THE JOURNAL OF SEX RESEARCH
2022, VOL. 59, NO. 2, 258–268
https://doi.org/10.1080/00224499.2021.1931798

A Cluster Analysis on Sexual Boredom Profiles in A Community Sample of Men and Women

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ABSTRACT

Research evidence of the attributes of sexual boredom is extremely limited. Understanding variability in the experience of sexual boredom may offer relevant insights for the field of human sexuality. This study aimed to explore the co-occurrence of sexual boredom and other sexuality-related dimensions. The sample consisted of 1021 participants aged between 18 and 75 years old ($M = 32.68$, $SD = 8.79$). A gender-stratified cluster analysis was performed to classify individuals regarding their scores on sexual boredom, general boredom, sexual sensation seeking, sexual desire, sexual excitation, sexual pleasure, and sexual satisfaction. A three-cluster solution was revealed for both men and women. Based on our findings, we put forward a profile for the sexually bored individual, who is more likely to be married or cohabiting with a partner, to have a boredom prone personality, to lack sexual sensation seeking, experience low sexual pleasure and satisfaction, and to present with sexual arousal and/or desire problems. Women dealing with sexual boredom might present low sexual desire for their partner but experience high sex desire for attractive others. Results are critically discussed and implications for sexual therapy explored.

Introduction

Sexual boredom has been discussed in several publications (Martin, 2018; Metz & McCarthy, 2011; Perel, 2007; Ryan & Jethá, 2011; Schnarch, 1997), yet scientific research on the topic is extremely limited (De Oliveira et al., 2021; Tunariu & Reavey, 2003, 2007).

Sexual boredom refers to a dimension of general boredom, the fleeting psychological state (e.g., Chaney & Chang, 2005; Fahlman et al., 2013; Leary et al., 1986) that takes place when the environment is perceived as unstimulating, repetitive, or monotonous (Hill & Perkins, 1985; Mikulas & Vodanovich, 1993; Perkins & Hill, 1985; Zuckerman, 1979). Boredom stems from two main sources: low levels of perceived external stimulation, coupled with an inability to create interesting activities for oneself and/or low levels of internal stimulation (e.g., Bruursema et al., 2011; Gana & Akremi, 1998; Vodanovich & Kass, 1990). Some individuals are more boredom prone or susceptible to boredom, i.e., display higher levels of trait boredom (Farmer & Sundberg, 1986; Zuckerman et al., 1972)

Sexual boredom was first defined by Watt and Ewing (1996) in their validation studies of the Sexual Boredom Scale (SBS) as "the tendency to experience boredom with the sexual aspects of one's life" (p. 57). The SBS includes a subscale of sexual monotony, concerned with facets of sexual routine and tedium in a relationship, and a subscale of sexual stimulation, describing elements of sexual constraint in a relationship – both with a clear focus on monogamy and relationship duration. Later, in a qualitative study with men (Tunariu & Reavey, 2003), sexual boredom was depicted as the experience of boredom with boring sex, i.e., dull, routine and over-rehearsed sex. In this context, boring sex corresponded to an isolated sexual act, while sexual boredom represented an over-arching feeling. Participants described sexual boredom as something that happens naturally in all long-term sexually exclusive relationships due to progressive familiarity, domesticity, and the human craving for sexual novelty. Another study from the same authors found that men and women in long-term relationships recognized sexual boredom in their relationships when sex was no longer pleasing, when there was sexual disinterest or no enthusiasm for sex, or when there was a strong focus on extra-dyadic relationships (Tunariu & Reavey, 2007). More recently, sexual boredom has been considered as the perception of monotonous or unpleasurable sexual activity, or as the lack of sexual interest, linked with the individual, relationship, or practice-related aspects of sex (De Oliveira et al., 2020). These authors propose that sexual boredom, similarly to general boredom, is multidimensional and comprises aspects of internal stimulation (individual aspects hindering sexual fulfillment), and of external stimulation (interpersonal aspects contributing to sexual boredom).

Correlates of Sexual Boredom

Some studies have identified relationships between sexual boredom and aspects of personality and sexuality. Sensation seeking, i.e., the need for varied, novel, and complex sensations to maintain an optimal level of arousal (Zuckerman, 1979;

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Zuckerman et al., 1972), and boredom proneness were both positively correlated with sexual boredom (Watt & Ewing, 1996). However, previous research observed that individuals with low levels of sexual boredom and high levels of sex-positive traits, including sensation seeking and sexual sensation seeking, reported higher levels of sexual novelty in their romantic relationships (Matthews et al., 2018). This suggests that there may be contexts in which high sexual boredom is not paired with high sexual sensation seeking, as one would expect from the literature on boredom and sensation seeking (Zuckerman, 1979; Zuckerman et al., 1972, 1978).

Sexual satisfaction, defined as the affective response that results from the subjective evaluation of positive and negative dimensions of sexual relationships (Lawrance & Byers, 1995), was also negatively correlated with sexual boredom (Carvalheira et al., 2014; Štulhofer et al., 2010; Watt & Ewing, 1996). Although these findings are limited, they are in line with previous qualitative research linking sexual boredom with lack of sexual satisfaction and pleasure (De Oliveira et al., 2020), and somewhat related with previous research relating general boredom with decreases in judged hedonic value (Berlyne, 1970).

In addition, sexual boredom has been negatively associated with sexual desire/interest (Carvalheira et al., 2014; Štulhofer et al., 2010), and positively correlated with responsive sexual desire (Štulhofer et al., 2013), masturbation (Carvalheira et al., 2015; Zamboni & Crawford, 2003) and hypersexuality (Klein et al., 2015; Štulhofer et al., 2008, 2016). These findings suggest that sexual boredom may be closely linked with sexual motivation, and hint at potential context-dependent relationships with sexual excitation and sexual inhibition. The Dual Control Model postulates that sexual response depends on the interaction between an excitatory system and an inhibitory system, and that individuals vary in their propensities for sexual excitation and sexual inhibition (Bancroft & Graham, 2011; Janssen & Bancroft, 2007). No previous studies have addressed the potential link between sexual excitation and/or inhibition and sexual boredom. However, disinhibition [the desire for social and sexual disinhibition expressed in social drinking, partying, and variety in sexual partners] has been formerly associated with boredom susceptibility (Zuckerman, 1979; Zuckerman et al., 1972, 1978) and with sexual boredom (Watt & Ewing, 1996).

Age and Gender Differences in Sexual Boredom

Previous research found that trait boredom and sexual boredom were more prevalent in men when compared to women (e.g., Polly et al., 1993; Tunariu & Reavey, 2007; Watt & Ewing, 1996), and that younger men presented higher levels of sexual boredom (Watt & Ewing, 1996). Explanations for sexual boredom in men are often framed within evolutionary psychology (e.g., Buss & Schmitt, 1993). This view argues that sexual boredom in men would be a manifestation of their reproductive promiscuity strategy known as the "Coolidge effect", that is, the tendency to restore mating behavior with a novel female once they have reached sexual satiation with another female (see Dewsbury, 1981). No explanation for sexual boredom in women is offered within this framework that we are aware of.

From a social constructionist standpoint, discourses on sex aim to regulate sexuality and validate [marital] forms of economically utilitarian sexuality (Foucault, 1976), shaping what we come to desire and how we behave sexually (Tunariu & Reavey, 2007). The aforementioned evolutionary debates postulate essentialist notions of sexuality as something gendered, natural, and stable (Tiefer, 1995), entailing that sexual boredom affects men more than it does women, thus erasing women's experiences of sexual boredom from scientific and popular discourses. Women's historical lack of access to pleasure and to expectations of sexual pleasure is a consequence of gender inequality (Fahs, 2014) and is reinforced by the unequal sexual scripts (Gagnon & Parker, 1995) manifested in the discourses about sexuality, including those on sexual boredom. Therefore, by reinforcing gendered notions of sexual boredom we seem to be hindering equal access to sexual pleasure. Exploring the intricacies of sexual boredom, in a way, contributes to equality in pleasure.

Current Study

Past research on sexual boredom suggests relationships with a few dimensions of sexuality, including sexual desire and sexual satisfaction. However, evidence on how sexual boredom may shape sexuality and relationships is incipient. Specifically, we do not know how sexual boredom presents in people with different characteristics. The current study used a data-driven approach to characterize men and women in respect to sexual boredom, boredom prone personality, sexual motivation, and hedonic value. Our aim was to specifically explore the co-occurrence of sexual boredom and dimensions of general boredom, sexual sensation seeking, sexual excitation, sexual desire (solitary, partner, and attractive person related), sexual pleasure, and sexual satisfaction (ego and partner related) in different clusters of men and women. Cluster analysis is an innovative approach in respect to sexual boredom, which should help clarify the possible overlap with other sexuality constructs and potential different presentations of sexual boredom.

Method

Participants

The sample of this study consisted of 1021 participants aged 18 to 75 years old. Of these, 72.4% were self-identified women (n = 739) and 27.6% were self-identified men (n = 282). Of the total participants, seven self-identified as transgender, and two preferred not to say. The sample average age was 32.68 (SD = 8.79). Participants were Portuguese speakers living in Portugal (88%), Brazil (5.2%), and other countries (6.8%), of which 91.7% had Portuguese nationality, 6.1% Brazilian nationality, and 2.2% other nationality. A large majority (89.7%) of participants (n = 912) were educated at a university level. Participants self-identified as heterosexual (80.7%), lesbian/gay (7%), bisexual (9.3%), pansexual (2.8%), and 3 participants (0.3%) self-identified as other/preferred not to say. Regarding relationship status, 51.3% of the participants were

married or cohabiting (n = 518), 23.9% were dating without cohabiting (n = 242), 23.1% did not have a relationship (n = 234), and 0.8% were in consensual non-monogamies (n = 8), 0.2% reported having occasional sex (n = 2), and 0.7% reported other type of relationships (n = 7).

Procedure

Participants were recruited via e-mail and social media snowballing and through the official channels of Porto University. The study was also advertised in the University's laboratory webpage. All the advertisements displayed the survey link where a general description of context and purpose was provided followed by informed consent. The description included authorship, affiliations, and funding sources in addition to conditions of participating and the primary author's e-mail contact for any questions or concerns. Participants were required to agree to terms and conditions and provide informed consent before moving forward with answering the questionnaire. After completing the study, all participants could opt to provide their e-mails for further information on results as well as to leave any comments which they felt necessary. This study was approved by the Ethics Committee of Porto University.

Responses were scrutinized for repeated entries and invalid responses. Even though conditions for participating emphasized participants needed to be at least 18 years old, some participants stated they were underage, and their data were therefore excluded. From an original pool of 1033, 12 participants were excluded.

Measures

Boredom Proneness Scale (BPS)

The BPS (Farmer & Sundberg, 1986) is a self-report measure which consists of 28 true-false items designed to assess the trait or tendency for individuals to experience boredom. The authors reported a satisfactory level of internal consistency (Cronbach's *alpha* = .79). Other authors chose to apply a 7-point Likert scale ranging from 1 (*I totally disagree*) to 7 (*I totally agree*) to BPS items, with Cronbach's *alpha* coefficients ranging from .79 to .83 (cf. Mercer & Eastwood, 2010). Most factor structure studies of the BPS agree on the presence of two factors (see Vodanovich & Watt, 2016 for a review) – external stimulation and internal stimulation. The Portuguese version of the BPS (Martins, 2012) comprises 26 items (items 15 and 17 of the original version were excluded due to poor loadings) and uses a 7-point Likert scale, with a Cronbach's *alpha* of .83 for total score, of .85 for internal stimulation, and of .69 for external stimulation. In the present study, the BPS showed good reliability for total score (Cronbach's *alpha* = .83), and for internal stimulation (Cronbach *alpha* = .88), and acceptable reliability for external stimulation (Cronbach *alpha* = .69).

Sexual Boredom Scale (SBS)

The SBS (Watt & Ewing, 1996) is an 18-item self-report measure of the tendency to experience boredom with the sexual aspects of one's life, designed for sexually active non-psychiatric populations. Responses are given on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) with higher scores reflecting higher sexual boredom. It comprises two subscales of nine items each, "Sexual Monotony" and "Sexual Stimulation". The first refers to sexual routine and tedium (e.g., *Sex frequently becomes an unexciting and predictable routine*) and the second to aspects of sexual excitement and constraint (e.g., *I would not stay in a relationship that was sexually dull*). The authors report high internal consistency reliability for total score across samples (Cronbach's *alpha* = .92 – .95). The Portuguese adaptation of the SBS also demonstrated good reliability (Cronbach's *alpha* = .93), but revealed a unidimensional factor structure and three items were removed due to low loadings (Pechorro, Figueiredo et al., 2015). In the current study, the Cronbach's *alpha* was also .93.

Sexual Sensation Seeking Scale (SSSS)

The SSSS (Kalichman & Rompa, 1995) is an unidimensional self-report scale of 10 items designed to assess sexual sensation seeking, the need to have new and varied sexual experiences, and taking physical and social risks to enhance sexual sensation. Items range from 1 (*strongly disagree*) to 4 (*strongly agree*). The authors report good internal consistency (Cronbach's *alpha* = .81). The Portuguese version of the SSSS (Pechorro, Pascoal et al., 2015) demonstrated good reliability (Cronbach's *alpha* = .74). In this study Cronbach's *alpha* for this measure was .71.

New Sexual Satisfaction Scale (NSSS)

The NSSS (Štulhofer et al., 2010) is a 20-item scale consisting of two dimensions of 10 items each that assess ego-centered sexual satisfaction and partner/sexual activity centered sexual satisfaction. Items range from 1 (*not at all satisfied*) to 5 (*extremely satisfied*). The scale was simultaneously validated for Croatia and the United States. The authors reported good internal consistency across samples for total score (Cronbach's *alpha* = .94 – .96), ego-centered sexual satisfaction (Cronbach's *alpha* = .91-.93), and partner-centered sexual satisfaction (Cronbach's *alpha* = .91-.94). The Portuguese version presented Cronbach's *alpha* of .96 for total score, .95 for ego-centered sexual satisfaction, and .94 for partner-centered sexual satisfaction (Pechorro, Almeida et al., 2015). In the current study, the Cronbach *alpha* was .95 for total score, .93 for ego-centered sexual satisfaction, and .93 for partner/sexual activity centered sexual satisfaction.

Sexual Desire Inventory-2 (SDI-2)

The SDI-2 (Spector et al., 1996) is a self-report measure consisting of 14 items to assess sexual desire in two dimensions, dyadic sexual desire and solitary sexual desire. Items are answered of a 9-point scale ranging from 0 (*no desire*) to 8 (*strong desire*). In the authors' validation studies both factors presented good levels of internal consistency (Cronbach's *alpha* = .86 for dyadic sexual desire and Cronbach's *alpha* = .96 for solitary sexual desire). A three-factor model of SDI-2 was recently proposed and splits up the dyadic sexual desire scale into "partner related" and "attractive person related" subscales (Moyano et al., 2017). The Portuguese version of the SDI-2 (Peixoto et al., 2018) presented Cronbach's *alpha* of .90 for

total score, Cronbach's alpha of .91 for solitary sexual desire, Cronbach's alpha of .88 for dyadic sexual desire, and Cronbach's *alpha* of .88 for the dyadic sexual desire attractive person-related subscale. The current study showed a Cronbach's *alpha* of .89 for total score, .92 for solitary sexual desire, .86 for partner dyadic sexual desire, and .86 for attractive person dyadic sexual desire.

Sexual Pleasure Scale (SPS)

The SPS (Sanchez et al., 2005) is a self-report measure of sexual pleasure with three items assessing the extent to which individuals perceive sexual relations, sexual activities, and sexual intimacy as pleasurable. Items are presented on a 7-point Likert scale ranging from −3 (*not pleasurable at all*) to 3 (*very pleasurable*), with higher scores indicating greater satisfaction and pleasure. The authors reported good internal consistency, with a value for Cronbach's *alpha* of .84. The Portuguese version of the SPS (Pascoal et al., 2016) uses a scale ranging from 1 (*not pleasurable at all*) to 7 (*very pleasurable*) and showed high level of internal consistency, with a value for Cronbach's *alpha* of .94. Total scores range from 3 to 21, with higher scores indicating higher sexual pleasure. Cronbach's *alpha* was .85 in the current study.

Sexual Inhibition and Sexual Excitation Scales (SIS/SES)

The SIS/SES (Janssen et al., 2002) is a 45-item measure of sexual excitation and sexual inhibition with versions for women and men. This study only used the Sexual Excitation Scale (SES) where items describe a series of situations hypothetically leading to sexual arousal due to non-threatening potentially sexual exciting situations (e.g., *When I think of a very attractive person, I easily become sexually aroused*). Participants respond on a 4-point Likert scale ranging from 1 (*strongly agree*) 4 (*strongly disagree*) indicating their typical response to the stimuli described. The original SES version had good levels of internal consistency (Cronbach's *alpha* = .89). The Portuguese version of the SIS/SES (Gomes et al., 2018) showed high internal consistency levels for SES (20 items: Cronbach's *alpha* = .92) presenting adequate internal consistency. In this study Cronbach's *alpha* for SES was .90 for women, and .87 for men.

Data Analyses

Data analyses were performed according to the following steps: (1) A gender-stratified cluster analysis was used to classify subgroups based on the extent of the variables of interest; (2) Analysis of Variance (ANOVA) and chi-square association tests were carried out to examine potential differences in age, relationship status, and sexual orientation, among the subgroups (clusters) for both men and women. Bonferroni correction was applied for multiple comparisons; and 3) Centroid mean and standard deviation were calculated for our measures of interest (internal boredom, external boredom, sexual boredom, sexual sensation seeking, excitation, solitary sexual desire, partner sexual desire, attractive person sexual desire, ego sexual satisfaction, partner sexual satisfaction, sexual pleasure) based on the cluster solution for men and women. Cluster analysis was chosen as it is an appropriate method for grouping individual actions into patterns of behavior by determining which responses co-occurred (P. J. Rosa et al., 2016). A two-step clustering algorithm was preferred due to its efficacy in large datasets by automatically determining the optimal number of clusters (Zhang et al., 1996). The log-likelihood distance measure was applied for clustering and the Schwarz's Bayesian Criterion (*BIC*) was used to select the optimal number of clusters. The silhouette measure of cohesion and separation was used to assess overall clustering quality. The average silhouette measure ranges from 0 to 1, with larger values indicating more distinct clusters. The clustering quality model is assumed to be fair when the average silhouette value is at least .20 (Kaufman & Rousseeuw, 1990). A noise handling of 30% was used as a criterion for outlier removal (Gamito et al., 2016). Our analyses were performed on IBM-SPSS 25 and all tests of statistical significance were conducted at a "p" value of .05.

Results

Patterns of Sexual Boredom in Men

A three-cluster solution was reached for men (*BIC* = 2119.72): 39.7% cases (n = 112) were assigned to Cluster 1, named *low sexual boredom with low sexual motivation*; 22.3% cases (n = 63) were assigned to Cluster 2, named *high sexual boredom with low sexual motivation*; and 37.9% cases (n = 103) to Cluster 3, named *high sexual boredom with high sexual motivation*. The ratio size (largest cluster: smallest cluster) was 1.78. According to Kaufman and Rousseeuw (1990), the overall clustering quality was fair with an average silhouette of .30.

Men with *low sexual boredom with low sexual motivation* (sexual desire and sexual excitation) presented simultaneously low boredom proneness and high hedonic value (sexual satisfaction and sexual pleasure). Men with *high sexual boredom with low sexual motivation* showed the highest boredom proneness and the lowest levels of hedonic value. Finally, men with *high sexual boredom with high sexual motivation* displayed the highest levels of sexual boredom, sexual motivation and of sexual sensation seeking, as well as high hedonic value. Descriptive findings can be found in Figure 1.

Patterns of Sexual Boredom in Women

A three-cluster solution was also found for women (*BIC* = 2252.20): 41.4% (n = 306) were assigned to Cluster 1, *low sexual boredom with low sexual motivation*; 29.0% (n = 214) to Cluster 2, *moderate sexual boredom with high sexual motivation*; and 29.5% of the cases (n = 218) were assigned to Cluster 3, *high sexual boredom with low sexual motivation*. One outlier (0.1%) was identified as they could not fit into any cluster previously described. The ratio size was 1.76. The overall clustering quality was fair, with an average silhouette of .20. (Kaufman & Rousseeuw, 1990).

Women with *low sexual boredom with low sexual motivation* (sexual desire and sexual excitation) presented low boredom proneness and high hedonic value (sexual pleasure and sexual satisfaction). Women with *moderate sexual boredom with high sexual motivation* displayed moderate boredom proneness, the highest levels of sexual motivation and of sexual sensation seeking, and high hedonic value. Finally, women

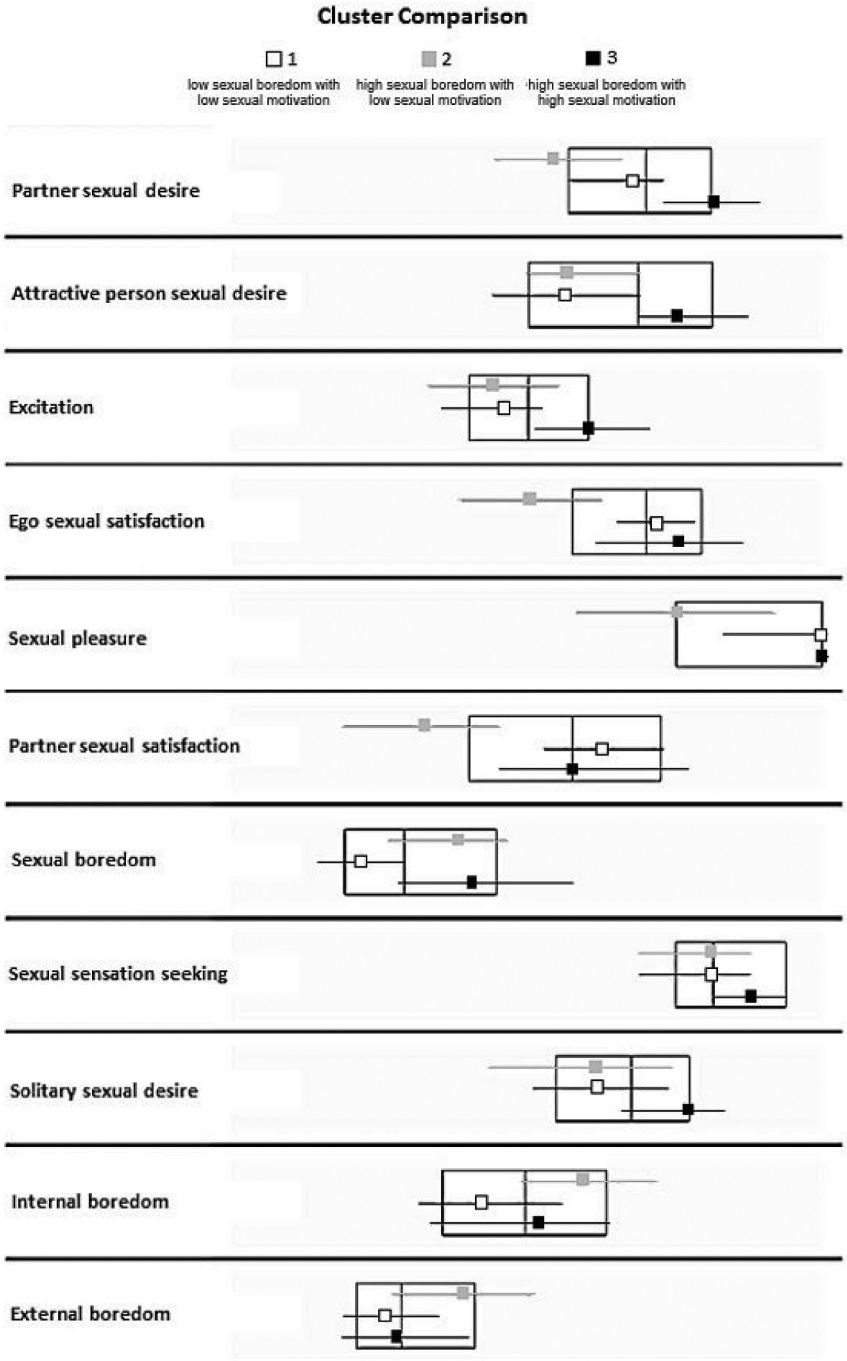

Figure 1. Cluster comparison in male sample. The small squares represent the median for each cluster. The line at the center represents the overall median. Note that input variables are sorted in descending order by prediction importance in estimating the clustering solution.

with *high sexual boredom with low sexual motivation*, showed the highest levels of boredom proneness, and the lowest hedonic value. These women showed simultaneously lower levels of partner sexual desire and higher levels of attractive person sexual desire (excitation and solitary sexual desire were close to median). See Figure 2 for descriptive findings.

Clusters Comparison by Gender

After the three-cluster solution was found, we examined whether three relevant variables related to sexual behavior (age, relationship status, and sexual orientation) differed significantly among clusters for both men and women. Results revealed no statistically significant differences on age across clusters, neither in men [$F(2, 275) = 0.34$, $p = .708$], nor in women [$F(2, 735) = 0.16$, $p = .855$]. The following categories of relationship status, the categories "consensual non-monogamies" (0.8%), "other type of relationships" (0.7%) and "occasional sex" (0.2%) were excluded from analysis because they were residual categories. Chi-square results did not reveal a relationship between relationship status and men's clusters $\chi^2(8) = 7.85$, $p = .448$. However, a significant association between the relationship status and women's clusters was found $\chi^2(8) = 55.19$, $p < .001$. A more detailed analysis

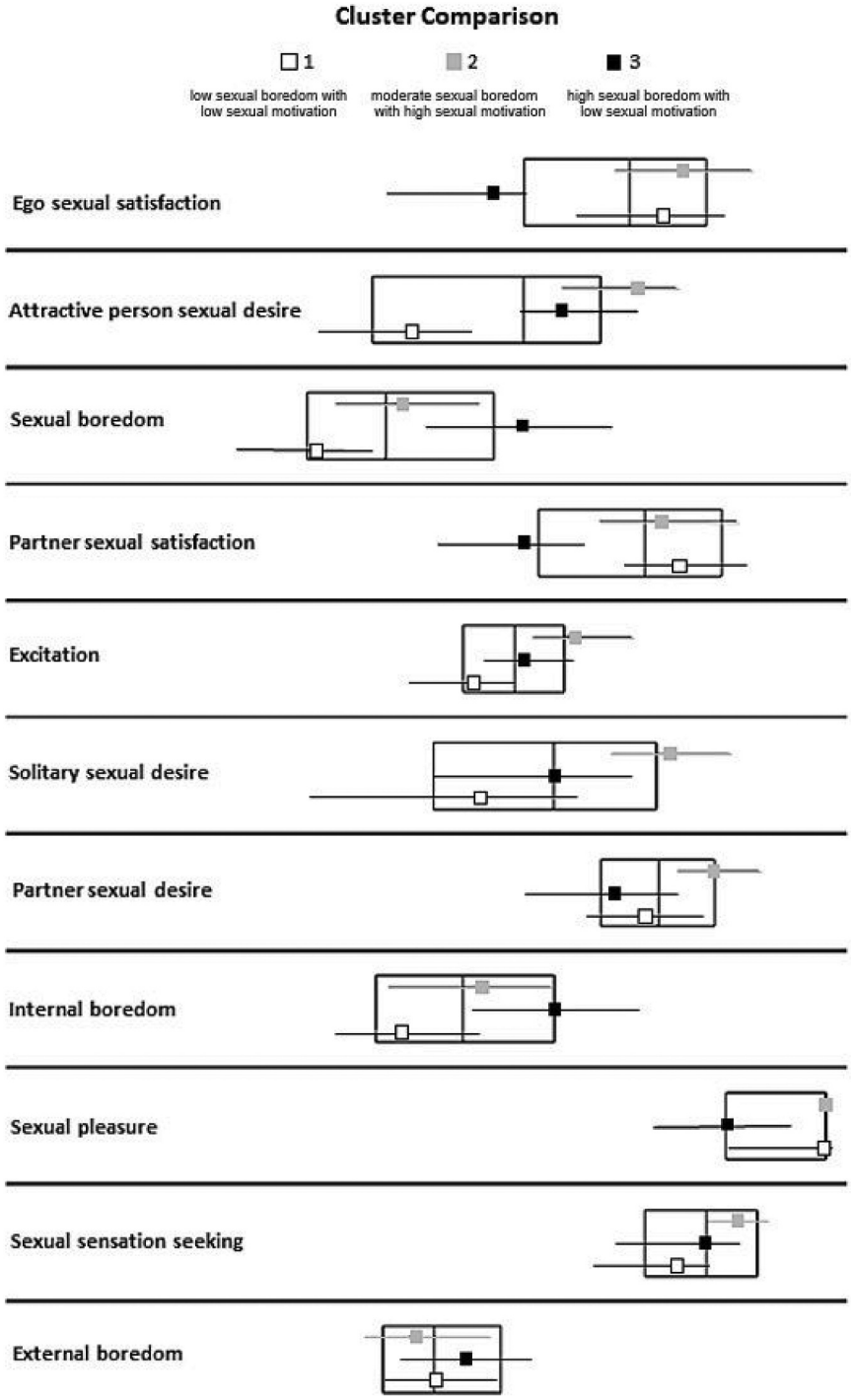

Figure 2. Cluster comparison in female sample. The small squares represent the median for each cluster. The line at the center represents the overall median. Note that input variables are sorted in descending order by prediction importance in estimating the clustering solution.

showed that Cluster 1 (*low sexual boredom with low sexual motivation*) had a higher percentage of married or cohabiting participants (Z_{adj} = 4.20) than participants with no relationship (Z_{adj} = −6.10). Conversely, Cluster 2 (*moderate sexual boredom with high sexual motivation*) had a higher percentage of participants with no relationship (Z_{adj} = 5.2) than married or cohabiting participants (Z_{adj} = −4.00). In addition, Cluster 3 (*high sexual boredom with low sexual motivation*) presented a lower percentage of participants that were dating with no cohabitation (Z_{adj} = −2.00). Regarding sexual orientation, the categories "other (0.2%)" and "preferred not to say" (0.1%) were considered residual categories (< 1%) and therefore excluded from chi-square analyses. Results showed no relationship between sexual orientation and men's clusters χ^2 (6) = 5.85, p = .440. However, in women, a significant association between sexual orientation and clusters was found χ^2 (6) = 20.65, p = .002. A detailed analysis indicated that Cluster 1 (*low sexual boredom with low sexual motivation*) had a higher percentage of heterosexual participants (Z_{adj} = 3.80) than bisexual participants (Z_{adj} = −3.30). On other

Table 1. Means and standard deviations of men and women's clusters.

	Men			Women		
	Low sexual boredom with low sexual motivation (cluster 1)	*High sexual boredom with low sexual motivation (cluster 2)*	*High sexual boredom with high sexual motivation (cluster 3)*	*Low sexual boredom with low sexual motivation (cluster 1)*	*Moderate sexual boredom with high sexual motivation (cluster 2)*	*High sexual boredom with low sexual motivation (cluster 3)*
	M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Internal boredom	58.43(13.76)	72.39(15.07)	64.38(16.40)	52.54(14.76)	62.24(16.44)	73.71(17.81)
External boredom	20.24(4.51)	24.87(6.86)	20.68(5.19)	21.72(5.41)	20.58(5.59)	23.60(6.63)
Sexual boredom	35.56(10.17)	49.05(14.41)	53.73(19.82)	30.42(11.56)	43.19(16.43)	56.39(17.12)
Sexual sensation seeking	26.23(2.40)	26.26(3.11)	28.06(1.41)	23.88(3.75)	27.11(1.74)	25.04(3.00)
Ego sexual satisfaction	38.54(4.36)	29.86(7.28)	39.37(7.64)	38.48(6.36)	40.14(6.03)	26.44(7.87)
Partner sexual satisfaction	35.05(6.38)	23.55(7.72)	33.69(10.06)	40.08(6.49)	38.80(6.99)	28.61(7.88)
Sexual pleasure	19.99(1.35)	17.65(2.99)	20.38(1.59)	19.64(2.02)	20.53(0.95)	17.30 (3.56)
Partner sexual desire	40.88(5.05)	36.79(7.18)	46.78(4.36)	37.12 (7.50)	48.19 (4.98)	33.25 (9.86)
Solitary sexual desire	18.28(6.48)	17.94(6.35)	22.84(5.15)	12.27(7.88)	22.56(4.83)	15.42(7.79)
Attractive person sexual desire	8.86(3.13)	9.07(2.75)	12.62(2.27)	4.80(3.21)	10.51(2.66)	8.31(3.74)
Excitation	50.24(6.48)	49.79(7.00)	58.34(6.95)	43.71(7.87)	55.83(7.07)	50.26(7.06)

hand, we found the opposite pattern for Cluster 2 (*moderate sexual boredom with high sexual motivation*), that is, a higher percentage of bisexual participants (Z_{adj} = 3.30) than heterosexual participants (Z_{adj} = −2.80). Cluster 3 (*high sexual boredom with low sexual motivation*) showed no significant percentage differences between sexual orientation. See Table 1 for means and standard deviations regarding men and women's three cluster solution.

Discussion

This study focused on sexual boredom in men and women, including aspects of personality (boredom proneness and sexual sensation seeking), sexual motivation (sexual excitation and sexual desire), and hedonic value (sexual satisfaction and sexual pleasure), and explored possible associations between these variables and participants' relationship status and sexual orientation. Men and women were analyzed separately.

Our cluster analysis revealed a three-cluster solution for both men and women, showing similar trends. We found groups of men and women experiencing *low sexual boredom with low sexual motivation* and high hedonic value. Likewise, our groups of men and women experiencing *high sexual boredom with low sexual motivation* also experienced low hedonic value in sex. The major difference between men and women in these groups concerned their difference on sexual desire for attractive others. When comparing medians within gender, women with *high sexual boredom with low sexual motivation* displayed higher sexual desire for attractive others while experiencing lower sexual desire for their partner. On the other hand, men displayed lower levels in both these indicators. Finally, we found a group of men presenting *high sexual boredom with high sexual motivation*, and a group of women showing *moderate sexual boredom with high sexual motivation*. Both groups leaned toward higher sexual desire, sexual excitation, sexual pleasure, sexual satisfaction, and sexual sensation seeking. Moreover, our findings indicated that relationship status and sexual orientation differed significantly among the different groups of women, but not among men.

Findings of the present study indicate that individuals experiencing low levels of sexual boredom may be less boredom prone, have low sexual motivation, but obtain high hedonic value from sex. In line with our findings, previous research suggested high hedonic value might contribute to lower levels of sexual boredom (Carvalheira et al., 2014; De Oliveira et al., 2020; Štulhofer et al., 2010). However, the same studies also revealed a link between high sexual boredom and low sexual desire, which we did not observe in the individuals with *low sexual boredom with low sexual motivation*, but we did in the individuals with *high sexual boredom with low sexual motivation*. These and other discrepancies show the relevance of studying sexual boredom via cluster analysis, as it examines different patterns between variables and individuals. We speculate that individuals with low sexual boredom and low sexual motivation might invest less in sexual activity due to having less sexual drive (desire/excitation), reducing the chance of monotony/habituation to stimuli and therefore minimizing the likelihood of experiencing sexual boredom. At the same time, when these individuals engage in sexual activity, they perceive high hedonic value, which may in turn contribute to maintaining their low levels of sexual boredom. Our analysis also showed the women in this group were more likely to be married or cohabiting heterosexuals, which aligns with previous studies indicating women who were married or cohabiting had greater odds of being sexually active and sexually satisfied than those who were not (Thomas et al., 2015).

Overall, previous research supports our results concerning the clusters of the individuals with high sexual boredom and simultaneously high boredom proneness, low sexual

motivation, and low hedonic value (cf. Carvalheira et al., 2014; Štulhofer et al., 2010; Watt & Ewing, 1996). Potentially, these men and women experience high sexual boredom because they display a boredom prone personality, take little pleasure or satisfaction from sexual activity, and, consequently, have lower sexual desire. In agreement with this, De Oliveira et al. (2020) argued that low sexual desire can be a consequence of sexual boredom, as well as a defining feature of sexual boredom.

However, it seems as if men in the cluster of *high sexual boredom with low sexual motivation* deal with low levels in all indexes of sexual motivation, whilst women only struggle in having desire for their partners. This means men's high sexual boredom relates to generalized, and potentially more problematic, low sexual desire. As for the sexually bored women, they appear to be dealing with situational low desire, considering they revealed higher sexual desire for attractive others. For some of these women, this could be related to what is commonly referred to as the "pleasure gap", that is, heterosexual women experience less sexual pleasure than their counterparts (Mahar et al., 2020; McClelland, 2010; Rubin et al., 2019). Possibly, if these women had access to more pleasurable, worth desiring, partnered sexual activity, they would experience less sexual boredom. Notwithstanding, our women's waning sexual desire may be due to over-familiarity with their partner and their sexual activity (Sims & Meana, 2010), and due to relationship duration (Murray & Milhausen, 2012), as they were mostly married or cohabiting. Perhaps some women are more sensitive to partnered sexual monotony and/or sexual frustration and consequently come to desire attractive others. This is similar to what evolutionary theories postulated for men, who, unlike women, are considered to benefit from sexual promiscuity (Buss & Schmitt, 1993). Yet, based on our findings, this theory does not seem to provide a comprehensive framework for sexual boredom.

Alternatively, we can consider the potential role played by excitatory and inhibitory systems. While these men with high sexual boredom presented low levels in all indexes of sexual motivation, women with high sexual boredom showed lower levels of partner sexual desire and higher levels of attractive person sexual desire, but their levels of excitation and solitary sexual desire were close to the median. Accordingly, lower propensity for sexual excitation might be contributing to these men's high sexual boredom and overall low sexual desire, given that sexual excitation is linked to the capacity to be aroused by sexual stimuli (Bancroft & Graham, 2011). Despite this, and according to our data, this is unlikely affecting women. Further research should focus on clarifying the role of both sexual excitation and inhibition, as the latter is thought to be higher in women compared to men (Bancroft et al., 2009) and could provide an explanation for our results.

Furthermore, cluster analysis allowed identifying groups of men and women experiencing sexual boredom, high sexual sensation seeking, no relevant boredom proneness, high sexual motivation, and high hedonic value. Specifically, men displayed high sexual sensation seeking and high sexual boredom, while women displayed high sexual sensation seeking and moderate levels of sexual boredom. Most research identifies a link between high boredom and high sensation seeking (Zuckerman, 1979; Zuckerman et al., 1972, 1978), although recent research found a negative association between sexual boredom and sexual sensation seeking (Matthews et al., 2018). While our results concerning men are congruent with the classical literature on general boredom (Zuckerman, 1994; Zuckerman et al., 1978), our women's results are not as clear. Because these women also showed moderate to high sexual boredom, their results also do not corroborate the study of Matthews et al. (2018). Possibly, sexual sensation seeking prevented higher levels of sexual boredom by increasing sexual novelty, which was previously related to lower sexual boredom (M. N. Rosa et al., 2019). Yet it is noteworthy that women in this group were less likely to be in a relationship and therefore were less likely to be affected by partner familiarity. In addition, our sample had a higher percentage of bisexual women in this group, which conforms with previous findings relating bisexuality with elevated sexual sensation seeking and sexual excitability (Stief et al., 2014).

Given the high levels of sexual motivation and of hedonic value presented by the individuals in the clusters of low sexual boredom and in the clusters of high sensation seeking, we can consider that sexual boredom may not constitute a sexual problem for them, i.e., sexual boredom may not be inherently pathological or distressing (nor low sexual desire, for that matter). Conversely, the married/cohabiting individuals presenting with high sexual boredom with low sexual motivation and low hedonic value, seem more likely to be distressed with sexual-related concerns. In this scenario, granting individuals with tools to overcome sexual boredom will likely benefit overall sexual health and contribute to lessen the pleasure gap.

Limitations

This study intended to identify and characterize subgroups of individuals experiencing varying degrees of sexual boredom. Some limitations of the present study should be considered. First, because sexual boredom lacks a solid theoretical body, our results are difficult to interpret. Second, the results obtained were based on information gathered via online survey from a non-representative Portuguese community sample, which does not allow extrapolating nor fully reflecting on sexual boredom in clinical settings, where it should also be relevant. Third, this study could also have used external clustering validation in addition to the silhouette coefficient. Finally, the number of clusters we retained is somewhat arbitrary, affecting the results reported (Everitt, Landau, & Leese, 2001). While the decision for the number of the retained clusters was based upon the BIC, the choice is still subjective to some extent (Fraley & Raftery, 1998). As mentioned before, cluster analysis is a data-driven method; hence, despite the fair stability of the clusters in our study, the results may not be generalizable to other populations. However, this methodology is thought to produce hypotheses that can drive future research in this scientific domain.

Implications

Based on our findings we can put forward a profile of the men or women dealing with sexual boredom concerns. The sexually

bored individual in distress is more likely to be married or cohabiting with a partner, to have a boredom prone personality, to lack sexual sensation seeking behaviors, experience low sexual pleasure and satisfaction, and to present low sexual arousal and/or desire. Women dealing with sexual boredom might present low sexual desire for their partner but experience high sexual desire for attractive others, while men with sexual boredom might present low levels in all dimensions of sexual desire (solitary, partner, and attractive other). However, not all individuals who are sexually bored will present low levels of these other sexual dimensions, specifically those who display higher sexual sensation seeking. Henceforth, not all manifestations of sexual boredom are problematic.

These outcomes could have implications for individuals and couples dealing with sexual problems, to which sexual boredom might be contributing, explaining, or overlapping. One might speculate that traditional behavioral sex therapy techniques, including sensate focus, may not be particularly helpful for those individuals dealing with sexual boredom, who are likely to find the mechanical and repetitive nature of such exercises aversive. Alternatively, our data suggest that sexual boredom may benefit from interventions focused on enhancing pleasure and/or novelty, possibly combined with more complex approaches aimed at personality and long-term change. Finally, cluster analysis seems a promising tool toward understanding sexual problems as it identifies groups of people that may present these in different levels or combinations.

Funding

This work was supported by the Fundação para a Ciência e a Tecnologia [Grant number SFRH/BD/136088/2018].

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