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RESEARCH ARTICLE



# Is Sexual Aversion a Distinct Disorder or a Trans-Diagnostic Symptom across Sexual Dysfunctions? A Latent Class Analysis

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## ABSTRACT

Sexual aversion disorder (SAD) is a chronic condition that impacts sexual and psychological well-being. However, the relevance of SAD as a discrete disorder remains highly debated. This study aimed to clarify the status of SAD as either a distinct disorder or a trans-diagnostic symptom shared among sexual dysfunctions. This cross-sectional study used a latent class analysis approach among a Canadian community sample ( $n=1,363$ ) to identify how patterns of SAD symptoms (i.e., sexual fear, disgust, and avoidance) emerge across different spheres of sexual functioning (i.e., desire and arousal, erection or lubrication, genito-pelvic pain, and orgasm) and examine sociodemographic and psychosexual correlates of the identified classes. Examination of fit indices suggested four classes: *Sexually functional*, *Impaired desire and responsiveness*, *Sexual aversion*, and *Comorbid sexual dysfunctions*. *Sexual aversion* class members were more likely to be single, had experienced sexual assault in adulthood, and report lower levels of sexual satisfaction and psychological well-being, compared to *Sexually functional* class members. Results suggest that SAD is a distinct clinical syndrome, while its symptoms may co-occur with other sexual dysfunctions. To ensure that the needs of people with SAD are met with tailored treatment options, future nosography might consider reclassifying SAD as a specific disorder.

## Introduction

Sexual Aversion Disorder (SAD) first appeared in the third, revised edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R; American Psychiatric Association, 1987). It was later included as one of the two Sexual Desire Disorders in the DSM-IV (APA, 1994). SAD was defined as a chronic condition characterized by a “persistent or recurrent extreme aversion to, and avoidance of—all or almost all—genital sexual contacts with a sexual partner,” causing significant distress or interpersonal difficulties (APA, 1994). Thus, individuals living with SAD usually experience fear, anxiety, or disgust at the prospect of having sexual interactions (APA, 1994). In severe SAD, the anticipation of being exposed to sexual cues can cause somatic symptoms of extreme anxiety (e.g., panic attacks) and avoidance behaviors (Brotto, 2010). However, there are great variations among individuals living with SAD regarding sexual stimuli that may elicit aversion and avoidance. Such stimuli may encompass elements of partnered or solo sexual activities (e.g., penetration, masturbation, intimate sexual touch, bodily fluids) and sexual cues (e.g., nudity, dirty talk, cuddling, kissing; APA, 2000; Borg, Both, Ter Kuile, & De Jong, 2020).

SAD is a condition that has been the subject of much debate and controversy in the field of sexual medicine. SAD was removed as a distinct disorder in the transition from the DSM-IV-TR (APA, 2000) to the DSM-5 (APA, 2013), a decision supported by the limited epidemiological and pathophysiological data on this disorder, concerns regarding the reliability and validity of its diagnosis, and its overlap with other sexual dysfunctions (Borg et al., 2020; Brotto, 2010; Reed et al., 2016). Indeed, relative to the research done on other sexual difficulties (e.g., erectile disorder, premature ejaculation, female sexual interest/arousal disorder, female orgasmic disorder; Chen et al., 2019; Frühauf, Gerger, Schmidt, Munder, & Barth, 2013; Gbiri & Akumabor, 2023; Rowland & Cooper, 2022), little is known about the prevalence, etiology, and effective treatments for SAD (Borg, de Jong, & Elgersma, 2014; Borg et al., 2020; Brotto, 2010). However, as pointed out by Borg et al. (2014), the removal of SAD as a specific sexual dysfunction in the DSM-5 did not cause SAD symptomatology to disappear or become less relevant among individuals living with sexual fear, disgust, and avoidance.

Despite limited empirical data, there are several clinical and theoretical arguments for considering SAD as a distinct disorder with a unique set of symptoms. One compelling argument for considering SAD as a distinct condition is its prevalence. Cross-national data suggest SAD rates are comparable to other common mental health disorders (e.g., mood disorders, Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012; Pearson, Janz, & Ali, 2013) and sexual dysfunctions (e.g., genito-pelvic pain, erectile disorder; Hendrickx, Gijss, & Enzlin, 2016; Kedde, 2012; Lewis et al., 2010). In fact, population-based studies have found that SAD's 12-month prevalence estimates range from 4.5 to 15.0% in women, 0.6 to 6.9% in men, and 11.0 to 17.1% in nonbinary and trans individuals (Bakker & Vanwezenbeek, 2006; Hendrickx et al., 2016; Kedde, 2012; Kerckhof et al., 2019; Lafortune et al., 2022). Another argument is the association of SAD with significant distress and impairment, which emphasizes the importance of developing tailored treatments for individuals with this condition. Studies report that SAD is associated with psychological distress indicators such as poor body image (La Rocque & Cioe, 2011), depression (Bodenmann & Ledermann, 2008), anxiety (Figueira, Possidente, Marques, & Hayes, 2001; Van Minnen & Kampman, 2000), and obsessive-compulsive disorders (Van Minnen & Kampman, 2000), as well as a history of child sexual abuse (Vaillancourt-Morel et al., 2015) or sexual victimization in adulthood (Kelley & Gidycz, 2020). Moreover, persistent and intense aversion to and avoidance of genital contacts in SAD may result in significant social and health consequences, such as social isolation, stigma, relationship difficulties (e.g., partners may feel rejected, unwanted or frustrated), difficulties with reproductive health, and avoidance of medical exams and procedures involving genital examination (Brotto, 2010; Janata & Kingsberg, 2005). The removal of SAD from medical classification systems has had several deleterious consequences, such as the substantial invisibilization of the population affected by this difficulty, an impoverishment of funded research (based on a Scopus review, the number of published papers on SAD has been steadily decreasing since 2015), a lack of assessment and treatment guidelines for professionals who must deal with these clinical realities, and difficulties in obtaining coverage for medical and psychological services when they are contingent upon the presence of an official diagnosis.

Conversely to being a distinct diagnosis, SAD may be considered a transdiagnostic symptom across various sexual dysfunctions (Borg et al., 2020). Indeed, taken in isolation, the fear and disgust toward sex that characterize SAD are common features across different sexual dysfunctions, including low sexual desire and genito-pelvic pain/penetration disorders (Borg, de Jong et al., 2014, 2020). These relationships are largely attributed to the fact that sexual disgust or fear can be a manifestation of, or lead to, disgust-driven avoidance, performance anxiety, or pain anticipation, which can in turn inhibit sexual arousal, decrease lubrication, and increase pain-related fears (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009; Elliott & O'Donohue, 1997; Nobre & Pinto-Gouveia, 2008). De Jong et al. model (2013) of sex-related disgust proposes that sexual arousal inhibits sexual disgust to ensure sexual response. This theory suggests that the experience of sexual arousal dampens the repulsive nature of certain sexual stimuli, such as contact with saliva, sweat, and sexual fluids. Yet, high disgust may interfere with the ability to experience

sexual arousal (and associated lubrication or erectile response) in sexual contexts, which can result in an avoidance of sexual activities due to anticipated disgust. Empirical data have supported this model (de Jong et al., 2013), indicating a negative and bidirectional relationship between sexual arousal and disgust (Andrews, Crone, Cholka, Cooper, & Bridges, 2015; Borg & de Jong, 2012; Fleischman, Hamilton, Fessler, & Meston, 2015; van Overveld et al., 2013). De Jong et al.'s model (2013) underscores the impact of sexual disgust on sexual functioning, notably in the development and maintenance of lower sexual interest, arousal and genito-pelvic pain or penetration-related disorders (e.g., vaginismus and dyspareunia). Additional studies among clinical samples show that individuals with genito-pelvic pain/penetration disorder and sexual interest/arousal disorder tend to experience more disgust than healthy controls (Borg, de Jong, & Schultz, 2010; Borg, Georgiadis et al., 2014; DePesa & Cassisi, 2017). Interestingly, the latest editions of medical classifications do not include sexual disgust as a significant mechanism in the development and maintenance of sexual dysfunctions (APA, 2013; World Health Organization, 2019). Further research is required to explore whether sex-related disgust may serve as a transdiagnostic symptom across various sexual complaints, such as sexual interest/arousal disorder or genito-pelvic pain/penetration disorder.

Sex-related fears, worries, and negative anticipation also represent major contributing factors in various sexual dysfunctions (Awada, Corsini-Munt, Bergeron, & Rosen, 2014). For instance, pain-related fears and pain catastrophizing (i.e., excessive attention given to the expectation of unbearable pain) have been associated with genito-pelvic pain disorder (Desrochers et al., 2009). In this context, a phobic element can be associated with sexuality due to the anticipation of pain, resulting in an avoidance of penetrative sex or an aversion to sexual experiences. Other apprehensions may revolve around feeling pressured and anxious to please one's partner or being worried about sexual performance (e.g., not being sufficiently erect, lubricated, sexually aroused, or orgasmic; Hall & Binik, 2020; Wincze & Weisberg, 2015). For example, pressure to please one's partner and increased attentional focus on failure during sex contribute to women's sexual interest and arousal problems (Elliott & O'Donohue, 1997; Nobre & Pinto-Gouveia, 2008). Similarly, feeling anxious about sexual performance right before sex is more prevalent in men with low desire (39%) compared to those without such difficulty (15%;  $n=5,255$ ; Cavaleira, Traeen, & Štulhofer, 2014). Also, worry about sexual performance and related sexual avoidance have been repeatedly shown to be important factors in erectile difficulties during partnered sex (Kalogeropoulos & Larouche, 2020). Furthermore, anxious anticipation about potential inability to achieve or control one's orgasm is related to delayed orgasm issues (Ishak, Bokarius, Jeffrey, Davis, & Bakhta, 2010; Waldinger & Schweitzer, 2005). As Borg et al. (2020) outlined, SAD may then not exist as a distinct disorder, but its symptoms (sexual fear and disgust) may rather be underlying factors of several sexual difficulties (e.g., vaginismus, impaired desire and arousal).

In front of arguments supporting the idea that SAD should be considered a distinct disorder and other suggesting its symptoms are rather contributing factors of various sexual dysfunctions, further investigation into the diagnostic criteria and specificity of SAD is crucial. A comprehensive review of clinical, theoretical, and empirical literature has not yielded a definitive conclusion regarding whether SAD should be viewed as a discrete clinical entity or a transdiagnostic symptom (Borg et al., 2020).

Latent variable modeling, such as Latent Class Analysis (LCA; Hagenaars & McCutcheon, 2002), offers a valuable tool to determine whether SAD represents a distinct syndrome or a transdiagnostic symptom, by examining patterns of symptom co-occurrence across sexual dysfunctions. One argument for using LCA is that traditional diagnostic criteria for SAD may not accurately capture the heterogeneity and variety of symptoms and experiences on the "sexual aversion spectrum." For example, some individuals with SAD may primarily experience sexual fear, while others may experience disgust or a combination of these symptoms, with or without other cooccurring sexual dysfunctions. By using LCA, we can identify subgroups of individuals with similar SAD or other sexual dysfunction symptom profiles and examine whether these subgroups are associated with different predictors, mechanisms, and outcomes that contribute to the development and

maintenance of the disorder (e.g., sexual victimization, sexual dissatisfaction). As such, these analyses can contribute to the development of more accurate diagnostic criteria for SAD and improve our ability to identify individuals who may benefit from targeted treatments options. Indeed, by identifying subgroups of people with similar symptoms, tailored interventions could address the specific needs of these individuals. For instance, a potential subgroup that primarily experience sexual fear may benefit from anxiety-reducing techniques, such as exposure-based therapy (Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014; Meuret, Wolitzky-Taylor, Twahig, & Craske, 2012), whereas focusing on counter-conditioning techniques (Mason & Richardson, 2012) might be promising for individuals who primarily experience sex-related disgust.

Building upon current knowledge, this study aims to investigate whether SAD symptoms constitute a distinct disorder or are transdiagnostic. Thus, we conducted LCA on indicators of each clinical feature of SAD (i.e., sexual fear, disgust, and avoidance), along with sexual dysfunctions previously linked to SAD or its manifestations (i.e., low desire and arousal, impaired erection or lubrication, genito-pelvic pain, and delayed orgasm) in a community-based sample. We also examined whether the latent class membership was related to specific covariates (i.e., age, gender, sexual orientation, relationship status, lifetime number of sexual partners, education level, and experience of sexual victimization in childhood or adulthood) and outcomes (i.e., sexual satisfaction and psychological well-being). This study may contribute to the enhancement of the existing diagnostic categories and provide a more comprehensive understanding of SAD correlates.

## Methods

This study had received ethics approval from the Université du Québec à Montréal's Ethics Review Board (certification number: 2021-3671).

## Sampling

A convenience sample (non-probabilistic) of adults from Quebec, Canada, was recruited through social media (i.e., Facebook, Instagram) from June to September 2021. Social media posts promoted a confidential survey on sexual difficulties and their associated correlates. Advertising strategies were mobilized using Facebook Ads Manager to increase the participation of specific sociodemographic segments (e.g., 18- to 30-year-old adults, cisgender men). Interested participants were directed to the survey hosted on Qualtrics, where they could read a presentation of the study's aims and electronically sign an online consent form. After providing consent, participants could access the questionnaire. The survey was available in English and French. The completion time for the questionnaire was 30 to 40 min. To meet the inclusion criteria, participants had to be at least 18 years old and have sufficient knowledge of English or French to complete the questionnaire. A total of 2,154 participants consented to participate in the study, and 63.3% provided usable data, i.e., completed at least one of the seven indicators examined in this study (i.e., presence of a SAD or other sexual dysfunction symptom and the corresponding level of associated distress within the last six months; see the Measures section). The final sample consisted of 1,363 individuals. Participants who completed at least 70% of the questionnaire were eligible to enter a draw to win one of 30 gift cards (values from \$25 to \$200).

Participants' mean age was 40.3 years old ( $SD = 12.7$ ). Regarding gender identity, 56.8% ( $n=774$ ) identified as women, 38.9% ( $n=530$ ) identified as men, and 4.3% ( $n=59$ ) identified as trans or nonbinary. A proportion of 74.0% ( $n=1,008$ ) identified as heterosexual, while 14.8% ( $n=202$ ) identified as bisexual or pansexual, 5.6% ( $n=76$ ) identified as lesbian or gay, and 0.9% ( $n=12$ ) identified as asexual, while the remainder were questioning their identity or identified as "other" (e.g., queer; 4.8%;  $n=65$ ). About two thirds of the sample were in a relationship (dating, cohabiting, married; 66.5%,  $n=906$ ), and the mean number of lifetime sexual partners across all respondents was 17.45 ( $SD = 17.4$ ). Education level was professional or college studies

for 38.7% of participants ( $n=527$ ), followed by undergraduate studies (31.8%;  $n=434$ ), high school or secondary studies (17.5%;  $n=239$ ) graduate studies (10.4%;  $n=142$ ), and elementary studies (1.5%;  $n=21$ ). More than two-thirds of the sample reported being employed or self-employed (68.8%;  $n=937$ ), while other participants reported being students (10.9%;  $n=149$ ), being retired (6.5%;  $n=88$ ), looking for employment (4.3%;  $n=58$ ), being on sick leave (3.3%;  $n=45$ ), or being in another situation (e.g., volunteering, being caregiver; 6.2%;  $n=84$ ). Participants' ethnicity was mainly Caucasian (94.6%;  $n=1287$ ). Finally, about two-thirds of the participants reported having a family annual income of \$50,000 or more (65.3%;  $n=884$ ).

## Measures

### Latent class indicators

**Sexual dysfunctions.** Presence of sexual dysfunctions was assessed using an adapted version of the Arizona Sexual Experience Scale (ASEX; McGahuey et al., 2000;  $\alpha = .91$ ), which originally examined the experience of sexual difficulties throughout the sexual response cycle (e.g., sexual desire, orgasm). In the original ASEX, items related to sexual functioning are presented on a Likert scale ranging from high (1=extremely easily/strong/satisfying) to low (6=very difficult/weak/unsatisfying). Higher ASEX scores represent lower sexual functioning. In this adapted ASEX version, to reflect the DSM-5 criteria, respondents also indicated if their sexual difficulties were present for at least six months and were asked to report their associated level of distress (1=no distress to 6=severe distress) for each sexual difficulty. Continuous scores on symptoms and their associated distress levels were then recoded to reflect the presence or absence of each sexual dysfunction—namely, scores of 5 or 6 for each sexual dysfunction symptom (e.g., “very difficult” and “never reach orgasm” for delayed orgasm) were coded as 1 (“present”) and distress levels of 4 to 6 (i.e., “moderate” to “extreme” distress) were coded as 1 (“present”). Ultimately, participants who reported experiencing a high level of symptoms (i.e., 5 or more) and moderate to extreme distress associated with this specific difficulty (i.e., 4 or more) for the past six months were categorized as having this specific sexual dysfunction. An additional item measuring symptoms of sexual pain (“Do you experience pain during sexual activity?”) was included. Participants completed the version of the ASEX that corresponded to their genital sex rather than their gender, as some ASEX items are sex-specific (e.g., vaginal lubrication, penile erection). The ASEX showed good internal consistency in the current sample ( $\alpha = .79$ ).

**Sexual aversion disorder.** A measure of SAD symptoms was created based on the DSM-IV's SAD criteria A and B (APA, 1994) and previously used questionnaires (e.g., Hendrickx et al., 2016). Participants were invited to state whether, over the past six months, they had experienced lasting symptoms of either extreme anxiety or disgust in sexual contexts (e.g., “Feeling extreme anxiety in all or nearly all sexual situations with a partner or during masturbation”), avoidance of sexual situations (e.g., “Avoided all or nearly all sexual situations with a partner or masturbation”), and associated distress for each symptom (e.g., “Indicate the degree of distress caused by this disgust”). For each of these symptoms (i.e., extreme sexual anxiety, disgust, and avoidance), participants reported the occurrence (1) or absence (0) of such symptoms and associated distress on a four-point Likert scale ranging from 1=no distress to 4=severe distress. Three dichotomized variables were created for each SAD symptom: participants who reported experiencing extreme anxiety, disgust, or avoidance (1) as well as at least moderate distress associated with this specific difficulty (i.e., 3) for the past six months were categorized as having this particular SAD symptom.

### Covariates

**Sociodemographics.** A sociodemographic questionnaire was used to gather information on participants' characteristics, namely age, gender, sexual orientation, relationship status, lifetime number of sexual partners, and education level.



**Sexual victimization.** Childhood sexual abuse and sexual assault in adulthood were evaluated using a two-item measure based on the Canadian Criminal Code (one question for child sexual abuse and one for sexual assault in adulthood). This measure has demonstrated validity in assessing experiences of sexual victimization, as it considers nonconsensual sexual acts rather than relying on participants' self-perceived victim status (Bigras, Godbout, Hébert, & Sabourin, 2017;  $\alpha = 0.90$ ). Following a definition of sexual behavior ("A sexual act consists of any act, with or without contact, that seems sexual to you, such as caressing, kissing, sexual touching, oral, vaginal or anal sex, verbal sexual advances, or exposure to sexual content"), participants reported whether they had ever experienced child sexual abuse and sexual assault before/after the age of 18 (e.g., "Have you experienced any sexual act without your consent after the age of 18?" for sexual assault in adulthood) using a Yes or No format.

### Outcomes

**Sexual satisfaction.** Sexual satisfaction was measured using the Global Measure of Sexual Satisfaction (Lawrance & Byers, 1995;  $\alpha = .95$ ). Participants were asked to rate their overall sexual satisfaction on five seven-point bipolar scales (e.g., bad to good, unpleasant to pleasant), with higher GMSEX scores indicating higher sexual satisfaction. Internal consistency was excellent in the current study ( $\alpha = .91$ ).

**Psychological well-being.** Psychological well-being was measured using the K-6 Distress Scale (Kessler et al., 2003;  $\alpha = .89$ ). This six-item scale assessed anxiety and depression-related symptoms in the past 30 days, using a five-point Likert scale ranging from 0=None of the time to 4=All the time. In the present study, higher scores indicated higher psychological well-being. The scale presented good internal consistency in the current sample ( $\alpha = .87$ ).

### Analysis plan

All analyses were performed on Latent Gold 6.0 (Vermunt & Magidson, 2021). A three-step approach was followed for Latent Class Analysis (Vermunt, 2017; Weller, Bowen, & Faubert, 2020) to identify unique classes of individuals based on their patterns across sexual functioning and to examine associations between classes and both covariates and distal outcomes.

First, LCA was performed on individual responses to seven binary indicators of SAD symptoms and sexual dysfunctions: (1) sexual fear, (2) sexual disgust, (3) sexual avoidance, (4) impaired erection or lubrication, (5) low desire and arousal, (6) genital pain, and (7) delayed orgasm. LCA models were estimated and compared using an increasing number of classes (up to seven) to determine the best model fit. The optimal fitting classification model was identified by examining model fit statistics and class size, as well as parsimony and theoretical interpretability (Nylund, Asparouhov, & Muthén, 2007; Weller et al., 2020). The following fit indices were used to select the best model solution: Bayesian Information Criterion (BIC), Aikake's Information Criterion (AIC), Log-likelihood (LL), Vuong–Lo–Mendell–Rubin test (VLMR), Bootstrapped Likelihood Ratio Test (BLRT; Nylund et al., 2007), entropy, and examination of bivariate residuals. Lower values of BIC, AIC, and LL suggest a better-fitted model. The VLMR and the BLRT statistics were used to evaluate the relative adequacy of a  $(K - 1)$ -class model compared to a  $K$ -class model (Nylund et al., 2007) and provide a  $p$ -value indicating whether one model is statistically better than the one with fewer classes. Once models were selected, two parameters were used to describe the classes: class membership probabilities and item-response probabilities for item endorsement. Then, we regressed the latent classes' posterior membership probabilities on sociodemographic correlates (i.e., age, gender, sexual orientation, relationship status, lifetime number of sexual partners, education degree, history of childhood sexual abuse or sexual assault in adulthood) using a robust maximum likelihood estimator. Finally, two distal outcomes (i.e., sexual

satisfaction, psychological well-being) were regressed on the latent classes posterior membership probabilities using the Bolck-Croon-Hagenaars (BCH) modified bias-correction method, in conjunction with the robust variance estimator, to prevent the standard errors from being underestimated (Bakk, Tekle, & Vermunt, 2013; Bolck, Croon, & Hagenaars, 2004). Wald tests were computed to test potential differences between classes on sociodemographic correlates and psychosexual outcomes, and when significant, post-hoc comparisons were reported. Missing data were accounted for using the full information maximum likelihood estimation.

## Results

### Latent classes

LCA was used for grouping categorical data into latent classes, comparing models with different numbers of classes, and selecting the optimal solution to evaluate the symptoms clustering among participants. One- to seven-class models were estimated and compared (see Table 1 for fit indices). Although the BIC was lower for the two-class model, the four-class solution appeared to be optimal when considering the other fit indices, participants' distribution across classes, and the interpretability of the classes. The AIC was also the lowest in the four-class model. Also, the degree of improvement was significant for each additional class—up to four—added to the model (see VLMR and BLRT *p*-values), suggesting that the addition of a fifth class did not substantially improve model fit. Examination of bivariate residuals in the four-class model revealed few local independence issues (one residual at 4.11); accordingly, we allowed the bivariate residual between genital pain and delayed orgasm to correlate in order to obtain a better-fitting model without having to consider a five-class model. This resulted in all bivariate residuals being  $>2$  in the four-class model, indicating that the relationship between the variables is well explained by the number of classes and the fulfillment of the assumption of independence between indicators (Oberski & Vermunt, 2013). Theoretical and clinical interpretability of each solution was also considered, examining meaningful patterns of sexual symptoms in the two- to four-class models. Item-response probabilities more clearly separated one class from another in the four-class model in terms of clinical profiles (consistently with symptoms clustering and co-occurring symptoms in sexual health literature) and class membership probabilities reflect the estimated prevalence found in the general population. Moreover, the five-class model did not provide a theoretically sound solution over the four-class model.

### Patterns of sexual symptoms in the four-class solution

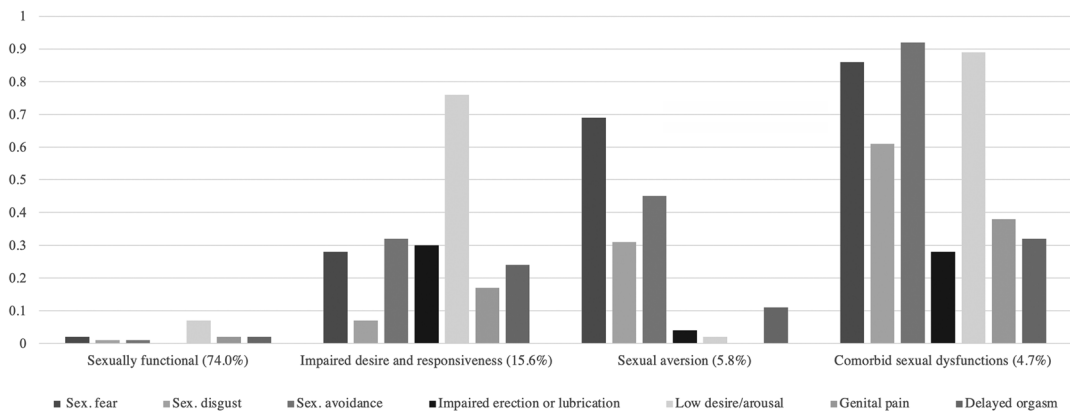
The first class, labeled “Sexually functional” (74.0%), comprised individuals with very low probabilities of experiencing distressing sexual difficulties on all indicators ( $\leq .07$ ; see Figure

**Table 1.** Model fit statistics and selection criteria for LCAs of sexual dysfunctions in the sample (one to seven classes).

# of Classes	LL	BIC	AIC	Total BVR	Max. BVR	VLMR <i>p</i> -value	BLRT <i>p</i> -value	Entropy	Parameter
1	−3072.203	6194.929	6158.407	2062.57	272,7553	—	—	1	7
2	−2632.964	5374.190	5295.929	58.26	12,1783	<.001	<.001	0.75	15
3	−2609.922	5385.845	5265.844	17.61	6,8413	<.001	<.001	0.68	23
<b>4</b>	<b>−2593.205</b>	<b>5410.150</b>	<b>5248.409</b>	9.34	4,1065	<b>.002</b>	<b>.001</b>	<b>0.65</b>	<b>31</b>
5	−2586.693	5454.867	5251.387	3.12	1,1683	.11	.25	0.62	39
6	−2581.874	5502.968	5257.748	1.613	0,5351	.15	.46	0.64	47
7	−2576.687	5550.332	5263.373	1.24	0,4314	.11	.30	0.63	55

Note: Bolded values refer to the selected model. LL: Log Likelihood; BIC: Bayesian Information Criterion; AIC: Akaike Information Criterion; BVR: Bivariate Residuals; VLMR: Vuong–Lo–Mendell–Rubin test; BLRT: Bootstrapped Likelihood Ratio Test.





**Figure 1.** Latent class membership probabilities and item response probabilities for the four-class model ( $n=1,363$ ).  
 Note: Each class indicator is dichotomous and was scored as 0 = not endorsing sexual dysfunction criteria and 1 = endorsing criteria.

1 for class membership and item response probabilities). The second class, labeled “*Impaired desire and responsiveness*,” represented a substantial proportion of the sample (15.6%) and was comprised of participants who had high probabilities of reporting low desire and arousal (.76) and moderate probabilities of experiencing sexual fear (.28), sexual avoidance (.32), and impaired erection or lubrication difficulties (.30). The third class, labeled “*Sexual aversion*” (5.8%), presented a more homogeneous profile characterized specifically by the experience of SAD symptoms only, including participants who had elevated probabilities of reporting sexual fear (.69), sexual avoidance (.45), and sexual disgust (.31), but low probabilities of reporting other sexual difficulties ( $\leq .11$ ). The fourth class was labeled “*Comorbid sexual dysfunctions*” (4.7%) and included participants who had elevated probabilities of reporting ( $\geq .61$ ) sexual fear, disgust, avoidance, and low sexual desire and arousal concomitantly with moderate probabilities (.28-.38) of experiencing impaired erection or lubrication difficulties, genital pain and delayed orgasm.

### Between-class differences on sociodemographic covariates

Table 2 displays the socio-demographic composition of the latent class membership. Members of Class 2 (*Impaired desire and responsiveness*) were significantly older than members of classes 1 (*Sexually functional*), 3 (*Sexual aversion*), and 4 (*Comorbid sexual dysfunctions*); all were significant at  $p < .01$ . Regarding gender, members of Class 2 were more likely cisgender women compared to members of classes 1 ( $p = .030$ ) and 3 ( $p = .039$ ), as well as for members of Class 4 compared to those of classes 1 ( $p = .010$ ) and 3 ( $p = .006$ ). Classes composition did not differ significantly on sexual orientation, except for classes 1 and 4 ( $p = .001$ ), with the latter comprising a greater proportion of individuals who self-identified as “other sexual orientations” (e.g., asexual, questioning). Class 3 members were more likely to report not being in a relationship (compared to those who were engaged in a relationship) compared to members of classes 1 ( $p < .001$ ) and 2 ( $p < .001$ ). Regarding the number of sexual partners, Class 3 members reported a greater number of sexual partners over the course of their lives compared to those of classes 1 ( $p = .041$ ), 2 ( $p = .015$ ), and 4 ( $p = .023$ ). Finally, Class 2 members reported childhood sexual abuse in greater proportion than members of Class 1 ( $p = .003$ ), while classes 2 ( $p = .013$ ) and 3 ( $p < .001$ ) members were more prone to report sexual assault in adulthood than individuals in Class 1. No other significant socio-demographic differences were found between latent class membership.

**Table 2.** Socio-demographic composition of the latent classes.

Covariates	Class 1 Sexually functional	Class 2 Impaired desire and responsiveness	Class 3 Sexual aversion	Class 4 Comorbid sexual dysfunctions	Wald test <i>p</i> -value
Age (mean)	39.6	45.6	36.3	38.6	< .0001
Gender (%)					
Cis women	54.28	66.46	44.44	79.26	0.0023
Cis men	41.64	28.49	51.32	14.70	
Trans and non-binary	4.08	5.05	4.24	6.04	
Sexual orientation (%)					
Heterosexual	75.24	70.52	71.36	68.41	0.022
Homosexual	5.63	5.58	7.17	2.69	
Bi/pansexual	14.63	15.6	18.69	10.38	
Other (e.g., questioning)	4.50	8.29	2.78	18.51	
Relationship status (%)					
In a relationship	68.37	70.67	38.51	57.38	0.0012
Not in a relationship	31.63	29.33	61.49	42.62	
Number of sexual partners (mean)	17.60	15.58	23.10	14.04	0.043
Education degree (%)					
Elementary	0.75	2.98	5.97	3.80	0.17
High school	16.86	20.47	17.97	17.93	
Professional or college	38.14	34.36	52.01	44.57	
Undergraduate	33.15	33.12	17.48	24.92	
Graduate	11.11	9.08	6.57	8.79	
Childhood sexual abuse (%)					
Yes	22.41	36.54	35.67	25.39	0.0071
No	77.59	63.46	64.33	74.61	
Adulthood sexual assault (%)					
Yes	26.95	39.66	54.60	42.87	0.0001
No	73.05	60.34	45.40	57.13	

**Table 3.** Adjusted means and standard errors for sexual satisfaction and psychological outcomes given latent class membership.

	Sexual satisfaction (0–35)			Psychological well-being (0–30)		
	M	Std. error	Wald test	M	Std. error	Wald test
Class 1	26.36	0.20	360.27*	17.34	0.15	165.23*
Class 2	17.23	0.63		14.61	0.45	
Class 3	21.29	1.09		11.02	0.82	
Class 4	14.90	1.06		10.75	0.82	

\**p* < .001.

### **LCA model with sexual satisfaction and psychological well-being as distal outcomes**

Compared to Class 1 members (*Sexually functional*), members of classes 2 (*Impaired desire and responsiveness*), 3 (*Sexual aversion*), and 4 (*Comorbid sexual dysfunctions*) had lower levels of sexual satisfaction and psychological well-being (all significant at  $p < .001$ ; see Table 3 for adjusted means and standard errors). Members of Class 4 reported being less satisfied with their sex life than those in class 2 ( $p = .026$ ) and 3 ( $p < .001$ ), while Class 3 members reported significantly higher levels of sexual satisfaction than those in class 2 ( $p = .01$ ). Furthermore, members of Class 2 had higher levels of psychological well-being compared to those in classes 3 ( $p = .005$ ) and 4 ( $p = .008$ ), but the latter did not differ significantly from Class 3 members in terms of levels of psychological well-being ( $p = .83$ ).

### **Discussion**

The primary objective of this study was to examine whether SAD represents a discrete clinical entity or whether its features are transdiagnostic symptoms across sexual dysfunctions, utilizing latent variable modeling in a large community-based sample. Results showed that a four-class

model provided the optimal fit to the data and interpretability. The four-class solution revealed a clearly defined and homogeneous profile of SAD, characterized by the presence of all SAD symptoms (i.e., sexual fear, disgust, and avoidance), along with minimal probabilities of reporting other sexual difficulties. Two other classes were characterized by the presence of SAD-related symptoms in concomitance with other sexual dysfunctions. The *Sexual aversion* class membership consisted of individuals who most likely were single, had experienced sexual assault in adulthood, reported higher number of lifetime sexual partners, and exhibited lower levels of sexual satisfaction and psychological well-being compared to the *Sexually functional* class members.

This study's findings support the two prominent trends in the existing literature regarding the diagnostic classification of SAD (Borg, de Jong et al., 2014, 2020; Brotto, 2010). Results suggest that SAD is a distinct clinical syndrome forming a class regrouping participants with specific SAD symptoms, and that some of its symptoms may also co-occur with other distressing sexual dysfunctions, especially within the *Comorbid sexual dysfunctions* class. The results also support previous empirical findings and clinical observations linking SAD to singlehood, a history of sexual victimization, as well as sexual dissatisfaction and psychological distress when compared to sexually functional individuals (Bodenmann & Ledermann, 2008; de Jong et al., 2013; Janata & Kingsberg, 2005; Vaillancourt-Morel et al., 2015). Significantly, the *Sexual aversion* class members reported lower levels of psychological well-being and sexual satisfaction than members of the *Sexually functional* class. Contrary to our initial prediction, only adult sexual victimization prevalence was significantly higher among the *Sexual aversion* class members in comparison to those of the *Sexually functional* class, as the observed proportions of child sexual abuse (22.4% in class 1 and 35.7% in class 3) did not reach statistical significance. Interestingly, members of the *Sexual aversion* class did not significantly differ in terms of gender when compared to the *Sexually functional* class members, both showing a similar proportion of cis men and women. However, when SAD symptoms co-occurred with other sexual dysfunctions (the *Comorbid sexual dysfunctions* class), cis women outnumbered cis men with a significant ratio difference of almost six to one. While prior studies have consistently highlighted a higher prevalence of SAD among women (Bakker & Vanwezenbeek, 2006; Hendrickx et al., 2016; Lafrenaye-Dugas, Hébert, & Godbout, 2020), our analyses suggest that the gender-based profile of SAD might be more nuanced. It may be partially dependent on the presence of co-occurring symptoms alongside SAD, as impaired sexual interest/arousal and genito-pelvic pain are more prevalent among women than men (Briken et al., 2020; Hendrickx et al., 2016; Lewis et al., 2010; Mitchell et al., 2013).

Surprisingly, the *Sexual aversion* class members reported the highest number of lifetime sexual partners among all the classes, despite experiencing elevated clinical manifestations of SAD. While this finding may appear counterintuitive, particularly regarding avoidance symptoms in SAD, potential explanations can be suggested. One perspective is rooted in the link between sexual exposure and trauma-related risk, as individuals who report a greater number of sexual partners are statistically more likely to be exposed to non-consensual sexual behaviors than those who report fewer partners (Dembo, Wareham, Schmeidler, & Wolff, 2022; Hoskin & Moody, 2023). This association could potentially explain the higher prevalence of adult sexual victimization also observed in the *Sexual aversion* class. An alternative interpretation could be that, for certain individuals living with SAD, engaging with more sexual partners may serve as a behavioral strategy aimed at gradually desensitizing, with the hope of reducing the intensity of their aversion to sexual activities and, potentially, overcoming it. This might be the case for the less severely phobic SAD individuals—when aversion is limited to a specific aspect of sex, such as being penetrated, having oral sex, or coming into contact with sexual fluids (i.e., situational aversion; Kaplan, 1987)—as they may still be able to experience erotic sensations as long as avoidance of their circumscribed phobic stimuli is maintained (Brotto, 2010). Adding further support to this, individuals belonging to the *Comorbid sexual dysfunctions* class, who exhibit higher levels of SAD symptoms in addition to other sexual dysfunctions, reported the lowest number of sexual partners among all the classes.

Alternatively, individuals with SAD may engage in having more sexual partners as a means of seeking validation and reassurance to confirm their desirability and attractiveness, countering

negative self-perceptions (e.g., that they are somehow abnormal or broken) and body shame, which are typically associated with SAD (La Rocque & Cioe, 2011; Lafortune et al., 2022). Lastly, certain people reporting SAD symptoms may encounter difficulties in finding sexual partners with whom they experience lower levels of aversion. Following this hypothesis, the number of sexual partners they have throughout their lives could merely reflect the exploration of their sexual preferences and boundaries, as well as sexual contexts that are less sexually aversive or present fewer potential triggers for their aversion. In sum, further research is crucial to explore the mechanisms (e.g., body image concerns, sexual self-efficacy, number and quality of sexual experiences, number and type of experiences of sexual victimization) that explain the bivariate associations found between emerging classes and the examined covariates, along with investigating the temporal relationship between these factors and the development and maintenance of SAD.

Regarding the classes' reliability, the *Sexually functional* class's estimated prevalence (74.0%) is consistent with prior epidemiological data on the proportion of individuals living with at least one sexual dysfunction (Hendrickx et al., 2016; Mitchell et al., 2013). Additionally, classes 2 and 4 reveal a concurrent presence of SAD-related symptoms and genito-pelvic pain or impaired sexual interest/arousal of genito-pelvic pain (e.g., in the *Comorbid sexual dysfunctions* class), in line with prior findings among clinical and non-clinical populations, suggesting a medium to strong relationship between genito-pelvic pain/penetration disorder, sexual interest/arousal disorder, and SAD-related symptoms (e.g., sexual disgust and fear; de Jong et al., 2013; Cavalleira et al., 2014; DePesa & Cassisi, 2017; Katz & Jardine, 1999). The finding that the *Sexual aversion* class constitutes a significant proportion of the sample (5.8%) and exhibits a consistent profile characterized solely by the experience of SAD symptoms rekindles the debate surrounding the exclusion of SAD from medical classifications and underscores the continued relevance of its diagnosis for physicians and (sex) therapists. These results also imply that the *Sexual aversion* class exhibits limited overlap with other established sexual dysfunction diagnoses. This finding has positive implications for enhancing the visibility of distress experienced by individuals with SAD, as well as for the development of research and clinical guidelines.

In 2010, Brotto proposed three approaches concerning the diagnostic status of SAD in the upcoming DSM-5: (1) removing SAD from the DSM-5 and expanding the definition of vaginismus to include sexually aversive individuals; (2) removing SAD from the DSM-5 and incorporating cases of genital contact phobia into the diagnosis of Specific Phobia; or (3) retaining SAD in the DSM-5 as a sexual dysfunction with the same DSM-IV criteria. Reflecting on our findings and previous studies, the first option appears less suitable if we consider the associations of SAD with not only genito-pelvic pain, but also low sexual interest and arousal (Andrews et al., 2015; Borg & de Jong, 2012; Fleischman et al., 2015; van Overveld et al., 2013), as well as the existence of a distinct *Sexual aversion* class. The second option holds relevance due to the presence of extreme fear and disgust-related responses—as observed in other specific phobias and related problems (e.g., arachnophobia or contamination-related compulsions; Inozu, Çelikan, Trak, Üzümcü, & Nergiz, 2021; Olatunji et al., 2009)—as well as stimulus-specific avoidance in SAD maintenance (Janata & Kingsberg, 2005; Mowrer, 1960). On that note, recent findings, using a virtual reality behavior avoidance test, revealed that individuals with SAD exhibited heightened fear and disgust responses along with less time spent touching the genitals of a naked virtual character compared to their non-SAD counterparts (Lafortune et al., 2023a). However, restricting SAD to genital contact phobia carries the risk of limiting its scope and failing to adequately capture the complexity of sexual experiences in individuals living with this condition. Future qualitative studies employing in-depth interviews with individuals experiencing SAD, and potentially their partners, would provide a more comprehensive understanding of their trajectories and experiences in various sexual contexts and interactions (Lafortune et al., 2022), and would help refine future SAD criteria and associated features.

Therefore, we concur with Brotto's third proposal, that SAD should be primarily regarded as a distinct sexual diagnosis in future DSM editions and other medical classification systems. Although, we suggest that SAD may benefit from a revision of its DSM-IV criteria, explicitly

indicating that aversion can encompass fear or disgust lasting at least six months (consistently with DSM-5's definition of other sexual dysfunctions), and that aversion could extend to sexual behaviors and cues encountered during sexual activity (e.g., penetration, masturbation, body odors, and sexual fluids) or anticipated contexts leading to sexual encounters (e.g., cruising, cuddling), with the aim to include SAD cases that go beyond a specific phobia of genital contact.

## **Limitations**

This study presents some limitations. First, the cross-sectional design precludes the drawing of any conclusions regarding the causality and directionality of the relationships between the emerging classes and examined covariates and outcomes. Future research employing longitudinal designs could explore the temporal interaction of SAD with identified covariates (e.g., sexual victimization, relationship status), outcomes (e.g., sexual dissatisfaction), and other sexual dysfunctions (e.g., low sexual desire/arousal). Second, the sample was not representative of the Quebec population on some variables (e.g., highly educated, low rate of non-Caucasian adults, slightly predominantly women and middle-aged adults). As such, its findings should be interpreted with caution, and this study should be replicated in other national and sociocultural contexts with representative, probability-based samples. Third, the presence of sexual dysfunction and SAD was estimated using self-reported questionnaires rather than official diagnostic records or clinical interviews. Thus, the results may be subject to social desirability and recall biases. Fourth, the adapted ASEX measured general sexual pain but didn't evaluate specific genito-pelvic pain/penetration disorder subtypes like vaginismus or dyspareunia, limiting interpretability given the wide range of experiences among individuals reporting painful sex. Fifth, part of the recruitment occurred during the COVID-19 pandemic, which has impacted many individuals' sex lives and relationships (Bhambhani et al., 2021), thus affecting the findings' generalizability to other contexts.

## **Conclusion**

While the ongoing debate regarding the relevance of SAD as a distinct disorder will persist, further research is crucial to determine its diagnostic status: whether SAD should be regarded as an independent syndrome or as a subtype of a broader disorder, or whether its symptoms should be considered as manifestations or mechanisms associated with the etiology of certain sexual dysfunctions. Although this study does not provide a definitive conclusion on the matter, it strongly encourages future investigation into the specific emotional, behavioral, cognitive, and pathophysiological features of SAD. This investigation should involve representative population-based studies, qualitative methods, and experimental designs with both clinical and non-clinical samples. Such research endeavors are not only crucial from a nosography standpoint but are also essential for facilitating funded research to gain a better understanding of the experiences of individuals with SAD and develop effective tailored treatment approaches.

## **Transparency and data availability statement**

The processed data and Latent Gold syntax can be accessed here, and the survey questionnaire is available at this [link: <https://osf.io/gxc7p/>]. This paper is based on a secondary analysis of a larger study on sexual health. Previous publications have presented descriptive prevalence of SAD and sexual dysfunctions within the total sample (Lafortune et al., 2022, 2023b), while this study use a probabilistic modeling approach on a subsample to examine the diagnostic status of SAD.

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