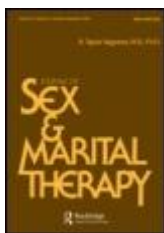


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Masturbation Among Women: Associated Factors and Sexual Response in a Portuguese Community Sample

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Abstract

Masturbation is a common sexual practice with significant variations in reported incidence between men and women. The goal of this study was to explore the (1) age at initiation and frequency of masturbation, (2) associations of masturbation with diverse variables, (3) reported reasons for masturbating and associated emotions, and (4) the relationship between frequency of masturbation and different sexual behavioral factors. A total of 3,687 women completed a web-based survey of previously pilot-tested items. The results reveal a high reported incidence of masturbation practices amongst this convenience sample of women. Ninety one percent of women, in this sample, indicated that they had masturbated at some point in their lives with 29.3% reporting having masturbated within the previous month. Masturbation behavior appears to be related to a greater sexual repertoire, more sexual fantasies, and greater reported ease in reaching sexual arousal and orgasm. Women reported a diversity of reasons for masturbation, as well as a variety of direct and indirect techniques. A minority of women reported feeling shame and guilt associated with masturbation.

Early masturbation experience might be beneficial to sexual arousal and orgasm in adulthood. Further, this study demonstrates that masturbation is a positive component in the structuring of female sexuality.

Introduction:

Masturbation is a common sexual practice with significant variations in the reported prevalence between men and women; as can actually be seen when making a literature review, research has described gender differences, showing that women report engaging in

masturbation less frequently than men (Alzate, 1989; Hatano, 1991; Laumann, Gagnon, Michael, & Michaels, 1994; Leitenberg, Detzer, & Srebnik, 1993; Meston, Trapnell, & Gorzalka, 1996; Oliver & Hyde, 1993).

Masturbation tends to begin early and can play a positive role in sexual development (Langfeldt, 1981; Bancroft, Herbenick, & Reynolds, 2002; Das, 2007), as well as providing a way of learning about the body and sexual responsiveness (Atwood & Gagnon, 1992; Coleman, 2002). Furthermore, in other studies, masturbation has also been linked to the orgasmic response during coitus (Hite, 1976; Kelly, Strassberg, & Kircher, 1990; Kinsey et al., 1953); to the overall sexual desire (Zamboni & Crawford, 2002); to a higher number of cues that facilitate sexual desire (Carvalheira, Brotto, & Maroco, 2011); and to sexual satisfaction (Hurlburt & Whittaker, 1991). Masturbation is described as a factor that contributes positively to the woman's ability to enjoy sexual relationships (Bruijn, 1982). Also, some studies that have addressed this matter, have shown that, among women, masturbation can be linked to indicators of sexual health, and to be a good marker of the female sexual function, in part due to its educational role and knowledge of one's body (Coleman, 2002; Heiman & LoPiccolo, 1976).

However, negative attitudes about masturbation, particularly transmitted through the Judeo-Christian culture, tend to persist and, as several authors point out, masturbation still remains stigmatized, frequently leading to feelings of guilt and shame (Cardamakis Vinakos, Lambou & Papathanasiou, 1993; Coleman, 2002; Hogarth & Ingham, 2009; Kitamura, 1990). A recent qualitative study in England with a sample of teenage women found a wide diversity of attitudes and beliefs towards masturbation (Hogarth & Ingham, 2009). A group of those young women held strong negative views about masturbation, another group appeared relatively indifferent to it (and talked in terms of having never really thought about it), whilst a third group reported regularly practicing masturbation and found it to be rewarding and pleasurable (although a few still battled with negative emotions associated) (Hogarth & Ingham, 2009). Bancroft (2009) argues that the evidence across studies reveals a lowering of the stigma associated with masturbation over recent years, and an associated increase in the likelihood of young people starting to masturbate.

Thus, and despite the persistence of this stigma and the difficulties in researching this theme (Bockting, 2002), several national studies on masturbation and sexual behavior have been successfully conducted in various countries. In the National Survey of Sexual Health and Behavior - NHSL (Laumann et al., 1994) developed in the US, 42% of women reported having masturbated during the previous year.

In the second British National Survey (NATSAL2, carried out in 2000), 71.2% of women indicated that they had masturbated at some point in their lives, and 36.8% in the 4 previous weeks; further, masturbation appeared to be part of a wider sexual repertoire rather than a substitute for partnered sex (Gerresu, Mercer, Graham, Wellings, & Johnson, 2008). On the one hand, reporting masturbation tended to be higher amongst individuals with higher education, from a higher social class, with a sexual function problem, aged between 25 and 34 years, and who were Caucasian. On the other hand, a negative association was found between women reporting masturbation and the reported strength of their religious beliefs (Gerressu et al., 2008).

In the French National Sexual Behavior Survey, the percentages of women reporting masturbation in the age groups of 18–19 and 20–24 were 34% and 38%, respectively (Béjin, 1996). The author found an increase in masturbation in the younger participants; however, he

came to the conclusion the practice of masturbation was underreported by women, which may indicate a selective recall or sharing of certain facts in their sexual trajectories. This underreporting is possibly associated to the social values that consider the female sexuality as necessarily connected to an emotional involvement (Béjin, 1996).

Furthermore, a Croatian study with 410 young women (ages 18–25) revealed that 40% of participants reported that they never masturbated; of those who reported masturbation, 23% reported masturbating a few times a year or less frequently (Baćak & Štulhofer, under review). Moreover, these authors found that women living in a large settlement, those who had more than six partners in the previous year, and those who were frequent church-goers were more likely to report not masturbating. Also, younger participants, and those that reported watching more pornography (\geq once a month) were more likely to report having masturbated in the previous year (Baćak & Štulhofer, under review).

However, it is important to highlight the fact that these studies are still scarce, and that they assessed different types of information (e.g.: different age groups, different time frames to which the questionnaires report to, etc.), making it difficult (or even impossible) to establish comparisons between the obtained data (e.g. Baćak & Štulhofer, under review).

Another study recently reported in the USA. (Das, 2007) assessed the relations between the reported masturbation frequency and several other variables, namely the mental and physical well-being, the existence (or not) of partnered sexual intercourse and several background conditions (such as age, ethnicity, religious beliefs). The author concluded that, contrary to other studies, the reported masturbation frequency tended to be lower amongst participants with good mental but poor physical well-being, to be higher amongst Caucasians, younger participants and those with lower traditional backgrounds with weaker moral positions (Das, 2007).

The last decades have witnessed, at least in Western societies, social transformations concerning gender roles (Torres, 2009) and sexual relationships (Das, 2007; Bancroft, 2009), with a gradually less repressive socialization for women (Torres, 2004, 2009). One of the consequences of these changes in female sexuality is, on the one hand, a greater freedom in the pursuit of sexual pleasure and, on the other, a more positive relationship with the body. However, despite these social changes, in our clinical practice we continue to see women with complaints of general sexual inhibition, negative self-image and a negative genital self-image, women who do not have sexual pleasure and who never masturbate. In the origin of these problems we frequently find clear psychosocial factors (Bancroft, 2001). Social and cultural change is never fast and, in our society, we are in the slow transition between old attitudes and new behaviors (Almeida et al., 1998), especially given the specificity of the Portuguese history in the past century (Amâncio, 2003). Socio-cultural factors strongly influence female masturbation (Laqueur, 2003) therefore it is interesting to study it in this time of social transformations.

Our aim with this study was help fill in the information gap, specifically by focusing on the reported masturbation behavior in a female sample and analyzing: (1) the frequency of masturbation, (2) the onset age, (3) associates of masturbation frequency, and (4) the relation between frequency of masturbation and different sexual practices. Furthermore, we aimed to assess the potential associations between (a) masturbation's purpose and techniques (b) associated emotions, and (c) orgasm and satisfaction with masturbation. For this purpose we created an online questionnaire survey, as we believe this methodology allows a greater self-disclosure on this private topic.

Methods

Participants

Demographic variables: A total of 3687 Portuguese women completed the questionnaires. All regions of the country were represented in the sample, although the majority of participants lived in larger metropolitan cities. The average age of participants was 29.4 (SD = 8.3; range = 17–75). Most women were in a committed relationship ([Table 1](#)).

Table 1. Demographic description of sample

	Women (N = 3687)	
Education	%	n
High school diploma or less	29.6	1091
University degree	52.2	1923
Postgraduate degree	18.3	673
Marital status		
Single	55.6	2051
Married	23.1	851
Common-law	13.2	487
Divorced/separated	7.5	276
Widowed	0.6	22
Relationship status		
In a committed relationship	77.2	2845
Not committed, sexually active	11.0	406
Not committed, not sexually active	11.8	436
Length of relationship (n = 2845)		
< 6 months	9.4	122
6 months–1 year	7.3	269
1–3 years	19.6	722
3–5 years	12.9	475
5–10 years	18.4	680
10 years	15.6	577
Religion		
Catholic (practicing)	12.1	445
Catholic (observant)	52.0	1919
Other religion (practicing)	2.0	73
Other religion (observant)	2.4	87
No religion	31.5	1163
Sexual orientation		
Heterosexual	89.2	3287
Homosexual	4.1	151
Bisexual	5.4	198
Undefined	1.4	51

Reproductive and health-related variables: A minority of women was pregnant at the time of participation (3.4%), some women were less than 6 months postpartum (1.5%), and 1.3% were breastfeeding. 122 were postmenopausal (3.3%), and of these 103 were receiving hormone therapy (2.8%). Ten percent of women were taking antidepressants, and 9.2% reported having experienced sexual abuse at some point in their lives.

Measures

A comprehensive, detailed questionnaire was developed for this study. The questions were developed and then selected based on the researchers' clinical experience, on the literature review and previous studies (e.g. Laumann et al., 1994; Béjin, 1996; Das, 2007; Gressu et al., 2008; Ferreira et al., 2010), and women's narratives on the masturbation experience.

The 59-item questionnaire included: (a) socio-demographic items (age, educational level, marital and relationship status, length of relationship, religion, sexual orientation); (b) brief mental health history (past psychological or psychiatric treatment over the last two years, use of antidepressants) and reproductive life cycle (pregnancy, breastfeeding, having a child under the age of 6 months, menopausal status, use of hormonal therapy); (c) variables related to sexual desire/arousal and orgasm; (d) frequency of erotic fantasies; (e) frequency of masturbation; (f) age at masturbation initiation; (g) masturbation purpose and techniques; (h) orgasm and satisfaction with masturbation; and (i) emotions associated with masturbation. All the questions were related to masturbation, specifically to solo-masturbation.

Procedure

A research website and database were created, which allowed for the complete data from the survey to be stored in a database linked to a university server. A username and password were established to ensure the database's security.

Pilot testing was carried out to verify the integrity of the website and to establish the face validity of the items. Women with different educational levels were asked to comment on the clarity of the items, the relevance of the content, and whether any items should be deleted or modified. The purpose of this initial step was to meet basic psychometric criteria, that is, to be clear and understandable and to provide comprehensive response choices. Technical errors were identified and corrected during this pilot testing.

The participants were mainly recruited through passive advertisement and snowball by e-mail. The survey was placed on one of the most popular Portuguese websites (www.sapo.pt) in a specific section devoted to women. We chose to use the internet for data collection as it is a reliable means of collecting sensitive data, because as it avoids the face-to-face and the pen and paper methods, it may decrease the fear of social evaluation, which may result in an

increased disclosure (Carvalho, 2007; Cooper et al., 2001; Hewson, Laurent & Vogel, 1996; Johnson, Wadsworth, Wellings, Bradshaw, & Field, 1992; Johnson, Wadsworth, Wellings, & Field, 1994; Johnson et al., 2001; Reips, 2000; Schmidt, 1997; Schroder, Carey, & Venable, 2003).

The recruitment for the survey was open from January–July 2008. After linking to the first webpage that described the study and its objectives, participants viewed an informed-consent form. After reading the informed-consent form, which briefly explained the study, and its objectives, and upon agreeing to participate in this study, the participants could access the questionnaire. In order to preserve confidentiality, no further information about the respondents was collected or saved; thus, the IP address was only used to control multiple submissions, in order to delete duplicate submissions. No remuneration was provided. The study was approved by ISPA's (Insituito Superior de Psicologia Aplicada) Ethics Commission.

Statistical analysis

Statistical analyses were performed with SPSS (v. 17.0, SPSS Inc, Chicago, IL). Significant effects were assumed for $p < 0.05$. Cases with missing observations were deleted listwise before any analysis was conducted. T-tests were used to compare two independent samples. An ordinal regression was conducted to examine the associates of masturbation frequency. Spearman's correlation coefficients were computed to analyze the relations between frequency of masturbation and different sexual practices.

Results

Frequency of masturbation

Two variables were used to assess the frequency of masturbation - most recent occasion of masturbation, and frequency of masturbation during the past year (assessed on a 9-point scale ranging from 1 = never to 9 = more than once a day). Analysis was performed using five age groups. The question was “When, if ever, was the last time you masturbated?” Answers ranged from “within the last 7 days” to “never” (Table 2). Ninety-one per cent of women indicated that they had masturbated at some point in their lives. A sizable minority of women (10.9%) masturbated more than once a week during the last year (Table 3). The average age of this minority of women ($n = 405$) was 28 ($SD = 7.8$; range = 17–75). Of this sub-sample of women who masturbated more than once a week, 61.2% are committed, 21.2% not committed but having sexual partner; 87% reported using masturbation “to have sexual pleasure”, 34.3% “to cope with stress”, 32.3% “to fall asleep” and 14.1% “when having more sexual activity”.

Table 2: Last occasion of masturbation (N = 3687)

Last occasion of masturbation	of Total N = 3687	[17–26] n = 1563	[27–36] n = 1534	[37–46] n = 412	[47–56] n = 141	n ≥ 57 n = 37
	n (%)	%	%	%	%	%
I never masturbated	313 (8.5)	10,6	7,1	5,8	8,5	8,1
Within the last 7 days	1244 (33.7)	34,0	33,3	34,7	29,8	45,9
1–3 months ago	1080 (29.3)	28,6	29,9	29,6	31,9	21,6
4–6 months ago	494 (13.4)	13,5	13,7	13,3	9,9	10,8
6–12 months ago	179 (4.9)	5,0	4,8	4,4	6,4	2,7
1–5 years ago	236 (6.4)	6,3	6,6	6,3	7,1	2,7
More than 5 years ago	140 (3.8)	2.1	4,6	5,8	6,4	8,1

Table 3: Frequency of masturbation during the past year (n=3373)^a

Frequency of masturbation during preceding year ^b	Total N = 3687	[17–26] n = 1397	[27–36] n = 1425	[37–46] n = 388	[47–56] n = 129	n ≥ 57 n = 34
	n (%)	%	%	%	%	%
Never	412 (12.2)	10,8	13,1	13,1	15,5	11,8
Less than once a month	1148 (34.0)	33,2	33,9	36,1	35,7	44,1
Once a month	589 (17.5)	16,5	18,3	16,5	22,5	11,8
More than once a month	483 (14.3)	15,0	13,7	14,4	14,7	11,8
Less than once a week	338 (10.0)	10,5	10,0	9,3	7,0	11,8
More than once a week	208 (6.2)	6,4	6,4	5,9	3,1	2,9
Almost daily	121 (3.6)	4,6	3,0	3,1	0,8	2,9
Daily	15 (0.4)	0,5	0,5	0,3	0,0	0,0
Sometimes more than once a day	59 (1.7)	2,6	1,1	1,3	0,8	2,9

^aWomen who never masturbate were excluded

^bParticipants were asked “How often did you masturbate during the last year”

The duration of relationship correlated negatively with the frequency of masturbation during the last year ($r_s = -0.165$, $P < 0.01$). Longer relationships were associated with lower frequency of masturbation.

Predictors of masturbation frequency

An ordinal regression was conducted to assess whether religion (catholic vs. non-catholic), age, relationship duration, last sexual intercourse, frequency of orgasm during sexual relationship, difficulty in getting aroused, responsive desire, and frequency of erotic fantasies are independently associated with the frequency of masturbation (N = 3687).

The variable frequency of masturbation is an ordinal variable with nine classes (How often did you masturbate during the last year). All the other variables are ordinal variables (Table 4) except age and religion. The overall model was found to be significant ($\chi^2 [8] = 537.002$, $P < .001$) and revealed that religion ($P < 0.05$), occurrence of last sexual relationship ($P < 0.05$), difficulty getting aroused ($P < 0.001$), and frequency of erotic fantasies ($P < 0.001$), and relationship duration ($P < 0.001$), were significantly associated with the frequency of masturbation (Table 5).

Table 4: Variables of sexual response and behaviors

	%
<i>Last sexual intercourse</i>	
Within past month	79.8
1–2 months ago	7.4
2–6 months ago	5.7
6–12 months ago	2.7
1–2 years ago	2.1
2–5 years ago	1.4
More than 5 years	0.8
<i>Frequency of orgasm during sexual relationship</i>	
Never	3.9
Few times	13.6
Sometimes	17.5
Often	42.5
Always	22.6
<i>Easily aroused¹</i>	
Very easy	18.9
Moderately easy	67.4
Moderately difficult	12.3
Very difficult	1.4
<i>Responsive sexual desire²</i>	
Never	17.1
Occasionally	51.5
Often	20.4
Very often	8.4
Always	2.7
<i>Frequency of sexual fantasies</i>	
Never	7.3
Occasionally	28.2

Table 4: Variables of sexual response and behaviors

	%
Last sexual intercourse	
Sometimes	52.5
Often	12.0

¹ Participants were asked: "How difficult is it for you to get sexual aroused?"

² Participants were asked: "How often do you engage in sexual activity, with no sexual desire, but after you begin engaging you can easily get aroused?"

Table 5: Predictors of masturbation frequency

	P	β
Age	.350	.004
Religion (catholic/non-catholic)	.004	-.200
Occurrence of last sexual relationship	.003	.138
Frequency of orgasm during sexual relationship	.300	-.033
Responsive sexual desire	.919	.004
Easily aroused	.000	-.370
Frequency of erotic fantasies	.000	.834
Relationship duration	.000	-.147

Non-catholic women, those whose last occurrence of sexual intercourse had occurred long ago, women with no difficulty in getting sexual aroused, women who report a high frequency of sexual fantasy, and women in short-term relationships were more likely to report masturbation during the previous year. However, age, frequency of orgasm, and responsive desire did not predict the likelihood of masturbation during last year.

Age of masturbation onset and sexual response

There was quite wide variation in responses to the question "Did you masturbate in your adolescence?". 21.7% of women reported no, 27.9% rarely, 37.4% frequently and, 13.2% quite frequently. Regarding the age of commencing masturbation, the majority of women masturbated for the first time between 10 and 19 years old (Table 6). The mean age of starting to masturbate was 15 years old (SD = 4.7; min = 6; max = 50).

Table 6: Age of commencing masturbation (n=3373)

Age of beginning masturbating	%
< 10 years	7.0
10–14	44.4
15–19	35.9
20–29	10.8
30–39	1.3
>40	0.7

Women who masturbated during adolescence tend to report lower arousal difficulties (median = 1, corresponding to very easy to get sexual aroused) compared to women who did not masturbate during adolescence (median = 2, corresponding to moderately easy to get sexual aroused), $t(3681,7) = 7.89, p < 0.001$.

Also, significantly more women who masturbated during adolescence tended to reach orgasm during sexual intercourse more often (median = 4, corresponding to often) compared with women who did not masturbate during adolescence (median = 3, corresponding to sometimes), $t(3666,7) = -2.52, p < 0.05$.

Masturbation purpose and techniques

Women reported diverse reasons for masturbation, including seeking sexual pleasure (65.4%) but also to cope with stress (31.9%) and to help them fall asleep (20%) (Table 7).

Table 7: Reasons and techniques for masturbation (n=3373)

	n	%
At the present, when do you masturbate? ¹		
<i>When I feel like to have sexual pleasure</i>	2207	65.4
<i>To cope with stress</i>	1077	31.9
<i>To help me fall asleep</i>	674	20.0
<i>When I'm having more sexual activity with partner</i>	448	13.3
<i>When partner is unavailable</i>	289	8.6
<i>Other reasons</i>	75	2.2
How do you masturbate? ¹		
<i>I touch my clitoris</i>	2929	86.8
<i>I use vibrators or introduce some objects into the vagina</i>	723	21.4
<i>I use a pillow between my legs or similar to pressure my genitals</i>	538	16.0
<i>I cross my legs and balance</i>	315	9.3
<i>I use the shower jet water</i>	773	22.9
<i>Sitting on some surfaces (couch, chair, banister, etc)</i>	187	5.5

Table 7: Reasons and techniques for masturbation (n=3373)

	n	%
Cycling	24	0.7
Other ways	275	8.2

¹ Respondents could select more than one option.

Regarding the techniques used for masturbation it seems that some women use more than one masturbation technique. The majority of women touch genitals directly; however, a sizable number of participants masturbate through an indirect way (Table 7), for example, using a pillow or a similar object between legs to press genitals (16%). These women who do masturbate through an indirect way (not touching genitals) have the following distribution per age groups: [17–26] = 18.9%; [27–36] = 14.7%; [37–46] = 11.9%; [47–56] = 12.4; and [≥57] = 5.9%.

The majority of women (65%) reported taking less than 15 minutes to masturbate to orgasm, 32.1% take 15–30 minutes, 2.6% take 30–60 minutes, and 0.3% take more than one hour.

Satisfaction variables on masturbation

The majority of women are able to reach orgasm through masturbation; however, there is a minority who reach orgasm sometimes (12.7%) or never (7.6%). The same minority reported little or no pleasure during masturbation (Table 8).

Table 8: Orgasm and satisfaction on masturbation (n=3373)

	n	%
<i>Frequency of orgasm during masturbation¹</i>		
Never	258	7.6
Sometimes	430	12.7
Most of the time	718	21.3
Always	1579	46.8
Always and more than one orgasm	388	11.5
<i>Self-reported satisfaction with masturbation²</i>		
No pleasure	36	1.1
Little pleasure	220	6.5
Some pleasure	1307	38.7
A lot of pleasure	1810	53.7

¹Participants were asked “Usually are you able to reach orgasm during masturbation”

²Participants were asked “How much satisfaction do you feel during masturbation”

Results also revealed some negative emotions associated with masturbation behavior; shame (15.4%), guilt (10.3%), and feeling ridiculous (9.1%). Results revealed an increase of guilt and a decrease of shame with increasing age, except in the 47- to 56-year-age group. In this age segment we observe the highest level of positive feelings, and the lowest level of negative emotions (guilt, shame and feeling ridiculous). (Table 9)

Table 9: Emotions associated with masturbation (n=3373)

How do you feel when you masturbate?(Could choose more than one response)	n (%)	[17–26]	[27–36]	[37–46]	[47–56]	n
		n = 1397	n = 1425	n = 388	n = 129	
I feel well and relaxed	2580 (76.5)	73.9	76.7	82	84.5	82.4
Guilt	347 (10.3)	9.9	10.5	11.3	8.5	11.8
Shame	521 (15.4)	19.9	13.5	10.1	6.2	8.8
Feeling ridiculous	307 (9.1)	10.3	8.5	7.5	7.0	11.8

Masturbation and sexual response

Higher reported frequency of masturbation was associated with higher levels of initiating sexual relationships, fellatio and cunnilingus practices, unexpected sexual arousal, and the frequency of sexual fantasies. Masturbation practice was also associated with less difficulty in sexual arousal and less sexual inhibition. (Table 10)

Table 10: Correlation between frequency of masturbation^a and sexual practices

	<i>r_s</i>	<i>P</i>
Initiating sexual relationships	.142	.000
Fellatio ^b	.218	.000
Cunnilingus ^c	.146	.000
Easily aroused	-.202	.000
Unexpected sexual arousal ^d	.201	.000
Level of perceived sexual inhibition	-.073	.000
Frequency of erotic fantasies	.351	.000

^a Participants were asked “How often did you masturbate on the last year”.

^b Participants were asked: “How often do you perform oral sex on your partner?”. Response options presented on a five-point Likert scale (1-never, 5-always).

^c Participants were asked: “How often does your partner perform oral sex on you?”. Response options presented on a five-point Likert scale (1-never, 5-always).^d Participants were asked “Did you ever feel genital sensations (on your vagina) of sexual arousal, with no reasons for, in a spontaneous way, and out of a sexual context?”. Response options presented on a five-point Likert scale (1-never, 5-always)

Discussion

This study aimed to assess the practice of masturbation, in a convenience sample of Portuguese women, and analyzing the differences among women.

There is relative consistency in the finding that masturbation occurs in most men but in a smaller proportion of women (e.g.: Alzate, 1989; Hatano, 1991; Laumann, Gagnon, Michael, & Michaels, 1994; Leitenberg, Detzer, & Srebnik, 1993; Meston, Trapnell, & Gorzalka, 1996; Oliver & Hyde, 1993). Nonetheless, the present study provided interesting information on the frequency of female masturbation, revealing a very high percentage of women who masturbated at some point in their lives (91%), during the last year (87.8%), and within the previous month (63%).

These findings are not consonant with previous studies. In the NHSLS (Laumann et al., 1994) a much lower percentage of women had masturbated during the past year (42%). In the second British National survey (2000), fewer women indicated that they had masturbated at some point in their lives (71.2%), and in the past 4 weeks (36.8%) (Gerresu et al., 2008). Moreover, in the present study, 10.6% of women aged between 17–26 years, reported that they never masturbate, against the 40% of participants aged 18–25 in the Croatian study of 410 women (Baćak & Štulhofer, under review).

This difference in results might be due to several factors. First, our sample is not representative of Portuguese women (clearly a limitation to this study). Second, the use of the internet for data collection that, as previously mentioned, may have been a more reliable way for the participants to report sensitive behaviors (Carvalho, 2007; Cooper et al., 2001; Hewson, Laurent & Vogel, 1996; Johnson, Wadsworth, Wellings, Bradshaw, & Field, 1992; Johnson, Wadsworth, Wellings, & Field, 1994; Johnson et al., 2001; Reips, 2000; Schmidt, 1997; Schroder, Carey, & Venable, 2003). Furthermore, and despite the existing guilt and possible shame regarding masturbation (e.g.: Cardamakis et al., 1993; Coleman, 2002; Hogarth & Ingham, 2009; Kitamura, 1990), the social changes over the last decades (Almeida et al., 1998; Amâncio, 2003; Bancroft, 2009; Das, 2007; Laqueur, 2003) since Kinsey's study (1953), may have lead to a decrease in the inhibitions concerning the female sexuality and, thus, help explain the difference in the results. However, specially designed research using standardized measures will be needed to explore the factors that may account for variations between countries and across time.

Regarding the frequency of masturbation during the preceding year, 34% of women reported that they had masturbated less than once a month, 17.5% once a month, 14.3% more than once a month, and 9.8% weekly. Interestingly, we found a very small group of women who reported masturbating almost daily or daily (4%), or sometimes more than once a day (1.7%). According to Bancroft (2009), some individuals use sex as a mood regulator, and the use of masturbation may serve to reinforce such problematic patterns of sexual responsiveness.

The data analyses also revealed some associations between the frequency of masturbation and other variables. Women in short-term relationships, non-catholic, women with no difficulty getting sexually aroused, and those who report a high frequency of sexual fantasy, were more likely to report masturbation during the previous year. The inverse association between reporting masturbation and religious beliefs confirmed findings reported from the NATSAL2 data (Gerresu et al., 2008) and from the French National survey (Spira et al. 1994). Moreover, the majority of women in our sample are able to reach orgasm during masturbation. However, results revealed two interesting minorities: 7.6% who never reach

orgasm and 7.6% who reported little or no pleasure during masturbation, and 11.5% who always reach orgasm and more than one orgasm. Multiple orgasms are possible, although they are not part of typical sexual experience for most women in this sample.

Despite the high reported prevalence of masturbation in this study, this solitary behavior still remains somewhat associated with guilt and other negative emotions. Despite the youth of the sample, results still revealed a minority of women who reported feeling shame (15.4%), guilt (10.3%), and 'feeling ridiculous' (9.1%) during masturbation. The shame was more common within young women—in the 17- to 26-year-age group. Results revealed a slight increase of guilt and a decrease of shame over the age groups, except in the 47- to 56-year-age group. Interestingly, on this age segment we observe highest percentage of reported well-being and the lowest levels of the three negative emotions; thus, the majority of women considered the practice of masturbation free from the constraints of guilt. However, we still observe this "duet" of guilt and shame all over the age groups with guilt prevailing among older women and shame amongst the younger. This shows that the double standard of sexual morality still persist to some extent - the repressive socialization of female sexuality that does not promote the pursuit of sexual pleasure. Several studies have also reported an association of masturbation with guilt and myths, being that this type of sexual behavior remains highly stigmatized (Cardamakis Vinakos, Lambou & Papathanasiou, 1993; Coleman, 2002; Kitamura, 1990).

Regarding the age of masturbation onset, almost the half the women recall beginning to masturbate between the ages of 10 and 14, and 36% between the ages 15 and 19. Exactly half of our total sample reported frequent masturbation during adolescence. These findings showed that masturbation during adolescence is positively associated with the sexual arousal response and orgasm in sexual intercourse. Thus, in this sample, women who masturbated during adolescence reported less arousal difficulty and higher orgasm frequency during partnered sex, when compared to women who did not masturbate during adolescence. These findings empirically support what the authors have commonly observed in their clinical practice - women with arousal/orgasm problems reveal no history of masturbation and negative attitudes toward their genital area. Masturbation allows the exploration and understanding of the complex female genitalia, and thus a more positive relationship with the genital body, and therefore a more satisfactory sexual response (Coleman, 2002). Thus, masturbation can be seen as a means of achieving sexual health (Coleman, 1997, 2002), and as a helpful technique in the treatment of female sexual dysfunctions (LoPiccolo & Lobitz, 1972; Kaplan, 1979; Heiman & LoPiccolo, 1988, Zilbergeld, 1992; Leiblum & Rosen, 1989).

Regarding masturbation's purpose, 'sexual pleasure' appears to be the main reason for masturbating (65%) but our results revealed other different purposes for this behavior, including 'to cope with stress' (32%), 'to fall asleep' (20%), or 'unavailability of partner' (8.6%). These results corroborate previous studies that revealed that masturbation is not only (or even mainly) a substitute for partnered sex, but constitutes an additional way to achieve sexual pleasure for many women (Coleman, 2002; Dekker & Schmidt, 2002; Kontula & Haavio-Mannila, 2002; Gerresu et al., 2008).

Interestingly, our findings also revealed an important minority of women who recognize their masturbatory behavior is associated with an increase of sexual activity with their partner (13.3%). These findings are not consistent with results of a recent US survey, with women in established heterosexual relationships, where the frequency of women's masturbation during the preceding month was negatively associated with her satisfaction with her sexual relationship (Bancroft et al., 2010); and with those from the NHSL (Laumann et al., 1994)

fewer women reported masturbating 'for physical pleasure' (42%), and more women indicated because 'partner was unavailable' (32%).

Thus, the present findings show that masturbation is used as a replacement for sexual activity for a minority of women (8.6%), while it means an additional way to achieve sexual pleasure for the majority (65.4%).

Women may choose their masturbatory techniques. Among females in this sample, the principal method reported - direct stimulation of the clitoris—was used by the majority (86.8%) of participants; this result is similar to that of Hite's report (1976) with 73%. Other methods include the insertion of vibrators or something into the vagina (21.4%), or the shower jet water (22.9%). Despite the high number of women who directly touch the clitoris, there still remain a proportion of women who do not touch genitalia to masturbate, using an indirect via of clitoral stimulation such as squeezing the thighs (9.3%) or pressing genitals with pillows (16%).

These techniques appear to be a way of avoiding direct contact with the genitalia, and reveal some evidence of the stigma still associated with masturbation. In part, and according to Judeo-Christian cultural heritage, masturbatory behavior means something that is not supposed to be done, more precisely, the vulva is something that is not supposed to be touched or explored. Curiously, according to our results, this type of masturbation without touching the genitalia, is mostly practiced by young women, and there is a gradual decline over the age groups. That is, this stigmatization appears to decrease as age increases. These data seem to indicate that women need time to internalize a more positive relationship with their genital body and allow themselves to explore the vulva. These findings are consistent with those related with the feeling of shame associated to masturbation, which also decreases with age.

We can also speculate whether the practice that some women get pleasure without touching themselves (which seems to be obvious possible consequence of repression) will harm their sexual satisfaction in the relationship with a partner. The study by Leff & Israel (1983), with 117 women, showed no significant relationship between the style of masturbation and orgasmic capacity in coitus, but the authors point out the limitation of not having considered the frequency of orgasmic capacity in the way intercourse is practiced. In clinical practice, the researchers have observed that some women can reach orgasm only during masturbation without touching and then with the partner are not able to copy this way of reaching orgasm, which causes an enormous frustration. Furthermore, according to Coleman (2002), masturbation has been linked to the woman's orgasmic capacity, a healthy sexual functioning, as well as a greater sexual satisfaction in relationships.

The present findings also show that women who masturbate take more initiatives in sexual activity and engage in more sexual practices, as well as getting sexually aroused more easily than women who do not masturbate. Thus, masturbation behavior appears to be related to a greater sexual repertoire. Masturbation is also associated with a high frequency of sexual relationships, which is in conflict with the idea of masturbation as a substitute or compensation for the lack of partnered sex.

There are some limitations in this study that must be considered. First, the sample is not representative of all Portuguese women since the use of an internet survey preselected more highly educated women, as it necessarily implicates the participation of Internet users. Second, the reliability and validity of the investigator-derived questionnaire is unknown since it was not

validated before use. Third, the study relies on volunteer participants' self-reports of events, and there is no way of validating these. However, the use of internet-based research methodology to carry out a survey on such a private topic as masturbation behavior can offer anonymity and privacy to respondents.

In conclusion, this study demonstrates that masturbation is a positive component in the structuring of female sexuality. We believe masturbation can be an interesting "tool" in the process of exploration and discovery of sexual pleasure. The high frequency of masturbatory behavior in this large sample of women, compared with previous studies, may reflect the current social changes towards the sexual socialization of women in a less repressive way, thus allowing a healthier relationship with the body and a more positive experience of sexuality.

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