i> women = 27.6).</p>	<p>from 0 = never or once a year to 4 = once or more times per day.</p>	<p>Sexual satisfaction was rated on a seven-point Likert-type scale (1 = not at all satisfied; 7 = absolutely satisfied).</p>	<p>In men, a negative relationship is observed between masturbation and sexual satisfaction; in women, a positive relationship is observed between masturbation and sexual satisfaction.</p>
<p>2587 people (1105 men, 1482 women) in a relationship.</p>	<p>Ad hoc item.</p>	<p>Ad hoc item.</p>	<p>Age is controlled.</p>
<p>Kvalem et al. [49]</p>	<p>Norway</p>	<p>Two questions about the frequency of masturbation during the last six months: "Your capacity to let go during sex"; "Your capacity of feeling sexual desire"; and "The quality of your sex life." The response categories were (1) clearly unsatisfactory, (2) slightly unsatisfactory, (3) satisfactory, (4) very good, (5) could not have been better, and (6) have not had a sex partner.</p>	<p>Covariates in the regression model: body satisfaction, Body Mass Index, relationship status, intercourse activity, and mental health.</p>
<p>Representative sample from 14 to 33 years old.</p>	<p>Not specified.</p>	<p>Question extracted from the ELSA Sexual Relationships and Activities Questionnaire (SRA-Q) included in the ELSA project. An instrument with items from the Natsal-SF [50], the European Male Ageing Study Sexual Function Questionnaire [51], and the NSHAP Project [52].</p>	<p>In men, a positive relationship is observed between the frequency of masturbation and being dissatisfied with their overall sex life. In women, no significant relationship is found.</p>
<p>6201 (2745 men, 3456 women) aged 50 years and older (<i>M</i> men = 66.9; <i>M</i> women = 66.8). A subsample in a partnership (2009 men, 2053 women).</p>	<p>Heterosexual.</p>	<p>The item was how often did you masturbate?</p>	<p>Adjusted for age and self-rated health.</p>
<p>Lee et al. [47]</p>	<p>United Kingdom</p>	<p>Study Sexual Function Questionnaire [51], and the NSHAP Project [52].</p>	<p>In men, a positive relationship is observed between the frequency of masturbation and being dissatisfied with their overall sex life. In women, no significant relationship is found.</p>
<p>661 men (two samples of 326 and 335) (<i>M</i> age = 27.63 and 46.76, respectively).</p>	<p>Ad hoc item.</p>	<p>Sexual satisfaction was measured using the Global Measure of Sexual Satisfaction and the Global Measure of Relationship Satisfaction [54]. Participants rated their sexual relationship and overall relationship across three 7-point bipolar scales: good–bad, satisfying–unsatisfying, and valuable–worthless. An overall sexual satisfaction score was calculated.</p>	<p>In Study 1 and Study 2, masturbation frequency is significantly negatively associated with sexual satisfaction.</p>
<p>Miller et al. [53]</p>	<p>Australia</p>	<p>Heterosexual.</p>	<p>Adjusted for age and self-rated health.</p>
<p>A subsample of partnered men with sexual relationships</p>	<p>To respond, an 8-point scale was used (where 1 = less than monthly, 2 = monthly, 3 = fortnightly, 4 = 1–2 times per week, 5 = 3–4 times per week, 6 = 5–6 times per week, 7 = daily,</p>	<p>Frequency of masturbation over the past 6 months.</p>	<p>Adjusted for age and self-rated health.</p>

(Study 1: 156; Study 2: 320).
and 8 = more than once a day).

Neto et al. [55]	1314 people (386 men, 928 women) with a mean age of 37.6 years old ($M = 37.6$) with a partner.	Heterosexual and homosexual.	Ad hoc item. Before and after the quarantine, an ordinal multiple-choice question (<1, 1-2, 3-5, >5/week) graded the masturbatory sexual frequency.	The Female Sexual Quotient (FSQ) [43] and the Male Sexual Quotient (MSQ) [56] were used. Both instruments were developed in Brazilian Portuguese. Questions express the satisfaction level, contemplating the sexual response cycle phases. Responses ranged from 0 = never to 5 = always.	A higher frequency of masturbation is associated with poorer sexual satisfaction in both men and women. Covariates in the regression model: lack of nightlife (clubs, bars, restaurants), lower libido, isolation from partner, working at a central institute, higher sexual frequency, and sexually active.
Study 1: 489 participants (264 men, 223 women, 2 unidentified)	who were 27.81 years old, with an average age ranging from 18 to 70. Half of the participants were in a relationship.	Not specified.	Ad hoc item: "Please rate how often you DO or GET each of the listed sexual activities: sexually touching myself (e.g., masturbation)." Responses ranged from 1 = not at all to 7 = a lot.	Four questions from the Satisfaction with Sex Life Scale—Revised [58] and from [45]: • In most ways, my sexual life is close to my ideal. • The conditions of my sexual life are excellent. • I am satisfied with my sexual life. • My sexual life meets my expectations. Responses ranged from 1 = Not at all to 7 = extremely.	Study 1: a significant negative association between masturbation frequency and sexual satisfaction was observed only in individuals with a partner (vs. singles). Study 2: neither in the correlations nor in the regression model was a significant relationship observed between masturbation and sexual satisfaction. Covariates in regression models: gender, age, solitary desire, partnered desire, partnered activity, and interactions.
Park and MacDonal d [57]	Study 2: 286 single people (150 men, 136 women), M age = 37.72, from 19 to 79 years old, including 463 partnered individuals (257 men, 203	Not specified.	Responses ranged from 1 = not at all to 7 = a lot.	Responses ranged from 1 = Not at all to 7 = extremely.	Covariates in regression models: gender, age, solitary desire, partnered desire, partnered activity, and interactions.

women, and 2 others) from 19 to 79, Mage = 39.

<p>Four questions about sexual functioning and sexual relationships are based on the Derogatis Interview for Sexual Functioning (DISF-SR) [60] and the Changes in Sexual Functioning Questionnaire (CSF) [61].</p>				<p>“During the last six months, how satisfied have you been with ...?”</p> <ul style="list-style-type: none"> • Your own capability to give yourself when you have sex. • Your own capability to experience sexual lust. • The quality of your sex life. • The total relationship with current or last sex partner <p>Responses to sexual satisfaction items on a 6-point scale ranged from</p> <p>could not have been better to clearly unsatisfactory with an answer option for having not had any sex partner.</p>
<p>1303 men, 1508 women (age 20–26). In a subsample of 2101 that had a sex partner.</p>	<p>Ad hoc item.</p> <p>Masturbation frequency was asked. Responses were less than monthly, once per month, to 2–6 times a week, daily, or more often.</p>	<p>Not specified.</p>	<p>Ad hoc item to rate their frequency of masturbation using a scale from 1 = never to 8 = multiple times a day.</p>	<p>Masturbation frequency is negatively associated with sexual satisfaction in men, but not in women.</p> <p>Covariates in the regression model: age, partner status, relationship duration, social support, masculinity/femininity, depression/anxiety, intercourse debut age, kissing/hugging, intercourse/oral sex, extra-dyadic relationship, and lifetime sex partners.</p>
<p>Pedersen and Blekesaune [59]</p>	<p>Norway</p>			<p>Masturbation frequency was negatively associated with sexual satisfaction.</p> <p>Covariates in the regression model: age, SES, gender, frequency of partnered sex, availability of partner, and religiosity.</p>
<p>621 participants (39.5% men, 60.5% women) aged 18 to 30 ($M = 22.1$).</p>	<p>Malaysia</p>			<p>One item from the Female Sexual Function Inventory (FSFI) [36]: “Over the past 4 weeks, how satisfied have you been with your overall sexual life?” referring to the past four weeks.</p> <p>Responses ranged from 1 = very dissatisfied to 5 = very satisfied.</p>
<p>Phuah et al. [62]</p>				<p>Participants without a sex partner were excluded from analysis.</p>

Rowland et al. [64]	United States, other English-speaking countries (e.g., Canada, England) and Hungary.	Subsample of 3343 participants from a sample of 3586 men who had had a sexual partner or were having sex with their partner, aged 18 to 85 ($M = 40.8$).	Ad hoc item asking about frequency of masturbation ranging from 0 = never to 10 = more than 4x/day.	Ad hoc item to assess sexual satisfaction: "how satisfied are you with the sexual aspects of your relationship". Responses ranged from 1 = not satisfied at all to 5 = very satisfied.	Higher masturbation frequency was associated with lower sexual satisfaction. Covariates in the regression model: age, medical issue, anxiety, frequency of pornography use, sexual interest, delayed ejaculation, and erectile dysfunction.
Tao and Brody [65]	China	158 participants (84 men, 74 women) aged 24 years or older.	Ad hoc item. Days in the past month engaged in masturbation, and days in the past month orgasmed from the activity of masturbation.	Sexual satisfaction was measured in two ways: <ul style="list-style-type: none"> The full sexual satisfaction scale of the Multidimensional Sexuality Questionnaire (MSQ) [45] A single item from the scale "I am very satisfied with the sexual aspects of my life", similar to the single item from the Life Satisfaction Scale LiSat-11 [39] used in the Swedish study [37] Both are rated on a five-point scale of agreement to disagreement.	No predictive capacity of masturbation is observed to explain the two measures of sexual satisfaction, both separately and together, in both men and women.
Vaillancourt-Morel et al. [66]	Canada	211 couples (247 women, 174 men, and 1 intersex who identified as a man) aged from 18 to 70 years.	Ad hoc item. Participants were asked whether they had sexual activity alone that included masturbation within the last 24 h or since they last completed a diary. This item was coded as 0 = no masturbation today and 1 = masturbation today.	Global Measure of Sexual Satisfaction [67] was used to evaluate participants' general global satisfaction.	There is no observed relationship between masturbation and sexual satisfaction for 'actor' and 'partner' separately. Neither self-masturbation nor partner's masturbation had the capacity to explain sexual satisfaction. Neither self-masturbation nor partner's masturbation had the capacity to explain sexual satisfaction. The use of pornography (yes/no) is controlled for.
		72 same-sex couples (34.1%; 54 women–men and 18 men–men) and 139 mixed-sex couples.			
		Heterosexual (57.1%; $n = 241$); bisexual (11.4%; $n = 48$);			

gay/lesbian (16.8%, $n = 71$); queer (8.5%, $n = 36$); pansexual (4.0%, $n = 17$); and (2.1%, $n = 9$) as "other", including asexual or uncertain.

Velten and Margraf [16]	964 couples (1928 people) from 18 to 90 years old ($M = 51.28$).	98% heterosexual couples, 0.9% male-male, 0.5% female-female.	Ad hoc item. The frequency of masturbation was assessed on a 6-point scale: never, less than once a month, once to three times a month, once to twice a week, three to four times a week, and five times a week and more.	Ad hoc item. A single item assesses the degree to which participants were satisfied with their sexual lives. It was answered on a scale ranging from 0 to 100, with lower scores indicating lower satisfaction.	In both men and women, an actor effect of masturbation frequency was observed to explain sexual satisfaction negatively. There was no partner effect of masturbation on sexual satisfaction.
Wang et al. [68]	1670 from general population and 166 athletes (47.4%/53.6%).	Not specified.	Ad hoc item. "During the past 6 months, how often, on average, have you engaged in the following sexual activities?" Responses ranged from 1 = not at all to 6 = daily.	Ad hoc item: "How satisfied are you with your sex life?" The response categories were extremely dissatisfied, somewhat dissatisfied, neither satisfied nor dissatisfied, somewhat satisfied, and extremely satisfied.	The frequency of solitary sexual activity was negatively associated with sexual satisfaction. Covariates in the regression model: negative attitudes toward sex, partner-involved sexual activities, self-sexual activity and sexual desire, quality of life, height, orgasm frequency, positive attitudes toward sex, sexual desire, health, exercise, quality of life, and self-stimulation.

3. Results

3.1. Study Selection

The database search yielded 851 records (see Supplementary Data S1). After eliminating duplicates, 464 records remained according to their title, abstract, and keywords. Of these, 432 records were excluded due to the exclusion criteria. A total of 32 underwent a full-text examination, and, finally, 10 were eliminated because they did not meet the inclusion criteria. To broaden the selection process, although a search was made for the papers cited in the studies to be considered, none of them were included. This left 22 papers that met the inclusion criteria and methodological quality standards and could, therefore, be included in the present systematic review. Figure 1 shows a flow chart of the selection process for these studies.

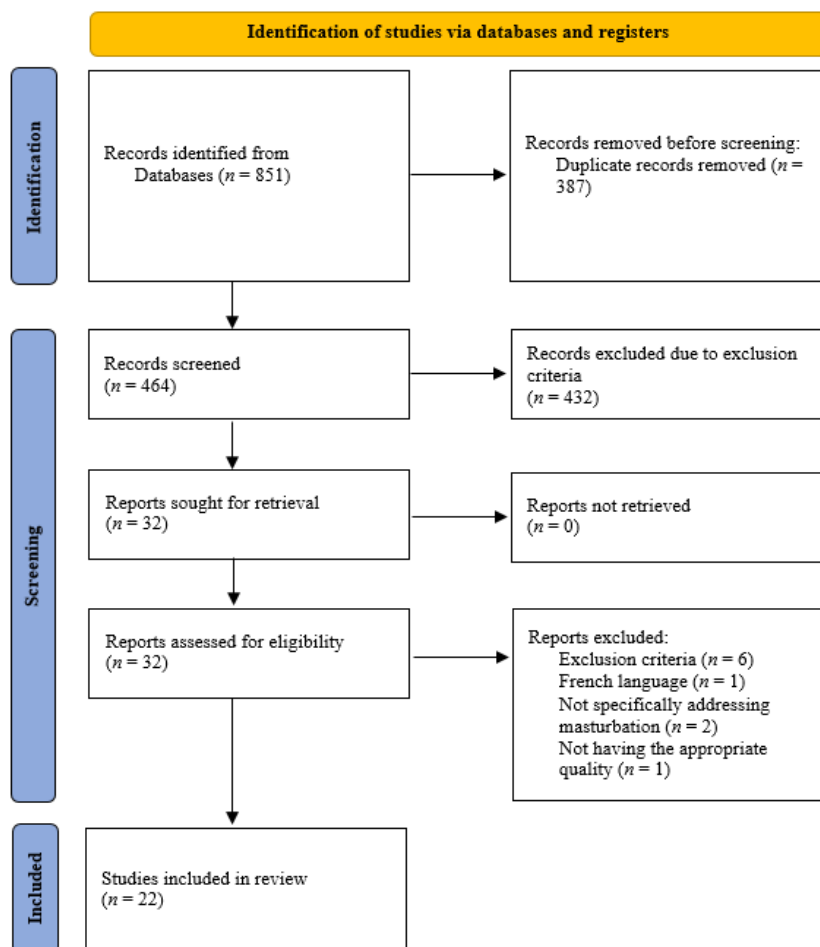


Figure 1. Flow diagram for the systematic review of searches of databases.

Below are the results of the 22 analyzed papers that evaluated the relation between solitary masturbation and sexual satisfaction (see Table 1).

3.2. Sociodemographic Characteristics

The studies were conducted in one or more of these countries: the United States (5 publications), Norway (4), Brazil (2), Switzerland (1), Sweden (1), Denmark (1), Belgium (1), Portugal (1), Hungary (1), the Czech Republic (1), the United Kingdom (1), Australia (1), Malaysia (1), China (1), Canada (1), and Germany (1).

Seventeen of the twenty-two papers included both men and women samples [12,15,16,37,41,46–49,55,57,59,62,64–66,68], while four papers were conducted exclusively with women [36,40,42,44] and one with men [53]. Three studies reported exclusively heterosexual participants [47,48,53], and six also included populations of other sexual orientations (e.g., gay or bisexual) [16,41,42,46,55,66]. The rest of the studies did not report their participants' sexual orientation.

3.3. Instruments to Assess Masturbation

Most of the studies used ad hoc procedures to assess masturbation: frequency scales and, to a lesser extent, a dichotomous item or an interview to determine presence/absence. Only three papers employed an item drawn from validated scales or found in previous projects to assess masturbation frequency [12,46,47]. The time frame to which masturbation practice referred, in those studies that indicated it, was variable: in the last 24 h [66], in the last month [12,36,37,46,59,65], in the last 6 months [41,49,53], or in the last year [15,42].

Regarding the response scale, except for two studies in which presence/absence was evaluated dichotomously (i.e., having masturbated vs. not having masturbated) [15,66] and one in which the response was free (i.e., indicate the number of times) [36], in the remaining papers that specified it, Likert-type response scales of three [59], four [55], five [48], six [16,41,49,68], seven [12,46,57], eight [53,62], nine [42,44], and ten [64] categories were used.

3.4. *Instruments to Assess Sexual Satisfaction*

Sexual satisfaction was assessed in twelve of the studies using ad hoc items on satisfaction with sexual relationships and/or sex life [12,15,16,36,40,41,46–49,64,68], answered with a Likert-type scale, except for two studies that employed dichotomous items (i.e., satisfied vs. not satisfied) [15,40].

Four papers employed items drawn from one of the following validated instruments or more: the Life Satisfaction Scale [38,39], the Multidimensional Sexuality Questionnaire (MSQ) [45], the Female Sexual Function Inventory (FSFI) [63], the Changes in Sexual Functioning Questionnaire (CSFQ) [61], the Satisfaction with Sex Life Scale—Revised [58], and the Derogatis Interview for Sexual Functioning (DISF-SR) [60].

The remaining six papers used standardized assessment instruments: the Global Measure of Sexual Satisfaction [54] the Female Sexual Quotient [43], which were both included in two papers, the Male Sexual Quotient [56], and the Multidimensional Sexuality Questionnaire (MSQ) [45].

3.5. *Relation between Masturbation and Sexual Satisfaction*

Five studies (22.7%) examined the relation between masturbation and sexual satisfaction in men and women together. They revealed a negative relation [55,57,62,68] or no relation [57,66] between both variables.

Of the studies with samples exclusively made up of men or that examined men independently of women, 71.4% of them (ten articles) reported a negative relation between masturbation and sexual satisfaction [12,16,37,41,44,47,49,53,59,64]. In contrast, three studies (21.4%) found no significant relation between the two variables [46,48,65], and a single study (7.2%) observed a positive association between masturbation and sexual satisfaction [15].

Of the studies with samples formed exclusively of women or that examined women independently of men, six (40%) indicated no relation between masturbation and sexual satisfaction [40,41,46,48,59,65], five studies (33.3%) reported a negative relation [12,16,36,37,44], and four (26.7%) showed a positive relation [15,42,46,49].

4. Discussion

Solitary masturbation is a behavior with implications for sexual health, among which sexual satisfaction is included. To integrate the results obtained from the scientific literature about the relation between solitary masturbation and sexual satisfaction, this study presents a systematic review of the articles published up to October 2023. Most of the studies included in the review (63.6%) were conducted in the United States and Europe. This aligns with the increasingly positive view in western countries that solitary masturbation is considered to be a source of pleasure that is independent of sexual relationships [1,3,10,69]. The evolution toward a positive view of this behavior in recent years has promoted further research, which is reflected by the publication year of the works included in this systematic review because most had publication dates in the last two decades. Nevertheless, masturbation experiences can be positive or negative, depending on prevailing social attitudes [1]. The cultural divide observed in this review could be evidence of the challenges in the area of research into sexuality that some societies face, such as African ones, where difficulties are reported for people to share some aspects related to their sexuality [70]. Masturbation is still taboo in some of these societies, which contributes to the limited discussion on the topic and the proliferation of many misconceptions about the effects of masturbation, implying disinformation [71].

Most of the participants in the reviewed studies are heterosexuals, which agrees with what has been generally observed in the sexuality research area [72]. This scenario reveals that sexual minorities are less represented. In this regard, the importance of integrating groups affected by social stigma in research is highlighted [73].

Solitary masturbation was assessed mostly with one ad hoc item that identified the presence/absence of masturbation or its frequency. Masturbation frequency has been stressed as a relevant measure for investigating masturbation [26,74]. This relevant parameter is related to significant indicators of sexual well-being, highlighting its relevance to sexual functioning. In women, the frequency of masturbation is positively related to orgasm pleasure [75] and to the greater facility of reaching orgasm in older

women [74]. In men, more frequent masturbation is associated with more difficulty reaching an orgasm [74] and more symptoms of retarded ejaculation [76]. Therefore, this parameter has contributed to expanding scientific knowledge about masturbation and delving deeper into the study of this behavior [2]. However, we should bear in mind the diversity of time ranges and the responses employed to measure this parameter when comparing and generalizing the results reported in the present systematic review.

Sexual satisfaction was often assessed with ad hoc items about the level of experienced satisfaction. This matter has been criticized by Sánchez-Fuentes et al. [19]. Using a single item can present measurement stability problems [77], and it may generate sources of error when simplifying the evaluated construct [78]. Four works employed items taken from standardized scales, which does not guarantee suitable psychometric properties for the original instrument. Only 27% of the studies evaluated sexual satisfaction using standardized scales, which ensure that acceptable and reliable measures are obtained [79]. Of these scales, the Female Sexual Quotient [43], the Male Sexual Quotient [56], and the Multidimensional Sexuality Questionnaire (MSQ) [45] appeared. We stress the Global Measure of Sexual Satisfaction [54], used in two studies. It is a measure included in the Interpersonal Exchange Model of Sexual Satisfaction Questionnaire (IEMSSQ) [80] that derives from the Interpersonal Exchange Model of Sexual Satisfaction (IEMSS) [23], a theoretical consolidated model of sexual satisfaction [67] that has been validated in Spain [81,82], Canada [23], and the United States [83]. Considering the complexity of the conceptualization of sexual satisfaction and the diverse ways of assessing it [84], it is highly relevant to integrate its definition to compare and delve into the study of this sexual functioning dimension [85].

In relation to the obtained findings about the relation between solitary masturbation and sexual satisfaction, the studies that jointly considered men and women pointed out a negative relation between solitary masturbation and sexual satisfaction [55,57,62,68] or no relation [57,66]. Despite some studies including gender as a covariable (e.g., [57,62]), the results must be cautiously considered given the known

differences between men and women in the various parameters associated with masturbation [26,74,86–90].

The findings in those studies that examined the relation between solitary masturbation and sexual satisfaction in men and women separately are more interesting. Most of the studies (71.4%) that have dealt with this association in men reported a negative relation between solitary masturbation and satisfaction, as opposed to 21.4% of them that did not find a significant relation and the 7.2% that reported a positive association. Thus, a negative relation was observed mostly for men, which contrasts with the evidence showing that masturbation is a positive indicator of sexual health [1] and practicing masturbation is related to different beneficial health aspects (e.g., [91–93]). One of the main hypotheses that could explain this finding in men stems from the compensatory model of masturbation [8,15]. This model proposes that people resort to this behavior as a substitute for sexual dissatisfaction. Previous evidence reveals that the compensatory pattern of masturbation might be more characteristic of men than women [9,12–14]. To support this hypothesis, more men compared to women have reported having less desire to masturbate [94] and show a more negative attitude toward masturbation at older ages [74]. This stresses the importance of considering the negative attitude toward masturbation (see [95]) when studying this behavior to understand its implication in the sexual satisfaction experience. This finding could also be interpreted in line with the hypothesis put forward by Rowland et al. [64]. According to their hypothesis, people who masturbate may exhibit a strong auto-erotic orientation, which could make this behavior more gratifying than sexual relationships. This proposal is coherent with evidence showing that men report more solitary sexual desire than women [26,74,86], they report a higher masturbation frequency (e.g., [74,88]), and among the various reasons for practicing this behavior, sexual pleasure stands out [96]. So it is proposed that future studies which examine the relation between solitary masturbation and satisfaction should include the reasons why masturbation is practiced as a mediator variable.

The studies performed with women reflect, to a greater extent, the heterogeneity of the obtained results: 40% found no relation between solitary masturbation and sexual satisfaction, 33.3% found a negative association, and 26.7% pointed out a positive relation between both variables. This greater heterogeneity of the results obtained for women might have something to do with their sexuality compared to that of men, which is generally determined by a larger number of variables [26,97–99], as specifically noted for sexual satisfaction [100]. One third of the studies performed with women found a negative association between solitary masturbation and sexual satisfaction. This reveals that sexual dissatisfaction could also be a reason for them to practice masturbation [93]. Masturbating could be an indicator of feeling comfortable about one's body and sexuality, which could raise awareness about dissatisfaction or reduce the likelihood of someone exaggerating their sexual satisfaction during sexual relationships [40]. The percentage of the studies that report a positive association between solitary masturbation and sexual satisfaction was higher in women (26.7%) than in men (7.1%). In recent decades, inhibition about female sexuality may have lowered [11,15], which would reflect the empowerment role of masturbation noted in women [101,102].

The inconsistency encountered in the obtained results could be partly due to the diversity of the employed measures, and very few of the research works assessed sexual satisfaction with instruments based on robust theoretical models that have demonstrated their invariance in the population of interest. As previously mentioned, the cultural diversity in accepting and practicing masturbation could also be a source for the variation in the results [3], as could considering neither a negative attitude toward masturbation nor the reasons for masturbating to be covariables. Not all the studies contemplated interpersonal- type variables, such as satisfaction with one's relationship, which has been associated with both practicing masturbation [94] and sexual satisfaction [100]. Other covariables that should be considered are age, given that this behavior evolves with generational advancement [10,11,14,69], having a partner because of its association with masturbation practice [9,10], and sexual satisfaction [59]. In the

exploration of the distinction between being single or in a relationship, it has been observed that in the two studies focusing exclusively on single individuals, no significant association between masturbation and sexual satisfaction was found [40,57], while in the studies that considered exclusively samples of couples, they found a positive (e.g., [15]), negative (e.g., [57]), or no relation (e.g., [66]). These findings should be approached with caution due to the diversity of terminology employed (i.e., partner, sex partner, couple, in a relationship) and the limited evidence found in single people. The importance of further study of the relation between masturbation and sexual satisfaction in single individuals is highlighted [57].

Finally, it is worth mentioning that the results must be cautiously considered because the experimental design type of the reviewed studies does not allow case–effect relations to be established. To interpret the findings of our systematic review, it is necessary to bear in mind that the reviewed studies were original scientific articles written only in Spanish and English. Thus, this systematic review did not consider other languages, types of investigations (e.g., narrative and qualitative), or other reviews. As mentioned above, the diverse criteria for masturbation frequency (e.g., the past 30 days or 6 months), the different instruments used to assess sexual satisfaction, and the sample used (mostly heterosexuals) could influence the generalizability of the results.

5. Conclusions

Our systematic review evidences the relation between solitary masturbation and sexual satisfaction. Although its findings in favor of a negative association are present, considering sexual differences is absolutely necessary. Thus, a more consistent pattern of negative relations is found in men, which supports the compensatory role of masturbation. Conversely, the results for women are more heterogeneous, and there are more pieces of evidence for a positive relation than for men. This finding suggests that solitary masturbation for women could be an indicator that is more related to sexual health, which would support the complementary role between both behaviors (solitary

masturbation and sexual relationships). It is necessary to continue research to examine in more depth the association between masturbation and sexual satisfaction, considering partnered masturbation. In future studies, given the relevance of masturbation to sexual satisfaction, it could also be interesting to examine how different patterns of sexual activity (including solitary masturbation and sexual relationships) are associated with sexual satisfaction in a romantic relationship. It would also be relevant to use a validated theoretical model of sexual satisfaction that would also include solitary masturbation frequency and other important parameters like age of masturbation onset, reasons for masturbating, and specific measures that characterize the subjective orgasm experience achieved by masturbation or taking a negative attitude toward this behavior.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/healthcare12020235/s1>: Supplementary Data S1: Records identified from databases.

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Estudio 2: Development of the Spanish Short Version of Negative Attitudes Toward Masturbation Inventory

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Abstract

Background/Objective: Masturbation has historically been a sexual behaviour associated with negative connotations, as a consequence of traditional orthodox positions, despite its positive impact on health. The instruments developed to measure the attitude towards masturbation are scarce, and none of them have been validated in the Spanish adult population. This study aims to propose a short version of the Negative Attitudes Toward Masturbation Inventory (NATMI) and examine their psychometric properties (reliability and evidence of validity) in the Spanish adult population. *Method:* A total of 4,116 heterosexual adults aged 18-83 years ($M = 40.58$; $SD = 12.24$; 54.64% women) participated in the study. In addition to the NATMI, they answered other scales to assess sexual attitudes, sexual desire, propensity to become sexually excited/inhibited and sexual functioning. *Results:* Analysis of the construct validity of the NATMI resulted in a reduced version of ten items grouped into a single factor explaining 66% of the variance (ordinal alpha = .95). The evidence of validity is clear, as subjects with negative and positive attitude towards masturbation differed in religiousness, frequency of masturbation, erotophilia, positive attitude towards sexual fantasies, sexual inhibition and sexual functioning. *Conclusions:* The Spanish short version of NATMI provides reliable and valid measures in the Spanish adult population.

Keywords: Attitude toward masturbation; Negative Attitudes Toward Masturbation Inventory; Reliability; Validity evidence; Instrumental study

Resumen

Antecedentes/objetivo: La masturbación ha sido una conducta sexual asociada históricamente a connotaciones negativas, como consecuencia de posturas tradicionales ortodoxas, a pesar de su impacto positivo en la salud. Son escasos los instrumentos desarrollados para medir la actitud hacia la masturbación, no existiendo ninguno validado en población adulta española. El objetivo de este estudio es proponer una versión breve del *Negative Attitudes Toward Masturbation Inventory* (NATMI) y examinar sus propiedades psicométricas (fiabilidad y evidencias de validez) en población adulta española. *Método:* Participaron 4.116 adultos heterosexuales de 18-83 años ($M = 40,58$; $DT = 12,24$; 54,64% mujeres), que respondieron además del NATMI a otras escalas para evaluar actitudes sexuales, deseo sexual, propensión a excitarse/inhibirse sexualmente y funcionamiento sexual. *Resultados:* El análisis de la validez de constructo dio lugar a una versión reducida de diez ítems agrupados en un único factor que explica el 66% de la varianza (alfa ordinal = 0,95). Se aportan evidencias de validez, ya que los sujetos con actitud negativa y positiva hacia la masturbación se diferencian en religiosidad, frecuencia de masturbación, erotofilia, actitud positiva hacia las fantasías sexuales, inhibición sexual y funcionamiento sexual. *Conclusiones:* La versión española breve del NATMI proporciona medidas fiables y validas en población adulta española.

Palabras clave: Actitud hacia la masturbación; Negative Attitudes Toward Masturbation Inventory; Fiabilidad; Evidencias de validez; Estudio instrumental

Masturbation as sexual behaviour has traditionally had negative connotations owing to the influence of religion, especially Jewish-Christian, and to certain areas of 19th-century Medicine. These orthodox positions meant that many people experienced masturbation with feelings of guilt and negative affectivity (Abramson & Mosher, 1975; Carvalheira & Leal, 2013; Das, 2007; Ortega et al., 2005). The importance of religion, the frequency of attending religious ceremonies, sexual activity and sexual knowledge are significant predictors of attitude towards masturbation (Sümer, 2015). Nowadays, masturbation is considered a healthy lifelong conduct, even at older ages (Træen et al., 2019). It is practiced relatively often by men and to a greater extent than women (Gillario et al., 2017; Haus & Thompson, 2020), although a high percentage of women state having sometimes masturbated (Burri & Carvalheira, 2019). Masturbation is a means by which to improve self-knowledge. It also contributes to positive intimate experiences and improves sexual health (Coleman, 2003). The World Association for Sexual Health (2019) defends the right to health and sexual pleasure, which include pleasurable sexual experiences with masturbation among them. Yet despite increasingly more favourable attitudes, a stigmatised vision of this sexual behaviour still prevails (Burri & Carvalheira, 2019; Haus & Thompson, 2020).

Studying attitude towards masturbation is a poorly investigated area (Hogarth & Ingham, 2009). Although some studies have associated attitude towards masturbation with negative feelings like guiltiness and/or shame, even among young people (Carvalheira & Leal, 2013; Castellini et al., 2016; Ortega et al., 2005; Sierra et al., 2011), many studies have simply related it to masturbation frequency and have not dealt with its relation to other dimensions of sexuality. Attitude towards masturbation had been related to erotophilia and positive attitudes towards sexual fantasies (Sierra et al., 2013). People with negative attitude towards masturbation and sexual fantasies tend to use objects and fantasies during masturbation less and experience fewer orgasms (Driemeyer et al., 2017). Taking a positive attitude towards masturbation favours orgasmic capacity (Abramson et al., 1981) and is associated with higher masturbation

frequency (Zimmer & Imhoff, 2020). Intervention on negative attitudes towards masturbation has even been included in sexual education programmes to improve different sexual health aspects (Lameiras Fernández et al., 2004; Ruiz et al., 2019).

Very few instruments have been developed to assess attitude towards masturbation. One of the existing few is the Negative Attitudes Toward Masturbation Inventory (NATMI; Abramson & Mosher, 1975; Mosher, 2011). This instrument was developed to measure negative attitude towards masturbation and, although it was devised as a unidimensional measure, it actually groups three different theoretical dimensions: positive attitudes towards masturbation; false beliefs about the harmful nature of masturbation; and personally experienced negative affects associated with masturbation. Abramson and Mosher (1975) reported a corrected split-half reliability of .75, whereas Mosher and Vonderheide (1985) indicated Cronbach's alpha to be .94.

NATMI has been adapted to Hispanic adolescent populations. Sierra et al. (2010) worked with a sample of Salvadoran adolescents and isolated the three factors that the authors of the scale had conceptually contemplated: Personally experienced negative affects associated with masturbation ($\alpha = .85$); Negative attitudes towards positive aspects of masturbation ($\alpha = .76$); False beliefs about the harmful nature of masturbation ($\alpha = .61$). Regarding validity evidence, an inverse association was observed between negative attitude towards masturbation and erotophilia. Later Sierra et al. (2013) used a confirmatory factor analysis with a large sample of Peruvian adolescents and proposed a shorter 21-item version grouped into two factors: Negative attitudes towards positive aspects of masturbation ($\alpha = .62$) and Personally experienced negative affects associated with masturbation ($\alpha = .75$). The measures of this NATMI version offered suitable validity evidence by significantly correlating negatively with erotophilia and positive attitude towards sexual fantasies. It also distinguished those adolescents who had never masturbated from those who had.

As instruments that evaluate attitude towards masturbation are lacking in a Spanish adult population, and in order to confer continuity to the psychometric studies

of NATMI conducted in Hispanic adolescents, we considered adapting and validating this scale in Spanish adults following recommended guidelines (Hernández et al., 2020; Muñoz & Fonseca-Pedrero, 2019). Bearing in mind that NATMI could include items that are no longer up-to-date owing to the time since it was originally published and, given both the clinical and research fields, having a brief version with good psychometric properties is recommendable (Vallejo-Medina et al., 2014). So we proposed devising a shorter version of this instrument. To do so, the construct validity of the original NATMI version was examined, the internal consistency reliability coefficient was obtained and evidence of the discriminant validity of its measures was provided.

Method

Participants

Our study included 4,116 heterosexual Spanish adults from the general population (1,867 men, 2,249 women) aged between 18 and 83 years ($M = 40.58$; $SD = 12.24$). Table 1 offers the participants' socio-demographic characteristics. Of all the participants, 57.30% had university studies, and women's level of education was higher than that of men. Most (72.40%) had a partner at the time the evaluation was made, with a slightly higher percentage for men, and 92.80% of the people in a relationship practiced sex, while 67.10% with no partner reported having at least one sexual relationship in the past 6 months. Practically all the participants had masturbated on some occasion (94.30%), but men more frequently than women. The age of their first masturbation experience was younger for men ($M = 13.05$ years) than women ($M = 16.52$ years). Finally regarding their religiousness, 69.40% of the participants never prayed.

Table 1 Sociodemographic characteristics of the participants.

	Total <i>N</i> = 4,116	Men <i>n</i> = 1,867	Women <i>n</i> = 2,249	<i>t</i> / χ^2
Age <i>M</i> (<i>SD</i>)	40.58 (12.24)	40.19 (11.66)	41.06 (12.90)	2.26*
Education level <i>n</i> (%)				22.61***
No studies	10 (0.30)	7 (0.40)	3 (0.10)	
Primary Education	284 (7.20)	136 (7.30)	148 (6.60)	
Secondary Education	1,390 (35.20)	693 (37.10)	697 (31)	
University Degree	2,263 (57.30)	959 (51.40)	1,304 (58)	
Partner relationship <i>n</i> (%)				-3.25**
Yes	2,982 (72.40)	1,399 (74.90)	1,583 (70.40)	
No	1,134 (27.60)	468 (25.10)	666 (29.60)	
If you have a partner, do you have sexual activity within that relationship? <i>n</i> (%)				-1.03
Yes	2,766 (92.80)	1,305 (93.30)	1,461 (92.30)	
No	216 (7.20)	94 (6.70)	122 (7.70)	
If you do not have a partner, have you had sex in the last six months? <i>n</i> (%)				4.62***
Yes	664 (67.10)	243 (59)	421 (72.80)	
No	326 (32.90)	169 (41)	157 (27.20)	
Age of first sexual experience <i>M</i> (<i>SD</i>)	17.79 (3.47)	18.02 (3.74)	17.60 (3.22)	3.78***
Have you ever masturbated? <i>n</i> (%)				-4.84***
Yes	3,883 (94.30)	1,797 (96.30)	2,086 (92.80)	
No	233 (5.70)	70 (3.70)	163 (7.20)	
Age of first masturbation experience <i>M</i> (<i>SD</i>)	14.90 (5.31)	13.05 (2.32)	16.52 (6.54)	-21.14***
Current masturbation frequency <i>n</i> (%)				469.77***
Never	163 (4.20)	63 (3.40)	100 (4.40)	
Less than once a month	389 (10)	93 (5)	296 (13.20)	
Once a month	115 (3)	31 (1.70)	84 (3.70)	
A few times a month	829 (21.30)	240 (12.90)	589 (26.20)	
Once a week	275 (7.10)	108 (5.80)	167 (7.40)	
A few times a week	1,492 (38.40)	782 (41.90)	710 (31.60)	
Once a day	431 (11.10)	330 (17.70)	101 (4.50)	
More than once a day	189 (4.90)	150 (8)	39 (1.70)	
Praying frequency <i>n</i> (%)				21.20**

Never	2,736 (69.40)	1,247 (66.80)	1,489 (66.20)
Less than once a month	408 (10.30)	183 (9.80)	225 (10)
Once a month	44 (1.10)	21 (1.10)	23 (1)
A few times a month	226 (5.50)	88 (4.70)	138 (6.10)
Once a week	26 (0.60)	9 (0.50)	17 (0.80)
A few times a week	209 (5.30)	84 (4.50)	125 (5.60)
Once a day	188 (4.80)	107 (5.70)	81 (3.60)
More than once a day	106 (2.70)	58 (3.10)	48 (2.10)

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

Instruments

Background Questionnaire. This instrument was used to collect information about sex, age, education level, nationality, partner relationship, current sexual activity, sexual orientation, age of their first sexual experience, masturbation experience, age of their first masturbation experience, and religiosity.

The Negative Attitudes Toward Masturbation Inventory (NATMI; Mosher, 2011). This inventory is a 30-item, 5-point Likert-type scale anchored by 1 (*not at all true for me*) and 5 (*extremely true for me*). Higher scores indicate a more negative attitude towards masturbation. Its psychometric properties are described in the Introduction.

The Spanish version of the Sexual Opinion Survey-6 (SOS-6; Vallejo-Medina et al., 2014). It measures erotophilia with six items on a 7-point Likert-type scale ranging from 1 (*I strongly disagree*) to 7 (*I strongly agree*). The higher the score, the higher the degree of erotophilia. Its internal consistency reliability is adequate ($\alpha = .74$) and it evidences convergent validity by correlating its scores with sexual satisfaction, sexual desire, sexual functioning, sexual assertiveness and positive attitudes towards sexual fantasies (Vallejo-Medina et al., 2014). In the present study, the ordinal alpha coefficient was .82.

The Spanish version of the Hurlbert Index of Sexual Fantasy (HISF; Sierra, Arcos-Romero et al., 2020). It consists of ten items to evaluate the positive attitude towards sexual fantasies on a Likert scale from 0 (never) to 4 (*all of the time*). Higher scores indicate more positive attitude towards sexual fantasies. Its internal consistency

reliability is .94 and it presents suitable evidence of validity by being related to similar measures. In this study, the ordinal alpha coefficient was .91.

The Solitary Sexual Desire Subscale of the Spanish version of the Sexual Desire Inventory (SDI; Moyano et al., 2017). Its four items evaluates interest in solitary sexual activity. It presents different scale kinds with Likert-type responses depending on the item (e.g., from 0 = *no desire* to 8 = *strong desire*). High scores indicate higher levels of desire for solitary sexual activities. Its internal consistency reliability is .90 for men and .93 for women. There is evidence of suitable convergent validity. Cronbach's alpha in the present study was .84.

The Spanish version of the Sexual Inhibition/Sexual Excitation Scales-Short Form (SIS/SES-SF; Moyano & Sierra, 2014). It is composed of 14 items that assess sexual excitation (SES), sexual inhibition due to the threat of performance failure (SIS1) and sexual inhibition due to the threat of consequences (SIS2). Responses are provided on a Likert scale ranking from 1 (*strongly disagree*) to 4 (*strongly agree*). Higher scores indicate greater excitation and inhibition proneness. The internal consistency reliability of its subscales is over .60 and its authors provide evidence of the validity of its measures. In this study, the ordinal alpha values were .83 for SES, .72 for SIS1 and .71 for SIS2.

The Spanish version of the Arizona Sexual Experience Scale (ASEX; McGahuey et al., 2000; Sánchez-Fuentes et al., 2019). It is made up of six items that evaluate sexual functioning in the last 7 days in terms of desire, excitation, orgasm, erection (in men), vaginal lubrication (in women), facility of having an orgasm and orgasm satisfaction. It employs a Likert-type scale from 1 (*good functioning*) to 6 (*bad functioning*). High scores reflect worse sexual functioning. The scale shows suitable psychometric properties: Cronbach's alpha of .81 and .79 in men and women, respectively, and suitable evidence of validity. In the present study, the ordinal alpha was .81 for men and .86 for women.

Procedure

Following the International Tests Commission's guidelines (see Hernández et al., 2020; Muñiz & Fonseca-Pedrero, 2019), the NATMI items were translated from English to Spanish by two researchers specialised in sexuality with a high level of English. A consensus on the translations was reached with a bilingual psychologist, who is also an expert in sexuality. The obtained version was judged by four experts in Psychometry and Sexuality, who scored to what extent, from 1 (*not at all*) to 4 (*considerably*), all 30 items matched the four criteria (representativeness, comprehension, clarity and ambiguity), and suggested improvements if they deemed them necessary. An analysis with Aiken's V with a 95% confidence interval was carried out. The results showed that a suitable consensus had been reached with good construct representativeness as the lower Aiken's V limit was found in all the items over .50. For comprehension, items 3, 10, 17, 20 and 27 had values below .50 and items 10 and 20 were evaluated as not very clear. Finally, items 1, 3, 5 and 10 were found to be ambiguously worded. After revising the seven different items following the experts' recommendations, the pilot version of the scale was applied to a group of 50 Spanish adults from the different sex-paired ages to see if they understood each item or not. Only item 20 obtained a consensus below 90% by those surveyed. Thus it was revised to improve its comprehension and the definitive version of the instrument was obtained.

The battery of instruments was applied online. This is the usual method in studies that evaluate sexual behaviours (Arcos-Romero & Sierra, 2019; Calvillo et al., 2020; Sánchez-Mendoza et al., 2020; Tavares et al., 2019) and its use is also recommended to study masturbation (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013). Former research has indicated no differences between the responses obtained by this method and the traditional paper-and-pencil kind (Álvarez-Muelas et al., 2021; Carreno et al., 2020; Sierra et al., 2018). The online battery was distributed using virtual platforms (Facebook®, Twitter®, WhatsApp® groups, and e-mail), using LimeSurvey® software. The IP address of the responses was controlled; to avoid automated responses,

participants were asked to confirm their access to the survey by responding to a security question consisting of a simple randomized arithmetic operation. Anonymity was guaranteed to all participants, as well as the confidentiality of their data, and their participation was voluntary. Before responding, participants were asked to read and accept an informed consent form, which described the purpose of the study and provided information on data confidentiality and privacy. The study was approved by the University of Granada Human Research Ethics Committee.

Data analysis

Our sample was divided into two random subsamples: Subsample 1 ($n = 2,060$) was used to carry out the Exploratory Factor Analysis (EFA), while Subsample 2 ($n = 2,059$) was employed for the Confirmatory Factor Analysis (CFA). All the other analyses were performed with the whole sample. To process any missing data, an algorithm for non-parametric distributions was applied to create a random forest model for each variable by means of the other variables from the database. The estimated error range for the imputation was 26%. With subsample 1, the factorial reduction of the inventory was explored by considering 23 methods to obtain the number of factors. Next according to this estimation, an EFA was performed on the polychoric matrix for which maximum likelihood was employed as the estimation method. Once the EFA results were known, the CFA was performed in the polychoric matrix in Subsample 2. The Weighted Least Squares Means and Variance Adjusted (WLSMV) estimation method was used, which is suitable for non-parametric samples comprising ordinal or categorical data (Lara Hormigo, 2014). The following fit indices were contemplated for the CFA: (a) root mean square error of approximation (RMSEA); (b) comparative fit index (CFI); (c) Tucker-Lewis Index (TLI). The RMSEA values were lower than .06 (Browne & Cudeck, 1993), and the CFI and TLI values exceeded .95 (Kline, 2011), which are indicators of a good model fit. Then internal consistency was examined by the ordinal alpha. Finally to examine discriminant validity, two age-paired groups were formed: (1) 136 cases ($M_{\text{age}} = 38.24$; $SD = 13.78$) with two standard deviations over the mean score (i.e., score that

equals or exceeds 15: a more negative attitude towards masturbation); (2) 102 cases ($M_{age} = 38.83$; $SD = 11.94$) with scores on the opposite pole (score of 10: a possibly more positive attitude towards masturbation). The differences between both groups were examined in terms of religious frequency and masturbation, erotophilia, attitude towards sexual fantasies, solitary sexual desire and sexual functioning (sexual desire, excitation, erection/vaginal lubrication and orgasm). To examine the differences, the data fit was compared according to the null hypothesis and the alternative hypothesis by applying Fisher's ANOVA Bayesian analysis. An $r^{JZS} = 0.71$ was employed. A positive outcome contributes a higher likelihood to favour the null hypothesis, while a negative outcome favours the alternative hypothesis. An outcome is considered more robust the further away it is from zero by assuming the following intervals (Jeffreys, 1961): 1-3 anecdotal, 3-10 substantial, 10-20 strong, 20-30 strong, 30-100 very strong, 100-150 decisive, >150 decisive.

To carry out the analyses, the R® environment was used (version 3.6.3; R Core Team, 2020) with its RStudio® interface (version 1.2.5042; RStudio Team, 2020). To impute any missing values, the missForest package was employed (version 1.4; Stekhoven & Bühlmann, 2011). To explore the factorial structure, the Parameters package was resorted to (version 0.8.0; Lüdtke et al., 2020). The EFA and the ordinal alpha calculation were performed with the Psych package (version 1.9.12.31; Revelle, 2019). For the CFA, the lavaan package was utilised (Rosseel, 2012). Finally, the tidyBF package (version 0.4.0; Patil, 2018) was used for the Bayesian analyses.

Results

Construct validity: EFA and CFA

First of all, in Subsample 1 the factorial structure underlying the original 30-item version was examined. We observed that most methods (four: acceleration factor, VSS complexity 1, TLI, RMSEA) supported the unifactorial structure. In fact the second proposal supported by the three methods suggested a 29-factor structure, which would

indicate very little cohesion with items. This would be consistent with the fact that the variance explained by the unidimensional version was low: 41%. What all this evidences is the need to reduce the number of items in order to seek a more consistent structure.

In order to improve the explained variance in NATMI, all the items whose communality (h^2) was above .50 were selected by means of the EFA. With this criterion, ten items were selected with which a short version was proposed (items 10, 30, 23, 12, 4, 18, 6, 20, 7, and 27). The factorial structure of this short version was explored by the above-described parameters where, once again, a single factor was proposed (backed by nine methods: 39.13%). Given the greater consensus reached with the unifactorial 10-items version, the EFA for one factor was applied, which explained 66% of total variance (see Table 2).

Table 2 Item analysis of the NATMI.

Item	Factor loadings	h^2
10. After masturbating, a person feels degraded	.91	.83
30. After I masturbate, I am disgusted with myself for losing control of my body	.87	.75
23. When I masturbate, I am disgusted with myself	.86	.74
12. I feel guilty about masturbating	.82	.68
4. People masturbate to escape feelings of tension and anxiety	.82	.67
18. Playing with your own genitals is disgusting	.81	.65
6. Masturbation is an adult is juvenile and immature	.80	.64
20. Any masturbation is too much	.73	.54
7. Masturbation can lead to homosexuality	.73	.54
27. Masturbation is a normal sexual outlet	.73	.54

Note. The items maintain the numbering of the original 30-item version.

Next a CFA was performed in Subsample 2 to test the fit of the 10-item version of the unifactorial model. This single-factor structure showed an acceptable fit: RMSEA = .071; 90%CI RMSEA = .065-.078; CFI = .930; TLI = .910; $\chi^2(35) = 400.06$, $p < .01$. Figure 1 illustrates the flow chart of the unifactorial model where the standardised loadings fell within the .68 (item 27) and .90 (item 23) range.

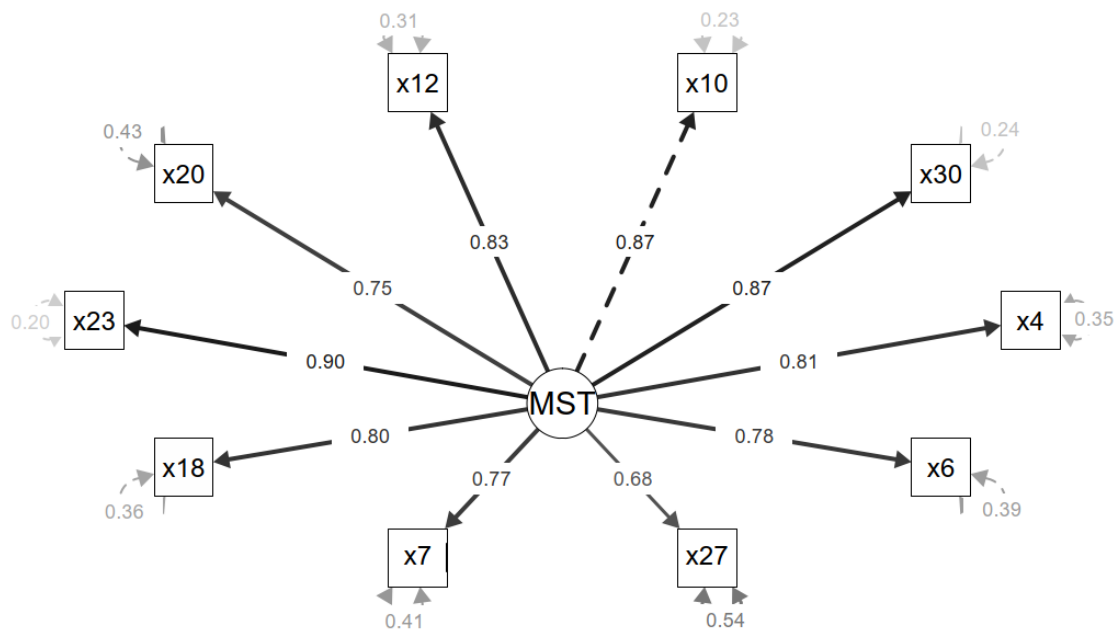


Figure 1 Standardised estimates of the 10-item unifactorial model.

Note. The items maintain the numbering of the original 30-item version.

Reliability

Having confirmed the structure of one factor, its internal consistency was analysed by the ordinal alpha for the total inventory score. The 10-item version gave an excellent internal consistency reliability coefficient (ordinal alpha = .95). As we can see in Table 3, eliminating any of these 10 items did not improve this alpha. It is worth stressing the high kurtosis for most items as most responses were for response 1 option (not at all true for me) of the instrument's Likert-type scale, which would be expected in a non-clinical Spanish general population.

Table 3 Reliability analysis.

Item	<i>M</i>	<i>SD</i>	Cronbach α if item deleted	<i>r</i>	Skew	Kurtosis
Item 10	1.06	0.34	.94	.88	7.50	68.05
Item 30	1.13	0.49	.94	.83	4.64	24.93
Item 4	1.08	0.41	.94	.80	6.76	51.00
Item 6	1.11	0.42	.94	.78	5.37	35.87
Item 27	1.18	0.51	.95	.69	4.22	23.50
Item 7	1.04	0.28	.94	.73	8.65	91.12
Item 18	1.08	0.37	.94	.78	6.43	51.13
Item 23	1.09	0.39	.94	.82	5.78	40.59
Item 20	1.19	0.57	.94	.72	3.80	16.73
Item 12	1.18	0.58	.94	.75	3.91	16.56

Note. The items maintain the numbering of the original 30-item version.

Validity evidence

Finally given the high kurtosis, the NATMI scores were compared between those people with a negative attitude and those with a positive attitude towards masturbation. As Figure 2 shows, both groups proved significantly different for masturbation frequency, religiousness, erotophilia, positive attitude towards sexual fantasies, sexual inhibition due to the threat of performance failure and solitary sexual desire, and effect sizes ranged between moderate and large. Significant differences were also found between both groups for sexual functioning, with generally moderate effect sizes (see Figure 3). All these differences were corroborated with Bayesian probability.

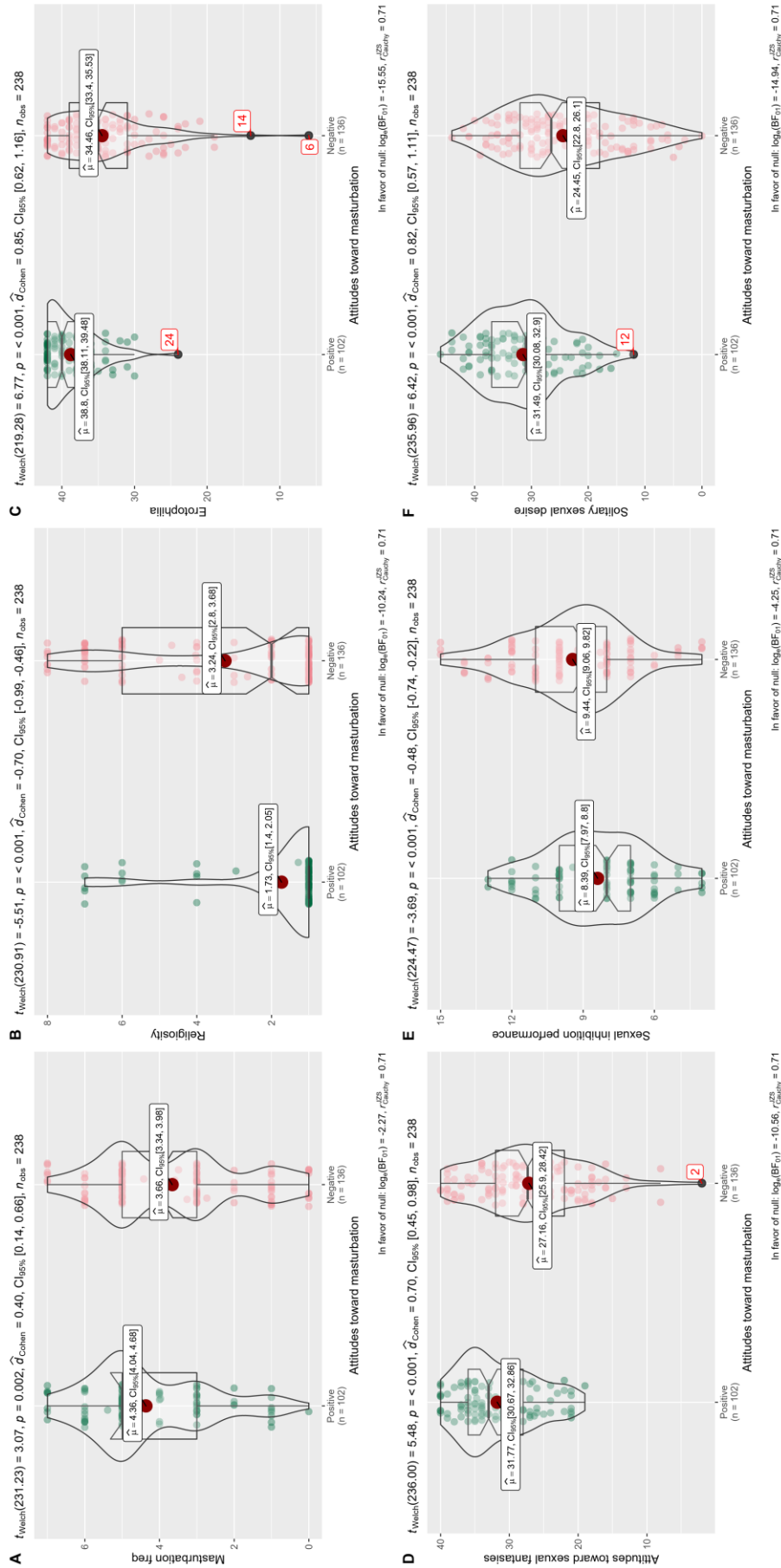


Figure 2 Comparisons between groups with positive and negative attitudes towards masturbation in frequency of masturbation, religiosity, erotophilia, positive attitude towards sexual fantasies, sexual inhibition due to fear of failure in sexual performance and solitary sexual desire. *Note.* The red dot shows the population mean (μ) of that group together with the corresponding confidence interval. Below each figure are the results of the Bayesian analysis.

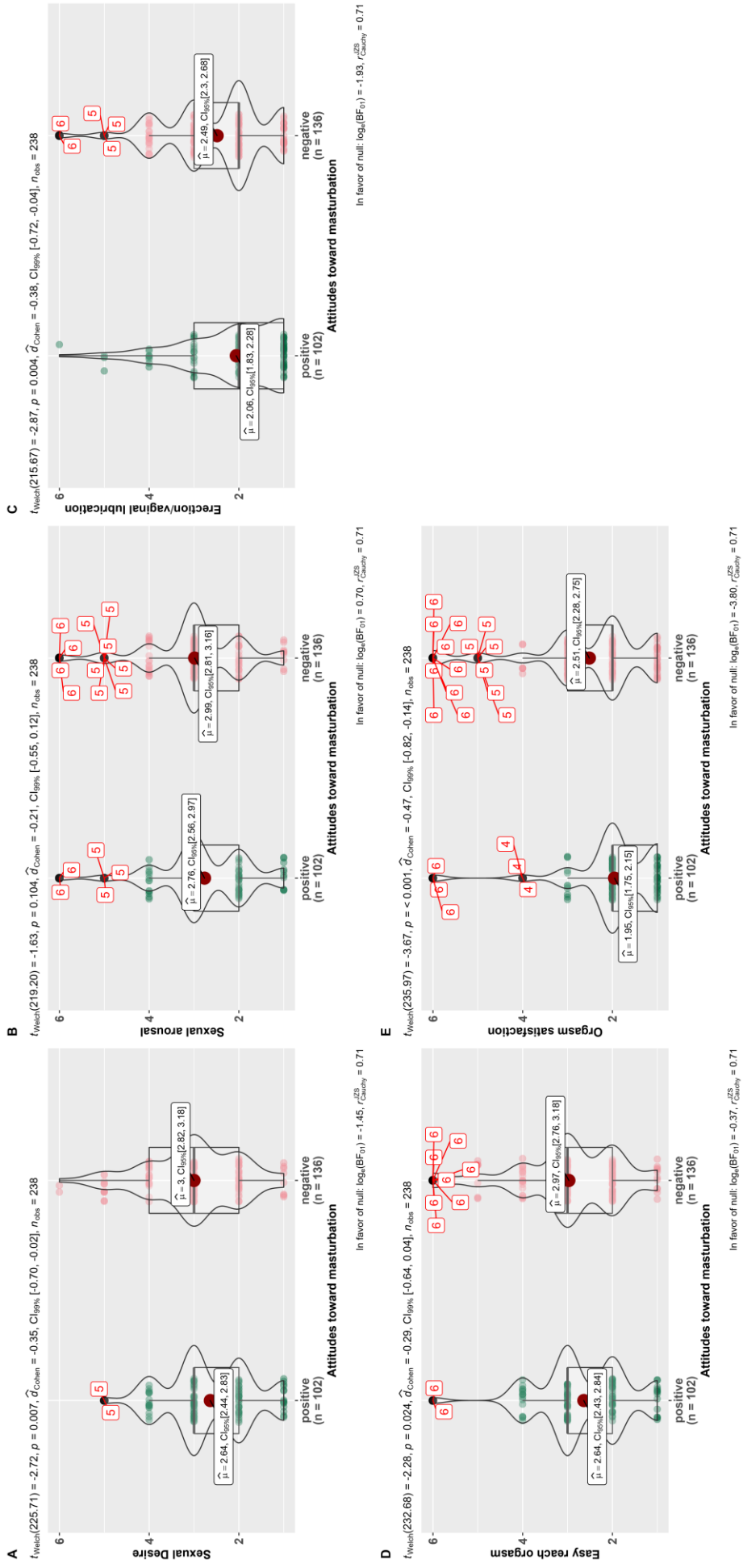


Figure 3 Comparisons between groups with positive and negative attitudes towards masturbation in the dimensions of sexual functioning: desire, arousal, erection/vaginal lubrication, ease of reaching orgasm and orgasm satisfaction.
 Note. The red dot shows the population mean (μ) of that group together with the corresponding confidence interval. Below each figure are the results of the Bayesian analysis.

Discussion

The main objective of the present study was to adapt and validate NATMI (Mosher, 2011) in a Spanish adult population to propose a short version. The final proposal is a short unifactorial scale with ten items taken from the original 30-item version. This version showed suitable construct validity, excellent internal consistency reliability and evidence of discriminant validity. Collectively, these results reveal that NATMI is a suitable instrument to measure negative attitude towards masturbation of a Spanish adult population.

Adaptation and validation were performed following the International Tests Commission's guidelines (see Hernández et al., 2020; Muñoz & Fonseca-Pedrero, 2019). Firstly, the subjective evaluation of the items by four experts in Psychometry and Human Sexuality demonstrated its good representativeness, comprehension, clarity and low level of ambiguity. Only seven items (1, 3, 5, 10, 17, 20 and 27, three of which form part of the final short version) had to be revised in accordance with the experts' indications. These results were supported by a quantitative analysis, which ensured that the lower Aiken V's limit of all the items was between .50% and .95% (Vallejo-Medina et al., 2016).

The first analyses of the construct validity of the 30-item version showed that the cohesion of the items was low. Perhaps the time that had elapsed since the original scale was devised could mean that many items are not as relevant for measuring today's attitude towards masturbation. For this reason, and to improve its consistency, those items whose communality was over .50 were selected. Ten items were selected. Selecting those items with better psychometric guarantees is the normal procedure to reinforce an instrument's measurement properties (Muñoz & Fonseca-Pedrero, 2019). Moreover, proposing a short version will improve its usefulness for both research and clinical practice purposes (Vallejo-Medina et al., 2014). The 10-item NATMI version confirmed a unifactorial structure, including items from the three theoretical dimensions (positive attitudes: e.g., "Masturbation is a normal sexual outlet"; false beliefs: e.g., "Masturbation

can lead to homosexuality”; negative affects: e.g., “I feel guilty about masturbating”), and considerably increased its explained variance (66%) in relation to former versions (Abramson & Mosher, 1975; Sierra et al., 2013).

Regarding reliability, the inventory revealed ordinal alpha of .95, which improves the values obtained by former works (Mosher & Vonderheide, 1985; Sierra et al., 2010; Sierra et al., 2013). A tendency in responses was observed with high kurtosis in most items, which was expected if we bear in mind that the sample formed part of a non-clinical general population. It also reflected the typical polarisation of an occidental society where masturbation is viewed more positively (Burri & Carvalheira, 2019; Træen et al., 2019). The evidence of discriminant validity in the short NATMI version was capable of distinguishing between people with negative attitude (scores equalling or exceeding 15) and positive attitude towards masturbation (the lowest possible score on the scale: 10) in the psychosexual variables, which we now go on to look at. As expected, we observed differences in masturbation frequency between both groups. A recent study has evidenced how beliefs and attitudes about the negative impact of masturbation are more prevalent in men who do not practice masturbation (Zimmer & Imhoff, 2020). Furthermore, differences were noted in praying frequency, which falls in line with former evidence pointing out that practicing one’s religion is a predictor of having a negative attitude towards masturbation (Sümer, 2015). For erotophilia, discrepancies also appeared between the two groups, which coincides with previous works (Sierra et al., 2010, 2013). For attitude towards sexual fantasies, the encountered differences fell in line with former studies insofar as this attitude and resorting to sexual fantasies more are related to showing a more positive attitude towards masturbation (Driemeyer et al., 2017; Sierra et al., 2013). Validating this instrument by taking into account how their measures are related to other attitudes like erotophilia and attitude towards sexual fantasies provides evidence about their potential usefulness given the relevance of these variables in sexual health (Arcos-Romero et al., 2020; Sierra, Arcos-Romero et al., 2020;

Vallejo-Medina et al., 2014). Finally, sexual inhibition due to the threat of performance failure was higher in the group with a negative attitude towards masturbation. If we bear in mind that this attitude is related to less masturbation frequency (Zimmer & Imhoff, 2020), it could be accompanied by less self-exploration, less personal experience with self-stimulation and less sexual self-knowledge, which could justify higher sexual inhibition levels due to the threat of performance failure. This hypothesis is congruent with employing masturbation as a therapeutic approach with certain sexual dysfunctions (Graham, 2014; Perelman, 2014).

Differences were also found in sexual functioning depending on the attitude towards masturbation being positive or negative. That is, those people who take a negative attitude towards this conduct reported generally less sexual desire and less solitary sexual desire. The relation between sexual desire and sexual attitudes has been well-documented in previous works (Arcos-Romero & Sierra, 2020; Sánchez-Fuentes et al., 2019; Santos-Iglesias et al., 2013; Sierra, Arcos-Romero et al., 2020). Moreover, sexual attitudes could be one of the best predictors of wishing to masturbate and frequency in doing so (Kelly et al., 1990). Therefore, promoting a healthier attitude towards masturbation may be important in the therapeutic field in the sexual desire context (Zamboni & Crawford, 2003). For sexual excitation, differences have been detected in informed measures of erection/vaginal lubrication, as pointed out by Abramson (1981). The same can be stated of the facility to reach an orgasm and orgasm satisfaction, with discrepancies appearing between both groups according to their attitude. Accordingly, Kelly et al. (1990) found more prevalence for negative attitude towards masturbation in anorgasmic women than in functional peers, whereas Bentler and Peeler (1979) observed the orgasmic response in the masturbation context, as well as sexual relationships, being related to attitude towards masturbation, although these effects were mediated by sexual experience. These results suggest the role of attitude towards masturbation in the orgasmic experience and its relevance in sexual health

(Sierra, Ortiz et al., 2020), although these relations must be explored in more depth by future works.

This study is not without its limitations because, despite employing a large varied sample, it is not possible to generalise the results to the whole Spanish population because the participants were selected by incidental sampling and were all heterosexual. Moreover, the majority of those surveyed showed a positive attitude towards masturbation, which must be taken into account when contemplating the results. Although a negative attitude towards masturbation persists in a small proportion of the Spanish population, the importance of studying it in ages where this behaviour is practiced more frequently is highlighted, such as adolescence, or in groups formed by people for whom this practice has been traditionally stigmatised, such as women. Its relation to other evaluated psychosexual variables in the present work suggests the relevance of dealing with this attitude by means of sexual education programmes to promote healthy sexuality. With clinical samples, future research could incorporate this instrument and look closely at the role played by attitude towards masturbation in sexual health. However, we conclude that the measures obtained with the short Spanish NATMI version (Appendix A) are reliable and valid, and the fact that it is brief makes it a useful tool for both research and clinical practice.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:

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Appendix A Spanish short version of Negative Attitudes Toward Masturbation Inventory.

A continuación, se le presentan diez afirmaciones que muestran diversas opiniones y actitudes sobre la masturbación en solitario. Le pedimos que indique en qué medida son verdaderas o falsas para usted.
Para responder, debe utilizar la escala numérica que aparece al lado de cada frase.
Por favor, recuerde lo que significa cada número de la escala de respuesta que aparece justo a continuación.

- 1 = Totalmente falso
2 = Bastante falso
3 = Indecisión
4 = Bastante verdadero
5 = Totalmente verdadero

1	People masturbate to escape feelings of tension and anxiety (<i>La masturbación es un signo de debilidad o un pecado contra uno/a mismo/a</i>)	1	2	3	4	5
2	Masturbation is an adult is juvenile and immature (<i>La masturbación en adultos es una conducta infantil e inmadura</i>)	1	2	3	4	5
3	Masturbation can lead to homosexuality (<i>La práctica de la masturbación puede conducir a la homosexualidad</i>)	1	2	3	4	5
4	After masturbating, a person feels degraded (<i>Tras masturbarse, las personas deberían sentir vergüenza</i>)	1	2	3	4	5
5	I feel guilty about masturbating (<i>Cuando me masturbo me siento culpable</i>)	1	2	3	4	5
6	Playing with your own genitals is disgusting (<i>Jugar con los propios genitales es asqueroso</i>)	1	2	3	4	5
7	Any masturbation is too much (<i>La masturbación es una conducta que está de más</i>)	1	2	3	4	5
8	When I masturbate, I am disgusted with myself (<i>Cuando me masturbo, me doy asco</i>)	1	2	3	4	5
9	Masturbation is a normal sexual outlet (<i>La masturbación es una conducta sexual normal</i>)	1	2	3	4	5
10	After I masturbate, I am disgusted with myself for losing control of my body (<i>Después de masturbarme, me enfado conmigo mismo/a por haber perdido el control sobre mi propio cuerpo</i>)	1	2	3	4	5

Note. Item 9 is reverse.

Estudio 3: Validation of the Orgasm Rating Scale in the Context of Masturbation

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(puesto 39 de 147).

Abstract

Background: The Orgasm Rating Scale (ORS) assesses the subjective experience of orgasm. Its psychometric properties have only been examined in the context of sexual intercourse. This study aims to validate the ORS in the context of solitary masturbation.

Methods: A sample of 1,171 men and 1,424 women aged 18-83 years ($M = 40.51$, $SD = 12.07$) completed the ORS in the solitary masturbation context along with other scales to assess sexual attitudes, solitary sexual desire, propensity for sexual arousal/inhibition, and sexual functioning. **Results:** A four-dimensional structure is confirmed, as is its homologous version for the context of sexual intercourse. Measures obtained from the ORS are sex and age invariant, show adequate internal consistency, discriminate between persons with orgasmic difficulties, and is associate to related variables.

Conclusions: The ORS is a multidimensional measure that provides reliable and valid measures of the subjective experience of orgasm in the context of solitary masturbation.

Keywords: Orgasm Rating Scale; subjective orgasm experience; masturbation; reliability; validity

Resumen

Antecedentes: La Orgasm Rating Scale (ORS) evalúa la experiencia subjetiva del orgasmo. Sus propiedades psicométricas únicamente se examinaron en el contexto de las relaciones sexuales. El objetivo de este estudio es validar la ORS en el contexto de la masturbación en solitario. **Método:** Una muestra formada por 1.171 hombres y 1.424 mujeres de 18 a 83 años ($M = 40,51$; $DT = 12,07$) completaron la ORS en el contexto de la masturbación en solitario junto con otras escalas para evaluar actitudes sexuales, deseo sexual solitario, propensión a la excitación/inhibición sexual y funcionamiento sexual. **Resultados:** Se confirma una estructura de cuatro dimensiones, al igual que su versión homóloga para el contexto de las relaciones sexuales. Las medidas obtenidas mediante la ORS son invariantes por sexo y edad, sus dimensiones muestran una adecuada consistencia interna, discriminan entre personas con y sin dificultades orgásmicas y se relacionan con variables afines. **Conclusiones:** La ORS es una medida multidimensional que aporta medidas fiables y válidas de la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario.

Palabras clave: Orgasm Rating Scale; experiencia subjetiva del orgasmo; masturbación; fiabilidad; validez.

Orgasm is characterized by a maximum, variable and transitory experience of intense pleasure, accompanied by psycho-physiological responses that, as a result of sexual activity, culminate in a marked feeling of well-being (Arcos-Romero & Sierra, 2018; Meston et al., 2004). It is an effective indicator of pleasurable and healthy sexuality because it is related to satisfaction with sexual relationships (Edard & Rusinek, 2020). Traditionally, studies into the orgasm have paid attention to its physiological dimension, and the subjective experience associated with it (i.e., psychological perception of the effects caused by this sexual response) has been less studied (Arcos-Romero & Sierra, 2018; Mah & Binik, 2001).

Lack of standard measures to assess the subjective dimension of the orgasm has probably been one of the reasons why very few studies have shown an interest in this human sexuality dimension (Arcos-Romero & Sierra, 2018; Arcos-Romero et al., 2018; Mah & Binik, 2005). The Orgasm Rating Scale (ORS; Mah & Binik, 2002, 2005, 2020) is one of the few instruments that evaluates and quantifies the subjective experience of an orgasm in the contexts of sexual relationships and solitary masturbation.

The ORS was adapted to the Spanish population in the sexual relationships context by Arcos-Romero et al. (2018), who proposed a shorter version with 25 items grouped into four factors: Affective ($\alpha = .90$), which refers to the feelings experienced during an orgasm (e.g., Satisfying); Sensory ($\alpha = .93$), which refers to perceiving the physiological sensations of an orgasm (e.g., Pulsating); Intimacy ($\alpha = .78$), which includes the items that reflect an intimate aspect of the orgasm experience (e.g., Tender); Rewards ($\alpha = .86$), which includes those items about the consequences or gratifying effects of an orgasm (e.g., Relaxing). This shorter version adequately demonstrates validity by relating the scores of its four dimensions to similar constructs, such as erotophilia or sexual satisfaction. The scale also discriminates between people with and without orgasm difficulties.

Despite the sound evidence of the ORS' validation in the sexual relationships context, its psychometric properties have not yet been examined in the solitary masturbation context. Nowadays, masturbation is understood as a relevant indicator of sexual development (Coleman, 2003). Practicing masturbation favors learning about the type of stimulation that leads to an orgasm by facilitating body self-knowledge and promoting more consistent orgasms (Matsick et al., 2016). Practicing masturbation is related to having sexual fantasies, more frequent sexual activity and a broader sexual repertoire (Driemeyer, 2013). In women, masturbation has been observed to be practiced for pleasure, to relax, to release tension, among other reasons (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013; Kılıç Onar et al., 2020). The frequency of practicing masturbation also predicts orgasmic pleasure and orgasm difficulties (Rowland, Kolba et al., 2020). In fact training in masturbation is a relevant technique to therapeutic approach orgasm problems (Kingsberg et al., 2017; Zamboni & Crawford, 2003).

Having an instrument that evaluates subjective orgasm experience that is validated in the solitary masturbation context would allow us to understand the relation between the context and orgasmic response. Evidence along these lines exists and indicates that orgasmic experience can be determined by the context in which it takes place. Specifically, the orgasm in context of sexual relationships is experienced more intensely than in the solitary masturbation (Bensman, 2011; Goldey et al., 2016; Levin, 2007; Mah & Binik, 2002; Sierra et al., 2021). These differences could be due to not only sensorial factors, which differ according to the context (e.g., being in contact with someone), but also to the negative attitude that traditionally comes with solitary masturbation (Cervilla et al., 2021; Sierra et al., 2021).

Therefore, the overall objective of this study was to validate the Spanish version of the ORS in the solitary masturbation context. Factorial invariance was examined per sex with the validated version in the sexual relationships context, internal consistency was calculated with evidence for validity based on the relation of the ORS to other

variables, for which a positive relation with erotophilia and a positive attitude toward sexual fantasies were expected (Arcos-Romero et al., 2018; Sierra et al., 2020), and in the negative sense with a negative attitude toward masturbation (Cervilla et al., 2021). Likewise, scores were expected to be positively associated with both solitary sexual desire and orgasmic capacity/satisfaction in sexual relationships (Burri & Carvalheira, 2019; Rowland, Hevesi et al., 2020). Finally, it is expected to find discriminant validity evidence based on its capacity to distinguish between people with/without orgasm difficulties, and the group with orgasm difficulties was expected to experience less orgasm intensity with masturbation. This confirms the relation between the orgasm in the sexual relationships and masturbation context (Rowland, Hevesi et al., 2020).

Table 1
Sociodemographic characteristics of the participants

	Total N = 2,595	Men n = 1,171	Women n = 1,424
Age <i>M (SD)</i>	40.51 (12.07)	41.22 (12.86)	39.92 (11.36)
Education level <i>n (%)</i>			
Primary Education	153 (5.9)	81 (6.9)	72 (5.1)
Secondary Education	856 (33.0)	408 (34.8)	448 (31.5)
University Degree	1.482 (57.1)	637 (54.4)	845 (59.3)
Partner relationship <i>n (%)</i>			
Yes	1,893 (72.9)	895 (76.4)	998 (70.1)
No	702 (27.1)	276 (23.6)	426 (29.9)
If you have a partner, do you have sexual activity within that relationship? <i>n (%)</i>			
Yes	1,756 (92.8)	827 (92.4)	929 (93.1)
No	137 (7.2)	68 (7.6)	69 (6.9)
If you do not have a partner, have you had sex in the last six months? <i>n (%)</i>			
Yes	436 (68.2)	148 (59.2)	288 (74)
No	203 (31.8)	102 (40.8)	7.1 (26)
Age of first sexual experience <i>M (SD)</i>	17.72 (3.22)	18.02 (3.50)	17.48 (2.96)
Age of first masturbation experience <i>M (SD)</i>	14.86 (5.35)	13 (2.42)	16.42 (6.52)

Current masturbation frequency <i>n</i> (%)			
Never	78 (3.1)	34 (3)	44 (3.2)
Less than once a month	219 (8.8)	58 (5.1)	161 (11.8)
Once a month	69 (2.8)	17 (1.5)	52 (3.8)
A few times a month	526 (21.1)	146 (12.9)	380 (27.9)
Once a week	186 (7.5)	66 (5.8)	120 (8.8)
A few times a week	1.012 (40.5)	516 (45.5)	496 (36.4)
Once a day	291 (11.7)	214 (18.9)	77 (5.7)
More than once a day	115 (4.6)	84 (7.4)	31 (2.3)

Method

Participants

In this study, 2,595 Spanish heterosexual adults (1,171 men, 1,424 women) participated from 18 to 83 years ($M = 40.51$, $SD = 12.07$). The inclusion criteria were being a Spanish heterosexual adult and having masturbated on some occasion. The mean age for the first masturbation experience was 13 years in men and was 16.42 years in women. Presently, 96.9% of the participants practice masturbation with different frequencies. Table 1 shows the sample's socio-demographic characteristics.

Instruments

Background Questionnaire. It collected data about sex, age, level of education, nationality, couple relationship, sexual activity, sexual orientation, age when the first sexual relation occurred, masturbation experience, age when the first masturbation experience occurred and masturbation practice frequency.

The Spanish version of the Orgasm Rating Scale (ORS; Arcos-Romero et al., 2018). This scale evaluates the subjective orgasm experience with 25 adjectives answered on a 6-point Likert-type scale: 0 (*Does not describe it at all*) to 5 (*Describe perfectly*). The scores of its dimensions are obtained by the direct addition of its items ranging from 0 to 30 for the Affective dimension, 0 to 65 for the Sensorial dimension, and from 0 to 15 for the Intimacy and Rewards dimensions, respectively. The participants answered in

relation to their more recent orgasm during solitary masturbation (during any sexual activity they had alone).

The Spanish version of the Negative Attitudes Toward Masturbation Inventory (NATMI; Cervilla et al., 2021). It measures negative attitudes toward masturbation with 10 items (e.g., “I feel guilty about masturbating”), which are answered on a 5-point Likert-type scale ranging between 1 (*Not at all true for me*) and 5 (*Extremely true for me*). Total score results from the addition of the direct and inverse items, ranging from 10 to 50. Its internal consistency (alpha ordinal) is .95. It adequately evidences construct and discriminant validity with other psychosexual variables and sexual functioning. In our study the ordinal alpha coefficient was .94.

The Spanish version of the Sexual Opinion Survey-6 (SOS-6; Vallejo-Medina et al., 2014). It evaluates erotophilia with six items (e.g., “Masturbation can be an exciting experience”) answered on a 7-point Likert-type scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The addition of their direct and inverse item scores ranges from 6 to 42. Its internal consistency is Cronbach’s $\alpha = .74$. Its scores correlate with similar constructs, such as sexual satisfaction or sexual functioning (Vallejo-Medina et al., 2014). In the present study the ordinal alpha coefficient was .82.

The Spanish version of the Hurlbert Index of Sexual Fantasy (HISF; Sierra et al., 2020). Its 10 items measure the positive attitude toward sexual fantasies (e.g., “I enjoy fantasizing about sex”) on a Likert-type scale from 0 (*Never*) to 4 (*All of the time*). Its total score is obtained by adding its items, ranging from 0 to 40. Its ordinal alpha is .94, it adequately shows validity evidence and its measurements are related to similar constructs. The ordinal alpha coefficient in this study was .91.

The Solitary Sexual Desire subscale from the Spanish version of the Sexual Desire Inventory (SDI; Moyano et al., 2017). Its four items (e.g., “How strong is your desire to engage in sexual behavior by yourself?”) evaluate interest in solitary sexual activity using different Likert response scales depending on the item (e.g., from 0 = *No desire* to 8 = *Strong desire*). Total scores are the result of the addition of its four items ranges from 0

to 31. Its internal consistency is good (Cronbach's α of .90 in men, .93 in women) and it presents validity evidence due to its relation to similar constructs. In this study Cronbach's alpha was .84.

The Spanish version of the Sexual Inhibition/Sexual Excitation Scales-Short Form (SIS/SES-SF; Moyano & Sierra, 2014). It evaluates the tendency to feel excited/inhibited with 14 items distributed into three subscales: Excitation (SES; e.g., "When I think of a very attractive person, I easily become sexually aroused") ranging its scores from 6 to 24, Inhibition to the threat of performance failure (SIS1; e.g., "I cannot get aroused unless I focus exclusively on sexual stimulation") in a range from 4 to 16; Inhibition to the threat of performance consequences (SIS2; e.g., "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") in a score range from 4 to 16. It uses a Likert-type scale from 1 (*Strongly disagree*) to 4 (*Strongly agree*). Dimensions scores are the results of the addition of its correspondent items. High scores evidence a higher sexual excitement/inhibition tendency. Its internal consistency (Cronbach's α) ranges between .60 (SIS2) and .72 (SES). It presents suitable evidence of validity. In the present study, the ordinal alpha values were .83 for SES, .72 for SIS1 and .71 for SIS2.

The Spanish version of the Arizona Sexual Experience Scale (ASEX; McGahuey et al., 2000) of Sánchez-Fuentes et al. (2019). It evaluates general sexual functioning in the last 7 days in the sexual relationships context with six items: drive, arousal, lubrication/erection, orgasm, satisfaction from orgasm. It is answered on a Likert-type scale from 1 (*hyperfunction*) to 6 (*hypofunction*). Only the last two orgasm-related items were taken into account, considering that the last objective was to analyze the capacity of the ORS to discriminate between people with and without orgasmic problems. Scores equaling or exceeding 5 for items 5 or 6 evidence orgasmic problems (McGahuey et al., 2000). Its internal consistency is adequate (Cronbach's alpha of .81 in men, .79 in women), and present evidence of validity. Its ordinal alpha was .81 in men and .85 in women.

Procedure

The International Test Commission guidelines guided the ORS validation (see Hernández et al., 2020; Muñiz & Fonseca-Pedrero, 2019). The battery was published and distributed using Facebook. Payment (900€) was made to Facebook to promote the survey from 23 December 2019 to 15 March 2020 by adults from all over Spain. The online evaluation is the usual procedure followed to evaluate sexual conducts (Arcos-Romero & Sierra, 2019; Calvillo et al., 2020; Tavares et al., 2019), particularly recommended for studying masturbation (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013). Former studies have confirmed that no differences exist with the traditional paper-and-pen method (Álvarez-Muelas et al., 2021; Sierra et al., 2018). Repeated responses were controlled by IP address and CAPTCHA was used to avoid automatic responses. Responses were thoroughly examined to rule out any cases with non-conclusive responses or abnormal patterns. Participation was voluntary without compensation for taking part in the study, and ensured both the participants' anonymity and the confidentiality of all their responses. Along with the survey, all the participants received informed consent indicating the study purpose. This study was approved by the Ethics Committee of Human Research of the University of Granada.

Data analysis

Missing data did not exceed 3% of the total and were imputed using an algorithm for non-parametric distributions by creating a random forest model for each variable. The ORS factorial invariance was first analyzed for the masturbation context between men and women and age group following the factorial structure of Arcos-Romero et al. (2018) for the ORS in the sexual relationships context. Age groups were made according to previous studies (Arcos-Romero et al., 2019; Sierra et al., 2020). The weighted least squares mean adjusted estimation method was used (WLSM), appropriate for ordinal scales (Tarka, 2017). The root mean square error of approximation (RMSEA) values below .06, and the comparative fit index (CFI) and Tucker-Lewis index (TLI) values over

.90, indicate a good fit. Factorial invariance was gradually analyzed at four levels: configural, weak, strong and strict. When following recommendations about the CFI as the main invariance fit (Milfont & Fischer, 2010; Putnick & Bornstein, 2016) to accept models' equivalence for the different levels, a change in the CFI that equals or exceeds .01 is considered to adopt the less limited model and to reject the most restrictive one. Next the items were analyzed by calculating the reliability of internal consistency by means of the ordinal alpha and the distribution of responses. To obtain evidence for validity, the scores of the four ORS dimensions correlated with similar variables. One group with orgasmic dysfunction was compared (scores equaling or exceeding 5 for ASEX items 5 or 6), as was another with no orgasm difficulties (scores equaling or below 4 for ASEX items 5 or 6). In addition to classical statistics, Fisher's ANOVA Bayesian analysis was applied to examine differences according to recommendations (Ruíz-Ruano y López-Puga, 2018, 2020) and logarithm was used to facilitate its interpretation. An $r^{JZS} = 0.71$ was employed. A more robust result would move away from zero if the following intervals were contemplated (Jeffreys, 1961): 1-3 anecdotal, 3-10 substantial, 10-30 strong, 30-100 very strong, >100 decisive.

Analyses were carried out in the R® environment (version 3.6.3; R Core Team, 2020) with its RStudio® interface (version 1.2.5042; RStudio Team, 2020). The following packages were used: missForest (version 1.4; Stekhoven & Bühlmann, 2012) to impute missing data; Parameters (version 0.8.0; Lüdtke et al., 2020) to explore the factorial structure; Psych (version 1.9.12.31; Revelle, 2019) to calculate the ordinal alpha; lavaan for invariance (Rosseel, 2012); tidyBF (version 0.4.0; Patil, 2018) for the Bayesian analyses.

Results

Validity evidence of the internal structure and factorial invariance

Factorial invariance was examined by sex of the ORS structure proposed by Arcos-Romero et al. (2018), made up of four factors: Affective (items 1, 4, 6, 14, 15, 21), Sensory (items 2, 3, 5, 8, 9, 10, 11, 19, 20, 22, 23, 24, 25), Intimacy (items 7, 12, 13), Rewards (items 16, 17, 18). This factorial structure showed strict invariance per sex (CFI = .976, RMSEA = .058, 90% CI [.057, .059]); and group age [CFI = .977, RMSEA = .058, 90% CI [.056, .059]] in the solitary masturbation context, with a good fit (Table 2). Factors loadings and covariances are shown in Table 3.

Table 2
Measurement invariance across sex and age

Model	χ^2	df	p	CFI	TLI	RMSEA	RMSEA 90% CI
Sex (men, women)							
Configural	6587.45	538	< .001	.981	.979	.055	.053, .056
Weak	5444.48	559	< .001	.979	.977	.056	.055, .058
Strong	5846.62	580	< .001	.977	.976	.057	.056, .059
Strict	6090.89	605	< .001	.976	.976	.058	.057, .059
Age (18-34, 35-49, ≥ 50 years old)							
Configural	7050.64	807	< .001	.982	.980	.055	.054, .056
Weak	5719.74	849	< .001	.979	.978	.058	.056, .059
Strong	5993.77	891	< .001	.978	.978	.058	.056, .059
Strict	6237.90	941	< .001	.977	.978	.058	.056, .059

Note: CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval.

Reliability

An ordinal alpha of .94 was obtained for the Affective dimension, .95 for the Sensory dimension, .71 for the Intimacy component and, finally, .90 for Rewards (Table 4). As Figure 1 shows, all the adjectives describe the subjective orgasm experience, where the dimensions Affective and Rewards represent this experience to a greater extent.

Table 3

Factor loadings (λ) by items and covariances by dimensions of the ORS

Orgasm Rating Scale dimensions				
Items	Affective	Sensory	Intimacy	Rewards
1. Elated	.69			
4. Satisfying	.62			
6. Blissful	.91			
14. Exciting	.85			
15. Fulfilling	.75			
21. Pleasurable	.73			
2. Flooding		.65		
3. Pulsating		.69		
5. Uncontrolled		.63		
8. Quivering		.69		
9. Shooting		.77		
10. Euphoric		.78		
11. Flushing		.65		
19. Throbbing		.81		
20. Exploding		.81		
22. Rising		.75		
23. Spreading		.80		
24. Trembling		.68		
25. Wild		.76		
7. Loving			.81	
12. Tender			.73	
13. Close			.47	
16. Peaceful				.75
17. Relaxing				.74
18. Shooting				.90
Dimensions				
Affective	-	.64	.49	.58
Sensory	-	-	.72	.52
Intimacy	-	-	-	.53
Rewards	-	-	-	-

Note: Factor loadings below .30 are not shown.

Table 4

Item analysis of the ORS

Dimensions	Item	<i>M</i>	<i>SD</i>	Skew	Kurtosis	Alpha if item deleted	Item total-correlation	Ordinal alpha
Affective	1	4.32	0.95	-1.68	3.44	.93	.76	.94
	4	4.52	0.79	-1.95	4.65	.92	.82	
	6	4.00	1.21	-1.26	1.25	.93	.80	
	14	4.19	1.13	-1.65	2.63	.93	.80	
	15	4.31	1.05	-1.87	3.74	.92	.84	
	21	4.44	0.93	-2.03	4.64	.92	.85	
Sensory	2	3.09	1.53	-0.59	-0.54	.95	.68	.95
	3	3.45	1.50	-0.90	-0.06	.95	.69	
	5	2.29	1.73	0.06	-1.27	.95	.69	
	8	2.80	1.76	-0.31	-1.19	.95	.71	
	9	2.39	1.72	-0.05	-1.26	.94	.82	
	10	2.91	1.67	-0.43	-0.98	.95	.78	
	11	2.26	1.75	0.07	-1.31	.95	.69	
	19	3.16	1.64	-0.64	-0.71	.95	.79	
	20	3.03	1.74	-0.51	-1.01	.94	.83	
	22	2.98	1.69	-0.52	-0.92	.95	.74	
	23	2.61	1.73	-0.22	-1.19	.94	.81	
Intimacy	24	2.11	1.77	0.20	-1.29	.95	.74	.71
	25	2.38	1.78	0.01	-1.30	.95	.79	
	7	2.10	1.76	0.22	-1.28	.67	.43	
	12	1.73	1.67	0.50	-1.01	.67	.43	
	13	4.05	1.26	-1.54	2.00	.29	.89	
Rewards	16	3.69	1.45	-1.09	0.41	.92	.84	.90
	17	4.00	1.20	-1.35	1.58	.93	.82	
	18	3.72	1.43	-1.16	0.62	.88	.91	

Validity evidence of relation with other variables

In the expected direction, moderated significant correlations were obtained between the scores for the four ORS dimensions and those of sexual attitudes and solitary sexual desire; furthermore, weak correlations were observed with the sexual excitement/inhibition tendency and the two orgasm-related items (Table 5). Moreover, the comparison made of the ORS scores between those with/without orgasm difficulties indicated significant differences for the Affective dimension $t_{\text{Welch}}(248.59) = 3.42$, $p = .001$, $d_{\text{Cohen}} = 0.42$, $\log_e(\text{BF}_{01}) = -3.41$; Intimacy dimension $t_{\text{Welch}}(262.96) = 3.42$, $p < .001$, $d_{\text{Cohen}} = 0.45$, $\log_e(\text{BF}_{01}) = -1.44$; and Rewards dimension $t_{\text{Welch}}(258.61) = 2.01$, $p < .001$, $d_{\text{Cohen}} = 0.25$, $\log_e(\text{BF}_{01}) = 0.09$; except Sensory ($p = .225$), which showed a clear tendency

to manifest much greater orgasm intensity by solitary masturbation for all the groups without orgasm difficulties (Figure 2).

Table 5

Correlations among ORS dimensions, sexual attitudes, solitary sexual desire, excitation/inhibition sexual and orgasmic functioning

Variable	Affective	Sensory	Intimacy	Rewards
Negative attitudes toward masturbation	-.31**	-.10**	-.10**	-.14**
Erotophilia	.34**	.21**	.15**	.21**
Attitude positive toward sexual fantasy	.31**	.25**	.21**	.23**
Solitary sexual desire	.40**	.35**	.25**	.28**
Excitation	.18**	.28**	.18**	.19**
Inhibition to the threat of performance failure	-.11**	.04	.03	.03
Inhibition to the threat of performance consequences	-.07**	-.08**	-.00	-.01
Orgasm	-.17**	-.09**	-.11**	-.07**
Satisfaction from orgasm	-.29**	-.17**	-.15**	-.13**

Note: High scores in Orgasm and Satisfaction from orgasm reflect worse capacity to reach orgasm and dissatisfaction from orgasm, respectively.

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

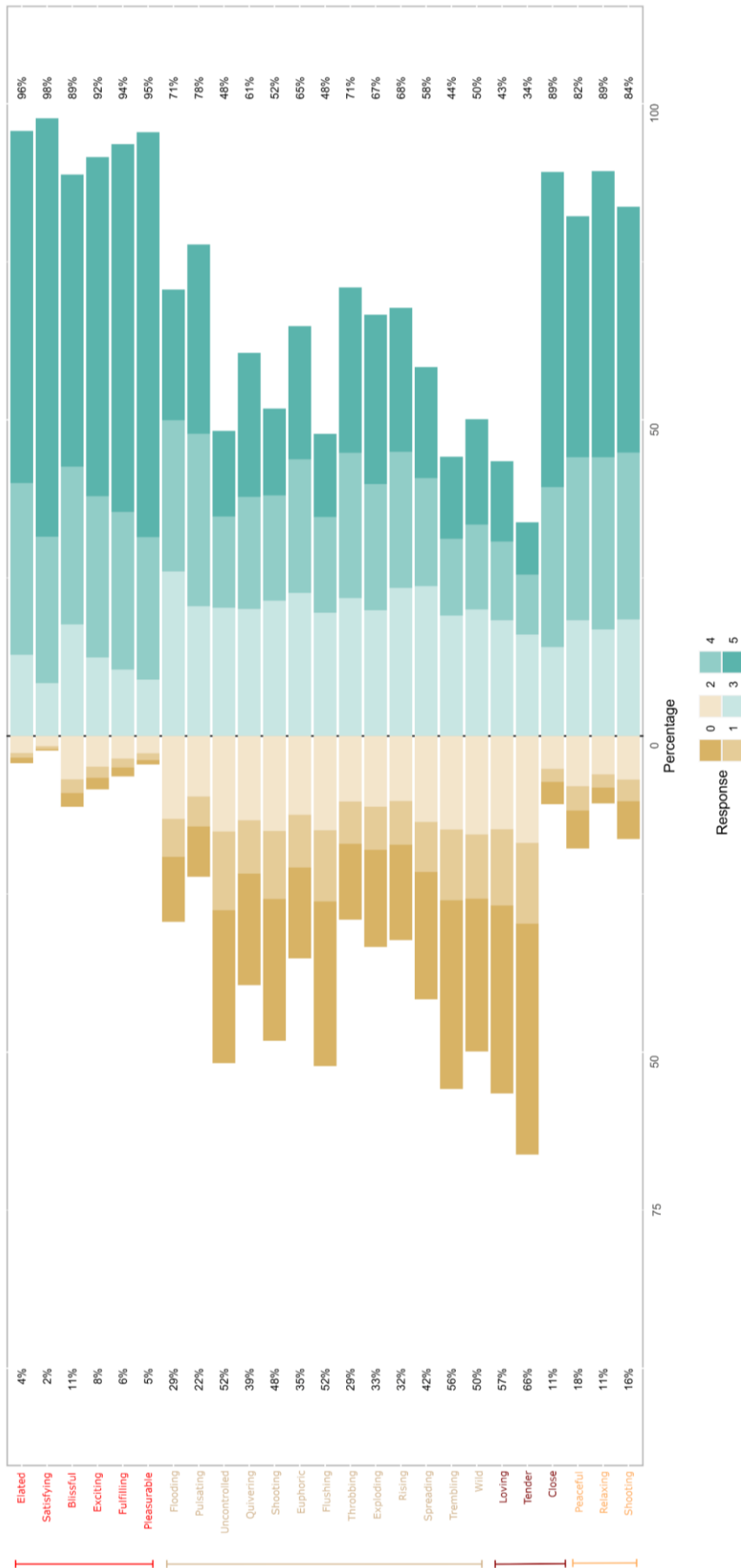
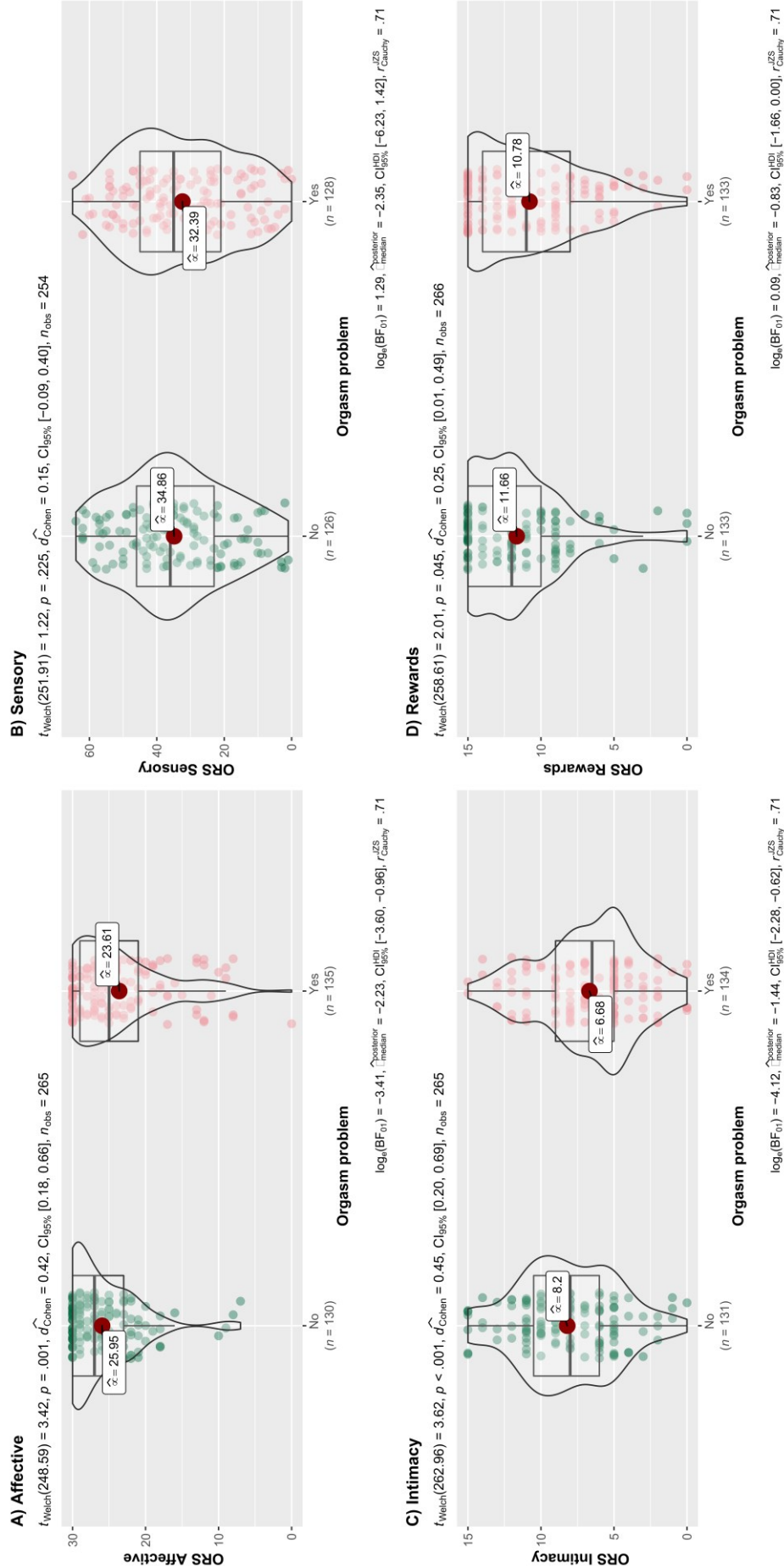


Figure 1. Distribution of responses regarding the representativeness of the 25 adjectives of orgasm in the context of solitary masturbation organized by dimensions in descending order: Affective (red), Sensorial (brown), Intimacy (garnet) and Rewards (yellow). On the left, in three shades of yellow, the percentage of answers from 0 to 2 are shown, on the right, in three shades of green, the percentage of answers corresponding to 3, 4 or 5 on the Likert-type scale.



Note: Red dot indicates the population mean (μ) of that group. Bayesian results for the differences are shown below each figure.
Figure 2. Distribution of data, for each of the four dimensions of the ORS, in the group with and without orgasmic problems.

Discussion

The study aimed to validate the ORS in the solitary masturbation context. With the same structure as the validated homologous version in the sexual relationships context, the ORS presents suitable psychometric properties and is a useful scale to evaluate subjective orgasm experiences as a result of solitary masturbation.

In the solitary masturbation context, the ORS maintains a good fit of the previously validated structure in the sexual relationships context (Arcos-Romero et al., 2018) with 25 items distributed into four factors: Affective, Sensory, Intimacy and Rewards. Their measures were strictly invariant in sex and age terms, as well as for the sexual relationships context (Arcos-Romero & Sierra, 2019), which is relevant in the clinical domain because it allows a comparison to be made of the subjective orgasm experience between both couple members when the couple is heterosexual. Having the same structure for both contexts facilitate its use and confirms the multidimensionality of the orgasmic experience (Arcos-Romero et al., 2019) regardless of the context in which it was obtained (sexual relationships or solitary masturbation). Regarding reliability, the ORS subscales in the solitary masturbation context obtained suitable ordinal alpha values, which were similar to those reported by Arcos-Romero et al. (2018) in the sexual relationships context. The Intimacy dimension presented the lowest internal consistency in both contexts.

With the relations between the ORS scores and the external variables, despite that only weak and moderate statistically significant correlations were found in the expected direction with the evaluated sexual attitudes, the correlation magnitude is similar to previous studies in the sexual relationships context (Arcos-Romero et al., 2018; Arcos-Romero y Sierra, 2020). The negative association with a negative attitude toward masturbation is logical because this attitude has been related to worse orgasmic capacity and less orgasm satisfaction (Cervilla et al., 2021; Kelly et al., 1990). Subjective orgasmic experience intensity in the solitary masturbation context was positively related to

erotophilia as being predisposed to positively react to sexual stimuli would favor orgasm intensity, especially in women, as previously reported (Arcos-Romero et al., 2018). In the same direction, orgasm intensity was positively associated with positive attitude toward sexual fantasies, which agrees with other works as sexual fantasies are a relevant predictor of masturbation frequency, whereas a negative attitude toward fantasies has been related to orgasm difficulties (Carvalho & Leal, 2013; Sierra et al., 2020).

The highest correlations appeared with solitary sexual desire. This was expected because of the reports by Arcos-Romero et al. (2022) about correlations with partner-focused dyadic sexual desire in the sexual relationships context. This relation is interesting because it backs the relevance of masturbation as a therapeutic tool to increase sexual desire/excitation (Zamboni & Crawford, 2003), and is one of the main reasons for women practicing masturbation (Burri & Carvalho, 2019). The ORS scores also positively related to the sexual excitation tendency or trait, which agrees with previous works that report this trait being associated with orgasmic experience intensity in the sexual relationships context (Arcos-Romero et al., 2019; Arcos-Romero & Sierra, 2020). Nevertheless, no correlations between the two types of sexual inhibition (SIS1 and SIS2) and the subjective orgasmic experience practically existed. Quinta Gomes et al. (2018) informed about a relation between SIS1 and orgasm only in men. This lack of relation in the present study suggests that inhibition due to threats to sexual performance would be relevant in sexual relationships, but not in the solitary masturbation context. Moreover, SIS2 did not seem very important for sexual functioning in both men and women (Quinta Gomes et al., 2018), which was also reflected for masturbation where it would be more difficult to fear consequences of such sexual activity.

Both the capacity of having an orgasm while maintaining sexual relationships and being satisfied with it have been associated with subjective orgasmic experience (Arcos-Romero et al., 2018; Hevesi et al., 2020; Paterson et al., 2014). Our results point out that this association not only occurs for subjective orgasmic experience in sexual

relationships, but a relation also exists between orgasmic capacity and orgasmic satisfaction during relationships and subjective orgasmic intensity induced by solitary masturbation. This relation backs the association with orgasms among different sexual activities, like masturbation and sexual relationships, as recently described (Rowland, Hevesi et al., 2020). This relation also backs practicing masturbation as a therapeutic tool in orgasmic dysfunctions (Clayton & Hamilton, 2009; Ma et al., 2019; Waldinger, 2009). Along these lines, people with no orgasm difficulties in their sexual relationships report higher orgasm intensity in the solitary masturbation context than those with difficulties, except for the Sensory dimension. For example, it is known that those women who tend to approach sexual relationships negatively are expected to do the same in self-erotic conducts (Mollaioli et al., 2018), which would explain these differences in the ORS dimensions, as observed for the sexual relationships context (Arcos-Romero et al., 2018). No differences in the Sensory component were found, probably due to no diagnosis being made in this general population sample. Hence the dysfunctionality identified with the ASEX could be more related to psychosocial circumstances than to physiological ones, which would explain why the Sensory component was less affected (Mah & Binik, 2002).

This study has a limitation because the sample was formed incidentally by means of a given type of social networks, which limits the generalization of the results. Nonetheless, the sample's socio-demographic size and diversity allowed a conclusion to be reached with the confirmation of the ORS' multidimensional structure in the solitary masturbation context, and its good psychometric properties were confirmed. All this further establishes it as an adequate instrument for evaluating and investigating subjective orgasm experience in the solitary masturbation context.

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Estudio 4: Validation of the Multidimensional Model of the Subjective Orgasm Experience in the Context of Masturbation

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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.

Keywords: Model of Subjective Orgasm Experience; Masturbation; Sexual arousal; Genital response

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, 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.

Palabras clave: Modelo de la Experiencia Subjetiva del Orgasmo; Masturbación; Excitación sexual; Respuesta genital

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 psychophysiological 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.

The 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 women 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).

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.

Table 1*Descriptive Statistics of the Evaluated Variables*

Variables	Total		Men		Women		t
	N = 60	M (SD)	n = 30	Range	n = 30	Range	
Affective	24.53 (4.84)	24.07 (5.48)	5-30	5-30	14-30	25 (4.16)	-0.74
Sensory	31.22 (12.60)	30.97 (14.53)	1-55	1-55	2-51	31.47 (10.57)	-0.15
Intimacy	6.33 (3.22)	6.67 (3.67)	0-15	0-15	1-13	6 (2.73)	0.79
Rewards	11.03 (3.27)	11.33 (3.51)	1-15	1-15	2-15	10.73 (3.05)	0.70
Propensity for sexual excitation	15.92 (2.82)	15.97 (3.37)	9-22	9-22	11-19	15.87 (2.19)	0.13
Propensity for sexual inhibition to the threat of performance failure	7.75 (2.15)	7.17 (2.26)	5-16	5-16	5-13	8.33 (1.90)	-2.16
Propensity for sexual inhibition to the threat of performance consequences	11.23 (2.38)	11.17 (2.74)	5-16	5-16	9-16	11.30 (2.00)	-0.21
Rating of sexual arousal	9.28 (6.26)	8.10 (5.11)	0-20	0-20	0-23	10.47 (7.13)	-1.47
Rating of genital sensations	2.13 (1.40)	1.67 (1.12)	0-4	0-4	0-6	2.60 (1.51)	-2.71**
Genital response	-	10.21 (7.03)	0.65-28.70	0.65-28.70	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. * $p < .05$; ** $p < .01$; *** $p < .001$.

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)

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

Predictors	B	SE	β	95% CI	t	p	R²	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	.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; *R*²: 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	R²	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; *R*²: adjusted R-squared value; *VIF*: Variance inflation factor.

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 sex 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.

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

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**Estudio 5: Masturbation Parameters Related to Orgasm Satisfaction
in Sexual Relationships: Differences Between Men and Women**

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Abstract

Objective: Masturbation is a behavior that can enhance sexual functioning. This study aims to analyze differences between men and women in different masturbation parameters, and to examine their relation with orgasm satisfaction in sexual relationships.

Method: One thousand three hundred and thirty-fifth men and women from the Spanish population aged 18-83 years ($M = 36.91$; $SD = 11.86$) participated in an online survey. A questionnaire was used to collect socio-demographic. Sexual history data, negative attitude toward masturbation, solitary sexual desire and orgasm subjective experience upon masturbation were assessed. Given the differences between men and women, independent regression models are proposed to explain orgasm satisfaction in the sexual relationships context.

Findings: Men, compared to women, masturbated at a younger age ($p < 0.001$), and reported higher current masturbation frequency ($p < 0.001$) and more solitary sexual desire ($p < 0.001$). Women reported greater intensity in the subjective orgasm experience on its Affective ($p < 0.001$), Sensory ($p < 0.001$) and Intimacy ($p < 0.001$) dimensions. Regarding regression models, the Affective dimension of orgasm was a common parameter in men ($\beta = 0.36$; $p < 0.001$) and women ($\beta = 0.24$) to explain orgasm satisfaction during sexual relationships. In men, solitary masturbation frequency ($\beta = -0.10$; $p = 0.027$) acquired a significant role. In women, the model also included age ($\beta = 0.09$; $p = 0.038$), negative attitude toward masturbation ($\beta = -0.12$; $p = 0.005$) and solitary sexual desire ($\beta = 0.19$; $p = 0.001$).

Conclusion: When dealing with men and women's orgasm difficulties in the sexual relationships context, it is important to consider the role of masturbation. In men and women, the Affective dimension of the orgasm experience explain the orgasm satisfaction in sexual relationship. Also, in men, the solitary masturbation frequency is

negatively related with orgasm satisfaction in sexual relationship, supporting the compensatory hypothesis of masturbation. In women, in addition to the Affective dimension, the orgasm satisfaction in sexual relationship is explained, negatively, by the negative attitude toward masturbation, and positively, by the solitary sexual desire, which could be associated with more sexual self-knowledge. The relevance of masturbation in understanding sexual functioning is highlighted.

KEYWORDS

orgasm satisfaction, partnered sex, masturbation, subjective orgasm experience, attitude toward masturbation, sex-differences

Introduction

Masturbation is a relatively frequent behavior that is positively associated with sexual health (1-5). More importance has been attached to study it in recent decades, and its capacity to promote sexual self-knowledge and to elicit positive sexual responses has been underlined (6, 7). Among these good points, its usefulness in sexual therapy to improve sexual functioning has been stressed (8).

Very little evidence exists for the relation between masturbation and sexual relationships (9). The association between both sexual behaviors has been described by two models: compensatory vs. complementary. The former proposes practicing masturbation to replace desired sexual relationships that do not take place (10, 11). The fact that higher masturbation frequency is related to lower sexual satisfaction, and has been found for women, favors this model (12), while higher masturbation frequency for those who less enjoy their sexual relationships has been described for men (13). The complementary model hypothesizes that a direct positive relation exists between both these sexual activities, and increasing the practice of one would be associated with an increase in the other (14).

Some works suggest that masturbation does not offer a clear advantage for sexual relationships (15-17). Nonetheless, it has been found that women who masturbate are more likely to have an orgasm during sexual relationships (18), and those who masturbate more frequently describe better sexual experiences in couples and less sexual inhibition (2, 3). Techniques like Directed Masturbation can boost pleasurable stimulation from knowing pleasure points, which improves women's orgasm facility while couples practice sex (19). Therefore, learning to have orgasms by masturbation allows women to adjust and generalize this orgasm response in sexual relationships in couples (20). These results sustain the usefulness of masturbation as the first line of treatment for the Female Orgasmic Disorder (20, 21).

Despite some findings that favor practicing masturbation to improve orgasm capacity, very little evidence exists for the role that the different parameters related to this behavior play in orgasms in the sexual relationships context. Of these parameters, attitude toward masturbation, solitary sexual desire and intensity of the subjective orgasm experience obtained by masturbation stand out. Taking a negative attitude toward masturbation has been associated with feeling guilty and ashamed (22, 23), and also with negative sexual experiences (24). Moreover, lower masturbation frequency, more difficulty to have an orgasm and lower orgasm satisfaction have been observed in those with a more negative attitude toward masturbation (25). Solitary sexual desire (i.e., interest in solitary sexual activity) has been associated with high sexual satisfaction and self-esteem levels in women (2, 4), and has been related to both sexual satisfaction and unsatisfactory sexual functioning in men (26-28). In light of all this, a positive relation between solitary sexual desire and the intensity of the subjective orgasm experience in the solitary masturbation context has been found in a sample made up of men and women (29). Subjective orgasm experience in masturbation has been shown to be capable of distinguishing people with and without difficulties in having an orgasm during sexual relationships (29). Sierra et al. (30) recently observed that masturbation frequency, negative attitude toward masturbation and the subjective orgasmic experience in masturbation are associated with orgasm satisfaction in sexual relationships in people aged over 50 years.

Bearing in mind the relevance of masturbation for sexual health, and its usefulness in the therapeutic context to improve sexual functioning, this study aims to: analyze differences between men and women in different masturbation parameters (i.e., first masturbation experience, current solitary masturbation frequency, negative attitude toward masturbation, solitary sexual desire and subjective orgasm experience); examine their relation, along with age, to orgasm satisfaction in the sexual relationships context. To do so, the following hypotheses are proposed: (1) differences are expected in

masturbation parameters between men and women; (2) orgasm satisfaction in sexual relationships is expected to be linked with masturbation parameters (30).

Method

Participants

The sample comprised 1,335 Spanish adults (738 men, 597 women) aged 18-83 years ($M = 36.91$; $SD = 11.86$). The inclusion criteria were: (a) having Spanish nationality; (b) being heterosexual; (c) currently engaging in sexual relationships; (d) having solitary masturbation experience. Table 1 shows the samples' socio-demographic characteristics.

TABLE 1 Sociodemographic characteristics of the participants.

Variables	Total <i>N</i> = 1,335	Men <i>n</i> = 738	Women <i>n</i> = 597
Age <i>M</i> (<i>SD</i>)	36.91 (11.86)	37.62 (12.43)	36.04 (11.07)
Level of education <i>n</i> (%)			
Primary Education	53 (4.0)	26 (3.5)	27 (4.5)
Secondary Education	390 (29.2)	231 (31.3)	159 (26.6)
University degree (ongoing or completed)	892 (66.8)	481 (65.2)	411 (68.9)
Currently have a partner <i>n</i> (%)			
Yes	988 (74.0)	524 (71.0)	464 (77.7)
No	347 (26.0)	214 (29.0)	133 (22.3)
Praying frequency <i>n</i> (%)			
Never	989 (74.1)	523 (70.90)	466 (78.1)
Less than once a month	123 (9.2)	67 (9.1)	56 (9.4)
Once a month	7 (0.5)	6 (0.8)	1 (0.2)
A few times a month	54 (4.0)	32 (4.3)	22 (3.7)
Once a week	8 (0.6)	3 (0.4)	5 (0.8)
A few times a week	57 (4.3)	34 (4.6)	23 (3.9)
Once a day	60 (4.5)	41 (5.6)	19 (3.2)
More than once a day	37 (2.8)	32 (4.3)	5 (0.8)

Measures

Background questionnaire. This instrument collects data about sex, age, level of education, partner relationship, frequency of prayer, age when the first masturbation experience occurred and masturbation frequency.

The Spanish version of the Negative Attitudes Toward Masturbation Inventory (NATMI) (25, 31). It evaluates negative attitudes toward masturbation with 10 items (e.g., “I feel guilty about masturbating”) answered on a 5-point Likert-type scale: 1 (Not at all true for me) to 5 (Extremely true for me). Higher scores indicate a more negative attitude toward masturbation. It has a high internal consistency (alpha ordinal) of 0.95, and presents suitable evidence for construct and discriminant validity with other psychosexual variables and sexual functioning. In this sample, the ordinal alpha coefficient was 0.91.

The Solitary Sexual Desire subscale from the Spanish version of the Sexual Desire Inventory (SDI) (28, 32). It consists of four items (e.g., “How strong is your desire to engage in sexual behavior by yourself?”) and measures interest in solitary sexual activity using different Likert response scales depending on the item (e.g., from 0 = No desire to 8 = Strong desire). Higher scores show more solitary desire. It presents good internal consistency (Cronbach’s α higher than 0.90) and evidence for external validity. Cronbach’s alpha in the present study was 0.91.

The Spanish version of the Orgasm Rating Scale (ORS) (33) adapted to the solitary masturbation context by Cervilla et al. (29). It assesses the subjective orgasm experience in the solitary masturbation context (during any sexual activity performed alone) with 25 adjectives distributed on four dimensions: Affective, Sensory, Intimacy, Rewards. Items are answered on a 6-point Likert-type scale: 0 (Does not describe it at all) to 5 (Describes it perfectly). Higher scores indicate more intensity in the subjective orgasm experience. Its internal consistency reliability is good and ranges from 0.71 to 0.95. It adequately evidences validity, provided by its measures. In our study, the ordinal

alphas for the different subscales were: 0.93 for Affective, 0.94 for Sensory, 0.72 for Intimacy and 0.89 for Rewards.

The Spanish version of the Arizona Sexual Experience Scale (ASEX) (34) of Sánchez-Fuentes et al. (35). It consists of five items that assess general sexual functioning (sexual desire, arousal, erection for men/lubrication for women, orgasm, and orgasm satisfaction) in the last 7 days in the sexual relationship context. It uses a Likert-type scale from 1 (hypofunction) to 6 (hyperfunction). It presents good internal consistency (Cronbach's alpha of 0.81 in men, 0.79 in women) and evidence validity. The orgasm-related item referring to orgasm satisfaction was taken into account. Its score was inverted, so higher scores evidenced more orgasm satisfaction.

Procedure

Data collection was conducted by distributing a survey using LimeSurvey, which was promoted by paying to Facebook (900€) from 23 December 2019 to 15 March 2020 by adults from Spain. In order to improve the representativeness of the sample, the promotion targeted both men and women from different age groups. Online assessments are normally used to evaluate sexual behaviors (1, 36, 37). Previous studies have confirmed that there are no differences between online and paper-and-pen methods (38, 39). To avoid automatic or fraudulent responses, IP was controlled and a CAPTCHA was used. In addition, responses were carefully examined to rule out non conclusive or abnormal cases. Participation was voluntary, and both anonymity and confidentiality of responses were guaranteed. There was no compensation for taking part in the study. All the participants received informed consent with the study aim before responding. This research was approved by the Ethics Committee of Human Research of the University of Granada.

Statistical analysis

A cross-sectional correlational study is proposed. First, missing values were imputed using a random forest algorithm by considering the associated variables. To examine differences in the masturbation parameters between men and women, a MANCOVA was applied for first masturbation experience (age), current solitary masturbation frequency (“Never”, “Less than once a month”, “Once a month”, “A few times a month”, “Once a week”, “A few times a week”, “Once a day” and “More than once a day”), negative attitude toward masturbation, solitary sexual desire and subjective orgasm experience caused by masturbation, and by taking into account these covariates: age, level of education (“Primary Education”, “Secondary Education” and “University degree –ongoing or completed-”), having a partner (yes or no) and frequency of prayer (similar to the masturbation frequency). Considering the differences found by sex, the subsequent analyses were presented separately for men and women. The capacity of the masturbation parameters to explain orgasm satisfaction was examined by multiple linear regression using the enter method.

The R® environment was employed (version 3.6.3) (40) with its RStudio® interface (version 1.2.5042) (41). For missing value imputations, the missForest package was used (version 1.4) (42). For the ordinal alpha, the Psych package was applied (version 1.9.12.31) (43). The other statistical analyses were performed with SPSS v.22.

Results

Sex differences in the masturbation parameters

The significant multivariate covariates were age (Wilk's lambda = 0.87; $F_{(8, 1322)} = 24.49$, $p < 0.001$; $\eta^2 = 0.129$), having a partner (Wilk's lambda = 0.94; $F_{(8, 1322)} = 10.91$, $p < 0.001$; $\eta^2 = 0.062$) and frequency of prayer (Wilk's lambda = 0.96; $F_{(8, 1322)} = 7.42$, $p < 0.001$; $\eta^2 = 0.04$). Sex had a main effect on the masturbation parameters (Wilk's lambda = 0.77; $F_{(8, 1322)} = 48.91$, $p < 0.001$; $\eta^2 = 0.23$). The intersubject effect on these indicators is shown in Table 2.

TABLE 2 Effects of sex on masturbation-related indicators.

Variables	Males	Females	$F_{(1, 1329)}$	p	Cohen's d
$M (DT)$	$n = 738$	$n = 597$			
First masturbation experience	12.60 (2.03)	15.13 (5.92)	140.51	<0.001	0.60
Current frequency of solitary masturbation	3.17 (0.94)	2.50 (0.96)	185.11	<0.001	0.70
Negative attitude towards masturbation	13.03 (3.09)	13.13 (2.32)	1.91	0.167	-
Solitary sexual desire	21.59 (5.59)	19.75 (6.28)	31.96	<0.001	0.31
Subjective orgasm experience-Affective	25.66 (4.84)	27.05 (3.85)	31.69	<0.001	0.31
Subjective orgasm experience-Sensory	33.65 (15.74)	39.17 (15.15)	47.75	<0.001	0.36
Subjective orgasm experience-Intimacy	7.62 (3.64)	8.19 (3.71)	12.48	<0.001	0.15
Subjective orgasm experience-Rewards	11.34 (3.36)	11.56 (3.59)	1.82	0.177	-

Regression models

For men, a significant model was obtained that explained orgasm satisfaction in sexual relationships [$F_{(9, 728)} = 13.01$; $p < 0.001$]. Current solitary masturbation frequency ($\beta = -0.10$) and the Affective dimension of orgasm ($\beta = 0.36$) explained 13% of variance. See Table 3. The model was also significant for women [$F_{(9, 587)} = 8.88$; $p < 0.001$] and explained 11% of orgasm satisfaction from age ($\beta = 0.09$), negative attitude

toward masturbation ($\beta = -0.12$), solitary sexual desire ($\beta = 0.19$) and the Affective dimension of orgasm ($\beta = 0.24$). See Table 4.

TABLE 3 Multiple regression models for orgasmic satisfaction in men.

Predictors	B	SE	β	95% CI	t	p	R²	VIF
Orgasmic satisfaction							0.13	
Age	0.00	0.00	0.01	-0.00, 0.01	0.03	0.974		1.23
First masturbation experience	-0.01	0.02	-0.03	-0.05, 0.02	-0.88	0.379		1.08
Current frequency of solitary masturbation	-0.10	0.04	-0.10	-0.19, -0.01	-2.22	0.027		1.79
Negative attitude towards masturbation	-0.01	0.01	-0.05	-0.04, 0.01	-1.31	0.191		1.15
Solitary sexual desire	0.01	0.01	0.08	-0.00, 0.03	1.77	0.076		1.92
Subjective orgasm experience-Affective	0.07	0.01	0.36	0.05, 0.08	7.70	<0.001		1.85
Subjective orgasm experience-Sensory	-0.00	0.00	-0.05	-0.01, 0.00	-1.09	0.275		1.93
Subjective orgasm experience-Intimacy	0.00	0.01	0.01	-0.02, 0.03	0.32	0.746		1.70
Subjective orgasm experience-Rewards	-0.01	0.01	-0.03	-0.03, 0.01	-0.78	0.438		1.40

B: non-estandardized beta; *SE*: standard error; β : standardized beta; 95% IC: 95% confidence interval. VIF: Variance inflation factor.

TABLE 4 Multiple regression models for orgasmic satisfaction in women.

Predictors	<i>B</i>	<i>SE</i>	β	95% IC	<i>t</i>	<i>p</i>	<i>R</i> ²	VIF
Orgasmic satisfaction							0.11	
Age	0.01	0.00	0.09	0.00, 0.02	2.08	0.038		1.21
First masturbation experience	0.01	0.01	0.04	-0.01, 0.02	1.01	0.314		1.10
Current frequency of solitary masturbation	-0.07	0.06	-0.07	-0.18, 0.04	-1.27	0.203		1.88
Negative attitude towards masturbation	-0.05	0.02	-0.12	-0.09, 0.01	-2.80	0.005		1.15
Solitary sexual desire	0.03	0.01	0.19	0.01, 0.05	3.43	0.001		2.11
Subjective orgasm experience-Affective	0.06	0.01	0.24	0.04, 0.09	4.91	<0.001		1.65
Subjective orgasm experience-Sensory	-0.00	0.00	-0.03	-0.01, 0.00	-0.52	0.606		1.77
Subjective orgasm experience-Intimacy	0.00	0.01	0.01	-0.03, 0.03	0.12	0.906		1.68
Subjective orgasm experience-Rewards	-0.02	0.01	-0.08	-0.05, 0.00	-1.70	0.090		1.46

B: non-estandardized beta; *SE*: standard error; β : standardized beta; 95% IC: 95% confidence interval. VIF: Variance inflation factor.

Discussion

Masturbation is a sexual behavior that is contemplated to deal with sexual dysfunctions, especially orgasm difficulties (44-46). Justifying the use of masturbation in sexual therapy lies in the relation between this behavior and orgasm in sexual relationships. This is why the present study analyzes the relation between different

masturbation parameters in men and women (i.e., first masturbation experience, current solitary masturbation frequency, negative attitude toward masturbation, solitary sexual desire and subjective orgasm experience) with orgasm satisfaction in sexual relationships. The results show differences between men and women in the masturbation parameters, and also in the role that these parameters play in explaining orgasm satisfaction in the sexual relationships context.

The first hypothesis is backed by significant differences between men and women in the different masturbation parameters. We observe that men's first masturbation experience took place at an earlier age than it did in women, whose finding coincides with previous studies (1, 2, 25, 30, 47). Traditional sexual socialization could favor more permissiveness in men and more guilty feelings associated with women practicing masturbation (48). In turn, the differences found in solitary masturbation frequency coincide with previous works in the literature, and a more frequent masturbation frequency observed for men (25, 49, 50). Attitude to the sexual double standard (i.e., the distinct evaluation made of sexual behavior depending on whether it is practiced by a man or a woman) could explain these differences given the greater sexual freedom or permissiveness that men have been traditionally conferred than women (38). Alternative considerations have also been applied to explain these differences in association with hormone levels (51).

It is worth mentioning that no differences have been found in negative attitude toward masturbation between men and women. The fact that such differences are lacking could be related to an increasingly more positive change of attitude in both men and women, as observed in other attitudes like erotophilia (52). These results contradict those recently obtained in older people and reported by Sierra et al. (30), who indicate that men older than 50 years take a more negative attitude toward masturbation than women of a similar age. This could indicate younger generations' positive attitude toward masturbation. This question reflects the need to further study in-depth attitudes toward

masturbation and the factors related to it to better understand this matter (25). Regarding differences in solitary sexual desire, the highest level found for men is consistent with previous works that report similar results (27, 28, 53, 54). This is congruent with those studies showing a close association between masturbation and solitary sexual desire (55).

On subjective orgasm experience in solitary masturbation, and in line with the results obtained by previous studies that have examined the subjective orgasm experience in the heterosexual relationships context (36, 56), women report greater intensity than men, except on the Reward dimension, which has also been shown for the gay population (57). To explain differences in orgasm intensity between men and women, women have been proposed to better localize orgasms anatomically (56), which would be associated with perceiving greater intensity (58). It has also been indicated that women could have a bigger repertoire to describe their orgasm sensations (57, 59). Regarding the differences in their dimensions, not finding discrepancies would be expected on the Rewards dimension, which is made up of the items “peaceful”, “relaxing”, and “soothing”, because both men and women have pointed out that relaxing is one of the main reasons to masturbate (13, 60, 61).

Regarding our second hypothesis, orgasm satisfaction in the sexual relationships context is explained in both men and women by some masturbation parameters. In the model for men and women, the Affective dimension of the subjective orgasm experience during masturbation significantly and positively explains orgasm satisfaction in the sexual relationships context. Former findings stress the importance of the Affective dimension of the subjective orgasm experience for the sexual relationships context, especially for women (62). So it might seem logical to think that this could be the case in the masturbation context where this dimension is more important for explaining orgasm satisfaction in sexual relationships.

Apart from the orgasm Affective dimension in the men's model, higher solitary masturbation frequency is also associated with lower orgasm satisfaction. These results might appear to contradict works that have described how frequency is associated with more consistent orgasms (7). However in line with previous studies (30, 52), this association might be explained by the compensatory model of masturbation; that is, masturbation serving as a substitute of unsatisfactory sexual relationships. Therefore, lower orgasm satisfaction in the sexual relationships context might be expected to be compensated by higher masturbation frequency (26, 63).

In women, apart from the Affective dimension of orgasm, age and solitary sexual desire are positively associated, and attitude toward masturbation is negatively associated, with orgasm satisfaction in sexual relationships. The positive association of age would be expected because former works inform about a higher orgasm pleasure level with increasing age (18, 61). Moreover, the positive relation between sexual desire and sexual functioning has been well-described (27, 28, 64). In fact solitary sexual desire is associated with higher masturbation frequency (1, 55), which might imply more self-erotic experiences and sexual self-knowledge (3). Finally, the fact that negative attitude toward masturbation is related to lower orgasm satisfaction is consistent with previous works (25, 65). This attitude has been associated with lower masturbation frequency (25), which might imply fewer opportunities for both sexual response self-knowledge and the associated pleasure points (7, 19).

Some differences between the models for men and women are worth stressing. The positive effect of age is only observed in women. This suggests that women benefit from enjoying more orgasm satisfaction as they age to a certain extent. Despite a negative association between age and orgasm capacity having been previously described (36, 66), these results are consistent with some findings which reveal that women need time to interiorize a more positive relation with masturbation due to the stigmatization that their engagement in such behavior might imply (2). This suggests that the positive effects of

masturbation could increase as women age. Besides, solitary masturbation frequency only has a significant effect on men, which falls in line with former results which point out that masturbation frequency in women is not significantly associated with orgasm outcomes (18). As higher masturbation frequency in men is associated with lower orgasm satisfaction in sexual relationships, it would be coherent to think that solitary sexual desire plays no relevant role to explain men's orgasm satisfaction. Finally, the differences observed in the models of men and women fall in line with the previous literature, which emphasizes how women's orgasm is associated with more variables than it is for men (56, 57, 67).

This study has its limitations, which must be taken into account to generalize its results. The study sample was formed by incidental non probabilistic sampling over social networks and only included the heterosexual population. The cross-sectional correlational experimental design and the performed statistical analyses do not allow for causality relations. So, it may be need longitudinal studies to have a deep approach about the relationship between masturbation and sexual relationships. Different parameters of masturbation could be taken into account in future studies, such as the duration of masturbation, the use of erotic toys, the techniques used or the consumption of pornography. Notwithstanding, the findings are believed relevant for its contribution to the study of masturbation and orgasm satisfaction in the sexual relationships context.

Conclusion

The obtained results confirm the differences between men and women in the masturbation parameters and their role to explain orgasm satisfaction in sexual relationships. The Affective dimension of the subjective orgasm experience during solitary masturbation is stressed as a common variable for both men and women to explain orgasm satisfaction in sexual relationships. More masturbation parameters associated with orgasm satisfaction are observed in women than men. These findings suggest that the relation between solitary masturbation and sexual relationships is a

complex one. Masturbation in men could be a substitute for the satisfaction not achieved with orgasm in sexual relationship; in women, the negative attitude towards this behavior would be associated with lower orgasmic satisfaction, and a greater solitary sexual desire could promote more sexual self-knowledge. So it is important to consider these results to look more closely at the association between both sexual behaviors, and to further consolidate the usefulness of solitary masturbation in sexual therapy. Therefore, solitary masturbation is an available resource that should also be promoted in the community context as it can improve the sexual health of the population.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Human Research of the University of Granada. The patients/participants provided their written informed consent to participate in this study.

Author contributions

The concept and design: JCS. Acquisition, analysis, interpretation of data, drafting of the manuscript, critical revision of the manuscript, and statistical analysis: JCS and OC. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Estudio 6: Masturbation and Sexual Relationship in a Heterosexual Couple Context: A Cluster Analytic Approach

Manuscrito sometido a revisión

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Abstract

In the context of couples, the focus has traditionally been on sexual relations, relegating solitary masturbation to second place, although it is also part of the sexual repertoire of this context and its importance for sexual health. Therefore, it was proposed to examine in men and women with partners who present different patterns of frequency of solitary masturbation and sexual relationships, a profile composed of sociodemographic variables and variables associated with masturbation, sexual functioning and sexual and relationship satisfaction. A total of 1,028 Spanish heterosexual adults with a partner aged 18–75 years ($M = 37.08$; $SD = 11.95$) were evaluated. Cluster analysis divided the sample into three groups with different patterns: a group with a high frequency of sexual relationships and solitary masturbation, a group with a higher frequency of sexual relationships, and a group with a higher frequency of solitary masturbation. Overall, the results show that, especially in women, the combined practice of sexual relationships and solitary masturbation is associated with positive indicators of sexual health. In addition, men and women who masturbate more frequently but have less sexual relationships present indicators of poorer sexual health. In conclusion, the results show that solitary masturbation is important for assessing sexual health in the context of the couple.

Keywords: solitary masturbation; sexual relationships; couples; sexual health

Evolutionarily, maintaining a couple relationship is important (Arnett, 2000), given that it is positively associated with health (Loving & Slatcher, 2013). The World Association for Sexual Health notes that solitary masturbation, along with sexual relationships, is part of the repertoire of sexual behaviors in the couple context, helping to achieve sexual pleasure and improving sexual health (Ford et al., 2021). In general, the practice of masturbation is directly related to sexual health indicators (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013; Coleman, 2003; Herbenick et al., 2010; Kılıç Onar et al., 2020; Kingsberg et al., 2017), despite the historical stigma to which it has been subjected (Carvalheira & Leal, 2013; Cervilla et al., 2021; Kaestle & Allen, 2011). However, there has been little research on the implications for sexual health of the joint practice of solitary masturbation and sexual relationships with a partner (Rowland et al., 2021). Therefore, this study takes into account the sexual activity of the couple considering both the frequency of solitary masturbation and the frequency of sexual relationships. For this purpose, masturbation is understood as autoerotic stimulation without another person present or participating (Kirschbaum & Pederson, 2018; Levesque, 2018).

Masturbation and sexual relationships share common elements, such as sexual pleasure, but differ in certain aspects (Goldey et al., 2016). Masturbation is characterized by being more self-focused, increased autonomy and control, and a focus on physical and rewarding aspects (Foust et al., 2022; Goldey et al., 2016; Muñoz-García et al., 2023; Rowland et al., 2019). On the other hand, sexual relationships stand out for mutuality, emotional closeness, and more intense perception of the affective, sensory, and intimate aspects of orgasm (Foust et al., 2022; Goldey et al., 2016; Muñoz-García et al., 2023; Rowland et al., 2019).

While it has been suggested that masturbation does not bring benefits to partnered sexual activity (Kontula & Miettinen, 2016; Leff & Israel, 1983; Rowland et al., 2018), it has also been observed that both practices are related (Cervilla & Sierra, 2022; Sierra, Santamaría et al., 2023). For example, the similarity between the type of

stimulation during solitary masturbation and sexual relationships in terms of speed, pressure, intensity, duration, or management of the orgasmic moment may be associated with fewer difficulties in arousal and orgasm with a sexual partner (Bronner & Ben-Zion, 2014; Perelman, 2020; Rowland, Hevesi et al., 2020).

The implication that the association between masturbation and sexual relationships may have on sexual health has been studied within the framework of two models: the compensatory model and the complementary model. The compensatory model assumes that masturbation is a substitute for unsatisfactory sexual relationships, establishing an inverse relationship between both sexual activities (Das et al., 2009; Regnerus et al., 2017). The complementary model proposes that masturbation supplements dyadic sexual activity, i.e., partnered sex would encourage more sexual activity such as masturbation. Some studies suggest that the compensatory hypothesis would be more characteristic of men, whereas the complementary hypothesis would be more applicable to women (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013; Fischer et al., 2022; Fischer & Træen, 2022; Gerressu et al., 2008; Regnerus et al., 2017), although its gender independence has also been noted (Das et al., 2007; Velten & Magraf, 2017).

Factors Associated with Sexual Activity

Sociodemographic Factors

The sexual repertoire changes throughout the life cycle, and while masturbation is prevalent across all ages (Dodge et al., 2010), its frequency is reduced in older people (Corona et al., 2010; Das, 2007; Lee et al., 2016; Papaharitou et al., 2008). The same occurs with sexual relations, with a decline being observed at older ages (Waite et al., 2009), with older couples in good health being more likely to be sexually active (Lindau et al., 2007).

Regarding sex, previous findings indicate that men and women differ in their sexual activity, with men expressing a higher frequency of sexual relationships and masturbation than women (Petersen & Hyde, 2011). On the other hand, contradictory

evidence exists on the relationship between educational level and sexual activity. Specifically, regarding masturbation, some studies point to a positive relationship (Fischer & Træen, 2022; Gerressu et al., 2008), whereas others find no association (Byers & Rehman, 2014). In terms of sexual relationships, a higher educational level has been associated with more pleasurable sexual encounters (Haavio-Mannila & Kontula, 1997), lower risk of experiencing sexual disinterest, pain, or discomfort (Dennerstein et al., 1994), and greater sexual satisfaction (Barrientos & Paez, 2006; Carpenter et al., 2009; Koc & Saglam, 2013; Sánchez-Fuentes & Sierra, 2015). Women with a low educational level have reported a lower frequency of orgasms (Gramegna et al., 1998).

The first sexual relationship is an experience accompanied by emotional and behavioral changes (Blum et al., 2014; Patton et al., 2016; Vasilenko et al., 2022), which is an important turning point (Welsh et al., 2000). The limited evidence that has related this variable to masturbation shows that an early onset of sexual relationships is accompanied by a higher likelihood of masturbation in subsequent years (Das et al., 2009). In sexual relationships, earlier age onset has been related to having an older partner and a more negative attitude toward condom use (Ayhan et al., 2015). Men who started their sexual relationships earlier or later than the norm reported more difficulties in arousal, erection, and orgasm; meanwhile, women who started their sexual activity later indicated more difficulties in sexual arousal (Sandfort et al., 2008).

The duration of the relationship is an important indicator of the stage it is currently in (Garcia, 1997). Previous evidence indicates that the longer the relationship duration, the lower the frequency of masturbation and sexual relationships (Grøntvedt et al., 2020; McNulty & Fisher, 2008; Træen & Kvalem, 2023). It has also been observed that the duration of the relationship would not be related to the frequency of masturbation in men but to a decrease in women (Carvalheira & Leal, 2013; Klusmann, 2002). There is conflicting evidence on the effect that relationship duration may have on other aspects such as sexual satisfaction. While some studies point to a negative impact (Schmiedeberg & Schröder, 2016; Træen et al., 2019; Yeh et al., 2006), others have

described a positive relationship (Heiman et al., 2011), possibly due to a greater mutual knowledge of the sexual partner (Herbenick et al., 2019; Maxwell et al., 2017), with this positive relationship being observed especially in women compared to men (Heiman et al., 2011). In addition, other studies have pointed out the absence of relationship when other variables are controlled, such as life satisfaction, partner satisfaction, or gender (Frost et al., 2017; Kontula & Haavio-Mannila, 2009; Velten & Margraf, 2017).

Cohabitation has been related to a higher frequency of sexual relationships and lower masturbation (Brody et al., 2000), although it has been pointed out that the frequency of sexual relationships could depend more on the duration of the relationship than on cohabitation (Schröder & Schmiedeberg, 2015). Aspects of relationship satisfaction, such as sexual satisfaction, do not differ between cohabiting and non-cohabiting men, but women who live with their partner report being more satisfied (Pedersen & Blekesaune, 2003). In contrast, other findings indicate that sexual satisfaction might be independent of cohabiting (Schmiedeberg, & Schröder, 2016), relating more to partner duration and reduced sexual activity (Pedersen & Blekesaune, 2003).

Factors Associated with Masturbation

The age of first masturbation, despite the limited evidence, may be an indicator of later sexual activity, even more relevant to psychosexual development than that of first sexual relationships, as it is a milestone that usually occurs first (Peragine et al., 2022). Specifically, men and women who report doing so before the age of 19 years continue to engage in masturbation more frequently thereafter (Das et al., 2009). In contrast, later onset has been associated with fewer orgasms in any type of sexual activity, including masturbation (Driemeyer et al., 2017), and more body dissatisfaction in women (Wiederman & Pryor, 1997). This could be associated with worse sexual functioning and a lower frequency of sexual relationships with a partner (van den Brink et al., 2013). Women who first masturbated with vaginal stimulation reported greater vaginal orgasmic consistency in adulthood (Brody et al., 2013).

Negative attitude toward masturbation is an important predictor of the desire to masturbate (Kelly et al., 1990) and is associated with a lower frequency of masturbation (Cervilla et al., 2021). In the context of sexual relationships, it has also been related to more sexual inhibition, more partner dissatisfaction, and more difficulties with sexual desire, arousal, and orgasm (Cervilla et al., 2021, 2022; Mushy et al., 2021; Ren et al., 2022; Zimmer & Imhoff, 2020).

In general, the reasons for masturbation are closely associated with the frequency of this behavior (Hevesi et al., 2023; Rowland, Kolba et al., 2020). In men and women, they tend to be similar: pleasure, feeling aroused, reducing stress or relaxation (Herbenick et al., 2023). The implications for sexual relations are also evidenced. Men, when their sexual relationships is infrequent, report the need for pleasure as one of the main motives for masturbation (Hevesi et al., 2023), whereas when their frequency of masturbation is high, the motives could be different (e.g., to reduce anxiety when they have more sexual difficulties) (Hevesi et al., 2023). In women, it has been observed that the reasons for masturbation have no predictive value on sexual arousal and orgasm in a couple; however, when they do it for sexual dissatisfaction, it is associated with less orgasmic pleasure (Rowland, Hevesi et al., 2020). In addition, women in a relationship report masturbating less to feel sexy than those without a partner (Burri & Carvalheira, 2019).

Considering sexual desire, i.e., the interest that someone manifests in sexual activity (Spector et al., 1996) and its dimensions (i.e., partner-focused dyadic, attractive person-focused dyadic, and solitary; Moyano et al., 2017), it seems that each desire subtype has more relevance in its own context. Partner-focused dyadic sexual desire in the context of sexual relationships (Arcos-Romero et al., 2022) and solitary sexual desire in the context of solitary masturbation (Cervilla et al., 2023; Vowels et al., 2021). Dyadic sexual desire is positively associated with sexual activity in the relationship context (Pawłowska et al., 2024). Despite this, the importance of considering it together with its solitary dimension has been highlighted to better understand other variables such as

sexual satisfaction (Dosch et al., 2016). In women, a positive relationship has been reported between solitary sexual desire and orgasm satisfaction in sexual relationships (Cervilla & Sierra, 2022), although it has also been presented as an indicator associated with lower sexual satisfaction (Dosch et al., 2016).

Subjective experiences of orgasm in the contexts of solitary masturbation and sexual relationships are associated. The subjective orgasm experience, referred to as the psychological assessment of the effects caused by orgasm (Arcos-Romero et al., 2018), has been conceptualized through the Model of the Subjective Orgasm Experience (MSOE) validated for the context of sexual relationships (Arcos-Romero et al., 2019) and masturbation (Cervilla, Sierra et al., 2024). From this model, orgasm experiences are conceptualized through four dimensions: Affective (feelings experienced during orgasm), Sensory (perceptions of physiological sensations), Intimacy (intimate aspects of the experience), and Rewards (reinforcing effect of orgasm). It has been observed that the sensory and reward dimensions of the subjective orgasm experience in solitary masturbation are positively associated with the subjective experience of orgasm in the context of sexual relationships in heterosexual couples (Pérez-Amorós et al., 2023). Furthermore, the affective dimension in the context of masturbation is associated with greater satisfaction with orgasm in sexual relationships in both men and women (Cervilla & Sierra, 2022).

Consumption of erotic material is common during masturbation (Böhm et al., 2014; Carvalheira et al., 2015), with a positive relationship between pornography consumption and masturbation frequency (Baćaka & Štulhofer, 2011; Hald, 2006; Miller et al., 2019) and a negative association with sexual relationships (McNabney et al., 2020; Wright et al., 2021). In men, pornography consumption during masturbation has been related to lower relationship satisfaction and lower sexual satisfaction, whereas in women, no relationship has been found (Bennet-Brown & Wright, 2022; Træen & Daneback, 2013). It has been proposed that pornography consumption along with

masturbation could put partner sex on the back burner and reduce sexual satisfaction (Manning, 2006).

Masturbation, Sexual Functioning Dimensions and Sexual Satisfaction

Findings on the association between solitary masturbation and sexual functioning (i.e., sexual desire, arousal, orgasm, and sexual satisfaction) are limited. The practice of masturbation appears to influence sexual desire, which in turn influences greater sexual activity (Zamboni & Crawford, 2003). However, the relationship between desire and sexual relationships in the context of a couple is mediated by different variables such as the sexual functioning of the couple (Dewitte & Mayer, 2018). Men who find it difficult to maintain sexual desire in a long-term relationship are more likely to resort to masturbation (Carvalheira et al., 2015).

Sexual arousal is an emotional/motivational state that can be activated by internal and external stimuli and is expressed at physiological, psychological, and behavioral levels (Bancroft & Janssen, 2000; Janssen, 2011). The limited evidence found suggests that women who masturbate more frequently show fewer arousal difficulties during partnered sex (Rowland, Hevesi et al., 2020). In favor of this evidence, more ease in sexual arousal has been observed in women who masturbated during adolescence (Carvalheira & Leal, 2013). The Dual Control Model (Bancroft & Janssen, 2000) conceptualizes sexual arousal due to the balance between excitatory and inhibitory mechanisms (i.e., propensity for sexual arousal/sexual inhibition). Propensity for sexual excitation in populations exhibiting hypersexuality (i.e., with sexual activity significantly more frequent compared to those who did not identify as hypersexual) is a predictor of frequency of sexual relationships and masturbation (Walton et al., 2016).

The relationship between masturbation and orgasm, especially in women, has received recent attention. Orgasm is considered an experience of intense, transient pleasure, accompanied by psychophysiological responses as a result of sexual activity, resulting in a sense of well-being (Arcos-Romero et al., 2018; Meston et al., 2004). The practice of masturbation may be associated with greater ease in reaching orgasm, as

observed in women (Carvalho & Leal, 2013). In this sense, it has been described how women with difficulties reaching orgasm in sexual relationships are able to experience orgasm through masturbation (Rowland et al., 2019). Furthermore, women with difficulty reaching orgasm viewed masturbation as more positive and pleasurable than partnered sex, hypothesizing that confidence in reaching orgasm in this context redounds to the overall experience of orgasmic pleasure (Rowland et al., 2019). Thus, learning to reach orgasm through masturbation could allow adjustment and generalization of this sexual response to a sexual relationships context (Marchand et al., 2021). On the other hand, men with erectile dysfunction and premature or delayed ejaculation report a more functional erectile and ejaculatory response during masturbation than during sexual relationships with their partner (Rowland et al., 2021). Several hypotheses have been proposed in this regard: the context of sexual relationships intensifies sexual problems, masturbation decreases sexual problems, or the criteria for rating difficulties are different depending on the context (Rowland et al., 2021).

Regarding the relationship between masturbation and sexual satisfaction (i.e., affective response resulting from the evaluation of the dimensions associated with one's sexual relationship; Lawrence and Byers, 1995), the results show an inconsistent pattern. A recent systematic review has addressed this question, observing in men a negative relationship between masturbation and sexual satisfaction, whereas in women there is more evidence of a positive relationship (see Cervilla et al., 2024). Relationship satisfaction has been negatively related to masturbation in both men and women (Cerwenka et al., 2021; Santtila et al., 2008; Zamboni & Crawford, 2003) and positively in women (Hurlbert & Whittaker). This lack of consistency in the results highlights the need for further research in the area of satisfaction, taking into consideration standardized measures (Cervilla et al., 2024).

The Current Study

Until relatively recently, the study of sexual activity in the context of relationships has relegated to the background the role that solitary masturbation, as a behavior practiced in conjunction with sexual relationships, may have on sexual health. The study of masturbation is generating interest, highlighting the importance of considering parameters beyond the frequency of its practice (Cervilla & Sierra, 2022; Kirschbaum & Peterson, 2018). Without establishing prior hypotheses, this study examines, in a relationship context, whether diverse groups of people, formed by their sexual activity profile (i.e., frequency of solitary masturbation and sexual relationships), differ from each other across sociodemographic variables, variables associated with masturbation, and dimensions of sexual functioning. In other words, we tried to explore in men and women with partners who present different patterns in terms of frequency of solitary masturbation and sexual relationships, a profile composed of: (a) sociodemographic variables (i.e., age, educational level, age at first sexual relationship, duration of relationship and cohabitation); (b) variables associated with masturbation (i.e., age at first masturbation, negative attitude, motives for masturbation, solitary sexual desire, subjective experience of orgasm, frequency of pornography consumption, and motives for pornography consumption); (c) dimensions of sexual functioning (i.e., general sexual functioning, partner-focused dyadic sexual desire, attractive person-focused dyadic sexual desire, propensity for sexual excitation, propensity for sexual inhibition due to the threat of performance failure, propensity for sexual inhibition due to the threat of performance consequences of sexual activity, sexual arousal, erection/lubrication, facility to reach an orgasm, orgasm satisfaction, subjective orgasm experience in the context of sexual relationships); and (d) sexual satisfaction, and relationship satisfaction.

Method

Participants

A total of 1,028 Spanish adults (46.2% men and 53.8% women) aged 18 to 75 years ($M = 37.08$; $SD = 11.95$) participated. The following inclusion criteria were established: having a partner and a history of exclusively heterosexual relationships. The most relevant sociodemographic characteristics are shown in Table 1.

Measures

Background Questionnaire. It was used to collect data about nationality, sex, sexual orientation, age, level of education, age of first sexual experience, age of first masturbation experience, relationship status, relationship duration, cohabitation, frequency of masturbation, frequency of sexual relationship, and frequency of pornographic consumption in the past 3 months on a scale from 0 = *never* to 5 = *more than once a day*. Finally, motives for masturbating (sex pleasure, relieve stress, decrease sex tension, lack of sex, not satisfied with partner) were assessed with a multiple-choice question, indicating yes or no if they masturbated for that reason.

The Spanish version of the Negative Attitudes Toward Masturbation Inventory (NATMI; Mosher, 2011) of Cervilla et al. (2021). It assesses negative attitudes toward masturbation with 10 items (e.g., "When I masturbate, I am disgusted with myself"), answered on a 5-point Likert scale: 1 (*Not at all true for me*) to 5 (*Extremely true for me*). The total score results from the addition of the direct and inverse items, ranging from 10 to 50. Higher scores indicate a more negative attitude toward masturbation. Its internal consistency is high with an ordinal alpha .95, and it adequately shows evidence of construct and discriminant validity. In the present study, Cronbach's alpha was .85 and Omega was .90.

The Spanish version of the Pornography Consumption Inventory (IPC; Reid et al., 2011) by Leon-Larios et al. (2019). It consists of a 15-item 5-point Likert scale from 1 (*never like me*) to 5 (*very often like me*), distributed in three dimensions: Emotional avoidance, Sexual curiosity, and Excitement seeking and sexual pleasure. Scores are the

result of summing the items from each dimension, with higher scores indicating a greater tendency to consume pornography in the manner described by the dimension. Its reliability is good, with a Cronbach's alpha ranging between .91 and .93 for its three dimensions (between .84 and .87 in the present study), and the Omega ranged between .86 and .90. Furthermore, this scale also demonstrates adequate validity evidence.

The Spanish version of the Arizona Sexual Experience Scale (ASEX; McGahuey et al., 2000; Sánchez-Fuentes et al., 2019). This scale assesses general sexual functioning in the sexual relationship context in the last 3 months with six items (sexual desire, arousal, lubrication/erection, orgasm, and satisfaction from orgasm). Each item was rated using a Likert-type scale, ranging from 1 (*hyperfunction*) to 6 (*hypofunction*). Because sexual desire is assessed using a specific instrument, the item that evaluates this dimension is not presented in the study. It shows a good internal consistency (Cronbach's alpha of .81 in men, .79 in women) and presents adequate validity evidence (Sánchez-Fuentes et al., 2019). Scores were inverted so that higher scores indicate better sexual functioning. In this study, the alpha for the total score was .75 in men and .84 in women, and the Omega was .82 for men, and .91 for women.

The Spanish version of the Sexual Desire Inventory (SDI; Spector et al., 1996) of Moyano et al. (2017). Its 13 items using different Likert response scales depending on the item (e.g., from 0 = *No desire* to 8 = *Strong desire*) assess three dimensions of sexual desire: Partner-focused dyadic sexual desire, Dyadic sexual desire for an attractive person, and Solitary sexual desire. A higher score indicated more sexual desire. Its internal consistency is good (Cronbach's α higher than .90) and it shows adequate evidence of external validity. In this study, the ordinal alpha coefficient was .83 for partner-focused sexual desire, .87 for dyadic sexual desire for an attractive person, and .87 for solitary sexual desire, and the Omega was .89, .72 and .90, respectively.

The Spanish version of the Sexual Inhibition/Excitation Scales-Short Form (SIS/SES-SF; Carpenter et al., 2011) by Moyano and Sierra (2014). It consists of 14 items answered on a 4-point Likert-type scale distributed in three scales: Propensity for sexual

excitation, Propensity for sexual inhibition due to the threat of performance failure, and Propensity for sexual inhibition due to the threat of performance consequences of sexual activity. Its evidence of reliability and validity is adequate (Sierra et al., 2019; Sierra, Cervilla et al., 2024). In this study, Cronbach's alpha ranged from .68 to .78, and Omega ranged from .73 to .84.

The Spanish version of the Orgasm Rating Scale (ORS; Mah & Binik, 2020) adapted to the solitary masturbation context (Cervilla et al., 2022). It evaluates the subjective orgasm experience in the context of solitary masturbation with 25 adjectives answered on a 6-point Likert scale (from 0 = *does not describe it at all* to 5 *describe it perfectly*) distributed in four dimensions: Affective, Sensory, Intimacy, and Rewards. Higher scores indicate greater intensity in the subjective orgasm experience. In this context, its internal consistency reliability ranged from .71 and .95. It presents good validity evidence (Cervilla et al., 2022). The Cronbach's alpha values in this study were: .87 for Affective, .95 for Sensory, .68 for Intimacy, and .81 for Rewards. The Omega was .91 for Affective and .95 for Sensory, Intimacy and Rewards.

The Spanish version of the Orgasm Rating Scale (ORS; Mah & Binik, 2020) adapted to the sexual relationship context (Arcos-Romero et al., 2018). A homologous scale to the Orgasm Rating Scale for solitary masturbation, but referring to the most recent orgasm in the context of sexual relationship. Higher scores indicate greater intensity in the subjective orgasm experience. It shows good internal consistency reliability, ranging from .71 to, and presents adequate evidence of reliability and validity (Arcos-Romero & Sierra, 2019). In this study, the Cronbach's alpha for the different subscales were: .87 for Affective, .93 for Sensory, .78 for Intimacy, and .84 for Rewards. The Omega was .91 for Affective and .94 for Sensory, Intimacy and Rewards.

The Spanish version of the Interpersonal Exchange Model of Sexual Satisfaction Questionnaire (Lawrance et al., 2011) by Sánchez-Fuentes et al. (2015). It assesses the components of the Interpersonal Exchange Model of Sexual Satisfaction in terms of sexual benefits and costs (Exchange Questionnaire; EXQ), sexual satisfaction (Global

Measure of Sexual Satisfaction; GMSEX), and satisfaction with the partner relationship (Global Measure of Relationship Satisfaction; GMREL). The list of sexual exchanges (RCC) was not used in this study. From the six EXQ items we obtained: (a) the balance of sexual rewards and sexual costs in the relationship (REW - CST), (b) how these rewards and costs compare to the expected levels of rewards and costs (CL_{REW} - CL_{CST}), and (c) the perceived equality of rewards and costs between partners (EQ_{REW} and EQ_{CST}). Sexual satisfaction and satisfaction with the partner relationship were measured using GMREL and GMSEX, each consisting of five seven-item bipolar subscales respectively (Very bad/Very good; Very unpleasant/Very pleasant; Very negative/Very positive; Very unsatisfying/Very satisfying; and Worthless/Very valuable). In REW - CST and CL_{REW} - CL_{CST} , scores range from -8 to +8, and higher scores represent more sexual rewards; in EQ_{REW} and EQ_{CST} , higher scores represent greater equality between partners; and in GMSEX or GMREL, higher scores indicate greater sexual or relationship satisfaction, respectively. Its evidence of reliability and validity is adequate (Sánchez-Fuentes et al., 2015). Cronbach's alpha for GMSEX was .93 and for GMREL was .95, and the Omega was .93 and .96, respectively.

Procedure

The survey was distributed online through a promotion on Facebook, different platforms (Twitter®, WhatsApp®), and associations in the Spanish territory. Automatic or fraudulent responses were controlled using a CAPTCHA together with three control items, and non-conclusive or abnormal cases were carefully examined and eliminated. All participants provided informed consent before answering. Voluntary participation, anonymity, and confidentiality of all responses were guaranteed. There was no compensation for participation. This study was approved by the Ethics Committee on Human Research of the University of Granada.

Data Analysis

Cluster analysis was applied to the sample using the k-means algorithm (Jin & Han, 2011), considering the frequency of sexual relationships and solitary masturbation to identify subgroups with different frequency levels. Cluster validity was assessed using an R function that allows the application of more than 30 estimation indices (Charrad et al., 2014). In addition, the average silhouette measure was specifically examined, indicating the quality of clustering by determining how similar the cases within a cluster are and the distance between groups (Norušis, 2012). Considering the gender differences identified in prior research, ANOVAs were performed to examine the differences between clusters in men and women separately across sociodemographic variables (i.e., age, level of education, age of first sexual experience, relationship duration, and cohabitation); variables associated with masturbation (i.e., age of first masturbation experience, negative attitude, reasons for masturbation, solitary sexual desire, subjective orgasm experience in the masturbation context, frequency of pornography consumption, and reasons for pornography consumption); and sexual functioning (i.e., general sexual functioning, partner-focused dyadic sexual desire, dyadic sexual desire for an attractive person, propensity for sexual excitation, propensity for sexual inhibition due to the threat of performance failure, propensity for sexual inhibition due to the threat of performance consequences of sexual activity and sexual relationship, sexual arousal, erection/lubrication, facility to reach orgasm, satisfaction with orgasm, GMSEX, GMREL, REW - CST, CLrew - CLcst, EQrew, and EQcst). Tests were adjusted for all pairwise comparisons using Bonferroni correction.

Statistical analyses were performed with the R® environment (version 4.2.0; R Core Team, 2021) with its RStudio® interface (version 2022.12.0 Build 353; RStudio Team, 2022). The missForest package (version 1.4; Stekhoven & Bühlmann, 2012) was employed to impute missing values, the R Stats package (version 3.6.2) was employed for cluster analysis and the Psych package (version 2.3.12; Revelle, 2023) for Ordinal alpha and Omega. The rest of the analyses were performed using SPSS ® v.22.

Results

Cluster Analysis - Pattern

First, using the k-means cluster analysis, it was observed that the largest number of methods applied estimated an optimal clustering in three groups, supported among other methods by the Silhouette Test. The largest cluster with 510 (49.6%) participants was characterized by a high frequency of sexual relationships ($M = 3.18$; $SD = 0.53$) and high masturbation ($M = 2.85$; $SD = 0.72$). This cluster was labeled High Sexual Relationship and Masturbation (SR + M). The next cluster consisted of 19% of the sample ($n = 195$), characterized by high frequency of sexual relationships ($M = 2.76$; $SD = 0.69$) but low frequency of masturbation ($M = 0.51$; $SD = 0.50$), and was named High Sexual Relationship (SR). Finally, the third group (31.4%) with 323 participants was characterized by high frequency of masturbation ($M = 2.90$; $SD = 0.94$) but low frequency of sexual relationships ($M = 1.60$; $SD = 0.69$) and was labeled Higher Masturbation (M).

Sociodemographic Variables across Sexual Activity Profiles

In men, the SR + M and M clusters were composed of younger men on average with respect to the SR cluster. The SR cluster (vs. M) comprised a higher proportion of men with primary school education; in addition, this group was composed of men with less university education. The average age at first sexual relationship was lower in the SR + M and SR clusters than in the M cluster. The SR + M cluster reported the shortest relationship time and was composed of the highest proportion of men cohabiting with their partner. See Table 2.

In women, the SR + M and M groups were older on average than the SR group. There were no differences in educational level or age at the first sexual relationships. The relationship duration was shorter on average in the SR + M group compared with the M group. Finally, the SR + M cluster reported a higher proportion of women cohabiting with their partners than the SR cluster. See Table 2.

Variables Associated with Masturbation across Sexual Activity Profiles

In men, there were no differences in age at first masturbation or negative attitude. Regarding the reasons for masturbation, a higher proportion of men in the SR + M group (vs. SR) reported masturbation for sexual pleasure, and a lower proportion in the SR + M group reported masturbation for decreasing sexual tension and dissatisfaction with their partner than in the M cluster. Regarding the subjective experience of orgasm in masturbation, in the SR + M cluster, the affective and reward dimensions were more intense than those in the SR cluster. In addition, in the M cluster, the reward dimension was more intense than that in the SR cluster. The frequency of pornography consumption was higher in the SR + M and M clusters. In relation to the motives for consuming pornography, the SR + M and SR clusters did so in a lower proportion for emotional avoidance than the M cluster. See Table 3.

In women, the SR + M and M groups reported having the earliest first masturbation experience with respect to the SR group. In addition, the SR + M group reported the most positive attitude toward masturbation compared with the SR group. In relation to motives, higher proportions of the SR + M and M groups (vs. SR) reported masturbating for sexual pleasure, to relieve stress, or for lack of sex in the partner; furthermore, fewer proportions of the SR + M group reported masturbating for dissatisfaction with the partner relative to the M group. Solitary sexual desire was higher in the SR + M cluster. Regarding the subjective orgasm experience in masturbation, the SR + M group scored higher on all dimensions, especially rewards, and differed from all clusters. The highest frequency of pornography consumption was observed in the SR + M and M clusters. Regarding motives, the SR + M and M clusters did so more for arousal and sexual pleasure seeking than the SR cluster. See Table 3.

Sexual Functioning Dimensions across Sexual Activity Profiles

In men, the SR + M cluster reported better overall sexual functioning than the M cluster, with no differences found with the SR group. Regarding the two dimensions of dyadic sexual desire, the SR + M and SR clusters reported a higher level of partner-

focused dyadic sexual desire than the M group, whereas there were no differences in attractive person-focused dyadic sexual desire. The propensity for sexual excitation was higher in the M cluster with respect to SR, whereas there were no differences in the dimensions of sexual inhibition. No differences were found in sexual arousal. In erection, the SR + M and M groups reported less difficulties than the SR group. Regarding facility to reach an orgasm, there were no differences. Regarding orgasm satisfaction, the SR + M group scored higher than the M group. The affective, sensory, and intimate dimensions of the subjective orgasm experience in the context of sexual relationships were more intense in the SR + M clusters than in the M cluster. Finally, in the four variables corresponding to sexual satisfaction (GMSEX), relationship satisfaction (GMREL), rewards and costs (REW - CST), and equality between rewards and costs (CLrew - CLcst), the pattern of results was the same and showed that the SR + M and SR clusters obtained the highest scores versus cluster M. See Table 4.

In the case of women, the SR + M group reported better overall sexual functioning. In addition, in this cluster, partner-focused dyadic sexual desire was the highest, followed by the SR cluster and finally the M cluster. In addition, the SR + M and M clusters reported the highest sexual desire toward an attractive person. The SR + M and M clusters showed the highest propensity for sexual excitation compared with the SR cluster, and the SR + M cluster showed the lowest sexual inhibition compared with the other groups. In sexual arousal and lubrication, the SR + M group indicated better sexual functioning. For the variables facility to reach orgasm and orgasm satisfaction, the results followed an identical pattern. Specifically, the SR + M cluster had the highest score and differed significantly from both SR and M, with the latter group scoring lower on both variables. No significant differences between clusters were found in the affective and rewards dimensions of the subjective orgasm experience in the context of sexual relationships. In both the sensory and intimacy dimensions, higher scores corresponded to the SR + M clusters than to the M cluster. Sexual satisfaction (GMSEX) was significantly higher in the SR + M cluster than in the SR and M groups, with the latter

scoring the lowest. The results indicated an identical pattern in the variables: relationship satisfaction (GMREL), relationship costs (REW - CST), and equality between rewards and cost (CLrew - CLcst). Specifically, the highest scores were found in the SR + M and SR clusters and the lowest in group M. See Table 5.

Table 1

Sociodemographic Characteristics of the Participants

Variables	Total	Men	Women
Age <i>M (SD)</i>	38.38 (12.01)	43.23 (12.72)	34.21 (9.59)
Level of education <i>n (%)</i>			
Primary Education	39 (3.80)	26 (5.50)	13 (2.40)
Secondary Education	242 (23.50)	143 (30.10)	99 (17.90)
University Studies	732 (71.20)	300 (63.20)	432 (78.10)
Age of first sexual experience <i>M (SD)</i>	17.61 (3.20)	17.99 (3.48)	17.30 (2.92)
Age of first masturbation experience <i>M (SD)</i>	13.98 (3.82)	12.73 (1.96)	15.14 (4.67)
Relationship duration in years <i>M (SD)</i>	10.83 (11.01)	14.39 (12.79)	7.77 (8.05)
Cohabitation <i>n (%)</i>			
Yes	658 (65.10)	338 (72.20)	130 (27.80)

Table 2

Differences in Sociodemographic Variables between Clusters of Men and Women

Variables	Men				Women							
	SR + M cluster (n = 249)	SR cluster (n = 49)	M cluster (n = 177)	F/ χ^2	p	η^2/V	SR+M cluster (n = 261)	SR cluster (n = 146)	M cluster (n = 146)	F/ χ^2	p	η^2/V
Age <i>M</i> (<i>SD</i>)	41.37 (12.01) _a	53.59 (12.85) _{a,b}	42.97 (12.34) _b	20.54	<.000	0.08	33.48 (8.86) _a	33.30 (9.33) _b	36.41 (9.59) _{a,b}	5.33	.005	0.02
Educational level <i>n</i> (%)												
Primary Education	14 (5.60)	7 (14.30) _a	5 (2.80) _a	13.05	.042	0.11	7 (2.70)	3 (2.10)	3 (2.10)	2.77	.837	-
Secondary Education	78 (31.30)	17 (34.70)	48 (27.10)				40 (15.30)	31 (21.20)	28 (19.20)			
University Studies	154 (61.80)	24 (49.0) _b	122 (68.90) _b				209 (80.10)	110 (75.30)	113 (77.40)			
Age of first sexual relationships <i>M</i> (<i>SD</i>)	17.68 (3.51) _a	17.26 (3.25) _b	18.62 (3.41) _{a,b}	5.00	.007	0.02	17.14 (2.45)	17.15 (3.04)	17.72 (3.48)	2.15	.118	-
Relationship duration in years <i>M</i> (<i>SD</i>)	10.94 (11.58) _{a,b,c}	26.24 (16.06) _{a,b,c}	15.96 (11.10) _{a,b,c}	36.03	<.000	0.13	6.33 (7.57) _a	8.20 (7.90)	9.93 (8.55) _a	9.93	<.001	0.04
Cohabitation <i>n</i> (%)												
Yes	151 (61.6) _{a,b}	44 (91.7) _a	143 (81.70) _b	30.60	<.000	0.35	131 (51.0) _a	104 (72.20) _a	85 (60.30)	17.35	<.000	0.26

Note. Equal subscripts indicate the differences between these groups. Tests are adjusted for all pairwise comparisons using the Bonferroni correction.

Table 3

Differences in Factors Associated with Masturbation between Clusters in Men and Women

Variables	Men					Women						
	SR + M cluster (n = 249)	SR cluster (n = 49)	M cluster (n = 177)	F/ χ^2	p	η^2/V	SR + M cluster (n = 261)	SR cluster (n = 143)	M cluster (n = 146)	F/ χ^2	p	η^2/V
Age of first masturbation <i>M</i> (<i>SD</i>)	12.70 (1.97)	12.51 (2.12)	12.84 (1.91)	0.55	.577	-	14.68 (4.25) _a	17.03 (5.33) _{a,b}	14.30 (4.37) _b	13.57	<.000	0.05
Negative attitude <i>M</i> (<i>SD</i>)	11.08 (2.86)	13.43 (7.61)	11.35 (3.09)	8.23	<.000	0.03	10.38 (1.10) _a	11.45 (3.28) _a	10.77 (2.14)	11.59	<.000	0.04
Reasons <i>n</i> (%)												
Sexual pleasure	205 (58.70) _a	12 (3.4) _a	132 (37.8)	11.49	.003	0.12	235 (90) _a	57 (71.2) _{a,b}	128 (88.9) _b	19.56	<.000	0.22
Stress relief	109 (44.1)	6 (27.3)	84 (47.5)	3.28	.194	-	142 (54.6) _{a,b}	19 (24.1) _{a,c}	59 (41.3) _{b,c}	24.39	<.000	0.33
Decreased sexual tension	91 (36.8) _a	7 (31.8)	94 (53.1) _a	12.32	.002	0.22	67 (25.9)	14 (17.7)	40 (28.0)	2.99	.224	-
Lack of partner sex	66 (26.7) _a	7 (31.8) _b	118 (66.7) _{a,b}	68.34	<.000	0.59	37 (14.3) _a	10 (12.7) _{a,b}	51 (35.7) _b	29.43	<.000	0.61
Dissatisfaction with the partner	15 (6.1) _a	1 (4.5)	37 (20.9) _a	22.85	<.000	0.66	11 (4.2) _a	3 (3.8)	18 (12.6) _a	11.56	.003	0.60
Solitary Sexual Desire <i>M</i> (<i>SD</i>)	29.74 (4.70) _a	20.43 (7.02) _{a,b}	30.33 (4.88) _b	79.36	<.000	0.25	28.67 (5.07) _{a,b}	19.63 (6.81) _{a,c}	26.75 (6.41) _{b,c}	111.33	<.000	0.29
Subjective orgasm experience – masturbation <i>M</i> (<i>SD</i>)												

Affective	23.04 (5.40) _a	18.06 (7.61) _{a,b}	21.83 (5.59) _b	7.17	.001	0.04	24.44 (4.68) _a	21.60 (6.81) _a	23.15 (5.62)	6.72	.001	0.03
Sensory	26.41 (15.88)	21.19 (16.08)	24.76 (15.08)	1.18	.309	-	34.07 (15.47) _a	26.72 (19.30) _a	30.20 (15.23)	5.34	.005	0.03
Intimacy	6.13 (3.59)	5.12 (3.30)	5.40 (3.12)	2.47	.086	-	6.80 (3.51) _a	5.38 (3.69) _a	6.38 (3.21)	3.45	.033	0.02
Rewards	11.19 (3.37) _a	8.81 (3.80) _a	10.69 (3.46)	4.11	.017	0.02	11.48 (3.26) _{a,b}	9.45 (4.16) _a	10.16 (3.62) _b	9.99	<.000	0.05
Frequency of pornography consumption <i>M</i> (<i>SD</i>) [†]	2.99 (0.82) _a	1.97 (0.94) _{a,b}	3.12 (0.86) _b	22.85	<.000	0.10	2.11 (0.82) _a	1.46 (0.51) _{a,b}	1.94 (0.83) _b	7.07	.001	0.06
Pornography consumption <i>M</i> (<i>SD</i>)												
Emotional avoidance	10.18 (4.38) _a	8.34 (3.85) _b	11.35 (4.91) _{a,b}	6.47	.002	0.02	8.50 (4.32)	6.71 (3.28)	8.64 (4.82)	1.90	.152	-
Sexual curiosity	10.05 (3.92)	8.55 (2.85)	9.57 (3.86)	2.25	.107	-	9.15 (4.32)	8.33 (4.10)	8.06 (3.49)	1.73	.179	-
Excitement seeking and sexual pleasure	8.88 (2.46) _a	6.97 (1.61) _{a,b}	9.10 (2.49) _b	9.60	<.000	0.05	8.40 (2.61) _a	6.58 (1.89) _{a,b}	8.01 (2.42) _b	5.47	.005	0.05

Note. Reasons reflect the proportion of people who report having masturbated for that reason versus those who report not having masturbated for that reason. Equal

subscripts indicate the differences between these groups. Tests are adjusted for all pairwise comparisons using the Bonferroni correction. †1 = never, 2 = less than once a month, 3 = once a month, 4 = a few times a month, 5 = once a week, 6 = a few times a week, 7 = once a day, 8 = more than once a day.

Table 4*Sexual Functioning Differences among Clusters*

Variables	Men						Women																	
	SR+M cluster (n = 248)			SR cluster (n = 49)			M cluster (n = 177)			SR+M cluster (n = 261)			SR cluster (n = 146)			M cluster (n = 146)								
	M (SD)	M (SD)	F	p	η^2	M (SD)	M (SD)	F	p	η^2	M (SD)	M (SD)	F	p	η^2	M (SD)	M (SD)	F	p	η^2				
General sexual functioning	24.49 (2.67) _a	22.93 (4.40)	23.59 (3.02) _a	7.52	.001	0.03	23.38 (3.60) _{a,b}	21.69 (4.25) _{a,c}	19.88 (4.78) _{b,c}	32.89	<.000	0.11	23.38 (3.60) _{a,b}	21.69 (4.25) _{a,c}	19.88 (4.78) _{b,c}	32.89	<.000	0.11	23.38 (3.60) _{a,b}	21.69 (4.25) _{a,c}	19.88 (4.78) _{b,c}	32.89	<.000	0.11
Partner-focused dyadic sexual desire	56.58 (5.08) _a	55.42 (5.53) _b	52.71 (8.67) _{a,b}	17.33	<.000	0.07	55.46 (5.96) _{a,b}	52.33 (7.55) _{a,c}	46.86 (10.01) _{b,c}	59.37	<.000	0.18	55.46 (5.96) _{a,b}	52.33 (7.55) _{a,c}	46.86 (10.01) _{b,c}	59.37	<.000	0.18	55.46 (5.96) _{a,b}	52.33 (7.55) _{a,c}	46.86 (10.01) _{b,c}	59.37	<.000	0.18
Attractive person-focused dyadic sexual desire	8.60 (4.26)	7.37 (4.43)	8.81 (3.80)	2.41	.091	-	7.22 (3.82) _a	5.65 (4.18) _{a,b}	7.08 (3.74) _b	8.22	<.000	0.03	7.22 (3.82) _a	5.65 (4.18) _{a,b}	7.08 (3.74) _b	8.22	<.000	0.03	7.22 (3.82) _a	5.65 (4.18) _{a,b}	7.08 (3.74) _b	8.22	<.000	0.03
Propensity for sexual excitation	16.12 (3.08)	15.24 (3.73) _a	16.54 (3.01) _a	3.39	.035	0.02	15.46 (2.98) _a	13.67 (2.99) _{a,b}	15.52 (3.17) _b	19.01	<.000	0.07	15.46 (2.98) _a	13.67 (2.99) _{a,b}	15.52 (3.17) _b	19.01	<.000	0.07	15.46 (2.98) _a	13.67 (2.99) _{a,b}	15.52 (3.17) _b	19.01	<.000	0.07
Propensity for sexual inhibition due to the threat of performance failure	7.82 (2.18)	8.06 (2.29)	8.31 (2.29)	2.46	.087	-	8.48 (2.21) _{a,b}	9.12 (2.47) _a	9.16 (2.28) _b	5.71	.004	0.02	8.48 (2.21) _{a,b}	9.12 (2.47) _a	9.16 (2.28) _b	5.71	.004	0.02	8.48 (2.21) _{a,b}	9.12 (2.47) _a	9.16 (2.28) _b	5.71	.004	0.02
Propensity for sexual inhibition due to the threat of performance consequences of sexual activity	10.27 (2.48)	10.84 (2.58)	10.80 (2.28) _b	2.84	.060	-	11.10 (2.44) _{a,b}	12.45 (2.64) _a	11.77 (2.42) _b	13.69	<.000	0.05	11.10 (2.44) _{a,b}	12.45 (2.64) _a	11.77 (2.42) _b	13.69	<.000	0.05	11.10 (2.44) _{a,b}	12.45 (2.64) _a	11.77 (2.42) _b	13.69	<.000	0.05
Sexual arousal	4.66 (0.76)	4.50 (1.11)	4.59 (0.87)	0.92	.400	-	4.41 (0.91) _{a,b}	3.95 (1.10) _a	3.72 (1.07) _b	24.20	<.000	0.08	4.41 (0.91) _{a,b}	3.95 (1.10) _a	3.72 (1.07) _b	24.20	<.000	0.08	4.41 (0.91) _{a,b}	3.95 (1.10) _a	3.72 (1.07) _b	24.20	<.000	0.08
Erection/lubrication	5.05 (0.82) _a	4.38 (1.34) _{a,b}	4.90 (0.95) _b	10.25	<.000	0.04	4.88 (0.99) _{a,b}	4.55 (1.10) _a	4.24 (1.14) _b	16.91	<.000	0.06	4.88 (0.99) _{a,b}	4.55 (1.10) _a	4.24 (1.14) _b	16.91	<.000	0.06	4.88 (0.99) _{a,b}	4.55 (1.10) _a	4.24 (1.14) _b	16.91	<.000	0.06

Orgasm facility	4.75 (0.86)	4.68 (0.91)	4.69 (0.90)	0.28	.753	-	4.38 (1.06) _a	4.19 (1.15) _b	3.71 (1.39) _{a,b}	14.68	<.000	0.05
Orgasm satisfaction	5.20 (0.75) _a	5.00 (0.85)	4.74 (0.84) _a	16.68	<.000	0.07	5.16 (0.84) _a	5.05 (1.06) _b	4.37 (1.41) _{a,b}	25.52	<.000	0.09
Subjective orgasm experience - sexual relationships												
Affective	26.98 (3.90) _a	25.08 (5.78)	25.50 (4.76) _a	6.69	.001	0.00	27.50 (3.54)	26.34 (4.92)	24.83 (5.40)	14.21	<.000	0.06
Sensory	41.03 (14.09) _a	36.16 (14.72)	35.33 (14.42) _a	7.71	.001	0.04	43.36 (13.50) _a	39.64 (15.92)	36.86 (16.53) _a	7.87	<.000	0.03
Intimacy	11.76 (3.10) _a	11.45 (3.75)	10.77 (3.51) _a	3.94	.020	0.02	11.19 (3.20) _a	10.57 (3.57)	9.57 (3.90) _a	8.29	<.000	0.03
Rewards	11.30 (3.53)	10.63 (4.26)	11.16 (3.30)	0.60	.547	-	10.42 (3.78)	9.86 (4.24)	9.33 (4.34)	2.89	.057	-
GMSEX	30.57 (5.76) _a	28.98 (6.01) _b	22.27 (9.11) _{a,b}	67.39	<.000	0.23	30.68 (6.23) _{a,b}	28.99 (6.78) _{a,c}	23.91 (9.15) _{b,c}	40.13	<.000	0.13
GMREL	30.57 (6.13) _a	29.33 (6.27) _b	23.87 (8.74) _{a,b}	42.30	<.000	0.16	30.87 (6.06) _a	29.90 (6.73) _b	25.66 (8.55) _{a,b}	25.84	<.000	0.09
REW - CST	5.75 (2.66) _a	4.69 (3.49) _b	2.48 (4.50) _{a,b}	41.99	<.000	0.16	5.53 (2.87) _a	5.56 (2.79) _b	2.43 (4.68) _{a,b}	41.76	<.000	0.14
CLrew CLcst	4.04 (2.92) _a	2.86 (3.72) _b	1.12 (3.97) _{a,b}	33.98	<.000	0.14	4.21 (2.99) _a	4.26 (3.07) _b	1.35 (4.33) _{a,b}	33.38	<.000	0.12
EQrew	2.61 (1.49)	2.29 (1.54)	2.56 (1.43)	0.92	.400	-	2.65 (1.44)	2.59 (1.48)	2.36 (1.52)	1.84	.160	-
EQcst	3.03 (1.34) _a	2.69 (1.49)	2.27 (1.54) _a	12.81	<.000	0.06	2.90 (1.37) _a	2.83 (1.44)	2.43 (1.53) _a	4.62	.010	0.02

Note. Equal subscripts indicate the differences between these groups. Tests are adjusted for all pairwise comparisons using the Bonferroni correction.

Discussion

Solitary masturbation and sexual relationships are part of the healthy sexual repertoire in the context of a relationship. Masturbation behavior stands out for its implication in sexual health; however, it has been relegated to the background and has hardly been addressed in the context of relationships. Without starting from previous hypotheses, this study explored, in men and women with a partner, three profiles of sexual activity obtained from the information reported by the respondents about the relative frequency of sexual relationships and solitary masturbation. Once these profiles were obtained, patterns of association with factors of different nature (i.e., sociodemographic variables, variables associated with masturbation, variables related to sexual functioning and sexual satisfaction and relationship satisfaction) were studied. The results show differences among the three sexual activity profiles in the variables evaluated. The findings are discussed for each variable in men and women, and discrepancies are examined.

Our cluster analysis showed a three-group solution. One cluster reported a higher frequency of sexual relationships and solitary masturbation (SR + M), another reported a higher frequency of sexual relationships than masturbation (SR), and a third indicated a higher frequency of masturbation (M). These three groups coincide with the three typologies reported in previous findings with women: a group with more sexual activity in general, a group with a higher frequency of sexual relationships, and a group with a higher frequency of masturbation (Rowland, Kolba et al., 2020).

Sociodemographic Variables across Sexual Activity Profiles

Previous findings have shown that at older ages, sexual relationships is the most common type of activity for men (Smith et al., 2007), and we have found that older men are those in the SR cluster. In accordance with previous findings proposing that women's difficulty in reaching orgasm during masturbation decreases with age (Rowland, Kolba et al., 2020), we found that older women are in cluster M, which could be associated with more practice of this behavior at older ages with respect to sexual relationships. It has

previously been noted that older women indicate that their partner's better sexual health is the main desirable factor for improving their sexual satisfaction (Fisher et al., 2010). Faced with a possible age-related physical decline in their male partners, they might focus more on masturbation. However, these hypotheses should be explored in future research from a longitudinal perspective. Considering the findings in men and women, this pattern fits with previous results that indicate that at older ages, the most common type of activity would be sexual relationships in men and masturbation in women (Smith et al., 2007). This is consistent with men reporting a greater decline in masturbation than women after the age of 50 years (Araujo et al., 2004).

In relation to educational level, the SR group is composed of a higher proportion of men with primary education and with less university education than the M group, although it could be said that these differences were weak as reflected by their effect size ($V = 0.11$). In women, on the other hand, for each of the three educational levels, there are no differences in the proportion composing the three sexual activity profiles. Taken together, our results suggest that the effect of educational level is more relevant to sexual functioning (e.g., Cabral et al., 2013; Martins & Abdo, 2010) than to the frequency of sexual activity (i.e., sexual relationships and masturbation) in couples.

In men, the age at first sexual relationships is earlier in the SR + M and SR groups than in M. It is possible that the sexual activity of men with later sexual relationships is more focused on masturbation; that is, by having their first sexual relationships later, the M group could have a longer prior history of masturbation. In addition, the association between later first sexual relationships and poorer sexual functioning has been shown (Sandfort et al., 2008), which could lead men in this group to masturbate more. It could also be expected that those men who took longer to have their first sexual relationships may have less assertiveness in initiating sexual relations and feel more comfortable masturbating, a hypothesis to be considered in future work. In contrast, in women, no differences were observed between the three groups. This suggests independence between the initiation of sexual relations and current sexual activity in the context of the

relationship. The differences between men and women reflect the different implications that sexual debut may have for men and women (Koch, 1988). In this sense, in men the first sexual relationships would be more oriented to physical pleasure and to satisfy sexual desire than in women (Walsh et al., 2011), which could be congruent with the fact that in men it has more implications for subsequent sexual activity than in women.

In men, the SR group reports a longer lasting relationship, followed by the M group and the SR + M group. The reasons could be diverse: with advancing years, masturbation would present a greater decline (Araujo et al., 2004) or, faced with a possible decline in sexual functioning more pronounced in men (Waite et al., 2009), they would try to concentrate their sexual activity in sexual relationships, a more pleasurable context. In women, the M group has a longer partner relationship than the SR + M group. The negative relationship between partner duration and sexual desire observed in women, but not in men (Murray & Milhausen, 2012), together with a lower difficulty in experiencing orgasm in masturbation with age (Rowland, Kolba et al., 2020), could partly explain why women concentrate more of their sexual activity on masturbation in later stages of the relationship. The pattern observed in men and women coincides with that observed for age. Therefore, relationship duration is associated with sexual activity in the couple differently in men and women.

Regarding cohabitation, in men, there is a lower proportion of cohabitants in the SR + M group than in the SR and M groups. In women, similarly, the SR + M group was composed of a lower proportion of cohabitants than the SR group. It can be observed, therefore, that the group of men and women who live less with their partner is the one that combines sexual relations and masturbation (SR + M). Aspects such as the expectation of seeing one's partner or having one's own space in which to masturbate away from the possible evaluation of the partner, considering that this has been a stigmatized behavior (Carvalho & Leal, 2013; Cervilla et al., 2021; Kaestle & Allen, 2011), could explain this common pattern in which people who do not cohabit combine more sexual relationships and solitary masturbation.

Variables Associated with Masturbation across Sexual Activity Profiles

In men, there are no differences in the age of first masturbation. The normalization of the practice of this behavior in young men (Kastle & Allen, 2011) and its high incidence in adolescence (Gerressu et al., 2008) suggests that its association with current sexual activity may not be relevant. In women, the groups reporting more current frequency of masturbation (SR + M and M) are those who started masturbating at an earlier age. This is consistent with the results collected in women associating earlier onset with a higher likelihood of current masturbation (Das et al., 2009). The SR group masturbates less, which is congruent with them having initiated this behavior later, either because of disinterest, a more negative attitude toward this behavior, or greater body dissatisfaction, a variable associated with a later onset of masturbation in them (Wiederman & Pryor, 1997). The reasons for initiating the first masturbation experience can be of great importance in further deepening these differences.

In men, there are no differences in the negative attitude toward masturbation between the groups, suggesting that the type of sexual activity is independent of this attitude. In women, the SR + M group reports less negative attitude toward masturbation than the SR group. These results together reflect that the negative attitude toward masturbation in men is independent of sexual activity in couples, whereas women who report a more positive attitude toward this behavior would combine frequency of sexual relationships and masturbation. Since no differences in attitude were found between the SR and M group, these findings are not in line with previous evidence that has observed a lower frequency of masturbation in those groups that manifest a negative attitude toward this behavior (Cervilla et al., 2021). It is possible that the context of the couple mediates the association that this attitude has with sexual activity in the relationship context.

Regarding the reasons for masturbation, in men, the SR + M group masturbates more for pleasure, whereas the group that masturbates more frequently (group M) does so to reduce sexual tension, for lack of sex with their partner, and for dissatisfaction with

their partner. In women, the groups where there is more masturbation, regardless of whether there is more or less frequency of sexual relations (groups SR + M and M), do it more for pleasure, to relieve stress, and for lack of sex in the couple. The M group of women did it more for dissatisfaction with their partner than the SR + M group. Examined as a whole, the SR + M group of men and women show motives more related to positive aspects of sexual health, reporting sexual pleasure as the main reason for masturbation, this being the most relevant reason for masturbation in men and women (Herbenick et al., 2023). It is noteworthy that group M, both men and women, masturbate more to compensate for aspects of sexual activity in couples (e.g., lack of sex, dissatisfaction...). These results highlight that a higher frequency of masturbation may be practiced for different reasons, and this should also be understood in the context of couple sexual relations, as recent evidence in men has already suggested (Hevesi et al., 2023).

Solitary sexual desire in men and women is higher in the groups with a higher frequency of masturbation (SR + M and M). This highlights the relationship between this type of desire and the frequency of this behavior's practice (Zamboni & Crawford, 2003), evidencing its contextual nature (Arcos-Romero et al., 2022; Cervilla et al., 2023).

On the other hand, the subjective orgasm experience in the context of masturbation, in both men and women, was less intense in the SR group, which would be expected considering that this is the group that masturbates less frequently. In addition, the SR + M group experiences orgasm with greater intensity during masturbation in its affective dimension related to orgasmic satisfaction in the context of sexual relationships (Cervilla et al., 2022).

The frequency of pornography consumption in men is higher in the groups that practice masturbation more frequently (SR + M and M). In addition, they did it for arousal and sexual pleasure, while group M also did it for emotional avoidance. In women, a similar pattern is observed, with the SR + M and M groups reporting the highest frequency of pornography consumption for arousal and sexual pleasure. These

results are consistent with others who have noted the relationship between pornography consumption and masturbation frequency (Baćaka & Štulhofer, 2011; Hald, 2006; Miller et al., 2019). When examining the pattern in men and women, it is observed that in men, unlike women, consumption was also done for emotional avoidance to a greater extent by the most sexually dissatisfied group: the M group. This agrees with previous studies that have observed in men but not in women a negative association between pornography consumption and sexual and partner satisfaction (Bennet-Brown & Wright, 2022; Træen & Daneback, 2013).

Sexual Functioning Dimensions, Sexual Satisfaction and Relationship Satisfaction across Sexual Activity Profiles

General sexual functioning in men is better in the SR + M group than in the M group, but does not differ from that in the SR group. The fact that there are no differences between the SR + M and SR groups shows that the presence of more or less frequent masturbation in them is not associated with better sexual functioning. In women, the SR + M group reported the best overall sexual functioning, differing from the other groups. This result is consistent with others where the combination of sexual relationships with masturbation in them was associated with more pleasure during sexual relationships (Rowland et al., 2019). The positive role of masturbation in women is congruent with them reaching orgasm through this behavior more easily with advancing years (Rowland, Kolba et al., 2020).

Taken together, these results are congruent with evidence that has pointed to the complementary role that masturbation would have in women (Burri & Carvalheira, 2019; Carvalheira & Leal, 2013; Fischer et al., 2022; Fischer & Træen, 2022; Gerressu et al., 2008; Regnerus et al., 2017). Possible hypotheses include that women are more likely to have not learned to be aware of their sexual responsiveness compared with men (Laan & Janssen, 2007); therefore, sexual functioning in women may benefit more from masturbation, given that this behavior may be conducive to a context of sexual self-awareness (Matsick et al., 2016). This is congruent with them reaching orgasm during

masturbation more easily with advancing years (Rowland, Kolba et al., 2020). Therefore, it would be appropriate to consider variables such as sexual self-knowledge in an attempt to further explore these results.

Regarding the dimensions of dyadic sexual desire, in men and women, there is a similar pattern, with more partner-focused dyadic sexual desire being observed in the groups in which sexual relations are more frequent, independent of masturbation, confirming the relevance of this type of desire for the couple context (Arcos-Romero et al., 2022). It is interesting to note that in women, the SR + M group differs from the rest by reporting higher desire toward the partner. This is congruent with the fact that the most used fantasy in women during masturbation is the partner (Burri & Carvalheira, 2019), which could foster more partner-focused dyadic sexual desire. On the other hand, in the attractive person-focused dyadic sexual desire, no differences were observed in men. In women, it was lower in the SR group. This group also presents a high desire for a partner and low solitary desire, which suggests that their desire would be more focused on the partner and not so much on other people or on solitary sex, which could explain why the most frequent activity is sexual relationships.

In men, the propensity for sexual excitation is higher in group M with respect to group SR; in women, it was higher in groups SR + M and M. In general, a higher propensity for sexual excitation is observed in groups in which masturbation is present, which is congruent with the positive relationship observed in men and women between propensity for excitation and masturbation (Das, 2007; Velten et al., 2018). On the other hand, our results show that sexual inhibition in men would be independent of the type of sexual activity practiced. In women, the SR + M group reports the lowest sexual inhibition in its two dimensions: propensity for sexual inhibition due to the threat of performance failure and propensity for sexual inhibition due to the threat of performance consequences of sexual activity. The fact that the SR + M group of women is the one with the lowest inhibition shows the advantage of combining both types of sexual activity more frequently. Previous evidence has indicated that the experience of masturbation in

women is associated with empowerment and feelings of security (Bowman, 2014; Foust et al., 2022), which could explain why they show less sexual inhibition. Taken together, the results in men and women show that sexual inhibition is not related to the type of sexual activity in men, whereas in women, the combination of masturbation and sexual relationships is associated with less sexual inhibition.

In men, there were no differences in sexual arousal during sexual relationships, but more difficulty in erection was observed in the groups that masturbated more (SR + M and M groups), supporting the compensatory model. These results show a better performance in sexual arousal in the groups in which masturbation is present more frequently, highlighting the role of this behavior in the approach to erectile dysfunction (Reynolds, 1991). In women, difficulties in arousal and lubrication are significantly lower in the SR + M group than in the other groups. Specifically, in women, evidence has been found of the relationship between masturbation and easier sexual arousal (Rowland, Hevesi et al., 2020), and more benefits for arousal of masturbation during adolescence (Carvalheira & Leal, 2013). Overall, the results show how the combination of sexual relationships and masturbation is associated with greater sexual arousal in both men and women.

With respect to orgasm in sexual relationships, in men and women, the SR + M group versus the M group reported better orgasmic response in terms of facility to reach, satisfaction, and intensity. These results show that the best orgasm response would be contextualized in the groups where the frequency of sexual relationships is higher. This supports previous findings in same-sex couples where a significant relation has been observed at the dyadic level between the subjective experience of orgasm in this context and sexual satisfaction (Mangas et al., 2024). The fact that group M reports the worst orgasm response in sexual relationships is congruent with this being the group with the worst overall sexual functioning.

In men, sexual satisfaction is higher in the SR + M and SR groups. It seems that for them masturbation is not as necessary when sex life is satisfactory and sexual

relationships is frequent, which would explain why the most satisfied groups are those who have sex more frequently (Fischer & Træen, 2022). The most satisfied women are those belonging to the SR + M group. This is consistent with the idea that women who have a high frequency of sexual relationships are also more likely to report a higher frequency of masturbation, which is positively related to their sexual satisfaction (Fischer & Træen, 2022). Masturbation, therefore, represents an important indicator associated with sexual satisfaction in women when combined with sexual relationships.

Recall that the SR + M group is the group that has been in a relationship for the shortest time on average. In this sense, our results agree with previous evidence indicating that, in the early stages of the relationship, sexual satisfaction is high (Liu, 2003) and decreases over time (Schmiedeberg & Schröder, 2016), either due to habituation (Call et al., 1995), routine (Klusmann, 2002; Pedersen & Blekesaune, 2003), or a decrease in passion in the couple (Baumeister & Bratslavsky, 1999). These results support the complementary role of masturbation in them (Carvalho & Leal, 2013; Gerressu et al., 2008; Regnerus et al., 2017) and the importance of sexual relationships frequency for sexual satisfaction in men (McNulty & Fisher, 2008).

Regarding the components of sexual satisfaction, a similar pattern was observed in men and women, as they reported more benefits and more equality in partner exchanges in the SR + M and SR groups, with respect to group M. In addition, greater equality was observed in the relationship costs in the SR + M group with respect to group M. This highlights the importance of studying masturbation as a mediating variable of relationship satisfaction. Finding similar patterns in the male and female groups in costs and benefits agrees with previous findings, which have not observed sex differences in these components (Sánchez-Fuentes & Santos-Iglesias, 2016). Our results show that group M experiences less rewards and more inequality in partner exchanges, which is congruent with this group being the most sexually and relationship dissatisfied.

Finally, with respect to relationship satisfaction, the results show that, in both men and women, the groups in which there is more frequent sexual relationships

(independent of masturbation) show more satisfaction with the partner relationship. Previous evidence has pointed to some independence between relationship satisfaction and the frequency of sexual relationships (Heiman et al., 2011). However, our results highlight that the groups that have more sexual relationships are more satisfied with their partners (SR + M and SR groups), supporting the importance of sexual relationships for relationship satisfaction (Brody et al., 2018). On the other hand, it should be noted that although the frequency of masturbation has been positively related to relationship satisfaction (Hulbert & Whittaker, 1991), in our results it can be observed that group M is the most dissatisfied in this sense, congruent with the results in other study variables in which it has been observed that group M is the most sexually dissatisfied and the one that manifests the least partner-focused dyadic sexual desire.

Limitations and Future Research Directions

This study has limitations that should be considered. Non-probability sampling and online collection are subject to biases such as educational level or access to social networks. The type of design does not allow causal relationships to be established, an aspect to be taken into account in the interpretation of the results. Considering relevant aspects within the context of the couple, such as intimacy, trust, and communication, would be of interest in future research. Additionally, incorporating a dyadic perspective that explores the dynamics of the couple could provide valuable insights. Other issues such as perceived partner support (Pawłowska et al., 2024), sexual assertiveness (Haavio-Mannila & Kontula, 1997), or having children (Gerressu et al., 2008; Schmiedeberg & Schröder, 2016) could be relevant in this context. Likewise, it would have been interesting to collect the reasons for not masturbating, sexual fantasies, masturbation styles, and preferences. Finally, it would be opportune to extend these findings to sexual minorities, which would allow collect the wide sexual diversity in the couple context.

Conclusions

The findings of this study highlight the relevance of sexual relationships along with novel variables closely related to masturbation in the context of couple relationships. Men and women who masturbate more frequently but have less sexual relationships in the context of a couple present worse indicators of sexual health. The results obtained highlight the relevance for sexual functioning and sexual satisfaction of the combination of sexual relationships and masturbation, especially in women. This study also emphasizes the importance of considering masturbation and its associated variables beyond its frequency because nuances and aspects relevant to sexual health that should be considered in the context of the couple would be left out of the object of study. In the clinical setting, the results show that masturbation may have a substitute or complementary function in both men and women in relation to variables such as sexual satisfaction. In this sense, it can be an indicator of problems or difficulties in the couple or a positive indicator of good sexual functioning and sexual satisfaction. Finally, this study highlights the need to further study masturbation in relation to sexual health in the context of the couple.

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DISCUSIÓN

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La salud sexual hace referencia al estado de bienestar físico, mental y social en relación con la sexualidad y no meramente a la ausencia de enfermedad, disfunción o incapacidad (World Health Organization, 2006). La masturbación es una conducta sexual reconocida por la Asociación Mundial para la Salud Sexual como un medio para alcanzar la salud sexual (Ford et al., 2021). Se puede definir como la estimulación manual, o mediante algún objeto, de los genitales propios o de otra persona (Shibley y DeLamater, 2024). Por tanto, puede estar presente en el contexto de la pareja, aunque un aspecto característico es su práctica en solitario (Kirschbaum y Peterson, 2018). Esta conducta forma parte del desarrollo evolutivo sexual normal del ciclo vital (Shibley Hyde y DeLamater, 2024) y se ha relacionado con diversos beneficios para la salud, destacando su papel en la salud sexual, asociándose con una mejor respuesta sexual (e.g., Carvalheira y Leal, 2013; Marchand, 2021; Rowland et al., 2021). A pesar de ello, históricamente la masturbación ha sido reprimida desde diferentes ámbitos como la Medicina y algunas religiones (Laqueur, 2007), asociándose su práctica con sentimientos de culpa y vergüenza (Kaestle y Allen, 2011). Hoy día, la visión positiva hacia esta conducta es ampliamente compartida, y en el ámbito de la investigación ha recibido un creciente interés, sin embargo, su estudio ha sido simplificado en contextos en los que puede ser relevante, como es el de la pareja.

Por ello, esta Tesis Doctoral parte de dos objetivos principales, por un lado, enriquecer el estudio de la masturbación ofreciendo diferentes medidas que permitan evaluar parámetros de esta conducta, como son la actitud negativa hacia la masturbación y la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario, así como profundizar en el estudio de la relación entre masturbación y salud sexual en hombres y mujeres, explorando su papel en el contexto de la pareja. Para dar respuesta a los objetivos específicos, se han realizado seis estudios independientes y secuenciales. En primer lugar, en el Estudio 1 se ha llevado a cabo una revisión sistemática de la

literatura científica que ha relacionado la masturbación en solitario con la satisfacción sexual, importante indicador de salud sexual con implicaciones en el contexto de la pareja (Henderson et al., 2009; Sánchez-Fuentes et al., 2014; World Health Organization, 2010). Se concluye que la masturbación está relacionada en sentido negativo con la satisfacción sexual en hombres, mientras que en mujeres aparecen resultados más heterogéneos, observándose mayores evidencias de una relación positiva. La revisión de la literatura llevada a cabo pone de manifiesto la importancia de incluir otros parámetros de la masturbación, aparte de su frecuencia, en el estudio de esta conducta. Entre estos parámetros destacamos la edad de la primera experiencia con la masturbación, la actitud negativa, el deseo sexual solitario y la experiencia subjetiva del orgasmo.

Para disponer de herramientas que permitan evaluar la masturbación y ampliar su estudio, es imprescindible contar con medidas adaptadas y validadas en la población donde se van a aplicar (Hernández et al., 2020; Muñiz et al., 2020). Por ello, se proponen los dos estudios siguientes con el propósito de validar dos escalas para evaluar dos parámetros importantes de la masturbación, por sus implicaciones para la salud sexual, como son la actitud negativa hacia la masturbación y la experiencia subjetiva del orgasmo. En concreto, para poder evaluar la actitud negativa hacia la masturbación, en el Estudio 2 se valida en población española el *Negative Attitudes Toward Masturbation Inventory* (NATMI) de Abramson y Mosher (1975). Este trabajo aporta una escala breve, formada por diez ítems, para evaluar la actitud negativa hacia la masturbación. Se observa un buen ajuste de la estructura unidimensional y destacan las adecuadas evidencias de validez basadas en la relación de sus medidas con constructos afines. En el Estudio 3, con el propósito de disponer de una medida para evaluar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario, se valida la *Orgasm Rating Scale* (ORS; Mah y Binik, 2002, 2005, 2020), instrumento que ha demostrado su validez recientemente en población española en el contexto de las relaciones heterosexuales (Arcos-Romero et al., 2018) y homosexuales (Mangas et al., 2022). Este

estudio confirma la misma estructura encontrada en el contexto de las relaciones sexuales (Arcos-Romero et al., 2018; Mangas et al., 2022), es decir, 25 ítems distribuidos en cuatro factores: Afectivo, Sensorial, Intimidad y Recompensa. Se proporcionan adecuadas evidencias de validez, ya que sus puntuaciones correlacionaron en el sentido esperado con diferentes medidas de actitud sexual, excitación/inhibición sexual y otras medidas relacionadas con el orgasmo. Además, sus puntuaciones discriminan entre personas con y sin dificultades orgásmicas.

En el Estudio 4, con el objetivo de avanzar desde una perspectiva psicológica en el conocimiento sobre el orgasmo en la masturbación, se realiza un experimento para aportar evidencias de validez al Modelo Multidimensional de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación, derivado de las medidas de la ORS. Este modelo ofrece un marco teórico que permite describir y explicar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario atendiendo a las cualidades psicológicas experimentadas. Para ello, se han relacionado sus dimensiones (afectiva, sensorial, íntima y recompensa) con distintas manifestaciones de la excitación sexual: propensión a la excitación e inhibición sexual, valoración de la excitación sexual y de las sensaciones genitales, y respuesta genital (diámetro de la circunferencia del pene y amplitud del pulso vaginal). Los resultados encontrados indican una asociación significativa entre excitación sexual y experiencia subjetiva orgásmica, con aspectos diferenciales entre hombres y mujeres.

Los dos últimos estudios de la Tesis Doctoral aportan evidencias sobre el papel de la masturbación en solitario en el contexto de las relaciones sexuales. Concretamente, en el Estudio 5, se relacionan diferentes parámetros de la masturbación (i.e., edad de inicio, actitud negativa, deseo sexual solitario, frecuencia y experiencia subjetiva del orgasmo) con la satisfacción orgásmica en el contexto de las relaciones sexuales. Se observa una relación positiva de la dimensión afectiva del orgasmo en la masturbación con la satisfacción orgásmica, tanto en hombres como en mujeres. Además, se hallan

diferencias, entre hombres y mujeres, en los parámetros de masturbación implicados en la explicación de la satisfacción con el orgasmo en las relaciones sexuales, encontrándose un patrón compensatorio de la masturbación en hombres. Finalmente, en el Estudio 6, se examina en personas con pareja, y diferentes frecuencias de masturbación y de relaciones sexuales, variables sociodemográficas, variables relacionadas con la masturbación, variables relacionadas con el funcionamiento sexual, y la satisfacción sexual y con la relación de pareja. Los resultados revelan que la combinación de masturbación en solitario con relaciones sexuales se asocia a mejor salud sexual, especialmente mejor funcionamiento sexual y más satisfacción sexual en mujeres. También se pone de manifiesto que mayor frecuencia de masturbación que de relaciones sexuales en el contexto de la pareja se relaciona con peores indicadores de salud sexual.

En definitiva, la presente Tesis Doctoral amplía el conocimiento sobre la masturbación en solitario y su papel en el contexto de la pareja, aportando un enfoque que considera diferentes parámetros, enriqueciéndose de este modo su perspectiva de estudio. A continuación, se discuten con más detalle los hallazgos de los seis estudios que componen esta Tesis Doctoral.

Relación de la masturbación con la satisfacción sexual

La Tesis Doctoral parte con una revisión sistemática de la literatura científica con el objetivo de examinar la relación entre la masturbación en solitario y la satisfacción sexual, considerando a esta como un importante indicador de salud sexual. Para realizar esta revisión sistemática se tuvieron en cuenta las recomendaciones de la declaración PRISMA (Page et al., 2021). Se consideran artículos científicos originales que abordan la relación entre la masturbación en solitario como presencia/ausencia o frecuencia de esta conducta y la satisfacción sexual evaluada con instrumentos estandarizados, ítems *ad hoc* o derivados de escalas, cuestionarios y/o entrevistas. En la búsqueda bibliográfica, se siguen las recomendaciones de Quevedo-Blasco (2022) y se toma como referencia la fórmula empleada para la satisfacción sexual de Sánchez-Fuentes et al. (2014). Las bases

de datos consultadas son APA PsycInfo, Medline, Scopus y Web of Science. Establecidos los criterios de inclusión, se evaluó la calidad de los trabajos que cumplieran con estos usando el *Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies* (QATOCCS; NHLBI, 2013) para los estudios con metodología cuantitativa y el *Strengthening the Reporting of Observational studies in Epidemiology* (STROBE; van Elm et al., 2014) para los estudios con metodología analítica observacional, para garantizar su robustez y fiabilidad. Tras la extracción de datos se calculó la fiabilidad de la codificación aplicando kappa verdadera (Morales-Toro et al., 2019).

Se incluyen 22 artículos científicos, en su mayoría (63,6%) con participantes estadounidenses y europeos. Estos hallazgos sugieren que, en países occidentales, la masturbación es un tema que suscita interés en la investigación, considerando la imagen positiva de esta conducta y su amplia aceptación (Burri y Carvalheira, 2019; Dekker y Schmidt, 2003; Ford et al., 2021; Træen et al., 2019; Wehrli et al., 2024). La ausencia de investigación en masturbación en otros países no occidentales podría deberse a que esta conducta seguiría siendo un tema sensible (Kasemy et al., 2016) y tabú (Mushy et al., 2021). Los recursos económicos destinados a investigación también pueden dar cuenta de esta brecha: 2,5% para Norteamérica y Europa Occidental, 2,1% para Asia oriental y el Pacífico, y <1% Latinoamérica, Asia Central y África (UNESCO, 2020). Cabe destacar que ninguno de los estudios incluidos en esta revisión se ha realizado en España, lo que pone de manifiesto la necesidad de profundizar en la relación entre masturbación y satisfacción sexual en esta población.

Atendiendo a los resultados, cinco trabajos examinan la relación entre frecuencia de masturbación y satisfacción sexual con muestras de hombres y mujeres en conjunto (Neto et al., 2021; Park y MacDonald, 2022; Phuah et al., 2023; Vaillacourt-Morel et al., 2021; Wang et al., 2023). Esta aproximación al estudio de la masturbación debe ser tomada con precaución, ya que variables relevantes como la edad de inicio de masturbación (Estrada-Carmona et al., 2023; Herbenick et al., 2010a, 2010b, 2023;

Janus y Janus, 1993; Robbins et al., 2011; Smith et al., 1996), su frecuencia (Driemeyer et al., 2017; Gerressu et al., 2008; Herbenick et al., 2010b, 2023; Laumann et al., 1994; Leistner et al., 2023; Mercer et al., 2013; Oliver y Hyde, 1993; Richters et al., 2014; Sierra et al., 2023) o la actitud hacia esta (Blanc, 2024; Phuah et al., 2023) pueden diferir entre hombres y mujeres. Por ello, resulta más clarificador atender a los estudios que han analizado esta relación con muestras independientes de hombres y mujeres. En la mayoría de los trabajos con hombres (71,4%) y en un tercio de los estudios en mujeres (33,3%), la frecuencia de masturbación se asocia en sentido negativo con la satisfacción sexual. Estos resultados vienen a mostrar, de manera paradójica, la relación negativa entre masturbación y satisfacción sexual, a pesar de que la masturbación es una conducta considerada como un indicador positivo de salud sexual (Ford et al., 2021). Se ha propuesto que esta relación puede reflejar un guion sexual tradicional caracterizado por ser heteronormativo y centrado en la pareja (Haus y Thompson, 2020), lo que favorecería una perspectiva asociada al papel compensatorio de esta conducta ante la insatisfacción en las relaciones sexuales. No obstante, dada la ausencia de un script claro para la masturbación, como se ha descrito recientemente (Fischer y Træen, 2022), es necesaria mayor investigación. Para dar cuenta de esta relación, se ha propuesto el modelo compensatorio de la masturbación (Das et al., 2009; Regnerus et al., 2017), que plantea que esta conducta incrementaría su frecuencia para suplir la insatisfacción sexual experimentada. Este patrón se ha encontrado en hombres y en mujeres (Bancroft et al., 2011; Bell y Reissing, 2017; Brody y Costa, 2009; Das et al., 2009; Huang et al., 2022; Lee et al., 2016; Štulhofer et al., 2019; Velten y Margraf, 2017), sin embargo, existen evidencias acerca de que podría ser más característico en ellos (Fischer y Træen, 2022; Fischer et al., 2022; Gerressu et al., 2008; Sierra et al., 2023). Esto explicaría el mayor número de certezas a favor de una relación negativa en hombres en comparación con mujeres. Estos resultados, además, concuerdan con que ellos informan que desearían masturbarse menos de lo que lo hacen estando en pareja (Santtila et al., 2008), apoyando una concepción de la masturbación como una conducta de segundo orden

(Blanc, 2024). También se ha hipotetizado que los hombres, en comparación con las mujeres, podrían presentar una mayor orientación hacia el autoerotismo (Rowland et al., 2023), congruente con que ellos expresen más deseo sexual solitario (e.g., de Oliveira et al., 2023; Dosch, Belayachi et al., 2016; Peixoto, 2023), lo que podría asociarse con la tendencia a valorar más negativamente la satisfacción sexual con la pareja. El 21,4% de los estudios en hombres y el 40% en mujeres no encuentran relación alguna entre masturbación y satisfacción sexual. Esto pone de manifiesto que esta asociación requiere mayor investigación, considerando otras variables relevantes, especialmente en las mujeres, en las que se ha descrito un mayor número de factores implicados en ámbitos de la sexualidad como el orgasmo o la satisfacción sexual (Arcos Hidalgo y Dewitte, 2021; Arcos-Romero y Sierra, 2020; Mangas et al., 2022). Finalmente, el 7,2% de los estudios en hombres en comparación con el 26,7% en las mujeres han encontrado una relación positiva. El porcentaje más elevado en mujeres que en hombres pone de manifiesto el potencial papel positivo de la masturbación en ellas (Bowman, 2014; Foust et al., 2022) y es consistente con las evidencias previas que han descrito en las mujeres una visión enriquecedora de su práctica (Burri y Carvalheira, 2019; Carvalheira y Leal, 2013). Esta relación apoyaría más el modelo complementario en mujeres, que hipotetiza que la práctica más frecuente de masturbación se asociaría con más actividad sexual (Pinkerton et al., 2003; Regnerus et al., 2017).

A partir de los resultados obtenidos en la revisión sistemática cabe señalar la heterogeneidad de los hallazgos encontrados, especialmente en las mujeres, aspecto a considerar en la generalización de los hallazgos (Quevedo-Blasco et al., 2024). Una de las posibles fuentes de variación estaría en las diferentes covariables incluidas en los estudios, ya que no todos los trabajos han considerado las mismas. Entre las covariables más presentes destacan la edad, asociada tanto con la masturbación (Burri y Carvalheira, 2019; Carvalheira y Leal, 2013; Gerressu et al., 2008) como con la satisfacción sexual (Dekker y Schmidt, 2003), o tener pareja, relacionada también con la masturbación

(Burri y Carvalheira, 2019; Regnerus et al., 2017) y la satisfacción sexual (Pedersen y Blekesaune, 2003), aunque estas no han sido controladas en todos los trabajos.

Las medidas empleadas para evaluar la masturbación pueden suponer otra posible fuente de variación en los hallazgos. Para evaluar la frecuencia de masturbación, la mayoría de los estudios han utilizado preguntas *ad hoc* considerando diversos rangos temporales, desde las últimas 24 horas (e.g., Vaillancourt-Morel et al., 2021) hasta el último año (e.g., de Lima et al., 2022), aspecto para tener en cuenta en la diversidad de los resultados encontrados. Si bien esta revisión sistemática se ha centrado en la medida de la frecuencia de masturbación al ser uno de los parámetros que más atención ha recibido en estudios previos (e.g., Bačaka y Štulhofer, 2011; Fischer y Træen, 2022; Hald, 2006; Miller et al., 2019; Sierra et al., 2023; Velten y Margraf, 2017), dada la heterogeneidad de los hallazgos, resulta importante considerar además de esta variable otros parámetros relevantes de la masturbación que permitan ampliar su estudio.

Otra potencial fuente de variación en los resultados puede encontrarse en la medición de la satisfacción sexual. Solo el 27% de los trabajos examinados utilizan escalas estandarizadas que garantizan la validez de sus medidas. La literatura previa ha puesto de manifiesto la complejidad de la satisfacción sexual, ya que es una variable determinada por múltiples factores, desde los más individuales a los más distales o sociales (Sánchez-Fuentes et al., 2014). Por ello, se requiere una perspectiva más integradora (Pascoal et al., 2014) que parta de un modelo validado y adaptado. En este sentido, destaca el Modelo de Intercambio Interpersonal de Satisfacción Sexual (IEMSS, por sus siglas en inglés; Lawrance y Byers, 1992, 1995) por las evidencias de validez que le avalan en parejas heterosexuales (Lawrance y Byers, 1995; Sánchez-Fuentes et al., 2015), parejas gais (Calvillo et al., 2020), parejas de lesbianas (Byers y Cohen, 2017) y en población mayor (Santos-Iglesias y Byers, 2023). Este modelo derivado de la Teoría del Intercambio Social (Thibaut y Kelley, 1950) se fundamenta en los intercambios que tienen lugar dentro de la relación de pareja, que posibilitan su desarrollo, mantenimiento

o deterioro. Los intercambios refieren a situaciones, pensamientos y/o comportamientos que se dan entre los miembros de la pareja que pueden ser considerados como beneficios cuando son agradables y placenteros, o como costes cuando demandan un esfuerzo, producen ansiedad, malestar o dolor. Los miembros de una pareja tratarán de maximizar los beneficios y minimizar los costes obtenidos de esas interacciones, de manera que, si los beneficios superan los costes, las personas estarán más satisfechas (Byers y Wang, 2004). Desde este modelo, se propone que la satisfacción sexual estaría determinada por: (1) el balance entre beneficios y costes sexuales en la relación, (2) el balance de los beneficios y costes sexuales obtenidos comparado con los beneficios y costes sexuales esperados, (3) la igualdad percibida de beneficios y costes sexuales entre la pareja, y (4) la calidad de aspectos no sexuales de la relación de pareja, como la satisfacción con la pareja. Para evaluar este modelo, se ha desarrollado el *Interpersonal Exchange Model of Sexual Satisfaction Questionnaire* (IEMSSQ; Lawrence et al., 2011), instrumento integrado por el *Exchange Questionnaire* (EXQ) para evaluar los componentes del modelo, la *Global Measure of Sexual Satisfaction* (GMSEX) para medir la satisfacción sexual general, la *Global Measure of Relationship Satisfaction* (GMREL) para medir la satisfacción con la relación de pareja y el *Rewards/Costs Checklist* (RCC) consistente en una lista de intercambios sexuales.

En resumen, los resultados de la revisión sistemática revelan una relación significativa en sentido negativo entre la masturbación y la satisfacción sexual, especialmente en hombres, observándose así un apoyo al modelo compensatorio de la masturbación. En las mujeres, los resultados son más heterogéneos y hay más evidencias a favor de una relación positiva que en los hombres, lo que supondría un apoyo a favor del modelo complementario en ellas. Se destaca la importancia de evaluar la satisfacción sexual con modelos que garanticen su validez, y se propone ampliar el estudio de la masturbación debido a las inconsistencias observadas, incluyendo diferentes parámetros que permitan estudiar esta conducta más allá de su frecuencia.

Validación de instrumentos para evaluar parámetros de la masturbación: actitud negativa y experiencia subjetiva del orgasmo

La inconsistencia de los resultados expuestos en el Estudio 1 de la Tesis Doctoral pone de manifiesto la importancia de ampliar la investigación en masturbación teniendo en cuenta diferentes parámetros de esta conducta, más allá de la frecuencia de masturbación, como son -por su interés y relevancia para la salud sexual- la edad de primera masturbación, la actitud negativa hacia esta conducta, el deseo sexual solitario y la experiencia subjetiva del orgasmo. Por ello, se diseñaron los dos estudios siguientes con el propósito de validar dos medidas relacionadas con dos de estos parámetros: el *Negative Attitudes Toward Masturbation Inventory* (NATMI; Abramson y Mosher (1975) para evaluar la actitud negativa hacia la masturbación y la *Orgasm Rating Scale* (Arcos-Romero et al., 2018) para evaluar la experiencia subjetiva del orgasmo. En este proceso, se han seguido las directrices recomendadas (Hernández et al., 2020; Muñoz y Fonseca-Pedrero, 2019) con el propósito de garantizar estándares de calidad que permitan una adecuada medición en Sexología (Sierra, 2023).

La trayectoria histórica de la masturbación, marcada por el estigma y los sentimientos de culpa, conlleva que el estudio de la actitud negativa hacia esta conducta sea de gran relevancia al analizar este comportamiento sexual. La ausencia de un instrumento con adecuadas propiedades psicométricas para evaluar esta actitud en población adulta española motivó la validación del *Negative Attitudes Toward Masturbation Inventory* (NATMI) de Abramson y Mosher (1975), escala que ya se había validado años atrás en adolescentes hispanohablantes (Sierra et al., 2010, 2013). La escala final resulta en una versión breve de diez ítems respondidos en una escala tipo Likert de 1 (*totalmente falso*) a 5 (*totalmente verdadero*) con óptimas propiedades psicométricas.

En primer lugar, con el propósito de examinar la validez de contenido de la escala, garantizando que sus ítems fuesen adecuados, se siguieron las directrices de la Comisión

Internacional de Test (Hernández et al., 2020; Muñiz y Fonseca-Pedrero, 2019). Para ello, instrucciones e ítems del instrumento original fueron traducidos al español por especialistas en sexualidad con alto nivel de inglés. Esta traducción sería juzgada por cuatro expertos en las áreas de psicometría y de sexualidad, en términos de representatividad, comprensión, claridad y ambigüedad. Para obtener el acuerdo interjueces, se analiza la V de Aiken con un intervalo de confianza del 95%. Tras revisar siete ítems, la versión piloto se aplica a 50 adultos españoles de diferentes edades, equiparados por sexo, para que valoren la comprensión de cada ítem. Finalmente, tras revisar un ítem, se obtiene la versión definitiva del instrumento que se somete a los correspondientes análisis psicométricos.

Al examinar la validez de constructo de la versión traducida de 30 ítems, se observa que la cohesión entre los reactivos era baja. Por este motivo, y para mejorar la consistencia interna, se seleccionan los ítems cuya comunalidad es superior a 0,50, escogiendo un total de diez. Este es un procedimiento habitual aplicado para mejorar las propiedades de medida del instrumento (Muñiz y Fonseca-Pedrero, 2019). La baja cohesión observada se podría deber a que algunos ítems propuestos en la versión inicial ya no serían relevantes en la actualidad (e.g., “*la masturbación practicada en exceso puede provocar impotencia en los hombres y frigidez en las mujeres*”). Esto podría reflejar un cambio a una visión cada vez más positiva sobre la masturbación con el paso de los años (Dekker y Schmidt, 2003). Además, es congruente con las modificaciones del propio instrumento en sus diferentes adaptaciones, observándose una tendencia a reducir su dimensionalidad (Sierra et al., 2010, 2013). La estructura unidimensional obtenida explica el 66% de la varianza, valor más elevado que en las versiones previas en otras poblaciones que explicaron en el conjunto de sus dimensiones un rango de 30,7-44,3% de varianza (Abramson y Mosher, 1975; Sierra et al., 2010, 2013). Esta versión breve recoge ítems pertenecientes a las tres dimensiones teóricas originales que hacen referencia a aspectos conductuales, afectivos y a una dimensión más positiva de esta

conducta. Además, su brevedad ofrece ciertas ventajas para el ámbito de la investigación y de la clínica (Bóthe et al., 2021; Sierra et al., 2014; Vallejo-Medina et al., 2014).

Respecto al análisis de ítems, la escala presenta un alfa ordinal de 0,95, mejorando la consistencia interna de versiones previas (Abramson y Mosher, 1975; Sierra et al., 2010, 2013). Este valor se considera adecuado en términos de fiabilidad (Doval et al., 2023). Cabe mencionar que, en la tendencia de respuestas, se observa una curtosis alta en la mayoría de los ítems en el polo hacia la actitud positiva, esperable en población general (Burri y Carvalheira, 2019; Træen et al., 2019). Además, este hecho se asocia a que el 96,3% de los hombres y el 92,8% de las mujeres de la muestra informaron haberse masturbado en alguna ocasión, en consonancia con resultados previos (TENGA, 2020).

Las evidencias de validez a las medidas de la escala, basadas en la relación de sus puntuaciones con otros constructos afines (American Educational Research Association et al., 2014), indican que las personas con una actitud más negativa hacia la masturbación presentan menor frecuencia de masturbación (Abramson y Mosher, 1975), mayor frecuencia de rezo (Sümer, 2015), menos erotofilia (Sierra et al., 2010, 2013), una actitud más negativa hacia las fantasías sexuales (Driemeyer et al., 2017; Sierra et al., 2013), más inhibición sexual y peor funcionamiento sexual, en general. Esta relación es consistente con evidencias previas que han señalado la asociación inversa entre la actitud negativa hacia la masturbación y el funcionamiento sexual (Sierra, Gómez-Carranza et al., 2021). Esto pone de manifiesto la importancia de evaluar y estudiar la actitud hacia la masturbación y, dadas sus implicaciones en la salud sexual, considerar su abordaje en el ámbito de la clínica (Kriofske Mainella et al., 2023; Lameiras Fernández et al., 2004; Ruiz et al., 2019).

En conjunto, el Estudio 2 proporciona una medida adaptada a población española que permite evaluar la actitud negativa hacia la masturbación con adecuadas características psicométricas. Los resultados reflejan una actitud positiva predominante

hacia esta conducta en la muestra española evaluada. Además, se observa que la actitud negativa hacia la masturbación se relaciona con peor funcionamiento sexual, aspecto que puede ser clave para el contexto de las relaciones sexuales. Por tanto, el estudio de esta actitud sigue siendo de interés, ya que por ejemplo siguen presentes en ciertos contextos como internet mensajes negativos asociados a la masturbación que podrían promover una actitud negativa hacia su práctica (Prause y Ley, 2024).

El Estudio 3 de la Tesis Doctoral tiene como objetivo aportar un instrumento para evaluar otro parámetro relevante de la masturbación: las cualidades psicológicas del orgasmo en este contexto. Para ello, se valida en población adulta española heterosexual la *Orgasm Rating Scale* (ORS), instrumento que mide la experiencia subjetiva del orgasmo. Se parte de la versión ya validada para el contexto de las relaciones sexuales de Arcos-Romero et al. (2018), formada por 25 ítems organizados en cuatro dimensiones: afectiva, en referencia a las emociones experimentadas durante el orgasmo, y se describe mediante adjetivos como “excitante” o “maravilloso”; sensorial, aludiendo a las sensaciones o la respuesta fisiológica percibidas a través de adjetivos como “palpitante” o “sofocante”; íntima, recogiendo los aspectos íntimos del orgasmo, descrita por ejemplo por “tierno” o “amoroso”; y recompensa, incluyendo el componente más reforzante del orgasmo, con adjetivos como “tranquilizante” o “reconfortante”. Teniendo en cuenta las diferencias de la experiencia subjetiva orgásmica entre hombres y mujeres en el contexto de las relaciones sexuales (Arcos-Romero y Sierra, 2018, 2023; Arcos-Romero et al., 2018, 2019; Mah y Binik, 2002; Mangas et al., 2022; Muñoz-García, Gómez-Berrocal y Sierra, 2023; Sierra et al., 2024), se examina su invarianza por sexo para reducir posibles sesgos metodológicos al comparar las puntuaciones del instrumento entre hombres y mujeres (Ock et al., 2020).

Los resultados muestran que la ORS mantiene la misma estructura tetradimensional (i.e., factores Afectivo, Sensorial, Intimidad y Recompensa) y el buen ajuste de la versión validada para el contexto de las relaciones sexuales por Arcos-

Romero et al. (2018). Además, presenta invarianza factorial a nivel estricto por sexo y edad, lo que permite utilizar la escala para comparar hombres y mujeres, y distintos grupos de edad, minimizando el sesgo de evaluación. Los resultados señalan una adecuada consistencia interna garantizando la fiabilidad de sus medidas, con un alfa ordinal que oscila entre 0,71 (Intimidad) y 0,95 (Sensorial). La distribución de las respuestas muestra como los adjetivos más representativos a los siguientes: “satisfactorio” (98% de los encuestados en el estudio), “gozoso” (96%), “placentero” (95%), “gratificante” (94%), “excitante” (92%) y “maravilloso” (89%). Estos cinco adjetivos coinciden con los encontrados en el contexto de las relaciones sexuales en personas heterosexuales (Arcos-Romero y Sierra, 2023), y gais, lesbianas y bisexuales (Sierra et al., 2024). Esto supone que los aspectos afectivos del orgasmo son relevantes, tanto en el contexto de las relaciones sexuales como en el de la masturbación en solitario, lo que pone de manifiesto la similitud de las cualidades del orgasmo entre contextos, en línea con los resultados de estudios previos que han abordado su relación (Huang et al., 2022; Rowland, Hevesi et al., 2020). La segunda dimensión más representativa de la experiencia subjetiva del orgasmo en la masturbación es la recompensante, con porcentajes que oscilan entre el 82-89% de representatividad. Esto es consistente con hallazgos previos que han mostrado la relevancia de la dimensión recompensante en el contexto de la masturbación en solitario (Mangas, da Silva Alves et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023).

Las relaciones encontradas entre las puntuaciones de las subescalas de la ORS y las de constructos afines aportan evidencias de validez a las medidas proporcionadas por la escala. Así, la experiencia subjetiva del orgasmo se asocia en sentido negativo con la actitud negativa hacia la masturbación (Kelly et al., 1990) y, en sentido positivo, con erotofilia (Arcos-Romero et al., 2018), actitud positiva hacia las fantasías sexuales (Carvalho y Leal, 2013; Sierra et al., 2020) y propensión a la excitación sexual (Arcos-Romero et al., 2019; Arcos-Romero y Sierra, 2020). Entre estos constructos destaca el deseo sexual solitario por su especial relevancia para la experiencia subjetiva del orgasmo

en su contexto (Cervilla et al., 2023). Para aportar evidencias adicionales de validez a las medidas de la ORS, se compararon sus puntuaciones entre personas con y sin dificultades para alcanzar el orgasmo en las relaciones sexuales. Se encuentra que aquellas con dificultad para alcanzar el orgasmo en las relaciones sexuales informan menor intensidad en la experiencia subjetiva del orgasmo en la masturbación. Este descubrimiento resulta de utilidad para el ámbito clínico, ya que puede facilitar la identificación de personas con dificultades orgásmicas en las relaciones sexuales que están presentes en hombres (McCabe y Connaughton, 2014) y mujeres (Meston et al., 2004), con una prevalencia relativamente alta (Briken et al., 2020). A pesar de que las personas incluidas en el estudio con dificultades no tenían por que estar diagnosticadas con alguna disfunción sexual -aspecto a considerar en futuros trabajos (de las Cuevas y Peñate, 2015; de las Cuevas et al., 2018)-, los resultados ponen de manifiesto que el orgasmo en sus dos contextos (i.e., masturbación y relaciones sexuales) estaría relacionado (Huang et al., 2022, Rowland, Hevesi et al., 2020), lo que tiene implicaciones en el abordaje de estas dificultades al incorporar la masturbación como herramienta terapéutica.

El Estudio 3, por tanto, aporta un instrumento de evaluación -la *Orgasm Rating Scale*- que proporciona medidas válidas y fiables de la experiencia subjetiva del orgasmo en un contexto prácticamente inexplorado, como es la masturbación en solitario. Además, la utilidad de esta medida resalta por la relación de sus puntuaciones en sentido positivo con otras variables importantes para la salud sexual y, especialmente, con el orgasmo en el contexto de las relaciones sexuales.

Validación del Modelo Multidimensional de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación en solitario

Tradicionalmente, la investigación sobre el orgasmo se ha centrado mayoritariamente en sus aspectos fisiológicos, su frecuencia y en su facilidad/dificultad para experimentarlo. El interés por profundizar en el conocimiento sobre el orgasmo, y su descripción desde un punto de vista subjetivo, llevó al desarrollo del Modelo de la Experiencia Subjetiva del Orgasmo (MESO) validado en el contexto de las relaciones sexuales (Arcos-Romero et al., 2019). Este modelo derivado de las medidas de la ORS en dicho contexto permitió describir conceptualmente las cualidades del orgasmo desde un enfoque psicológico y multidimensional, ofreciendo una novedosa perspectiva en su estudio, demostrando su utilidad para el ámbito clínico y de la investigación.

Las evidencias de validez de este modelo han sido prácticamente inexploradas en el contexto de la masturbación en solitario. Por ello, en el cuarto estudio de la Tesis Doctoral, se diseñó una tarea experimental con el objetivo de aportar evidencias de validez al MESO en el contexto de la masturbación en solitario. Este modelo, fundamentado en la estructura interna de la ORS avalada en el Estudio 3, conceptualiza la experiencia subjetiva del orgasmo en cuatro dimensiones: afectiva, que hace referencia a los sentimientos o emociones experimentados en el orgasmo; sensorial, que recoge la percepción de la respuesta fisiológica y las sensaciones experimentadas; intimidad que incluye los aspectos íntimos del orgasmo; y recompensa, referida a los aspectos reforzantes y reconfortantes del orgasmo.

Con la finalidad de aportar validez al MESO basada en las relaciones teóricas entre la excitación sexual y el orgasmo (Arcos-Romero y Sierra, 2020; Cervilla et al., 2023; Mangas et al., 2022), se examina la relación entre las cuatro dimensiones del modelo (i.e., afectiva, sensorial, intimidad y recompensa) y diferentes medidas de excitación sexual, concretamente, con la excitación sexual como propensión (i.e., excitación/inhibición) y como estado (i.e., valoración de la excitación sexual y de las

sensaciones genitales, y respuesta genital) ante la visualización de vídeos con contenido sexual explícito en un contexto de laboratorio. El objetivo es explicar la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario a partir de las medidas de excitación sexual. Para ello, en un experimento diseñado *ad hoc* se evalúan las cuatro dimensiones del orgasmo, la propensión a la excitación e inhibición sexual, y se presenta en el laboratorio a los participantes vídeos neutros y con contenido sexual explícito para registrar su excitación sexual autoinformada y la respuesta genital mediante pletismografía peniana o fotopletismografía vaginal.

Los resultados muestran que la excitación sexual se asocia con la experiencia subjetiva del orgasmo de manera diferente en hombres y mujeres (Arcos-Romero et al., 2019; Arcos-Romero y Sierra, 2020; Mangas et al., 2022; Mangas, Sierra et al., 2024;). En hombres, se observa una relación positiva entre la propensión a la excitación sexual y la dimensión recompensante del orgasmo, mientras que la inhibición por miedo a las consecuencias de la actividad sexual se asocia negativamente con la dimensión afectiva y sensorial. Además, la valoración de la excitación sexual en los hombres está relacionada en sentido positivo con la dimensión de intimidad. En mujeres, únicamente la valoración de la excitación sexual se asoció con la dimensión sensorial.

En los hombres, la importancia de la propensión a la excitación sexual para la dimensión recompensante del orgasmo se puede deber, por un lado, a la mayor predisposición en ellos a la excitación sexual (Quinta-Gomes et al., 2018; Moyano y Sierra, 2014), lo que se ha asociado con más frecuencia de masturbación (Janssen et al., 2002; Nowosielski et al., 2021) y, por otro lado, a la saliencia de esta dimensión recompensante para el contexto de la masturbación (Mangas, da Silva Alves et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023). La saliencia de la dimensión recompensante en ellos pone de manifiesto la tendencia a instrumentalizar más el orgasmo que las mujeres (Mangas, da Silva Alves et al., 2024). La relación negativa entre la inhibición sexual por la amenaza de ser pillado masturbándose (i.e., inhibición sexual

por miedo a las consecuencias derivadas de la actividad sexual) y las dimensiones afectiva y sensorial refleja la repercusión de ser descubierto masturbándose, teniendo en cuenta además que esta conducta podría ser considerada por ellos como un sustituto de las relaciones sexuales (Regnerus et al., 2017) o menos deseable (Santtila et al., 2008). Por el contrario, la inhibición por miedo al fallo en el rendimiento/ejecución sexual no fue relevante para explicar la experiencia subjetiva del orgasmo en la masturbación, a pesar de su importancia para las relaciones sexuales (Bancroft et al., 2009; Sierra et al., 2019; Tavares et al., 2018). Estos resultados sugieren que la inhibición sexual es dependiente del contexto en el que se produce la actividad sexual, por lo que el contexto de la masturbación en solitario se percibiría como menos amenazante, caracterizado por mayor autonomía y más independencia del ambiente (Goldey et al., 2016). Estos hallazgos podrían explicar, en parte, por qué en el contexto de la masturbación el funcionamiento sexual es más probable que quede preservado (Rowland et al., 2021), ya que se vería más influenciado por aspectos situacionales -*a priori* más controlables- que por problemas de rendimiento sexual. Respecto a la relación positiva entre la valoración de la excitación sexual y el componente íntimo del orgasmo, se ofrece una posible explicación basada en el consumo de pornografía. La asociación entre la excitación experimentada en el laboratorio ante el visionado de vídeos sexuales explícitos y el componente íntimo del orgasmo en hombres puede ser congruente con que ellos consuman este tipo de material con más frecuencia para masturbarse (Sun et al., 2016), contexto en el que el carácter íntimo de esta experiencia puede ser especialmente saliente. Esto es consistente con la relación positiva entre consumo de pornografía y excitación autoinformada en un contexto de laboratorio (Prause y Pfaus, 2015). Finalmente, la baja relevancia de la respuesta genital para la explicación de la experiencia subjetiva del orgasmo en la masturbación pone de manifiesto la relativa independencia en este contexto de la respuesta genital para el orgasmo, estando menos sujeta a aspectos más propiamente relacionales (Corona et al., 2010).

En las mujeres, la excitación autoinformada ante estímulos sexuales (i.e., valoración de la excitación sexual) fue la única variable relevante para explicar la intensidad de las cualidades sensoriales del orgasmo en la masturbación, de manera coincidente con el contexto de las relaciones sexuales (Arcos-Romero et al., 2019). Aunque en hombres esta medida de excitación también se asoció con la experiencia orgásmica, en ellas es la única variable de excitación implicada en la explicación de la intensidad orgásmica en la masturbación. Para interpretar estos resultados se ha señalado que ellas podrían valorar más los aspectos subjetivos que los hombres (Laan y Janssen, 2007). Esto iría en consonancia con evidencias previas que han señalado más capacidad de las mujeres para describir las sensaciones del orgasmo (Rowland et al., 2018; Sierra et al., 2021), estando más en sintonía con sus sensaciones internas (Dubray et al., 2017). Cabe mencionar que en las mujeres del estudio no se observó concordancia sexual (i.e., relación entre la valoración subjetiva de la excitación sexual y la respuesta genital) a diferencia de los hombres, de manera congruente con evidencias previas (véase Chivers et al., 2010), sin embargo, tanto en hombres como en mujeres se encontró una relación entre la valoración subjetiva de la excitación sexual y la intensidad orgásmica. Esto sugiere que la concordancia sexual sería relativamente independiente de la intensidad orgásmica en este contexto (Dubray et al., 2017).

Cabe destacar algunas diferencias con los resultados de Arcos-Romero et al. (2019) en el contexto de las relaciones sexuales, que pueden reflejar aspectos del contexto. Debemos indicar que esta comparación debe ser interpretada con precaución, dadas las diferencias en los participantes, algunas variables consideradas y los propios estímulos. En hombres, la valoración de la excitación sexual es más relevante en la masturbación para la dimensión íntima, mientras que en las relaciones sexuales lo fue la respuesta genital. Los hombres pueden considerar un logro para su masculinidad que la mujer alcance el orgasmo (Calvillo et al., 2024; Chadwick y van Anders, 2017), lo que pondría de manifiesto la importancia que puede tener para ellos la respuesta genital en las relaciones sexuales, mientras que, la excitación sexual a nivel subjetivo sería más

saliente en el contexto de masturbación en solitario, caracterizado por mayor focalización propia (Goldey et al., 2016). En mujeres, la relación entre la excitación subjetiva y la dimensión sensorial del orgasmo es coincidente en las relaciones sexuales y en la masturbación; sin embargo, en el contexto de la masturbación la excitación subjetiva explicó más porcentaje de varianza (33%) que en el contexto de las relaciones sexuales (6,8%). Estas diferencias podrían deberse a que, en las relaciones sexuales factores de tipo relacional como el deseo sexual diádico hacia la pareja o la satisfacción sexual y con la relación de pareja (Arcos-Romero y Sierra, 2020) podrían adquirir más relevancia y, por tanto, el estado de excitación sexual a nivel subjetivo fuese menos importante. También se ha propuesto que el tipo de estimulación podría ser diferente entre contextos (Rowland, Hevesi et al., 2020), estando en la masturbación por lo general más presente la estimulación del clítoris (Fahs y Frank, 2014; Rowland, Kolba et al., 2020), lo que podría explicar que en la masturbación la excitación subjetiva tenga un mayor peso para la experiencia del orgasmo.

En resumen, las relaciones significativas entre la excitación sexual y la experiencia subjetiva del orgasmo aportan evidencias de validez al Modelo de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación en solitario. En hombres, la excitación sexual explica las cuatro dimensiones del orgasmo, y en mujeres una única dimensión (sensorial). Esto pone de manifiesto la importancia del modelo para los hombres y la necesidad de considerar otras variables que posibiliten una mejor comprensión del modelo en las mujeres, en línea con evidencias previas que sugieren que el orgasmo en ellas podría ser a nivel subjetivo más complejo (Arcos-Romero y Sierra, 2020). A pesar de ello, para el ámbito clínico, este estudio ofrece un modelo que describe la experiencia subjetiva del orgasmo a través de sus cuatro dimensiones, permitiendo profundizar en las cualidades psicológicas de esta respuesta sexual y facilitando una hoja de ruta para el abordaje terapéutico de las dificultades en el orgasmo en hombres y mujeres. También resulta de utilidad para la investigación, ya que se aporta un modelo válido que permite evaluar el orgasmo en la masturbación desde una perspectiva

multidimensional, lo que posibilita avanzar en el conocimiento de esta dimensión en este contexto donde apenas ha sido investigado.

Masturbación en solitario y relaciones sexuales

En la Introducción de la Tesis, hemos destacado la relevancia de la masturbación para la salud sexual, así como las limitaciones que han acompañado su estudio al centrarlo básicamente en su frecuencia. Con la incorporación de otros parámetros, y sus correspondientes instrumentos para evaluarlos (e.g., actitud negativa y experiencia subjetiva del orgasmo), adaptados y validados en población española, se diseñaron los dos últimos estudios de la Tesis Doctoral. En primer lugar, se analiza la relación entre los parámetros de la masturbación (i.e., edad de primera masturbación, actitud negativa, deseo sexual solitario, frecuencia actual y experiencia subjetiva del orgasmo) y la satisfacción orgásmica en las relaciones sexuales. Seguidamente, se describe un perfil psicosexual que incluye dichos parámetros de la masturbación, así como otras variables de interés como la satisfacción sexual, en personas con pareja que presentan diferentes patrones de actividad sexual en cuanto a la masturbación en solitario y las relaciones sexuales.

La masturbación es una técnica terapéutica útil en dificultades sexuales (Kimmes et al., 2015; Meissner et al., 2020; Salmani et al., 2015; Shirai et al., 2023; Zamboni y Crawford, 2003), destacando entre ellas los problemas con el orgasmo en mujeres (Marchand, 2021) y de eyaculación en hombres (Memik et al., 2023; Perelman, 2016). En este sentido, se piensa que la masturbación podría ayudar al autoconocimiento acerca del tipo de estimulación más adecuado para facilitar la respuesta orgásmica en las relaciones sexuales. Es decir, conocer mejor las propias reacciones ante la estimulación sexual, podría mejorar la conciencia interoceptiva o bajar el umbral orgásmico (Huang et al., 2022). Teniendo en cuenta esto, con el propósito de profundizar en el conocimiento sobre la relación entre la masturbación en solitario y el orgasmo en las relaciones sexuales, se planificó el quinto estudio de la Tesis Doctoral, que tuvo como objetivo

comparar, en hombres y mujeres, los parámetros de la masturbación (i.e., edad de primera masturbación, actitud negativa, deseo sexual solitario, frecuencia y experiencia subjetiva del orgasmo) y estudiar su asociación con la satisfacción orgásmica en las relaciones sexuales.

Los resultados encontrados muestran diferencias en los parámetros de la masturbación entre hombres y mujeres, una vez controlado el posible efecto de la edad, tener pareja y la religiosidad (frecuencia de rezo). Estas diferencias van en consonancia con la literatura previa ya expuesta en la Introducción. Concretamente, se observa que los hombres, respecto a las mujeres, comienzan a masturbarse antes (Estrada-Carmona et al., 2023; Herbenick et al., 2010a, 2010b, 2023; Janus y Janus, 1993; Robbins et al., 2011; Smith et al., 1996), informan más deseo sexual solitario (Baumeister et al., 2001; Carvalheira et al., 2015; de Oliveira et al., 2023; Dosch, Belayachi et al., 2016; Hyde, 2005; Oliver y Hyde, 1993; Peixoto, 2023; Stark et al., 2015; van Anders, 2012) y se masturban con mayor frecuencia en la actualidad (Driemeyer et al., 2017; Gerressu et al., 2008; Herbenick et al., 2010b, 2023; Laumann et al., 1994; Leistner et al., 2023; Mercer et al., 2013; Oliver y Hyde, 1993; Richters et al., 2014; Sierra et al., 2023). Por su parte, las mujeres, en comparación con los hombres informan mayor intensidad en las dimensiones afectiva, sensorial e íntima del orgasmo experimentado mediante la masturbación (Arcos-Romero y Sierra, 2018, 2023; Arcos-Romero et al., 2018, 2019; Mah y Binik, 2002; Mangas, Sierra et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra., 2023; Sierra et al., 2024). No se observan diferencias significativas en actitud negativa hacia la masturbación, de manera contraria a lo que habían informado estudios previos (Blanc, 2024; Phuah et al., 2023), aunque en la línea con otros (Driemeyer et al., 2017; Petersen y Hyde, 2010). Este resultado debe ser interpretado con precaución dado el desconocimiento acerca de la invarianza por sexo de la escala empleada (el NATMI), aunque podría reflejar posibles cambios generacionales como se ha visto en otras actitudes como la erotofilia, al desaparecer en estudios recientes las diferencias entre hombres y mujeres (Sierra, Gómez-Carranza et al., 2021). Cabe destacar que la actitud

hacia la masturbación en este estudio está polarizada hacia una visión positiva, de manera congruente con los resultados encontrados en el Estudio 2 y en línea con estudios previos (Carvalho y Leal, 2013; de Lima et al., 2022; Driemeyer et al., 2017; Soares et al., 2024). Para explicar que los hombres comiencen a masturbarse antes, lo hagan más frecuentemente e informen de más deseo sexual solitario que las mujeres, se puede atender a diferentes teorías que señalan diferencias entre hombres y mujeres en actitudes y comportamientos sexuales (Petersen y Hyde, 2011). Desde la Teoría cognitiva del aprendizaje social (Bandura, 1986; Bussey y Bandura, 1999) se propone que los comportamientos se aprenden por observación e imitación. Así, hombres y mujeres estarían sometidos socialmente mediante refuerzos y castigos a comportarse de manera consistente a los roles y normas de género estándares. Una variable que podría influir en los comportamientos que es más probable que sean imitados es el doble estándar sexual. Esta actitud implica la evaluación de un mismo comportamiento sexual de manera diferente según sea realizado por un hombre o una mujer (Milhausen y Herold, 2002). En su vertiente tradicional, se ha asumido que el hombre tendría más libertad sexual que la mujer (Álvarez-Muelas et al., 2019; Sierra et al., 2018). Desde la Teoría social estructural (Wood, 2007) se propone que el comportamiento de hombres y mujeres está regulado por las diferencias de poder y la diferenciación de tareas, estableciéndose así una jerarquía de género en la que el hombre acumula mayor poder que la mujer en la mayoría de las sociedades. Esto podría explicar que ellos presenten más libertad para la expresión sexual. Por tanto, las diferencias encontradas podrían entenderse en parte, ya que se espera desde una postura tradicional que el hombre sea más activo y permisivo que la mujer en la esfera sexual (Petersen y Hyde, 2010, 2011).

Teniendo en cuenta las diferencias encontradas en los parámetros de la masturbación, se plantearon modelos explicativos de la satisfacción orgásmica en las relaciones sexuales independientes para hombres y mujeres. En hombres, la frecuencia actual de masturbación, en sentido negativo, y la dimensión afectiva de la experiencia subjetiva orgásmica en la masturbación, en sentido positivo, se asocian con la

satisfacción orgásmica en las relaciones sexuales. En mujeres, la edad, el deseo sexual solitario y la dimensión afectiva de la experiencia subjetiva del orgasmo en masturbación, en sentido positivo, y la actitud negativa hacia la masturbación, en sentido negativo, explican de manera significativa la satisfacción orgásmica. La única variable común en hombres y mujeres asociada en sentido positivo con la satisfacción orgásmica en las relaciones sexuales es la dimensión afectiva del orgasmo en la masturbación. No es de extrañar el peso que tiene este parámetro de la masturbación al explicar el orgasmo en las relaciones sexuales, ya que esta dimensión -con ítems como “satisfactorio”- ocupa un lugar nuclear en la descripción del orgasmo, de manera congruente con lo observado en el Estudio 3 y acorde con evidencias previas (Arcos-Romero y Sierra, 2023; Mangas, da Silva Alves et al., 2024; Sierra et al., 2024). Este resultado enfatiza esta cualidad común del orgasmo a través de los contextos, con las implicaciones que ello supone para el ámbito de la terapia sexual. Los resultados revelan además un patrón compensatorio en los hombres, ya que más frecuencia de masturbación se relacionó con más insatisfacción orgásmica (Sierra, Gómez-Carranza et al., 2021). Sin embargo, en mujeres, la frecuencia de masturbación es menos relevante para su satisfacción orgásmica y adquiere mayor importancia la actitud negativa hacia esta conducta, en consonancia con estudios previos (Rowland et al., 2019; Soares et al., 2024). Esto pone de manifiesto cómo en la práctica de la masturbación, principalmente estigmatizada en la mujer (Carvalho y Leal, 2013; Fahs y Frank, 2014; Kaestle y Allen, 2011), la actitud negativa adquiere relevancia para su experiencia orgásmica (Abramson et al., 1981; Driemeyer et al., 2017).

Considerando ambos modelos en conjunto, cabe señalar que es en las mujeres donde aparece un mayor número de parámetros de la masturbación implicados en el orgasmo en las relaciones sexuales, en comparación con los hombres, poniendo de manifiesto que, en la sexualidad de ellas, frente a los hombres, estarían implicadas más variables, tal como se ha observado previamente (Arcos-Romero y Sierra, 2020; Mangas et al., 2022; Tavares et al., 2018). La mayor implicación de los parámetros de la

masturbación en mujeres frente a hombres por sus asociaciones podría explicarse a partir de varias hipótesis. En un contexto en el que la masturbación femenina se ha considerado innecesaria (Kraus et al., 2017), especialmente estigmatizada (Blanc, 2024; Soares et al., 2024), con un inicio más tardío en su práctica (e.g., Estrada-Carmona et al., 2023; Herbenick et al., 2010a, 2010b, 2023) y menor probabilidad de haber aprendido sobre su capacidad para responder sexualmente en comparación con el hombre (Laan y Janssen, 2007), ellas podrían beneficiarse más al practicar esta conducta experimentando orgasmos satisfactorios (Csako et al., 2022).

En definitiva, los resultados obtenidos en el Estudio 5 de la Tesis Doctoral ponen de manifiesto la importancia de la masturbación para la satisfacción orgásmica en las relaciones sexuales, con una implicación más compensatoria en hombres. Las repercusiones clínicas de estos hallazgos son importantes, dado que la masturbación es una técnica terapéutica relevante en las dificultades orgásmicas femeninas (Marchand, 2021). Además, estos resultados subrayan la relevancia de trabajar en la actitud hacia la masturbación, especialmente en la mujer, por su relación con una mayor satisfacción orgásmica en las relaciones sexuales.

En el sexto y último estudio de esta Tesis Doctoral, el objetivo fue obtener un perfil psicosexual en hombres y mujeres con pareja que presentan diferentes patrones de frecuencia de masturbación en solitario y relaciones sexuales. En concreto, se establecen tres grupos en función de la frecuencia de masturbación y relaciones sexuales, y se comparan en (1) características sociodemográficas (i.e., edad, nivel educativo, edad de primera relación sexual, duración de la relación de pareja y convivencia con la pareja), (2) variables relacionadas con la masturbación (i.e., edad de primera masturbación, actitud negativa, razones para masturbarse, deseo sexual solitario, experiencia subjetiva del orgasmo, frecuencia de consumo de pornografía y motivos de consumo de pornografía), (3) variables relacionadas con el funcionamiento sexual (i.e., funcionamiento sexual general, deseo sexual diádico hacia la pareja, deseo sexual diádico

hacia una persona atractiva, propensión a la excitación sexual, propensión a la inhibición sexual debido a la amenaza por fallo en el rendimiento, propensión a la inhibición sexual debido a la amenaza por las consecuencias de la actividad sexual, excitación sexual, erección/lubricación, facilidad orgásmica, satisfacción orgásmica y experiencia subjetiva del orgasmo en las relaciones sexuales), y (4) satisfacción sexual y satisfacción con la relación de pareja. Para evaluar la satisfacción sexual, siguiendo la recomendación planteada en el Estudio 1 de la Tesis Doctoral, se consideró el Modelo de Intercambio Interpersonal de Satisfacción Sexual (IEMSS, por sus siglas en inglés) de Lawrance y Byers (1992, 1995), adaptado y validado en población española por Sánchez-Fuentes y Santos-Iglesias (2016). Mediante un análisis de clúster, los participantes en el estudio - separando hombres y mujeres- se dividieron en tres perfiles en función de su patrón de actividad sexual: (1) grupo que informa valores elevados en la frecuencia de relaciones sexuales y de masturbación en solitario (RS + M), (2) grupo que informa valores elevados en la frecuencia de relaciones sexuales, pero bajos en masturbación (RS) y (3) grupo que indica valores elevados en la frecuencia de masturbación, pero bajos en relaciones sexuales (M). Dadas las diferencias entre hombres y mujeres en distintos parámetros de la masturbación, las comparaciones en las variables evaluadas, entre los tres grupos, se llevaron a cabo por separado en cada sexo. Para discutir los resultados, se toman como referencia los grupos que practican masturbación con más frecuencia. Por un lado, se examinan las similitudes y diferencias en los perfiles de hombres y mujeres al comparar los grupos RS + M vs. RS, para explorar el papel de la masturbación en solitario cuando se practica en convivencia con las relaciones sexuales. Además, se analiza el papel de la masturbación en solitario cuando esta conducta es la actividad sexual principal (grupo M), examinando las similitudes en el patrón de hombres y mujeres al comparar el grupo M vs. RS + M y RS.

Al comparar las variables evaluadas entre los grupos RS + M y RS, se observan similitudes y discrepancias, tanto en hombres como en mujeres. De manera común, hombres y mujeres pertenecientes al grupo RS + M, con respecto al grupo RS, conviven

menos con su pareja, se masturban más por placer, informan mayor deseo sexual solitario, experimentan el orgasmo en la masturbación de manera más intensa en sus dimensiones afectiva y recompensante, y consumen pornografía con más frecuencia, haciéndolo más por búsqueda de placer. La menor proporción de convivientes, tanto en hombres como en mujeres, en el grupo RS + M podría deberse a que la masturbación en solitario estaría libre de la evaluación negativa que podría hacer la pareja (Marcus et al., 2011), teniendo en cuenta que ha sido una conducta estigmatizada (Carvalho y Leal, 2013; Kaestle y Allen, 2011). Los resultados también indican que hombres y mujeres del grupo RS + M frente al grupo RS se masturban más por placer y experimentan el orgasmo de manera más recompensante -cualidad que caracteriza al orgasmo obtenido mediante la masturbación (Mangas, da Silva Alves et al., 2024; Muñoz-García, Gómez-Berrocal y Sierra, 2023)-, lo que podría ser un aliciente para seguir manteniendo la práctica de la masturbación junto con las relaciones sexuales. No es de extrañar que estas personas consuman más pornografía, ya que se masturban más y, como es sabido, ambas variables están positivamente relacionadas (Bačaka y Štulhofer, 2011; Hald, 2006; Miller et al., 2019). Aunque esta asociación entre pornografía y masturbación sería más esperable en hombres, ya que son ellos los que consumen pornografía con más frecuencia (e.g., Hald y Malamuth, 2008), se ha señalado que ellas, estando en pareja, también la utilizan para masturbarse (Litsou et al., 2022).

En cuanto a las discrepancias entre hombres y mujeres, al comparar el grupo que combina masturbación en solitario y relaciones sexuales frente al que principalmente mantiene relaciones sexuales (i.e., RS + M vs. RS), se han encontrado diferencias en actitud negativa hacia la masturbación, razones para masturbarse y experiencia subjetiva del orgasmo. En mujeres, el grupo RS + M, en comparación al grupo RS, se masturba por primera vez antes, informa una actitud más positiva hacia la masturbación, se masturba más para aliviar el estrés y por falta de sexo en pareja, y experimenta el orgasmo en la masturbación más intensamente en sus dimensiones sensorial e íntima, mientras que los hombres de estos dos grupos no se diferenciaron en ninguna de estas variables. En

cuanto al funcionamiento sexual, las mujeres del grupo RS + M respecto al grupo RS informan mejor funcionamiento sexual general, más deseo sexual hacia la pareja y hacia una persona atractiva, más propensión a la excitación y menos inhibición, menos dificultades en excitación y en lubricación, y mayor satisfacción sexual; mientras, en los hombres únicamente se observó que los del grupo RS + M tienen más dificultad en erección que los del grupo RS. Por tanto, parece que en las mujeres la inclusión de la masturbación en el repertorio sexual se asocia a mejor funcionamiento sexual, mientras que, en hombres, la única diferencia encontrada apunta a un papel compensatorio de la masturbación (dificultades en la erección). Estos resultados sugieren una asociación más positiva de la masturbación en solitario con el funcionamiento sexual femenino que en el masculino en las variables evaluadas. Por tanto, la masturbación femenina es una práctica asociada a mejores relaciones sexuales en el contexto de la pareja y mejor salud sexual (Kılıç Onar et al., 2020). Las diferencias entre hombres y mujeres en el papel que juega la masturbación en el funcionamiento sexual podrían reflejar que, a los hombres, tradicionalmente se les ha atribuido la proactividad y la iniciativa sexual para las relaciones sexuales (Petersen y Hyde, 2011), por lo que recurrir a la masturbación sería un recurso de segundo nivel tras el fracaso de las relaciones sexuales, a diferencia de las mujeres que como refleja su mejor experiencia orgásmica en la masturbación con la edad (Rowland et al., 2019), podrían percibir la masturbación como un tiempo personal y de autocuidado, y una fuente de placer (Wehrli et al., 2024). La satisfacción sexual más alta en las mujeres que combinan relaciones sexuales y masturbación en comparación con el grupo RS, a diferencia de los hombres (Fischer y Træen, 2022), es consistente con los trabajos previos que apoyarían más un patrón complementario de la masturbación en ellas, en línea con lo sugerido en el Estudio 1 y evidencias previas (Burri y Carvalheira, 2019; Carvalheira y Leal, 2013).

En cuanto a las comparaciones del grupo con valores más elevados en masturbación que en relaciones sexuales (i.e., grupo M) con el grupo con valores elevados tanto en relaciones sexuales como en masturbación (i.e., RS + M) y el grupo con

valores más elevados en relaciones sexuales que masturbación (i.e., RS), cabe destacar que los hombres y mujeres pertenecientes al grupo M, en comparación con los grupos RS + M y RS, se caracterizan en general por peor salud sexual. Concretamente, informan menor deseo sexual diádico hacia la pareja, menor satisfacción sexual y con la relación de pareja, más costes que beneficios sexuales en la pareja, y mayor discrepancia en la comparación entre los beneficios/costes percibidos y esperados. Cuando en personas en una relación de pareja los costes sexuales superan a los beneficios, la masturbación actuaría como una posible solución a la insatisfacción sexual. Se sabe, por ejemplo, que mantener relaciones sexuales cuando a la pareja no le apetece constituye uno de los costes sexuales más frecuentes, tanto en hombres como en mujeres (Calvillo et al., 2024; Sánchez-Fuentes y Santos-Iglesias, 2016), hecho que pudiera motivar la práctica de la masturbación. Asimismo, la insatisfacción sexual provocada por un desajuste entre las expectativas y la realidad en términos de frecuencia de relaciones sexuales -factor considerado como beneficio sexual por un amplio porcentaje de hombres y mujeres (Calvillo et al., 2024; Sánchez-Fuentes y Santos-Iglesias, 2016), podría asociarse a mayor frecuencia de masturbación. Estos resultados ponen de manifiesto la relación entre masturbación e indicadores de peor salud sexual en hombres y mujeres y, por tanto, un patrón compensatorio de esta conducta. Esto evidencia que es importante abordar el estudio de la masturbación desde una perspectiva más amplia, ya que considerar la frecuencia de masturbación de manera aislada de otras variables relevantes, como puede ser la frecuencia de relaciones sexuales, ofrecería una perspectiva limitada. En este sentido, se ha visto en hombres, que el hecho de masturbarse frecuentemente puede deberse a diferentes motivos como el placer o por problemas sexuales (Hevesi et al., 2023). Por tanto, esta conducta puede ser un recurso para liberar tensión en circunstancias relacionales que pueden no ser favorables o, por el contrario, puede conformar una fuente de placer cuando diferentes recursos para obtener satisfacción no están disponibles. Ahora bien, es importante dejar claro que la asociación de la

masturbación con peores indicadores de salud sexual no implica necesariamente un efecto causal.

En resumen, este último estudio de la Tesis muestra la importancia de tener en cuenta la masturbación en solitario en el contexto de las relaciones de pareja. Practicar relaciones sexuales en convivencia con masturbación en solitario en comparación con mantener principalmente relaciones sexuales, en los hombres revela pocas diferencias en términos de funcionamiento sexual, es más, se asocia con más dificultades en la erección, lo que sugiere un papel compensatorio de la masturbación. Sin embargo, en las mujeres esta combinación de relaciones sexuales y masturbación se relaciona con un mejor funcionamiento sexual y mayor satisfacción sexual, abogando por tanto esta combinación por un papel complementario de la masturbación. Cabe destacar que las personas que principalmente se masturban (grupo M) presentan peores indicadores de salud sexual en relación con la pareja, lo que evidencia el rol compensatorio que puede adquirir la masturbación en hombres y mujeres. Por tanto, cuando la masturbación es practicada en convivencia con las relaciones sexuales puede adquirir un rol compensatorio en hombres y un rol complementario en mujeres, mientras que, cuando esta conducta autoerótica es la actividad sexual principal, adquiere un rol compensatorio independientemente de ser hombre o mujer.

Considerando los dos últimos estudios, respecto a la relevancia de los parámetros de la masturbación, se ha puesto de manifiesto que la edad de inicio más tardío se relaciona con menor frecuencia actual de práctica en mujeres en el contexto de la pareja. La frecuencia de masturbación en combinación con las relaciones sexuales en el contexto de la pareja tiene menor relevancia en el funcionamiento sexual masculino, mientras que, en las mujeres, este parámetro se asocia con mejor funcionamiento sexual. No obstante, cuando la masturbación en solitario es la actividad principal en el contexto de la pareja, esta adquiere un papel principalmente compensatorio. La actitud negativa hacia la masturbación, además de ser una variable relevante para la salud sexual por su

relación con otras actitudes sexuales y el funcionamiento sexual, se muestra como un factor importante para la mujer, asociándose negativamente a la satisfacción orgásmica en las relaciones sexuales y a menor frecuencia en su práctica en el contexto de la pareja. El deseo sexual solitario, por su parte, es relevante para el orgasmo femenino por su relación positiva con la satisfacción orgásmica en las relaciones sexuales, y está asociado a más frecuencia de masturbación en hombres y mujeres en el contexto de la pareja. Finalmente, la experiencia subjetiva del orgasmo en la masturbación (especialmente sus cualidades psicológicas afectivas) se asocia a mayor satisfacción orgásmica en las relaciones sexuales de hombres y mujeres. Estos resultados, subrayan la importancia de abordar el estudio de la masturbación incluyendo diferentes parámetros, lo que motiva a seguir explorando el papel que juegan en la salud sexual.

Implicaciones para la salud sexual

De los resultados obtenidos en la presente Tesis Doctoral se derivan implicaciones para la salud sexual que cabe mencionar. A pesar de que la masturbación es una conducta sexual muy prevalente en la población -tal como queda reflejado en los estudios de esta Tesis Doctoral- apenas existe educación sexual formal que tenga en consideración a esta conducta (Kaestle y Allen, 2011). En este sentido, promover una actitud positiva hacia la masturbación es relevante por las implicaciones que tiene para la salud sexual, por lo que es fundamental contar con programas que incluyan su abordaje (Kriofske Mainella et al., 2023; Lameiras Fernández et al., 2004; Ruiz et al., 2019), resaltando su práctica como una fuente de bienestar sexual, libre y saludable. Promover la práctica saludable de la masturbación atendiendo a las emociones experimentadas durante el orgasmo, además de proveer a las personas de una fuente de satisfacción sexual (Ford et al., 2021), puede conducir a experiencias más satisfactorias en las relaciones sexuales en pareja. Es importante atender a las diferencias encontradas entre hombres y mujeres, destacando la relevancia de promover su práctica en adultos como una fuente de placer independiente de las relaciones sexuales (Burri y Carvalheira,

2019; Dekker & Schmidt, 2003; Ford et al., 2021; Træen et al., 2019), especialmente en los hombres y, por otra parte, apoyando su práctica en la adolescencia como una conducta normal y saludable (Carvalho y Leal, 2013; Reynolds et al., 2003), con especial énfasis en las mujeres por su inicio más tardío.

La masturbación es una herramienta terapéutica empleada en el abordaje de algunas disfunciones sexuales (Barbach, 1974; Marchand, 2021; Nobre, 2017; Zamboni y Crawford, 2003). Sin embargo, se han descrito resistencias por parte de pacientes para incorporar ejercicios relacionados con esta conducta, por ejemplo, para abordar dificultades orgásmicas en mujeres (e.g., Carpenter et al., 2017). Por tanto, las actitudes sexuales deben ser consideradas en el ámbito de la terapia sexual (Hertlein y Nelson, 2017). En este sentido, contar con una herramienta con buenas propiedades psicométricas como el NATMI, validada en la presente Tesis Doctoral, posibilita evaluar la actitud negativa hacia la masturbación de manera previa a la implementación de la masturbación como herramienta terapéutica. Una de las manifestaciones del Trastorno hipersexual (CIE-11; World Health Organization, 2019) es la práctica de la masturbación; sin embargo, en su diagnóstico, es importante descartar que el malestar asociado a esta conducta no se deba exclusivamente a juicios morales o a lo que una persona puede considerar como frecuencia excesiva (Briken et al., 2024), por lo que evaluar la actitud hacia esta conducta con el NATMI puede ser útil en la clarificación del diagnóstico.

La utilidad de la masturbación para el abordaje de las dificultades en el orgasmo cuenta con evidencias suficientes (Kingsberg et al., 2017; Laan et al., 2013; Marchand, 2021; Stinson, 2009). Esta Tesis Doctoral detalla las asociaciones entre diferentes parámetros de la masturbación y la satisfacción orgásmica en las relaciones sexuales, encontrándose que la intensidad de las emociones experimentadas durante el orgasmo en la masturbación está estrechamente relacionada con la satisfacción orgásmica en las relaciones sexuales. Esto avalaría la potencialidad que puede ofrecer un entrenamiento en solitario de la respuesta sexual para transferirlo a las relaciones sexuales, centrando

la atención en la experiencia de aspectos más sensoriales y placenteros de la autoestimulación (Nobre, 2017). Además, los diferentes parámetros de la masturbación implicados en hombres y mujeres ponen de manifiesto distintas vías de intervención para tener en cuenta en el tratamiento de las dificultades orgásmicas; por ejemplo, en ellas, la actitud negativa hacia la masturbación o el deseo sexual solitario adquieren un papel más importante que en los hombres.

En el contexto de la pareja, la masturbación en solitario puede estar asociada a indicadores positivos de salud sexual cuando se practica en convivencia con las relaciones sexuales, pero cuando la actividad sexual se centra mayoritariamente en esta conducta solitaria puede ser un indicador de insatisfacción sexual y con la relación de pareja. Estos resultados ponen de manifiesto la utilidad para la terapia sexual de examinar la actividad sexual en la pareja considerando la actividad sexual diádica y solitaria. Se destaca también la asociación positiva de la masturbación con el funcionamiento sexual, la satisfacción sexual y con la pareja, en las mujeres. La mayor implicación de los parámetros de la masturbación en el orgasmo femenino en las relaciones sexuales, observada en el Estudio 5, anima a pensar que esta conducta estaría implicada en una mejor experiencia sexual en el contexto de la pareja, lo que se podría reflejar en mayor satisfacción sexual como se ha observado en el Estudio 6. No obstante, no se pueden establecer relaciones de causalidad, y los mecanismos de acción requieren futuros trabajos en este sentido. En resumen, la masturbación es una conducta que se puede manifestar más claramente como complementaria en el caso de las mujeres, mientras que, en los hombres, de manera puntual podría adquirir un papel más compensatorio en casos con dificultades en la erección, por ejemplo.

En definitiva, los resultados obtenidos en la presente Tesis Doctoral realzan la implicación de diferentes parámetros de la masturbación en la salud sexual y, más concretamente, en dificultades como las dificultades orgásmicas. Además, se enfatiza el papel diferente de esta conducta en hombres y mujeres, aspecto a considerar en el ámbito

de la terapia y educación sexual. Con todo, se pone de manifiesto la conveniencia de seguir profundizando en el estudio de la masturbación y su aplicabilidad en el contexto de la intervención sexológica.

Limitaciones

Es necesario señalar algunas limitaciones de la Tesis Doctoral y del propio estudio de la masturbación. En este sentido, el estigma social que ha rodeado tradicionalmente a la masturbación podría seguir haciendo que especialmente las mujeres reporten menor frecuencia de esta conducta (Petersen y Hyde, 2011), por lo que sería recomendable en próximos estudios la inclusión de alguna medida de deseabilidad social. Por otro lado, es importante considerar que los estudios presentados son todos de tipo transversal, por lo que no permiten establecer relaciones de causalidad (Peñate et al., 2018). Además, las muestras empleadas no son probabilísticas, aspecto para tener en cuenta en la generalización de los resultados obtenidos. Finalmente, se pone de manifiesto la importancia de ampliar estos hallazgos a otras poblaciones, incluyendo minorías sexuales y de género, o personas mayores.

En síntesis, considerando todos los estudios incluidos en esta Tesis Doctoral, se pone de manifiesto la importancia de abordar la masturbación, por sus implicaciones para la salud sexual, desde una perspectiva amplia que considere diferentes parámetros. En primer lugar, se ofrece una perspectiva actual de la relación entre la masturbación y la salud sexual, a través de la satisfacción sexual, justificándose la necesidad de ampliar los parámetros implicados. Además, se aportan dos instrumentos adaptados a población española adulta, el *Negative Attitudes Toward Masturbation Inventory* para evaluar la actitud negativa hacia la masturbación y la *Orgasm Rating Scale* para medir la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario. Los dos constructos evaluados con estas escalas, junto con la edad de inicio de la masturbación, el deseo sexual solitario y su frecuencia de práctica, conforman un conjunto de parámetros que caracterizan a esta conducta permitiendo ampliar su conocimiento. En

el contexto de pareja, se pone de manifiesto la relación entre la práctica de la masturbación y las relaciones sexuales, pero con algunas diferencias entre hombres y mujeres, destacando en las mujeres su asociación con mejor funcionamiento y satisfacción sexual.

CONCLUSIONES / CONCLUSIONS

CONCLUSIONES

1. En hombres, las evidencias científicas previas apoyan mayoritariamente una relación negativa entre masturbación y satisfacción sexual, mientras que en mujeres los resultados son más heterogéneos, con más evidencias que en los hombres de una relación positiva.
2. La versión española breve del *Negative Attitudes Toward Masturbation Inventory* (NATMI) es una medida unidimensional que proporciona puntuaciones válidas y fiables de la actitud negativa hacia la masturbación.
3. La actitud negativa hacia la masturbación se asocia con indicadores de peor salud sexual, concretamente con actitud más negativa hacia la sexualidad en general y hacia las fantasías sexuales en particular, y mayor inhibición sexual.
4. La *Orgasm Rating Scale* (ORS) es una medida multidimensional que permite evaluar de manera fiable y válida la experiencia subjetiva del orgasmo obtenido en la masturbación en solitario, atendiendo a aspectos emocionales, sensoriales, íntimos y recompensantes.
5. La intensidad de la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario se asocia con indicadores positivos de salud sexual. Concretamente, se relaciona en sentido positivo con la actitud positiva hacia la sexualidad en general y hacia las fantasías sexuales en particular y, en sentido negativo, con la actitud negativa hacia la masturbación. Además, hombres y mujeres que experimentan de manera menos intensa el orgasmo en la masturbación, presentan más dificultades orgásmicas en las relaciones sexuales.
6. La excitación sexual tiene capacidad para explicar las dimensiones del Modelo de la Experiencia Subjetiva del Orgasmo en el contexto de la masturbación, habiendo aspectos diferenciales entre hombres y mujeres. De este modo, se dota de evidencias de validez a este marco conceptual multidimensional que caracteriza a nivel psicológico la experiencia orgásmica en la masturbación.

7. Existen diferencias significativas entre hombres y mujeres en los parámetros de la masturbación (i.e., edad de inicio, actitud negativa, deseo sexual solitario, frecuencia y experiencia subjetiva del orgasmo). Concretamente, los hombres, respecto a las mujeres, comienzan a masturbarse antes, informan más deseo sexual solitario y se masturban con mayor frecuencia, mientras que las mujeres, en comparación con los hombres, informan mayor intensidad del orgasmo experimentado mediante la masturbación en sus dimensiones afectiva, sensorial e íntima.
8. Los parámetros de la masturbación se relacionan con la satisfacción orgásmica en el contexto de las relaciones sexuales. Tanto en hombres como en mujeres, la intensidad de las emociones experimentadas durante el orgasmo mediante la masturbación se asocia positivamente con la satisfacción orgásmica en el contexto de las relaciones sexuales. Además, en los hombres, la frecuencia de masturbación explica negativamente la satisfacción orgásmica, mientras que, en las mujeres, la actitud negativa hacia esta conducta, en sentido negativo, y el deseo sexual solitario, en sentido positivo, adquieren relevancia en la satisfacción con el orgasmo en las relaciones sexuales.
9. La práctica frecuente de relaciones sexuales y masturbación en solitario, en mujeres con pareja, se asocia con mejor funcionamiento sexual y mayor satisfacción sexual, mientras que esta relación no está presente en los hombres.
10. Cuando la masturbación en solitario es más frecuente que las relaciones sexuales, en el contexto de una relación de pareja, tanto los hombres como las mujeres presentan peor funcionamiento sexual y se sienten más insatisfechos sexualmente que cuando las relaciones sexuales son igual de frecuentes o más que la masturbación.

11. Aunque tanto en los hombres como en las mujeres, la masturbación en solitario podría adquirir un papel compensatorio de las relaciones sexuales, este hecho es más característico en ellos, mientras que en ellas se evidencia más un rol complementario de la masturbación.

CONCLUSIONS

1. In men, previous scientific evidence mostly supports a negative relationship between masturbation and sexual satisfaction, while in women the results are more heterogeneous, with more evidence of a positive relationship than in men.
2. The brief Spanish version of the *Negative Attitudes Toward Masturbation Inventory* (NATMI) is a unidimensional measure that provides valid and reliable scores of negative attitude toward masturbation.
3. Negative attitude towards masturbation are associated with indicators of poorer sexual health, specifically with a more negative attitude towards sexuality in general and sexual fantasies in particular, as well as greater sexual inhibition.
4. The *Orgasm Rating Scale* (ORS) is a multidimensional measure that allows a reliable and valid evaluation of the subjective orgasm experience obtained during solo masturbation, taking into account emotional, sensory, intimate and reward aspects.
5. The intensity of the subjective orgasm experience in the context of solitary masturbation is associated with positive indicators of sexual health. Specifically, it is related in a positive sense with positive attitudes towards sexuality in general and attitude towards sexual fantasies in particular and, a negative sense, with negative attitude towards masturbation. In addition, men and women who subjectively experience less intense orgasm during masturbation present more orgasm difficulties during sexual relationships.
6. Sexual arousal has capacity to explain the dimensions of the Model of the Subjective Orgasm Experience in the context of solitary masturbation, with differential aspects between men and women. Thus, this multidimensional conceptual framework, which characterizes the orgasmic experience of masturbation at the psychological level, is provided with validity evidence.

7. There are significant differences between men and women in masturbation parameters (i.e., age of first experience, negative attitude, solitary sexual desire, frequency and subjective orgasm experience). Specifically, men, in comparison with women, start masturbating earlier, report more solitary sexual desire and masturbate more frequently, while women, compared to men, report greater intensity of orgasm experienced through masturbation in its affective, sensory and intimate dimensions.
8. Parameters of masturbation are related to orgasm satisfaction in the context of sexual relationships. In both men and women, the intensity of emotions experienced during orgasm through masturbation is positively associated with orgasm satisfaction in the context of sexual relationships. Moreover, in men, the frequency of masturbation negatively explains orgasm satisfaction, whereas, in women, the negative attitude towards this behavior, in a negative sense, and the solitary sexual desire, in a positive sense, acquire relevance in satisfaction with orgasm in sexual relationships.
9. The frequent practice of sexual relationships and solitary masturbation in women with a partner is associated with better sexual functioning and greater sexual satisfaction, whereas this relationship is not present in men.
10. When solitary masturbation is more frequent than sexual relationships in the couple context, both men and women show worse sexual functioning and feel more sexually dissatisfied than when sexual relationships are equal to or more frequent than masturbation.
11. Although solitary masturbation could acquire a compensatory role to sexual relationships in both men and women, this is more characteristic of men, while in women masturbation may take a more complementary role.

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APÉNDICE

Apéndice A

Primera página del artículo correspondiente al Estudio 1 publicado en *Healthcare*

Systematic Review

Relationship between Solitary Masturbation and Sexual Satisfaction: A Systematic Review

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Abstract: Masturbation is a healthy sexual behavior associated with different sexual functioning dimensions, which highlights sexual satisfaction as an important manifestation of sexual wellbeing. This review aims to systematically examine studies that have associated masturbation with sexual satisfaction, both in individuals with and without a partner. Following the PRISMA statement, searches were made in the APA PsycInfo, Medline, Scopus, and Web of Science databases. The search yielded 851 records, and twenty-two articles that examined the relation between solitary masturbation and sexual satisfaction were selected. In men, a negative relation between masturbation and sexual satisfaction was observed in 71.4% of the studies, 21.4% found no such relation, and 7.2% observed a positive association. In women, 40% reported no relation, 33.3% a negative relation, and 26.7% a positive one. The negative association between solitary masturbation and sexual satisfaction is consistent with the previously proposed compensatory role of masturbation, especially for men. In women, compared to men, the complementary role of masturbation in relation to sexual relationships is observed to a greater extent and is associated more closely with sexual health. The importance of including different parameters beyond the masturbation frequency in future studies to explore its relation with sexual satisfaction is emphasized. This systematic review is registered in PROSPERO (CRD42023416688).

Keywords: solitary masturbation; sexual satisfaction; sexual health; sexual functioning; sexual relationships; systematic review



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1. Introduction

Masturbation is a healthy sexual behavior practiced with others (e.g., a partner) or individually [1]. Solitary masturbation is defined as erotic self-stimulation without anyone else being present or participating [2]. Its practice is present from very early development phases to old age [3]. This behavior favors self-exploration and sexual learning in a context in which the presence of sexual difficulties might be less prevalent [4]. Previous studies have stressed the importance of solitary masturbation for the adjustment and generalization of the sexual response to the context of sexual relationships [5], acting as a therapeutic tool to deal with some sexual difficulties [6,7].

The relation of solitary masturbation with sexual relationships has been studied mostly by two models: compensatory and complementary. The compensatory model hypothesizes that masturbation frequency could increase for the purpose of substituting unsatisfactory or insufficient sexual relationships [8,9]. The complementary model considers a positive relation between masturbation behavior and sexual relationships, implying that practicing one would be associated with the other one being practiced more frequently [9]. Previous pieces of evidence suggest that the compensatory pattern would be more present in men, with the complementary pattern in women [9–14], despite some studies showing the independence of gender in both of these models [15,16].

Apéndice B

Primera página del artículo correspondiente al Estudio 2 publicado en *International Journal of Clinical and Health Psychology*

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International Journal of Clinical and Health Psychology

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ORIGINAL ARTICLE

Development of the Spanish short version of Negative Attitudes Toward Masturbation Inventory[☆]



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KEYWORDS

Attitude toward
masturbation;
Negative Attitudes
Toward Masturbation
Inventory;
Reliability;
Validity evidence;
Instrumental study

Abstract *Background/Objective:* Masturbation has historically been a sexual behaviour associated with negative connotations, as a consequence of traditional orthodox positions, despite its positive impact on health. The instruments developed to measure the attitude towards masturbation are scarce, and none of them have been validated in the Spanish adult population. This study aims to propose a short version of the Negative Attitudes Toward Masturbation Inventory (NATMI) and examine their psychometric properties (reliability and evidence of validity) in the Spanish adult population. *Method:* A total of 4,116 heterosexual adults aged 18-83 years ($M = 40.58$; $SD = 12.24$; 54.64% women) participated in the study. In addition to the NATMI, they answered other scales to assess sexual attitudes, sexual desire, propensity to become sexually excited/inhibited and sexual functioning. *Results:* Analysis of the construct validity of the NATMI resulted in a reduced version of ten items grouped into a single factor explaining 66% of the variance (ordinal $\alpha = .95$). The evidence of validity is clear, as subjects with negative and positive attitude towards masturbation differed in religiousness, frequency of masturbation, erotophilia, positive attitude towards sexual fantasies, sexual inhibition and sexual functioning. *Conclusions:* The Spanish short version of NATMI provides reliable and valid measures in the Spanish adult population.

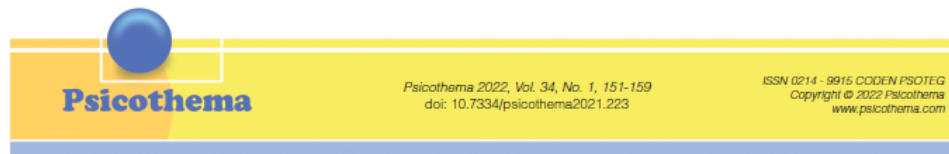
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Apéndice C

Primera página del artículo correspondiente al Estudio 3 publicado en *Psicothema*



Article

Validation of the Orgasm Rating Scale in the Context of Masturbation

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Abstract

Background: The Orgasm Rating Scale (ORS) assesses the subjective experience of orgasm. Its psychometric properties have only been examined in the context of sexual intercourse. This study aims to validate the ORS in the context of solitary masturbation. **Methods:** A sample of 1,171 men and 1,424 women aged 18-83 years ($M = 40.51$, $SD = 12.07$) completed the ORS in the solitary masturbation context along with other scales to assess sexual attitudes, solitary sexual desire, propensity for sexual arousal/inhibition, and sexual functioning. **Results:** A four-dimensional structure was confirmed, similar to the homologous version for the context of sexual intercourse. Measures obtained from the ORS were sex and age invariant, exhibited adequate internal consistency, discriminated between people with orgasmic difficulties, and were associated with related variables. **Conclusions:** The ORS is a multidimensional measure that provides reliable, valid measures of the subjective experience of orgasm in the context of solitary masturbation.

Keywords: Orgasm Rating Scale, subjective orgasm experience, masturbation, reliability, validity.

Resumen

Validación de la Orgasm Rating Scale en el Contexto de la Masturbación. **Antecedentes:** la Orgasm Rating Scale (ORS) evalúa la experiencia subjetiva del orgasmo. Sus propiedades psicométricas únicamente se examinaron en el contexto de las relaciones sexuales. El objetivo de este estudio es validar la ORS en el contexto de la masturbación en solitario. **Método:** una muestra formada por 1.171 hombres y 1.424 mujeres de 18 a 83 años ($M = 40,51$; $DT = 12,07$) completaron la ORS en el contexto de la masturbación en solitario junto con otras escalas para evaluar actitudes sexuales, deseo sexual solitario, propensión a la excitación/inhibición sexual y funcionamiento sexual. **Resultados:** se confirma una estructura de cuatro dimensiones, al igual que su versión homóloga para el contexto de las relaciones sexuales. Las medidas obtenidas mediante la ORS son invariantes por sexo y edad, sus dimensiones muestran una adecuada consistencia interna, discriminan entre personas con y sin dificultades orgásmicas y se relacionan con variables afines. **Conclusiones:** la ORS es una medida multidimensional que aporta medidas fiables y válidas de la experiencia subjetiva del orgasmo en el contexto de la masturbación en solitario.

Palabras clave: Orgasm Rating Scale, experiencia subjetiva del orgasmo, masturbación, fiabilidad, validez.

Orgasm is characterized by a maximum, variable, and transitory experience of intense pleasure, accompanied by psycho-physiological responses that, as a result of sexual activity, culminate in a marked feeling of well-being (Arcos-Romero & Sierra, 2018; Meston et al., 2004). It is an effective indicator of pleasurable and healthy sexuality because it is related to satisfaction with sexual relationships (Edard & Rusinek, 2020). Traditionally, studies into the orgasm have paid attention to its physiological dimension, and the subjective experience associated with it (i.e., psychological perception of the effects caused by this sexual response) has been less studied (Arcos-Romero & Sierra, 2018; Mah & Binik, 2001).

Lack of standard measures to assess the subjective dimension of the orgasm has probably been one of the reasons why very few studies have shown an interest in this dimension of human sexuality

(Arcos-Romero & Sierra, 2018; Arcos-Romero et al., 2018; Mah & Binik, 2005). The Orgasm Rating Scale (ORS; Mah & Binik, 2002, 2005, 2020) is one of the few instruments that evaluates and quantifies the subjective experience of an orgasm in the contexts of sexual relationships and solitary masturbation.

The ORS was adapted to the Spanish population in the sexual relationships context by Arcos-Romero et al. (2018), who proposed a shorter version with 25 items grouped into four factors: Affective ($\alpha = .90$), which refers to the feelings experienced during an orgasm (e.g., Satisfying); Sensory ($\alpha = .93$), which refers to perceiving the physiological sensations of an orgasm (e.g., Pulsating); Intimacy ($\alpha = .78$), which includes the items that reflect an intimate aspect of the orgasm experience (e.g., Tender); Rewards ($\alpha = .86$), which includes those items about the consequences or gratifying effects of an orgasm (e.g., Relaxing). This shorter version adequately demonstrates validity by relating the scores of its four dimensions to similar constructs, such as erotophilia or sexual satisfaction. The scale also discriminates between people with and without orgasm difficulties.

Despite the sound evidence of the ORS' validation in the sexual relationships context, its psychometric properties have not yet been examined in the solitary masturbation context.

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Apéndice D

Primera página del artículo correspondiente al Estudio 4 publicado en Revista Iberoamericana de Psicología y Salud



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Article

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

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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.

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Apéndice E

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Masturbation parameters related to orgasm satisfaction in sexual relationships: Differences between men and women

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Objective: Masturbation is a behavior that can enhance sexual functioning. This study aims to analyze differences between men and women in different masturbation parameters, and to examine their relation with orgasm satisfaction in sexual relationships.

Method: One thousand three hundred and thirty-fifth men and women from the Spanish population aged 18–83 years ($M = 36.91$; $SD = 11.86$) participated in an online survey. A questionnaire was used to collect socio-demographic, sexual history data, negative attitude toward masturbation, solitary sexual desire and orgasm subjective experience upon masturbation were assessed. Given the differences between men and women, independent regression models are proposed to explain orgasm satisfaction in the sexual relationships context.

Findings: Men, compared to women, masturbated at a younger age ($p < 0.001$), and reported higher current masturbation frequency ($p < 0.001$) and more solitary sexual desire ($p < 0.001$). Women reported greater intensity in the subjective orgasm experience on its Affective ($p < 0.001$), Sensory ($p < 0.001$) and Intimacy ($p < 0.001$) dimensions. Regarding regression models, the Affective dimension of orgasm was a common parameter in men ($\beta = 0.36$; $p < 0.001$) and women ($\beta = 0.24$) to explain orgasm satisfaction during sexual relationships. In men, solitary masturbation frequency ($\beta = -0.10$; $p = 0.027$) acquired a significant role. In women, the model also included age ($\beta = 0.09$; $p = 0.038$), negative attitude toward masturbation ($\beta = -0.12$; $p = 0.005$) and solitary sexual desire ($\beta = -0.19$; $p = 0.001$).

Conclusion: When dealing with men and women's orgasm difficulties in the sexual relationships context, it is important to consider the role of masturbation. In men and women, the Affective dimension of the orgasm experience explain the orgasm satisfaction in sexual relationship. Also, in men, the solitary masturbation frequency is negatively related with orgasm satisfaction in sexual relationship, supporting the compensatory hypothesis of masturbation. In women, in addition to the Affective dimension, the orgasm satisfaction in sexual relationship is explained, negatively, by the negative

Apéndice F

Versión española breve del Negative Attitudes Toward Masturbation Inventory (NATMI)

A continuación, se le presentan diez afirmaciones que muestran diversas opiniones y actitudes sobre la masturbación en solitario. Le pedimos que indique en qué medida son verdaderas o falsas para usted.
Para responder, debe utilizar la escala numérica que aparece al lado de cada frase.
Por favor, recuerde lo que significa cada número de la escala de respuesta que aparece justo a continuación.

1 = Totalmente falso
2 = Bastante falso
3 = Indecisión
4 = Bastante verdadero
5 = Totalmente verdadero

- | | | |
|----|---|-----------|
| 1 | La masturbación es un signo de debilidad o un pecado contra uno/a mismo/a | 1 2 3 4 5 |
| 2 | La masturbación en adultos es una conducta infantil e inmadura | 1 2 3 4 5 |
| 3 | La práctica de la masturbación puede conducir a la homosexualidad | 1 2 3 4 5 |
| 4 | Tras masturbarse, las personas deberían sentir vergüenza | 1 2 3 4 5 |
| 5 | Cuando me masturbo me siento culpable | 1 2 3 4 5 |
| 6 | Jugar con los propios genitales es asqueroso | 1 2 3 4 5 |
| 7 | La masturbación es una conducta que está de más | 1 2 3 4 5 |
| 8 | Cuando me masturbo, me doy asco | 1 2 3 4 5 |
| 9 | La masturbación es una conducta sexual normal | 1 2 3 4 5 |
| 10 | Después de masturbarme, me enfado conmigo mismo/a por haber perdido el control sobre mi propio cuerpo | 1 2 3 4 5 |

Nota. Ítem 9 es inverso.

Apéndice G

Versión española de la Orgasm Rating Scale (ORS) para el contexto de la masturbación en solitario

Ahora trate de recordar lo mejor posible el orgasmo más reciente que experimentó durante la **masturbación en solitario**. Esto puede incluir cualquier actividad sexual que haya tenido a solas.

SI NO HA TENIDO UN ORGASMO MEDIANTE MASTURBACIÓN EN SOLITARIO EN LOS ÚLTIMOS TRES MESES, PASE A LA SIGUIENTE PÁGINA

Si lo ha tenido, a continuación encontrará una lista de palabras que pueden utilizarse para describir la experiencia del orgasmo. Cada persona utiliza diferentes palabras para describir su experiencia personal, por lo que no hay una respuesta “correcta”. Para responder, señale uno de los números que hay al lado de cada palabra; el número que usted elija nos estará indicando cómo de bien describe esa palabra su orgasmo más reciente mediante la **masturbación en solitario**.

Para valorar cada palabra, use la siguiente escala, recuerde que los números entre el 0 (“No lo describe en absoluto”) y el 5 (“Lo describe perfectamente”) indican posiciones intermedias.

	No lo describe en absoluto					Lo describe perfectamente
1. Gozoso	0	1	2	3	4	5
2. Desbordante	0	1	2	3	4	5
3. Palpitante	0	1	2	3	4	5
4. Satisfactorio	0	1	2	3	4	5
5. Incontrolable	0	1	2	3	4	5
6. Maravilloso	0	1	2	3	4	5
7. Amoroso	0	1	2	3	4	5
8. Estremecedor	0	1	2	3	4	5
9. Desbocado	0	1	2	3	4	5
10. Eufórico	0	1	2	3	4	5
11. Sofocante	0	1	2	3	4	5
12. Tierno	0	1	2	3	4	5
13. Íntimo	0	1	2	3	4	5
14. Excitante	0	1	2	3	4	5
15. Gratificante	0	1	2	3	4	5
16. Tranquilizante	0	1	2	3	4	5
17. Relajante	0	1	2	3	4	5
18. Reconfortante	0	1	2	3	4	5
19. Vibrante	0	1	2	3	4	5
20. Explosivo	0	1	2	3	4	5
21. Placentero	0	1	2	3	4	5
22. Creciente	0	1	2	3	4	5
23. Efusivo	0	1	2	3	4	5
24. Tembloroso	0	1	2	3	4	5
25. Salvaje	0	1	2	3	4	5

