

DEPARTMENT of PSYCHOLOGY

Validation of the New Sexual Satisfaction Scale-Short Form in Sweden and its Relationship with Protective Psychological Factors

Xiangnan Yan

Master's Thesis (30 hp) Spring 2023

Supervisor: Ingela Steij Stålbrand

Abstract

The primary objective of this study was to validate the Swedish version of the New Sexual Satisfaction Scale-Short form (NSSS-S) in the Swedish population and explore its association with protective psychological factors, including self-compassion, body awareness, and body appreciation. The questionnaire survey method was used in this study, and a sample of Swedish-speaking participants (n = 164) aged 18 and above was recruited. The analysis of Internal Consistency and Exploratory Factor Analysis (EFA) yielded favorable results, confirming the reliability and construct validity of the Swedish version of NSSS-S, despite the need for some adjustments during several items. Difference analysis indicated no significant differences in sexual satisfaction across demographic variables including age, gender and mediation experience. For sexual orientation, excepting pansexual individuals experienced higher level of sexual satisfaction than heterosexual individuals, there was no significant difference between heterosexual and sexual minority groups in sexual satisfaction. The individuals who were in relationship reported higher sexual satisfaction than those without partners, whereas as the duration increased, the sexual satisfaction decreased. Additionally, correlation and mediation analyses revealed that body appreciation was positively associated with sexual satisfaction, and it was the mediator between body awareness and sexual satisfaction. There was no direct association between self-compassion and sexual satisfaction, and no evidence for a mediation effect of self-compassion. This result demonstrated the significant role of body appreciation and body awareness in promoting sexual satisfaction directly or indirectly. Self reported social anxiety was negatively related to sexual satisfaction.

Keywords: The New Sexual Satisfaction Scale-Short form, Protective psychological factors, Self-compassion, Body awareness, Body appreciation, Social anxiety

Introduction

The World Health Organization (2022) has proposed that a satisfying sexual life not only refers to the absence of sexual dysfunction or other diseases related to sexual behavior but also includes maintaining a respectful and positive attitude towards sexual behavior and relationships. Many studies agree that sexual satisfaction not only includes physical pleasure but also psychological satisfaction (Nekoolaltak et al., 2019; Raisi et al., 2015). Higher levels of sexual satisfaction can positively affect life satisfaction and psychological well-being (Schmiedeberg et al., 2017; Carcedo et al., 2015). Conversely, lower levels of sexual satisfaction, such as self-reported decreased sexual frequency and sexual dysfunction, can impact various aspects of health (Dekker et al., 2020).

Satisfaction with one's sexual life is influenced by various factors, such as physical and mental health, interpersonal and social relationships, and cultural influences (Garneau-Fournier et al., 2020; Karimi et al., 2019; Sánchez-Fuentes et al., 2014). In marital relationships, sexual compatibility can predict sexual satisfaction (Nekoolaltak et al., 2019; Offman & Matheson, 2005), and relationship satisfaction is also correlated with increased sexual satisfaction (Gurreri et al., 2022). Different genders also display different levels of perceived compatibility, with women's sexual depression and anxiety being more strongly related to their perception of compatibility than men's (Offman & Matheson, 2005). This is consistent with another study on gender and sexual satisfaction, which found that women's emotional pleasure and self-determination are more likely to promote satisfaction in relationships (Hall, 2019). In minority sexual orientation groups, sexual orientation concealment and self-stigmatization can decrease individual sexual satisfaction (Goncalves et al., 2020), and social pressure and anxiety can also lead to lower levels of sexual satisfaction (Zarzycka et al., 2017). In another study on the elderly, retirement transition is a significant factor influencing their sexual satisfaction, and the main trend is the decrease of sexual satisfaction after retirement, relationship satisfaction as well as plays an important role for older individuals in evaluating sexual satisfaction (Henning et al., 2023).

The current study is a sub-study within the main project "Faktorer som påverkar den sexuella tillfredsställelsen: En explorativ och tvärkulturell undersökning av sexuella och estetiska ideal, självmedkänsla och kroppsmedvetenhet". It has been approved by Etikprövningsmyndigheten (Dnr 2022-03724-01). The purpose of this sub-study is to validate the reliability and validity of the New Sexual Satisfaction Scale-Short form (NSSS-S) in the

Swedish version and describe the sexual satisfaction of different demographic groups, as well as assess demographic factors that may be related to sexual satisfaction. Additionally, there might be some protective psychological factors that can influence sexual satisfaction. Thus, another purpose of this study is to investigate the relationship between sexual satisfaction and protective psychological factors, including self-compassion, body awareness, and body appreciation.

The Measurements of Sexual Satisfaction

Currently, there is no precise definition for sexual satisfaction (Schwartz & Young, 2009), nor a standardized tool to evaluate it. In Sweden, current research on sexual satisfaction (Stentagg et al., 2021; Beckman et al., 2008) typically measures it with only one question, such as "Are you satisfied with your sex life?" or "How do you rate your sexual satisfaction?" Although some studies have indicated that single-item measures have good psychometric properties in assessing sexual satisfaction quickly and effectively (Garneau-Fournier et al., 2020; Ferenidou et al., 2008), such generalizations might not be comprehensive.

In addition to single-item measures of sexual satisfaction, commonly used international measurement tools include the Index of Sexual Satisfaction (ISS; Hudson et al., 1981), the General Measure of Sexual Satisfaction (GMSES; Lawrance & Byers, 1995), and the New Sexual Satisfaction Scale-Short Form (NSSS-S; Štulhofer et al, 2010). Although these tools differ, researchers' theoretical frameworks generally include assessments of individuals' experiences and partner/sexual relationships (Mark et al., 2014).

Both the NSSS-S and GMSEX are considered favorable options due to the better validity in measuring. However, if the intention is to distinguish between different dimensions regarding individuals' themselves and their partners, it is highly recommended to use the NSSS-S (Mark et al., 2014). Therefore, in this study, the NSSS-S was selected as the tool to measure sexual satisfaction and has been translated to Swedish. The original NSSS-S consists of two subscales with 12 items, which focus on individual experience and feelings by item 1-6, as well as evaluation related to interpersonal relationships/activities with partners by item 7-12. This study used internal consistency and construct validity to verify the reliability and validity of NSSS-S.

Sexual Satisfaction among Demographic Factors

Previous research indicated a negative correlation between age and sexual satisfaction (Vasconcelos et al., 2021). There is limited research on the sexual satisfaction of other gender except for men and women. Studies have only revealed women experience higher levels of sexual satisfaction compared to men in certain specific populations, for instance, older individuals undergoing retirement transition (Henning et al., 2023) and individuals in prison (Carcedo et al., 2011). For different sexual orientations, sexual minority groups seem to have lower sexual satisfaction due to the greater social pressure and anxiety (Gonçalves et al., 2020). The partner status has also been identified as a potential influencing factor, as inmates who engage in romantic relationships with other inmates exhibit higher levels of sexual satisfaction and psychological well-being (Carcedo et al., 2015). Mindfulness as a frequently used mediation training and psychological intervention, has been found the positive effects on sexual health and sexual satisfaction (Xu et al., 2023; Jaderek & Lew-Starowicz, 2019). Based on the previous research, this study proposes the following hypotheses:

Hypothesis 1: Age is negatively related to sexual satisfaction.

Hypothesis 2: Women has higher levels of sexual satisfaction than men.

Hypothesis 3: Sexual minority groups have lower levels of sexual satisfaction than heterosexual individuals.

Hypothesis 4: Individuals who are currently in a relationship have higher levels of sexual satisfaction than the individuals without partners, and as the duration time with partner increases, sexual satisfaction also increases.

Hypothesis 5: Individuals with mediation experience have higher levels of sexual satisfaction than those without the experience, and as the training time increases, sexual satisfaction also increases.

Protective Psychological Factors

When exploring the factors influencing sexual satisfaction and sexual health, a crucial topic that cannot be overlooked is the perception and evaluation of the body. However, previous research has predominantly focused on the negative impact of body perception on sexual satisfaction. For instance, body dissatisfaction is associated with lower levels of sexual satisfaction (Robbins & Reissing, 2018; Weaver & Byers, 2013). There has been relatively limited investigation into positive evaluations or protective factors that may influence sexual satisfaction, such as body awareness, body appreciation, and self-compassion.

Body Awareness

Body awareness refers to an individual's perception and description of their body information and changes. It also encompasses the perception of sensory and emotional states and can be applied in certain contexts to describe anxiety and panic disorders (Açik & Çağıran, 2022). Body awareness is an important concept in the area of both physical and mental health. On the physical health level, enhanced body awareness is associated with lower risks, including obesity and lipid abnormalities (Açik & Çağiran, 2022). On the mental health level, Basic Body Awareness Therapy (BBAT) can be used for certain mental illnesses, such as post-traumatic stress disorder (PTSD; Blaauwendraat et al., 2017) and major depression (Danielsson et al., 2014). Furthermore, research has shown a significant positive correlation between body awareness and life satisfaction (Zeynep & Neslihan, 2022). Based on the above studies, it could be concluded that cultivating positive and healthy body awareness can provide individuals with protection to some extent in physical health, mental health, and life satisfaction. These factors are also related to sexual satisfaction and sexual health as it mentioned above (Garneau-Fournier et al., 2020; Stephenson & Meston, 2015; Sanchez-Fuentes et al., 2014).

Although there is limited research on the relationship between body awareness and sexual satisfaction, some researchers have provided evidence of a potential connection between them. On the one hand, accurate self-understanding of one's body can increase body satisfaction and sexual satisfaction (Robbins & Reissing, 2018). However, on the other hand, excessive body awareness may lead individuals to focus too much on interpreting external sensory stimuli and internal feelings, thereby reducing sexual satisfaction (Yagci et al., 2023). Therefore, the relationship between body awareness and sexual satisfaction is still not clear, making it one of the investigated aspects in this study.

Body Appreciation

Body appreciation is another protective factor that may influence sexual satisfaction by affecting body satisfaction. Body appreciation is defined as "accepting, holding favorable opinions toward, and respecting the body, while also rejecting media-promoted appearance ideals as the only form of human beauty" (Tylka & Wood-Barcalow, 2015, p.53). It differs from body satisfaction in that body appreciation represents an individual's greater recognition of their personal qualities and the evaluation of themselves based not solely on appearance and others' approval, while also reducing body comparisons (Homan & Tylka, 2018). Body appreciation could reduce the negative impact of thin-ideal media on women and thereby enhances their body satisfaction (Tobin et al., 2019). Research by Bowsfield et al. (2019) found, both that individuals themselves have high levels of body satisfaction and that perceiving partners are satisfied with their bodies can increase sexual satisfaction. Therefore, it can be inferred that body appreciation may enhance sexual satisfaction by improving body satisfaction. Some studies have demonstrated a relationship between body appreciation and sexual function and satisfaction (Satinsky et al., 2012), while others indicate that body appreciation does not significantly influence sexual satisfaction (Van den Brink et al., 2016). Hence, this study hypothesizes a significant correlation between body appreciation as a protective psychological factor and sexual satisfaction.

Self-Compassion

Self-compassion refers to an individual's ability to be tolerant and understanding towards themself in times of pain and failure, rather than suppressing and blaming themself (Neff, 2003). Research has shown that self-compassion can help alleviate the negative effects of body dissatisfaction (Moffitt et al., 2018). Furthermore, self-compassion is significantly positively correlated with life satisfaction through the mediator of body awareness (Zeynep & Neslihan, 2022). These factors can all influence sexual satisfaction, thus suggesting that self-compassion may directly or indirectly impact sexual satisfaction.

Currently, there is limited research on the relationship between self-compassion and sexual life, sexual function, or sexual satisfaction. Previous studies indicate that male self-compassion can enhance sexual satisfaction by alleviating the negative impact of sexual issues (Ferreira et al., 2020), whereas female self-compassion is often associated with improving body dissatisfaction (La Rocque & Cioe, 2011; Weaver & Byers, 2013). This suggests that self-compassion may improve different factors to enhance sexual satisfaction.

Sexual Satisfaction and Protective Psychological Factors

Referencing previous studies on the relationship between these three protective psychological factors and sexual satisfaction, it can be inferred that these factors might influence sexual satisfaction from different aspects. However, it is still not clear how would protective factors related to sexual satisfaction because of the complex relations between these three protective factors, body satisfaction, sexual satisfaction, and life satisfaction. According to the complex relations, there might be a potential for body awareness and body appreciation as a mediator in the relationship between the other protective psychological factors and sexual satisfaction. Therefore, the hypotheses are proposed as follows:

Hypothesis 6: There is a directly association between sexual satisfaction and protective psychological factors.

Hypothesis 7: Body awareness serves as an intermediate variable in the impact of body appreciation and self-compassion on sexual satisfaction.

Hypothesis 8: Body appreciation serves as an intermediate variable in the impact of body awareness and self-compassion on sexual satisfaction.

Social anxiety

According the previous research, social anxiety could be a negative factor on protective psychological factors and sexual satisfaction. For instance, sexual depression ans anxiety play an important role for women on the perception of sexual compatibility (Offman & Matheson, 2005). Social pressure and anxiety can also lead to lower levels of sexual satisfaction for sexual minority groups (Zarzycka et al., 2017). Therefore, this study also investigated the relationship between social anxiety, protective psychological factors and sexual satisfaction as a supplement explanation for the effect of protective factors.

Method

Participants

The recruitment of participants was conducted by posting recruitment information on social media and also locally in Lund, a town in Southern Sweden, by posters on the campus of Lund University in the spring of 2023. Participants needed to be over 18 years old and proficient in Swedish in order to be included in the study. The recruitment material can be found in the appendix (**Appendix A1**).

A total of 245 responses were collected for this study, with some missing values in some responses. Therefore, only answers with no more than 3 missing values in the scale section (total of 52 questions) were retained, the final sample size was n = 164. Missing values were imputed using the mean imputation method, and the imputations on each item were the mean values for the whole group on the same item.

In this sample, participant ages ranged from 20 to 77 years old, with an average age of

41 years old. Approximately 70% of participants identified as women, 19% as men, and 11% as nonbinary; for the experience of gender transition, 9% of participants identified themselves as having transgender experience, 89% reported no transgender experience while 2% did not answer this question. For the partner status, 74% of participants are currently in relationships with an average length with their partners of 11 years, ranging from 0 to 55 years. For the mediation experience, 38% of participants reported the training experience and had an average training duration of 5.9 years, ranging from 0.1 to 41.7 years, and 58% of them used mindfulness. In addition, 16 participants answered the self-rated social anxiety (*Mean* = 4.19, SD = 3.62), ranging from 0 (no anxiety) to 10 (very anxious). Participants also provided information about their sexual orientation, education level, and occupation (see **Table 1**).

Ethical Consideration

Prior to their participation in this study, participants were informed about the content of the investigation and potential risks involved. They were also informed that their responses would only be used for academic research purposes and would remain completely confidential and unrelated to their personal identities. If they agree to participate, they would anonymously answer demographic questions, measures of sexual satisfaction, and other scales related to psychological health, as well as their perceptions of social aesthetics and sexual norms (for the main research project). Throughout their participation, they had the option to discontinue their questionnaire at any time, and the study did not collect or utilize any answered information. Should participants have any inquiries at any stage, they were encouraged to contact the research team, and if they had any negative consequence for the participants, they also had the possibility to contact a clinical psychologist. Informed consent was obtained from all participants involved in the study.

Materials

Single-item of Sexual Satisfaction

This single-item question was taken from the Life Satisfaction Scale (Fugl-Meyer et al., 1991). Participants were asked, "On a scale of 1 (very dissatisfied) to 6 (very satisfied), how would you rate your level of sexual satisfaction?". Although a single-item question can efficiently and effectively assess sexual satisfaction, its reliability is still questionable. In a study comparing three sexual satisfaction scales with the single-item question, the test-retest reliability of the single-item regarding sexual satisfaction was found to be .55 (Mark et al., 2014).

Table 1

Demographic Variables	п	%
Sexual orientation		
Heterosexual	89	54.2
Homosexual	12	7.3
Asexual	3	1.8
Bisexual	27	16.4
Pansexual	20	12.1
Other	13	7.9
Education level		
Gymnasium	12	7.3
Municipality Adult education	1	0.6
Folk High School	2	1.2
Vocational qualification	7	4.2
Bachelor's degree (BA/BSc/other)	53	32.3
Master's degree (MA/MSc/other)	68	41.4
Doctoral degree (Ph.D./MD/other)	14	8.5
Other	7	4.2
Occupation		
Gainfully employed	105	64.0
Student	25	15.2
Retired	4	2.4
Unemployed/Job seeker	10	6.0
Sick leave	6	3.6
Parental leave/Stay-at-home parent	4	2.4
Other	10	6.0

Demographic Characteristics of Participants

Self-compassion

Self-compassion was measured using a Swedish version (Bratt & Fagerström, 2020) of the Self-Compassion Scale-Short Form (SCS-SF), which is a 12-item questionnaire assessing the degree to which individuals treat themselves kindly and with understanding in difficult situations.Both English and Swedish version of SCS-SF can be found in the appendix (**Appendix A2**). Participants rated each item on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). The questionnaire consists of six components, each containing two items. Three components represent a compassionate attitude towards oneself in the face of difficulties (e.g., When I'm going through a really hard time, I give myself the care and concern I need), namely self-kindness, common humanity, and mindfulness. The other three components represent a non-compassionate attitude towards oneself (e.g., When I fail at something that is important to me, I tend to feel like it only happens to me), namely self-judgment, isolation, and over-identification. Additionally, the scores of these three components were reverse-coded in the analysis. A higher total score indicates higher levels of self-compassion. The Swedish version of SCS-SF has shown an acceptable internal consistency (Cronbach's $\alpha = .68$).

Body Awareness

Body awareness was measured using the Body Awareness Questionnaire-Swedish Version (BAQ-sv), translated by Löwenthal (2012). The original English version of the questionnaire (Shields et al., 1989) has demonstrated good internal consistency ($\alpha = .82$). The questionnaire consists of eighteen items rated on a 7-point scale, ranging from 1 (almost never) to 7 (almost always), and aims to assess the sensitivity to self-awareness of body changes (e.g., I notice a difference in how my body reacts to different types of food; I notice clear bodily reactions when I'm tired). Higher total scores indicate higher levels of body awareness. Both English and Swedish version of BAQ can be found in the appendix (**Appendix A3**).

Body Appreciation

The measurement of body appreciation was assessed using the Swedish version (Lemoine et al., 2018) of the Body Appreciation Scale-2 (BAS-2), which is a questionnaire consisting of ten items that assess individuals' satisfaction with their own bodies and overall body image (e.g., I have respect for my body; I appreciate the unique characteristics of my body). Participants rated each item on a 5-point scale, ranging from 1 (never) to 5 (always), with higher scores indicating greater body appreciation. The Swedish version of BAS-2 has been found to have high internal consistency ($\alpha = .94$). Both English and Swedish version of BAS-2 can be found in the appendix (**Appendix A4**).

Sexual Satisfaction

The measurement of sexual satisfaction was conducted using the Swedish version of

the New Sexual Satisfaction Scale- Short form (NSSS-S; Štulhofer et al., 2010). This questionnaire consists of twelve items, evaluating individual satisfaction with various aspects of sexual activity over the past six months (e.g., the quality of orgasms; the mood after sexual activity). Participants rated each item using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). A higher composite score on the questionnaire indicates a higher level of sexual satisfaction. The English version (Mark et al., 2014) of this questionnaire has shown acceptable internal consistency and stability ($\alpha = .90-.93$). Both English and Swedish version of NSSS-S can be found in the appendix (**Appendix A5**).

Analysis

The quantitative analyses in this study were conducted by SPSS.26.0 and a program named Process.3.3. Data normality was tested using skewness and kurtosis measures for the single-item of sexual satisfaction, SCS-SF, BAQ-sv, BAS-2, and NSSS-S. Skewness indicated approximate symmetry (-.660 to -.069, SE = .190), and kurtosis was less than zero, indicating relatively flat peakedness (SE = .377). It can be assumed that the data within the sample conforms quite closely to a normal distribution, allowing for the use of parametric tests in data analysis. Data normality was also tested for age (n = 164), duration time with partners (n = 121), and mediation training time (n = 60). The result of skewness (.445, SE = .190) and kurtosis (.172, SE = .377) only indicated age was normally distributed. The relationship between sexual satisfaction and duration time of partner and mediation training should be conducted non-parametric tests because of the non-normal distribution of them.

Internal consistency analysis was performed to examine the reliability of NSSS-S, and Exploratory Factor Analysis (EFA) was used to examine the construct validity of the scale. Descriptive statistics were used to calculate sexual satisfaction on different demographic characteristics within the Swedish sample. Independent Samples T-Tests was used to test differences in sexual satisfaction across demographic variables including age, gender, sexual orientation, partner status, and mediation experience. Person Correlation and Spearman Rank Order Correlation were used to analysis the relationship between sexual satisfaction and demographic variables, including age, duration time with partners, and mediation training time respectively. Person Correlation was also used to explore the relationships between sexual satisfaction, self-compassion, body awareness, and body appreciation. Further mediation analyses were conducted to investigate the mediation effects of body awareness and body appreciation in the impact of other protective psychological factors on sexual satisfaction.

Results

Internal Consistency of NSSS-S for Reliability

The internal consistency of the New Sexual Satisfaction Scale-Short form (NSSS-S) was calculated on the sample (n = 164) using Cronbach's alpha ($\alpha = .92$), indicating a high level of internal consistency. In addition, Cronbach's alpha of the remain items after removing each item were calculated , as shown in **Table 2**. After removing each item, the remaining items exhibited decreases in the Cronbach's alpha compared to the overall coefficient, indicating a strong level of consistency between each item and the rest of the items.

Construct Validity of NSSS-S for Validity

Exploratory factor analysis (EFA) was used on the 12 items of NSSS-S to test the construct validity. The Kaiser-Meyer-Olkin (KMO) measure was .91, and Bartlett's test of sphericity was significant ($\chi^2 = 1144.73$, p < .001), indicating this sample was suitable for conducting EFA. Then, utilizing the Principal Component Analysis (PCA) to extract principal components and analyze factor loadings. The result suggested that the scale could be divided into two dimensions, with eigenvalues of 6.44 and 1.26 respectively, explaining 64.1% of the variance. Items 7 and 3 had factor loadings greater than .5 on both dimensions. Loadings of the remaining items on each dimension are presented in **Table 3**.

Deleting items 3 and 7 to explore the remaining items, results showed that item 6 loaded greater than .5 on both dimensions. Then excluded item 6 and analyzed the remaining 9 items, KMO = .87, Bartlett's test was significant ($\chi^2 = 710.86$, p < .001). The two dimensions with eigenvalues of 4.66 and 1.24 respectively explained 65.5% of the variance. The final structure of NSSS-S with 9 items indicated that dimension 1 included items 8, 9, 10, 11, and 12; while dimension 2 included items 1, 2, 4, and 5.

The internal consistency of dimension 1, dimension 2, and the new NSSS-S with 9 items were high ($\alpha = .85, .83, .88$). The total scale (9 items) and both dimensions showed significant positive correlations ($r_1 = .91, r_2 = .87$), and a significant positive correlation was also observed between the two dimensions (r = .60).

Table 2

Cronbach's alphas and means of the remain items after removing each term for NSSS-S

Item	Means	Cronbach's Alpha
NSSS-S_1	36.75	.914
NSSS-S_2	36.88	.914
NSSS-S_3	36.75	.908
NSSS-S_4	36.75	.917
NSSS-S_5	36.57	.912
NSSS-S_6	36.70	.912
NSSS-S_7	36.66	.910
NSSS-S_8	36.92	.914
NSSS-S_9	36.44	.919
NSSS-S_10	37.01	.911
NSSS-S_11	37.15	.910
NSSS-S_12	37.54	.916

Table 3

Rotated component matrix of 12 items of NSSS-S

Items of NSSS-S	Factor loading		
	1	2	
8. My partner's emotional opening up during sex	.831		
10. My partner's sexual creativity	.818		
12. The frequency of my sexual activity	.713		
11. The variety of my sexual activities	.705		
7. The balance between what I give and receive in sex	.623	.502	
9. My partner's ability to orgasm	.622		
6. The pleasure I provide to my partner	.568		
4. My body's sexual functioning		.869	
2. My "letting go" and surrender to sexual pleasure during sex		.824	
1. The quality of my orgasms		.674	
3. The way I sexually react to my partner	.511	.667	
5. My mood after sexual activity		.667	

Note. The results only showed the factor loadings which were over .5.

Descriptive Analysis and Difference testing of Sexual Satisfaction across Demographic Variables: Age, Gender, Sexual Orientation, Partner status, and Meditation experience

The average sexual satisfaction score of NSSS-S was 40.19 (SD = 10.36), ranging from 12 to 60, and the mean for single-item of sexual satisfaction was 3.68 (SD = 1.49), ranging from 1 to 6. Descriptive analysis was performed for sexual satisfaction on demographic variables including gender, gender transition, sexual satisfaction, partner status, mediation experience, education background, and occupation. The results could be found in **Appendix A6**.

Person Correlation was used to test the influence of age on sexual satisfaction for hypothesis 1. The result showed there was no significant positive association between age and sexual satisfaction measured by both NSSS-S (r = -.061, p = .438) and single item (r = -.072, p = .359). Thus, hypothesis 1 that age is negatively related to sexual satisfaction was rejected.

Independent Sample T-Test was used to test whether there were gender differences in sexual satisfaction. Although men had higher scores of sexual satisfaction than women (the means and standard deviations can be found in the **Appendix A6**), the t-test result showed no significant difference between men and women in NSSS-S (t = 0.70, p = .487) and single item (t = 0.20, p = .840). The hypothesis 2 that women have higher level of sexual satisfaction than men was rejected.

Independent Sample T-Test was used to test the differences of sexual orientation in sexual satisfaction. Result of the comparison between heterosexual and homosexual showed no significant difference in both NSSS-S (t = 0.31, p = .761) and single item (t = 0.64, p = .521). There was also no significant difference between heterosexual and bisexual in NSSS-S (t = -1.14, p = .257) and single item (t = -1.49, p = .140). Significant difference was found between heterosexual and pansexual using the measurement of NSSS-S (t = -2.20, p = .030, $Mean_{pan} - Mean_{hetro} = 5.71$), while not found in single item (t = -1.09, p = .276). Therefore, hypothesis 3 that Sexual minority groups have lower levels of sexual satisfaction than heterosexual individuals was rejected.

Independent Sample T-Test was used to test weather partner status was an influencing factor related to sexual satisfaction. Result showed significant difference between different partner status in sexual satisfaction measured by single item (t = 3.27, p = .001) that the

individuals with partners currently experienced higher sexual satisfaction than those without partners, the mean difference was 0.85. The same trend was also found in NSSS-S, while the difference was not significant (t = 0.68, p = .497). Then, Spearman Rank Order Correlation was conducted to test the association between the duration time with partner (n = 121) and sexual satisfaction. Result showed the duration time with partner was significant negatively related to sexual satisfaction using NSSS-S (r = -.186, p = .041). There was no significant correlation between duration time and single item (r = -.061, p = .508). Thus, hypothesis 4 was partly supported that individuals who are currently in a relationship with partner have higher levels of sexual satisfaction than the individuals without partners. The further hypothesis that as the duration time increases, sexual satisfaction also increases was rejected.

Independent Sample T-Test was used to test the influence effect of mediation experience on sexual satisfaction. Although result showed that the individuals experienced mediation training had higher sexual satisfaction than those without mediation experience, the difference was not significant between them in NSSS-S (t = 0.15, p = .882) and single item (t= -1.29, p = .200). Then, Spearman Rank Order Correlation was conducted to test the association between the mediation training time (n = 60) and sexual satisfaction. Result showed there was no significant correlation between training time and sexual satisfaction in both NSSS-S (r = .008, p = .950) and single item (r = -.043, p = .745). Therefore, hypothesis 5 that individuals with mediation experience have higher levels of sexual satisfaction than those without the experience, and as the training time increases, sexual satisfaction also increases was rejected.

Correlation Analysis between Sexual Satisfaction and Protective Psychological Factors for Hypothesis 6

Person Correlation was used to test the relationship between sexual satisfaction and protective psychological factors. Result revealed significant positive correlations between single-item of sexual satisfaction and NSSS-S (r = .72, p < .001). Body appreciation (BAS-2) was positively correlated with sexual satisfaction measured by single item (r = .35, p < .001) and NSSS-S (r = .36, p < .001). Result also found that body appreciation was positively correlated with body awareness (BAQ-sv; r = .16, p = .036) and self-compassion (SCS-SF; r = .53, p < .001). The other correlation can be found in **Table 4**. Hypothesis 6 that there is a directly association between sexual satisfaction and protective psychological factors was partly supported.

Table 4

Scales	Single-item	SCS-SF	BAQ-sv	BAS-2	NSSS-S
Single-item	-				
SCS-SF	.124	-			
BAQ-sv	.095	.053	-		
BAS-2	.345**	.525**	.164*	-	
NSSS-S	.719**	.129	.113	.363**	-

Correlation between sexual satisfaction and protective psychological factors

Note. Single-item = single-item of sexual satisfaction, SCS-SF = Self Compassion-short form, BAQ-sv = Body Awareness Questionnaire-Swedish version, BAS-2 = Body Appreciation Scale-2, NSSS-S = New Sexual Satisfaction-Short form.

p < .05. p < .01.

Mediation Analysis between Protective Psychological Factors and Sexual Satisfaction for Hypothesis 7 and 8

Based on the correlation analysis results in **Table 4** and the previous research, the mediation effects of body appreciation (BAS-2) and body awareness (BAQ-sv) as a mediator were tested respectively. Using the software Process.3.3, bootstrap analysis with 5,000 repetitions and a 95% confidence interval were applied for mediation analysis.

For hypothesis 7 to test the mediation effect of body awareness, the first mediation model was self-compassion as the independent variable, sexual satisfaction (NSSS-S) as the dependent variable, and body awareness as the mediating variable. The result of 95% confidence interval of the indirect effect covered 0 [-0.018, 0.040] revealed that the mediation effect was not significant. The second model was that body appreciation as the independent variable, sexual satisfaction as the dependent variable, and body appreciation as the mediating variable. Result showed that the mediation effect of this model was also not significant with the confidence interval covered 0 [-0.020, 0.058]. Therefore, the hypothesis 7 was rejected.

For hypothesis 8 to test the mediation effect of body appreciation, the first mediation model was self-compassion as the independent variable, sexual satisfaction as the dependent

variable, and body appreciation as the mediating variable. 95% confidence interval of the indirect effect did not cover 0 [0.154, 0.396], while the direct effect was -.11. Results revealed that this model was not supported.

The second mediation model was body awareness as the independent variable, sexual satisfaction as the dependent variable, and body appreciation as the mediating variable. The results showed that body awareness was not significant in predicting sexual satisfaction ($\beta = 0.07, p = .149$). However, it was a significant predictor for sexual satisfaction when both body awareness and body appreciation were included in the regression equation ($\beta = .04, p < .001$). Other regression equations can be found in **Table 5**. The results of the mediation effect showed that the 95% confidence interval of the indirect effect did not include 0 [0.001, 0.076], indicating a significant mediation effect. The results also demonstrated that body appreciation accounted for 51.4% of the total effect between body awareness and sexual satisfaction (see **Table 6**). While after adding participants' currently partner status as a covariate into the regression equation, the proportion of the mediation effect was decreased to 46.8%. It revealed that there was a potential influencing for other factors served between the relationship of body awareness and sexual satisfaction. Tues, hypothesis 8 was partly supported.

Table 5

Outcome variable	Predictor variable	R^2	F	β	t	р
BAS-2		0.027	4.46			
	BAQ-sv			0.07	2.11	.036
NSSS-S		0.013	2.10			
	BAQ-sv			0.07	1.45	.149
NSSS-S		0.135	12.57			
	BAS-2			0.53	0.74	.459
	BAQ-sv			0.04	4.77	.000

Regression equations of mediation model with body appreciation as the mediator.

Note. BAS-2 = body appreciation, BAQ-sv = body awareness, NSSS-S = sexual satisfaction.

Table 6

	effect	BootSE	BootLLCI	BootULCI	Proportion
Indirect effect	.036	0.019	0.001	0.076	51.4%
Direct effect	.034	0.041	-0.044	0.116	48.6%
Total effect	.070	0.044	-0.014	0.157	

Total effect, direct effect, and mediation effect decomposition

Note. Indirect effect = mediation effect.

Supplementary Correlation Analysis of Social Anxiety, Protective Psychological Factors, and Sexual Satisfaction

Because of the limited sample size of participants who reported social anxiety (n = 16), Spearman Rank Order Correlation was computed for the relationship between social anxiety, protective factors, and sexual satisfaction. Result showed a significant positive correlation between social anxiety and body awareness (r = .64, p = .008). Social anxiety was also negatively correlated with self-compassion (r = -.80, p < .001), as well as sexual satisfaction in NSSS-S (r = -.52, p = .039).

Discussion

In general, this study aimed to validate the reliability and validity of the Swedish version of the New Sexual Satisfaction Scale-Short form (NSSS-S) and analyze the differences in sexual satisfaction across some demographic variables. Lastly, a correlation analysis was conducted to examine the relationship between protective psychological factors and sexual satisfaction, and the further examination was the mediation effect of body awareness and body appreciation.

The Internal Consistency and Construct Validity of NSSS-S

The findings of this study demonstrated the great internal consistency and construct validity of the Swedish version of NSSS-S to present its reliability and validity respectively. Exploratory factor analysis revealed that the scale primarily consists of two dimensions: ego-focus and partner/activity-focus. This structure was consistent with previous studies of the

NSSS-S in English and Spanish versions (Mark et al., 2014; Strizzi et al., 2016). However, there were some differences in the performance of individual items across dimensions compared to previous research. In the original NSSS-S, items 1-6 were classified under the dimension of ego-focus, while items 7-12 were categorized under the dimension of sexual activities and partner-related focus (Štulhofer et al., 2010). In this study, items 3, 6, and 7 of the Swedish version did not align with this classification.

Regarding these three items, item 3 refers to how individuals exhibit sexual responses towards their partners, focusing primarily on their own reactions and performance during sexual activities. Item 6 pertains to the pleasure individuals provide to their partners. Although the assessment for these two items is related to partners and the interactions within sexual activities, they emphasize more on participants' own sensations. Item 7 addresses the balance between giving and receiving during sexual activities. It can be understood as an evaluation of whether the sexual activity is balanced or as an assessment of satisfaction regarding one's own contributions and receptiveness. The ambiguity in the dimensional distribution of these three items may stem from the fact that sexual behavior itself involves both ego and partner engagement. When evaluating sexual responses and activities, individuals may consider various factors such as personal experiences and interactions with their partners.

Therefore, in future applications, it is worth considering both improving the translated content to emphasize the focal points or directly eliminating these three items with ambiguous dimension distributions. This study also analyzed the reliability and validity of the new scale after removing these three items. Items 1, 2, 4, and 5 consistently corresponded to the ego-focused dimension, while items 8, 9, 10, 11, and 12 corresponded to the activity and partner-focused dimension. The new scale still showed good internal consistency, and significant positive correlations were found between the sub-scales and the overall scale.

Furthermore, the high correlation between individual sexual satisfaction items and NSSS-S, as well as the similar variations in demographic variables, indicating the reliability of the single item in measuring sexual satisfaction, consistent with previous research (Garneau-Fournier et al., 2020; Ferenidou et al., 2008). However, if the goal is to examine differences in ego and partner aspects, it is recommended to use NSSS-S as the tool for measuring sexual satisfaction.

Difference Analysis of Sexual Satisfaction across Demographic variables

Hypothesis 1 stated that age is negatively related to sexual satisfaction. Although there is a study supporting this assumption (Vasconcelos et al., 2021), the results of the Pearson Correlation revealed no significant association between sexual satisfaction and age. A possible explanation for the rejection of hypothesis 1 could be that age-related discrimination does not diminish sexual satisfaction (Gonçalves et al. 2020).

The hypothesis 2 that women has higher sexual satisfaction than men was also not supported by the result of Independent Sample T-Test. The reason could be that women and men evaluate different aspects of sexual satisfaction. Previous research has shown that men are more likely to evaluate sexual satisfaction based on the frequency of intercourse and compatibility, while women tend to consider relational factors such as trust and mutual enjoyment (Daker & Donovan, 2002), additionally, women are more prone to consider their partners' satisfaction (McClelland, 2011). Although the results indicate no significant differences between men and women in overall sexual satisfaction scores, there might be variations in different dimensions of sexual satisfaction. Hence, a question worth reconsidering is whether the present scales can truly represent the sexual satisfaction of individuals across different genders. Furthermore, it might be questioned that whether the content and characters of the dimensions captured by these scales is comprehensive enough, if these scales need adjustments in the weightage of different dimensions. Currently, most research focuses primarily on men and women, neglecting other gender groups, such as nonbinary individuals. Future studies could explore modifications to sexual satisfaction scales and investigate the sexual satisfaction characteristics of other gender groups according the above mentioned points.

Hypothesis 3 stated that sexual minority groups have lower levels of sexual satisfaction than heterosexual individuals. Although previous research indicate that sexual minority group experience lower level of sexual satisfaction because of the more social pressure and anxiety (Gonçalves et al., 2020), this hypothesis was not supported in this study. The only significant difference between heterosexual individuals and other minority orientation groups was that pansexual individuals had higher level of sexual satisfaction than heterosexual. A possible explanation is that pansexual individuals tend to focus less on gender or gender identity, and instead prioritize the romantic and sexual attraction they experienced from others. Consequently, they would be more likely to perceive romance and pleasure

within sexual activities, leading to higher levels of sexual satisfaction. The overall trend of comparison was that there might be no or less differences between heterosexual individuals and sexual minority groups in sexual satisfaction, which is line with findings of Buczak-Stec et al. (2023). In this study, the sample included a limited number of individuals with minority sexual orientations that the difference analysis was not conducted for heterosexual individuals and asexual individuals. Therefore, further data are required to substantiate this statistical outcome.

Hypothesis 4 that who are currently in a relationship have higher levels of sexual satisfaction than the individuals without partners was supported in this study. The result corresponded with the previous study that inmates who engage in romantic relationships exhibit higher levels of sexual satisfaction (Carcedo et al., 2015). While the result did not support the hypothesis that as the duration time with partner increases, sexual satisfaction also increases. On the contrary, the result demonstrated a negative correlation between the duration of relationship and sexual satisfaction. This indicated that when it comes to evaluating sexual satisfaction related to one's partner, relationship satisfaction might be a crucial and intricate factor that can influence sexual satisfaction. Additionally, age and sexual dysfunction could also be the potential factors influencing sexual satisfaction.

Hypothesis 5 stated that individuals with mediation experience have higher levels of sexual satisfaction than those without the experience, and as the training time increases, sexual satisfaction also increases. This hypothesis was rejected by both results of Independent Sample T-Test and Spearman Correlation Analysis that mediation experience was not related to sexual satisfaction. However, there are research indicate that mindfulness as a frequently used mediation training could improve sexual satisfaction and sexual health (Xu et al., 2023; Jaderek & Lew-Starowicz, 2019). The future studies can investigate the effects of different types of mediation training on sexual satisfaction.

Correlation analysis and mediation analysis between protective psychological factors and sexual satisfaction

Hypothesis 6 stated that there is a directly association between sexual satisfaction and protective psychological factors. In this study, body appreciation has been found to positively predict sexual satisfaction, which aligns with previous research findings (Satinsky et al., 2012; Robbins & Reissing, 2018; Paquette et al., 2022). However, other protective psychological

factors such as self-compassion and body awareness showed no direct association with sexual satisfaction. Hypothesis 6 was partly supported by body appreciation.

For self-compassion, it has been supported that this protective factors usually influence sexual satisfaction from different aspects according to previous studies (Ferreira et al., 2020; La Rocque & Cioe, 2011; Weaver & Byers, 2013). Therefore, how would selfcompassion influence sexual satisfaction and which factor could be the crucial mediator between self-compassion and sexual satisfaction are still not clear. For body awareness, one research supports its positive effect on sexual satisfaction (Robbins & Reissing, 2018), whereas, another study supports negative effect (Yagci et al., 2023). It could be inferred that body awareness is still a complex factor related to sexual satisfaction. The relationship between body awareness and sexual satisfaction remains unclear that need future studies to investigate.

The correlation analysis further revealed body appreciation was associated with selfcompassion and body awareness. Thus, it would be more plausible to speculate that body appreciation may mediate the relationship between other protective factors and sexual satisfaction than body awareness. Mediation analysis results suggested that body appreciation indeed partially mediates the impact of body awareness, rather than self-compassion, on sexual satisfaction. Although the effect size was small, it indicated that body awareness played a partial role in sexual satisfaction and body appreciation could be a mediator for sexual satisfaction, supported hypothesis 8. However, results did not support the mediation effect of body awareness for hypothesis 7.

It could be concluded that both body awareness and body appreciation could be the influencing factors in sexual satisfaction, and body appreciation is more likely to serve as a mediator. This could be attributed to the fact that both body awareness and body appreciation involve individuals' perception and evaluation of their bodies, which were more likely to be noticed when evaluating sexual satisfaction, whereas self-compassion may improve sexual satisfaction through other psychological pathways.

Supplementary Correlation Analysis of Social Anxiety

In this study, a negative correlation between social anxiety and sexual satisfaction was observed, as well as body self-compassion. In addition, result that social anxiety was related

to body awareness positively could explain the complexity of body awareness in evaluating sexual satisfaction, as social anxiety should be a negative factor for protective psychological factors and sexual satisfaction. Although this sample was limited, considering the results and previous research (Offman & Matheson, 2005; Daker & Donovan, 2002), it was reasonable to speculate that social anxiety is an important indicator for predicting low levels of sexual satisfaction.

Limitations and future directions

The Questionnaire survey method was primarily utilized in this study. However, during the process of data collection, recruiting participants who use the Swedish language proved to be a rather challenging task for researcher. Consequently, the sample size of this study was not substantial, especially when analyzing the differences in sexual satisfaction among different groups. Some groups had an insufficient number of participants, making it challenging to conduct meaningful analyses. Future research can aim to expand the data scale to achieve a more representative quantitative study.

During the validity analysis, this study only conducted Exploratory Factor Analysis (EFA) to examine the construct validity of the NSSS-S by elucidating the structure of its two dimensions. However, EFA exhibits notable limitations, particularly when the exploratory results deviate from the original conception, making it challenging to ascertain whether adjustments are needed in the theoretical framework or if the analysis itself lacks content validity. In addition, the analysis of factor loading depended on Principal Component Analysis, which may not be able to explain factors as accurately as Principal Axis Factor analysis. Another limitation of the validity analysis method is the absence of Confirmatory Factor Analysis (CFA), resulting in an insufficient explanation of the structure in this study. Future research could address these limitations by expanding the sample size, enabling random partitioning into two sufficient subsets, one for EFA and the other for CFA to jointly explicate the construct validity and fit of the scale.

Furthermore, the cross-sectional design employed in this study precludes causal inferences within time. Future research could employ a longitudinal design to explore the temporal relationship between protective psychological factors and sexual satisfaction. Lastly, this study solely investigated the relationship between protective psychological factors and sexual satisfaction. Future studies could investigate the role of other factors in promoting

sexual satisfaction, such as relationship satisfaction, sexual behavior, sexual dysfunction, and cultural influences.

Based on the above discussion, it can be observed that although previous research has shown no significant differences in sexual satisfaction between men and women (Purdon & Holdaway, 2006), when evaluating sexual satisfaction, men and women tend to focus on different aspects, and are influenced and regulated by distinct factors. For instance, men tend to prioritize sexual activity compatibility, whereas women place more importance on sexual relationships and body satisfaction. Thus, exploring whether sexual satisfaction requires additional dimensions to explain the diverse physiological and psychological influences is a question that warrants future investigation. Additionally, while most studies on sexual satisfaction focus on heterosexual groups or heterosexual couples (Daker & Donovan, 2002; Nekoolaltak et al., 2019; Karasu et al., 2023), it is essential to also consider sexual minority groups. Future research can delve into specific categorizations based on sexual orientations and examine their variations.

Conclusion

This study is the first to validate the New Sexual Satisfaction Scale-Short form (NSSS-S) in Swedish version. It demonstrated good internal consistency and construct validity of a two-dimension structure of NSSS-S, indicating that NSSS-S in Swedish version could perform well in sexual satisfaction.

The results of difference analysis found that age, gender and mediation experience were not related to sexual satisfaction. Sexual minority groups are easier to experience lower level of sexual satisfaction, while results did not support this assumption. On the contrary, pansexual individuals reported higher level of sexual satisfaction than heterosexual individuals. Partner status could be a possible factor influencing sexual satisfaction that the individuals with partners currently experienced higher sexual satisfaction than those without partners. The negative correlation was also found between duration in relationship and sexual satisfaction.

The results of correlation and mediation analysis indicated that there was a direct positive correlation between body appreciation and sexual satisfaction, and body appreciation was a mediator between body awareness and sexual satisfaction. Both body awareness and body appreciation could be the protective factors that influencing sexual satisfaction directly or indirectly. The direct or indirect effect of self-compassion on sexual satisfaction was not found in this study. The supplementary analysis of social anxiety revealed the negative association between social anxiety and sexual satisfaction, and provided a new insight to investigate the influence factor of sexual satisfaction from a negative way.

Implication

Overall, this study made contributions both theoretically and practically. Theoretically, the validation of NSSS-S in Swedish version provided an foundation and reference for future research to conduct the more comprehensive analysis of reliability and validity, such as establishing a hypothesis of the theoretic structure for Confirmatory Factor Analysis. The study also explored the impact of demographic variables on sexual satisfaction, specifically showing the potential influences of sexual orientation, current partnership status, and duration of the relationship. Furthermore, the study investigated the correlation and mediating effects between sexual satisfaction and protective psychological factors, offering a theoretical basis for further research on the relationship between other relevant psychological factors (e.g., social anxiety) and concepts such as social aesthetics with sexual satisfaction. It could also provide insights for main project on the role of protective psychological factors in the impact of cultural aesthetics and sexual norms on sexual satisfaction.

In practical terms, this study provided insights for measuring and promoting sexual satisfaction among Swedish-speaking populations, indicating that the Swedish version of NSSS-S can serve as a reliable and effective tool for assessing sexual satisfaction in Sweden. Additionally, the study demonstrated the influence of protective psychological factors on sexual satisfaction, that body appreciation and body awareness could be the positive factors in improving sexual satisfaction. Clinical practitioners and therapists may consider incorporating interventions that enhance these factors to improve clients' sexual health. For instance, interventions focusing on positive body education and mindfulness-based practices may promote body appreciation and subsequently improve individuals' levels of sexual satisfaction.

Reference

- Açik, M., & Çağiran Yilmaz, F. (2022). Body awareness mediates the relationship between body mass index and lipid profiles in adolescents. *Journal of Diabetes & Metabolic Disorders*, 1–9. https://doi-org.ludwig.lub.lu.se/10.1007/s40200-022-01021-3
- Beckman, N., Waern, M., Gustafson, D., & Skoog, I. (2008). Secular Trends in Self Reported Sexual Activity and Satisfaction in Swedish 70 Year Olds: Cross Sectional Survey of Four Populations, 1971-2001. *BMJ: British Medical Journal, 337*(7662), 151–154. https://doi-org.ludwig.lub.lu.se/10.1136/bmj.a279
- Blaauwendraat, C., Levy Berg, A., & Gyllensten, A. L. (2017). One-year follow-up of basic body awareness therapy in patients with posttraumatic stress disorder. A small intervention study of effects on movement quality, PTSD symptoms, and movement experiences. *Physiotherapy Theory & Practice*, *33*(7), 515–526. https://doi-org.ludwig.lub.lu.se/10.1080/09593985.2017.1325957
- Bowsfield, M. L., Cobb, R. J., & Girme, Y. U. (2019). The roles of truth, projection, and directional bias in predicting individuals' perceptions of partners' satisfaction with individuals' bodies and implications for sexual satisfaction. *Canadian Journal of Human Sexuality*, 28(2), 120–133. <u>https://doi-org.ludwig.lub.lu.se/10.3138/cjhs.2019-0019</u>
- Bratt, A., & Fagerström, C. (2020). Self-compassion in old age: confirmatory factor analysis of the 6-factor model and the internal consistency of the Self-compassion scale-short form. *Aging & Mental Health*, 24(4), 642–648. https://doiorg.ludwig.lub.lu.se/10.1080/13607863.2019.1569588
- Buczak-Stec, E. W., Koenig, H.-H., & Hajek, A. (2023). Sexual Satisfaction Among Sexual Minority and Heterosexual Middle-Aged and Older Adults. *INNOVATION IN AGING*, 7(2), igad010. https://doi-org.ludwig.lub.lu.se/10.1093/geroni/igad010
- Carcedo, R. J., Perlman, D., Orgaz, M. B., Lopez, F., Fernandez-Rouco, N., & Faldowski, R.
 A. (2011). Heterosexual Romantic Relationships Inside of Prison: Partner Status as
 Predictor of Loneliness, Sexual Satisfaction, and Quality of Life. *International Journal of Offender Therapy and Comparative Criminology*, 55(6), 898–924.
- Carcedo, R. J., Perlman, D., Lopez, F., Orgaz, M. B., & Fernandez-Rouco, N. (2015). The Relationship between Sexual Satisfaction and Psychological Health of Prison Inmates: The Moderating Effects of Sexual Abstinence and Gender. *Prison Journal*, 95(1), 43– 65.

Daker, W. G., & Donovan, J. (2002). Sexual satisfaction, quality of life and the transaction of

intimacy in hospital patients' accounts of their (hetero)sexual relationships. *Sociology* of Health & Illness, 24(1), 89–113. https://doi-org.ludwig.lub.lu.se/10.1111/1467-9566.00005

- Danielsson, L., Papoulias, I., Petersson, E.-L., Carlsson, J., & Waern, M. (2014). Exercise or basic body awareness therapy as add-on treatment for major depression: A controlled study. *Journal of Affective Disorders*, 168, 98–106. https://doiorg.ludwig.lub.lu.se/10.1016/j.jad.2014.06.049
- Dekker, A., Matthiesen, S., Cerwenka, S., Otten, M., & Briken, P. (2020). Health, Sexual Activity, and Sexual Satisfaction. *Deutsches Ärzteblatt International*, 117(39), 645– 652. https://doi-org.ludwig.lub.lu.se/10.3238/arztebl.2020.0645
- Ferenidou, F. (1), Kapoteli, V. (1), Moisidis, K. (1), Koutsogiannis, I. (1), Giakoumelos,
 A. (1), & Hatzichristou, D. (1). (2008). Presence of a sexual problem may not affect women's satisfaction from their sexual function. *Journal of Sexual Medicine*, 5(3), 631-639–639. <u>https://doi-org.ludwig.lub.lu.se/10.1111/j.1743-6109.2007.00644.x</u>
- Ferreira, J. S., Rigby, R. A., & Cobb, R. J. (2020). Self-compassion moderates associations between distress about sexual problems and sexual satisfaction in a daily diary study of married couples. *Canadian Journal of Human Sexuality*, 29(2), 182–196. https://doi-org.ludwig.lub.lu.se/10.3138/cjhs.2020-0009
- Fugl-Meyer, A. R., Bränholm, I.-B., & Fugl-Meyer, K. S. (1991). Happiness and domainspecific life satisfaction in adult northern Swedes. *Clinical Rehabilitation*, 5(1), 25-33–33. https://doi-org.ludwig.lub.lu.se/10.1177/026921559100500105
- Garneau-Fournier, J., McBain, S., & Turchik, J. A. (2020). Factors associated with sexual satisfaction among veterans who have experienced military sexual trauma. *Journal of Sex & Marital Therapy*, 46(8), 721–735. https://doiorg.ludwig.lub.lu.se/10.1080/0092623X.2020.1808548
- Gonçalves, J. A. R., Costa, P. A., & Leal, I. (2020). Minority Stress in Older Portuguese Gay and Bisexual Men and Its Impact on Sexual and Relationship Satisfaction. *Sexuality Research and Social Policy*, 17(2), 209–218. <u>https://doiorg.ludwig.lub.lu.se/10.1007/s13178-019-00385-1</u>
- Gurreri, S., Lachapelle, M., & Godbout, N. (2022). Associations between parenthood, relationship, and sexual satisfaction in sex therapy patients. *Canadian Journal of Human Sexuality*, 31(2), 176–184. https://doi-org.ludwig.lub.lu.se/10.3138/cjhs.2022-0027

Hall, K. S. K. (2019). Cultural Differences in the Treatment of Sex Problems. Current Sexual

Health Reports, 11(1), 29–34. https://doi-org.ludwig.lub.lu.se/10.1007/s11930-019-00189-9

- Henning, G., Segel-Karpas, D., Björk, M. P., Bjälkebring, P., & Berg, A. I. (2023). Retirement and Sexual Satisfaction. *Gerontologist*, 63(2), 274–284. https://doiorg.ludwig.lub.lu.se/10.1093/geront/gnac102
- Homan, K. J., & Tylka, T. L. (2018). Development and exploration of the gratitude model of body appreciation in women. *Body Image*, 25, 14–22. https://doiorg.ludwig.lub.lu.se/10.1016/j.bodyim.2018.01.008
- Hudson, W. W., Harrison, D. F., & Crosscup, P. C. (1981). A Short-Form Scale to Measure Sexual Discord in Dyadic Relationships. *The Journal of Sex Research*, *17*(2), 157–174.
- Jaderek, I., & Lew-Starowicz, M. (2019). A systematic review on mindfulness meditationbased interventions for sexual dysfunctions. *The Journal of Sexual Medicine*, 16(10), 1581–1596. https://doi-org.ludwig.lub.lu.se/10.1016/j.jsxm.2019.07.019
- Karasu, F. (1), Çopur, E. Ö. (1), & Ayar, D. (2). (2023). The Effect of Solution Focused Level on Marital Disaffection and Sexual Satisfaction in Married Individuals. *Contemporary Family Therapy*, 45(1), 75-84–84. https://doiorg.ludwig.lub.lu.se/10.1007/s10591-021-09590-w
- Karimi, R., Bakhtiyari, M., & Arani, A. M. (2019). Protective factors of marital ability in long-term marriage globally: a systematic review. *EPIDEMIOLOGY AND HEALTH*, 41, e2019023. https://doi-org.ludwig.lub.lu.se/10.4178/epih.e2019023
- La Rocque, C. L., & Cioe, J. (2011). An Evaluation of the Relationship between Body Image and Sexual Avoidance. *The Journal of Sex Research, 48*(4), 397–408. https://doiorg.ludwig.lub.lu.se/10.1080/00224499.2010.499522
- LAWRANCE, K.-A., & BYERS, E. S. (1995). Sexual satisfaction in long-term heterosexual relationships: The interpersonal exchange model of sexual satisfaction. *Personal Relationships*, 2(4), 267–285. https://doi-org.ludwig.lub.lu.se/10.1111/j.1475-6811.1995.tb00092.x
- Lemoine, J., Konradsen, H., Jensen, A., Roland-Levy, C., Ny, P., Khalaf, A., & Torres, S. (2018). Factor structure and psychometric properties of the Body Appreciation Scale-2 among adolescents and young adults in Danish, Portuguese, and Swedish. *Body Image*, 26, 1–9. https://doi-org.ludwig.lub.lu.se/10.1016/j.bodyim.2018.04.004
- Löwenthal, I. P. (2012). Body Awareness Questionnaire (BAQ) Översättning och Kulturell Anpassning till Svenska. (Master's thesis). Karolinska Institutet.
- Mark, K. P., Herbenick, D., Fortenberry, J. D., Sanders, S., & Reece, M. (2014). A

Psychometric Comparison of Three Scales and a Single-Item Measure to Assess Sexual Satisfaction. *The Journal of Sex Research*, *51*(2), 159–169.

- McClelland, S. I. (2011). Who is the "self" in self reports of sexual satisfaction? Research and policy implications. *Sexuality Research & Social Policy: A Journal of the NSRC*, 8(4), 304–320. https://doi-org.ludwig.lub.lu.se/10.1007/s13178-011-0067-9
- Moffitt, R. L., Neumann, D. L., & Williamson, S. P. (2018). Comparing the efficacy of a brief self-esteem and self-compassion intervention for state body dissatisfaction and selfimprovement motivation. *Body Image*, 27, 67–76. https://doiorg.ludwig.lub.lu.se/10.1016/j.bodyim.2018.08.008
- NEFF, K. D. (2003). The Development and Validation of a Scale to Measure Self-Compassion. Self & Identity, 2(3), 223. https://doiorg.ludwig.lub.lu.se/10.1080/15298860309027
- Nekoolaltak, M., Keshavarz, Z., Simbar, M., Nazari, A. M., & Baghestani, A. R. (2019). Sexual compatibility among Iranian couples: a qualitative study. *Sexual & Relationship Therapy*, 34(1), 23–39. https://doiorg.ludwig.lub.lu.se/10.1080/14681994.2017.1347615
- Offman, A., & Matheson, K. (2005). Sexual compatibility and sexual functioning in intimate relationships. *Canadian Journal of Human Sexuality*, *14* (1-2), 31 39.
- Paquette, M.-M., Dion, J., Böthe, B., & Bergeron, S. (2022). Validation of the Body Appreciation Scale-2 in cisgender, heterosexual and sexual and gender minority adolescents and sexuality-related correlates. *Body Image*, 43, 193–204. https://doiorg.ludwig.lub.lu.se/10.1016/j.bodyim.2022.09.001
- Purdon, C., & Holdaway, L. (2006). Non-Erotic Thoughts: Content and Relation to Sexual Functioning and Sexual Satisfaction. *The Journal of Sex Research*, *43*(2), 154–162.
- Raisi, F., Yekta, Z. P., Ebadi, A., & Shahvari, Z. (2015). Whatare Iranian married women s rewards? Using interpersonal exchange model of sexual satisfaction: a qualitative study. *Sexual and Relationship Therapy*, 30 (4), 475 - 489.
- Robbins, A.-R., & Reissing, E. D. (2018). Appearance Dissatisfaction, Body Appreciation, and Sexual Health in Women Across Adulthood. *Archives of Sexual Behavior*, 47(3), 703–714. https://doi-org.ludwig.lub.lu.se/10.1007/s10508-017-0982-9
- Sánchez-Fuentes, M. del M., Santos-Iglesias, P., & Sierra, J. C. (2014). A systematic review of sexual satisfaction. *International Journal of Clinical and Health Psychology*, 14(1), 67–75. <u>https://doi-org.ludwig.lub.lu.se/10.1016/S1697-2600(14)70038-9</u>

Satinsky, S., Reece, M., Dennis, B., Sanders, S., & Bardzell, S. (2012). An assessment of

body appreciation and its relationship to sexual function in women. *Body Image*, 9(1), 137–144. https://doi-org.ludwig.lub.lu.se/10.1016/j.bodyim.2011.09.007

- Schmiedeberg, C., Huyer-May, B., Castiglioni, L., & Johnson, M. D. (2017). The More or the Better? How Sex Contributes to Life Satisfaction. Archives of Sexual Behavior: *The Official Publication of the International Academy of Sex Research*, 46(2), 465–473. https://doi-org.ludwig.lub.lu.se/10.1007/s10508-016-0843-y
- Schwartz, P., & Young, L. (2009). Sexual satisfaction in committed relationships. Sexuality Research & Social Policy, 6(1), 1–17. https://doiorg.ludwig.lub.lu.se/10.1525/srsp.2009.6.1.1
- Shields, S. A., Mallory, M. E., & Simon, A. (1989). The Body Awareness Questionnaire: Reliability and Validity. *Journal of Personality Assessment*, 53(4), 802. https://doiorg.ludwig.lub.lu.se/10.1207/s15327752jpa5304 16
- Stentagg, M., Skär, L., Berglund, J. S., & Lindberg, T. (2021). Cross-Sectional Study of Sexual Activity and Satisfaction Among Older Adult's ≥60 Years of Age. Sexual Medicine, 9(2). https://doi-org.ludwig.lub.lu.se/10.1016/j.esxm.2020.100316
- Stephenson, K. R., & Meston, C. M. (2015). The conditional importance of sex: Exploring the association between sexual well-being and life satisfaction. *Journal of Sex & Marital Therapy*, 41(1), 25–38. https://doi-

org.ludwig.lub.lu.se/10.1080/0092623X.2013.811450

- Strizzi, J., Fernández-Agis, I., Alarcón-Rodríguez, R., & Parrón-Carreño, T. (2016). Adaptation of the New Sexual Satisfaction Scale-Short Form Into Spanish. *Journal of Sex and Marital Therapy*, 42(7), 579-588–588. https://doiorg.ludwig.lub.lu.se/10.1080/0092623X.2015.1113580
- Štulhofer, A., Buško, V., & Brouillard, P. (2010). Development and Bicultural Validation of the New Sexual Satisfaction Scale. *The Journal of Sex Research*, 47(4), 257–268. https://doi-org.ludwig.lub.lu.se/10.1080/00224490903100561
- Tobin, L. N., Barron, A. H., Sears, C. R., & von Ranson, K. M. (2019). Greater body appreciation moderates the association between maladaptive attentional biases and body dissatisfaction in undergraduate women. *Journal of Experimental Psychopathology*, 10(2). https://doi-org.ludwig.lub.lu.se/10.1177/2043808719838937
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale-2: Item refinement and psychometric evaluation. *Body Image*, 12, 53–67. https://doiorg.ludwig.lub.lu.se/10.1016/j.bodyim.2014.09.006

Vasconcelos, P. A., Ramos, C., Paúl, C., & Nobre, P. J. (2021). Sexual Conservatism and

Sexual Satisfaction in Older Women: A Cross-Sectional Mediation Analysis. *Clinical Gerontologist*, 44(3), 249–258. https://doi-

org.ludwig.lub.lu.se/10.1080/07317115.2021.1872755

- Van den Brink, F., Smeets, M. A. M., Hessen, D. J., & Woertman, L. (2016). Positive Body Image and Sexual Functioning in Dutch Female University Students: The Role of Adult Romantic Attachment. Archives of Sexual Behavior: The Official Publication of the International Academy of Sex Research, 45(5), 1217–1226. https://doiorg.ludwig.lub.lu.se/10.1007/s10508-015-0511-7
- Weaver, A., & Byers, E. S. (2013). Eye of the Beholder? Sociocultural Factors in the Body Image and Sexual Well-Being of Heterosexual Women. *International Journal of Sexual Health*, 25(2), 128–147. https://doiorg.ludwig.lub.lu.se/10.1080/19317611.2012.737446
- WHO (2022). *Sexual health*. Retrieved from: https://www.who.int/health-topics/sexual-health#tab=tab_1
- Xu, J., Xue, B., Li, L., Qiao, J., Redding, S. R., & Ouyang, Y. (2023). Psychological interventions for sexual function and satisfaction of women with breast cancer: A systematic review and meta-analysis. *Journal of Clinical Nursing (John Wiley & Sons, Inc.)*, 32(9/10), 2282–2297. <u>https://doi-org.ludwig.lub.lu.se/10.1111/jocn.16194</u>
- Yagci, G., Benli, A. C., Erel, S., & Fenkci, S. M. (2023). Investigation of body awareness and body image perception in patients with type 2 diabetes mellitus. *Journal of Bodywork & Movement Therapies*. https://doi-org.ludwig.lub.lu.se/10.1016/j.jbmt.2023.04.051
- Zarzycka, B., Rybarski, R., & Śliwak, J. (2017). The Relationship of Religious Comfort and Struggle with Anxiety and Satisfaction with Life in Roman Catholic Polish Men: The Moderating Effect of Sexual Orientation. *Journal of Religion and Health*, 56(6), 2162–2179. https://doi-org.ludwig.lub.lu.se/10.1007/s10943-017-0388-y
- Zeynep Aydın Sünbül, & Neslihan Arıcı Özcan. (2022). The Mediating Role of Negative Mood States and Body Responsiveness in the Associations of Mindfulness and Self-Compassion with Life Satisfaction. *Studia Psychologica*, 64(4). https://doiorg.ludwig.lub.lu.se/10.31577/sp.2022.04.858

Appendix

Figure A1

Recruitment material



English version	Swedish version
When I fail at something important to me I	Jag känner mig helt otillräcklig när jag
become consumed by feelings of	misslyckas med något som är viktigt för
inadequacy	mig.
I try to be understanding and patient	Jag försöker att ha förståelse och tålamod
towards those aspects of my personality I	med de sidor av mig själv som jag inte
don't like.	tycker om.
When something painful happens I try to	När något smärtsamt händer försöker jag se
take a balanced view of the situation.	balanserat på situationen.
When I'm feeling down, I tend to feel like	När jag känner mig nere brukar det kännas
most other people are probably happier than	som om de flesta andra förmodligen är
I am.	lyckligare än vad jag är.
I try to see my failings as part of the human	Jag försöker se mina brister som något
condition	allmänmänskligt.
When I'm going through a very hard time, I	När jag går igenom en riktigt svår tid ger ja
give myself the caring and tenderness I	mig själv den omsorg och omtanke jag
need.	behöver.
When something upsets me I try to keep my	När något gör mig upprörd försöker jag håll
emotions in balance.	mina känslor i styr.
When I fail at something that's important to	När jag misslyckas med något som är viktig
me, I tend to feel alone in my failure	för mig brukar jag känna att det händer bara
	mig.
When I'm feeling down I tend to obsess and	När jag känner mig nere brukar jag fastna i
fixate on everything that's wrong.	grubblerier över allt som är fel.
When I feel inadequate in some way, I try to	När jag känner mig otillräcklig på något sät
remind myself that feelings of inadequacy	försöker jag påminna mig om att alla kan
are shared by most people.	känna så ibland.
I'm disapproving and judgmental about my	Jag är ogillande och dömande inför mina fe
own flaws and inadequacies.	och brister.
I'm intolerant and impatient towards those	Jag står inte ut med och är otålig mot de
aspects of my personality I don't like.	sidor av mig själv som jag inte tycker om.

Body Awareness Questionnaire in two versions

English version	Swedish version
I notice differences in the way my body	Jag märker skillnad på hur min kropp
reacts to various foods.	reagerar på olika sorters mat
I can always tell when I bump myself	Jag känner direkt när jag stöter emot något
whether or not it will become a bruise.	om det kommer att bli ett blåmärke eller inte
I always know when I've exerted myself to	Jag vet alltid när jag ansträngt mig fysiskt ti
the point where I'll be sore the next day.	den grad där jag kommer att få ont nästa dag
I am always aware of changes in my energy	När jag äter viss mat är jag medveten om hu
level when I eat certain foods.	min energinivå påverkas
I know in advance when I'm getting the flu.	Jag vet i förväg när jag håller på att få
	influensa
I know I'm running a fever without taking	Jag vet att jag har feber utan att ta tempen
my temperature.	
I can distinguish between tiredness because	Jag kan skilja mellan trötthet som beror på
of hunger and tiredness because of lack of	hunger och trötthet som beror på sömnbrist
sleep.	
I can accurately predict what time of day	Jag kan exakt förutse när på dagen bristen p
lack of sleep will catch up with me.	sömn hinner ikapp mig
I am aware of a cycle in my activity level	Jag är medveten om hur min fysiska
throughout the day.	aktivitetsnivå varierar under dagens lopp
I notice seasonal rhythms and cycles in the	Jag märker årstidsbundna rytmer och cykler
way my body functions.	min kropps sätt att fungera
As soon as I wake up in the morning, I	Så snart jag vaknar upp på morgonen, vet ja
know how much energy I'll have during the	hur mycket energi jag kommer ha under
day.	dagen
I can tell when I go to bed how well I will	När jag går och lägger mig kan jag förutse
sleep that night.	hur bra jag kommer att sova den natten
I notice distinct body reactions when I am	Jag märker tydliga kroppsliga reaktioner nä
fatigued.	jag är uttröttad
I notice specific body responses to changes	Jag lägger märke till specifika kroppsliga

English version	Swedish version
in the weather.	reaktioner på väderomslag
I can predict how much sleep I will need at	Jag kan förutsäga hur mycket sömn jag
night in order to wake up refreshed.	behöver under natten för att vakna utvilad
When my exercise habits change, I can	När mina träningsvanor ändras, kan jag
predict very accurately how that will affect	exakt förutsäga hur det kommer påverka min
my energy level.	energinivå
There seems to be a "best" time for me to go	Det verkar finnas en "bästa" tid för mig att
to sleep at night.	somna på kvällen
I notice specific bodily reactions to being	När jag är vrålhungrig märker jag specifika
overhungry.	kroppsliga reaktioner

English version	Swedish version
I respect my body.	Jag respekterar min kropp
I feel good about my body.	Jag trivs med min kropp
I feel that my body has at least some good	Jag tycker att min kropp har åtminstone
qualities.	några bra egenskaper
I take a positive attitude towards my body.	Jag har en positiv inställning till min kropp
I am attentive to my body's needs.	Jag är uppmärksam på min kropps behov
I feel love for my body.	Jag älskar min kropp
I appreciate the different and unique	Jag uppskattar min kropps olika och unika
characteristics of my body.	egenskaper
My behavior reveals my	Mitt beteende visar min positiva inställning
positive attitude toward my body; for	till min kropp, till exempel sträcker jag på
example, I hold my head high and smile.	mig och ler
I am comfortable in my body.	Jag är bekväm i min kropp
I feel like I am beautiful even if I am	Jag tycker att jag är vacker även om jag inte
different from media images of attractive	ser ut som attraktiva människor (t ex
people (e.g., models, actresses/actors).	modeller, skådespelare) på bilder i media

Body Appreciation Scale-2 in two versions

New Sexual Satisf	action	Scale-Sh	ort form	in two	versions
	1. 1				

English version	Swedish version		
The quality of my orgasms	Kvaliteten i mina orgasmer		
My "letting go" and surrender to sexual	Hur jag "släpper taget" och hänger mig till		
pleasure during sex	sexuell njutning under sex		
The way I sexually react to my partner	På vilket sätt jag sexuellt reagerar på min		
	partner		
My body's sexual functioning	Min kropps sexuella funktion		
My mood after sexual activity	Min sinnesstämning efter sexuell aktivitet		
The pleasure I provide to my partner	Njutningen som jag ger min partner		
The balance between what I give and	Balansen mellan vad jag ger och får vid sex		
receive in sex			
My partner's emotional opening up during	Hur min partner känslomässigt öppnar upp		
sex	under sex		
My partner's ability to orgasm	Min partners förmåga att få orgasm		
My partner's sexual creativity	Min partners sexuella kreativitet		
The variety of my sexual activities	Variationen av mina sexuella aktiviteter		
The frequency of my sexual activity	Frekvensen av min sexuella aktivitet		

Demographic variables	п	NSSS-S		Single-item	
		M	SD	M	SD
Gender					
Men	31	41.34	9.56	3.77	1.48
Women	115	39.87	10.61	3.71	1.50
Nonbinary	18	40.28	10.50	3.33	1.41
Fransgender experience					
Yes	14	42.36	10.27	3.79	1.19
No	146	39.97	10.35	3.69	1.52
Not list	4	40.75	12.92	3.00	1.41
Sexual orientation					
Heterosexual	89	38.79	10.71	3.55	1.52
Homosexual	12	37.79	10.24	3.25	1.55
Asexual	3	43.33	15.53	6.00	0.00
Bisexual	27	41.44	10.36	4.04	1.40
Pansexual	20	44.50	9.47	3.95	1.28
Other	13	42.09	6.67	3.31	1.38
Partner					
Yes	121	40.48	10.43	3.89	1.44
No	42	39.21	10.29	3.05	1.45
Not list	1	47.00	-	5.00	-
Education					
Gymnasium	12	46.73	6.28	4.42	1.17
Municipality Adult education	1	18.00	-	2.00	-
Folk High School	2	38.50	10.61	3.00	2.83
Vocational qualification	7	39.57	10.13	4.14	1.22
Bachelor's degree	53	38.79	10.68	3.45	1.50
Master's degree	68	40.66	10.11	3.81	1.53
Doctoral degree	14	39.79	10.44	3.43	1.22
Other	7	40.23	12.88	3.43	1.72

Descriptive Statistics of NSSS-S and single-item on demographic variables

Occupation

Demographic variables	п	NSSS-S		Single-item	
		M	SD	M	SD
Gainfully employed	105	40.33	10.46	3.65	1.51
Student	25	38.95	10.34	3.80	1.38
Retired	4	32.25	10.97	3.50	1.92
Unemployed/Job seeker	10	40.82	7.95	3.60	1.51
Sick leave	6	41.50	12.83	4.17	1.94
Parental leave	4	46.50	7.05	4.00	1.63
Other	10	41.06	11.35	3.50	1.35
Meditation experience					
Yes	62	40.31	10.79	3.48	1.53
No	101	40.06	10.17	3.79	1.45
Not listed	1	47.00	-	5.00	-

Note. Single-item = the single-item of sexual satisfaction.

 $p^* < .05. p^* < .01.$