



Article

# French Validation of the New Sexual Satisfaction Scale Short Form (NSSS-SF Fr)

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Abstract: This study addresses the critical need for French-language tools in assessing sexual satisfaction, an important aspect of global health, sexual health, and mental health. Its main aim is to validate the French version of the NSSS-SF scale (NSSS-SF Fr, Fr for French). The research was conducted in two phases. The first study involved 253 participants, predominantly female (77.75%), with a focus on examining the tool's psychometric properties (factorial structure, internal consistency, convergent validity). The second study included 855 participants, with a similar gender distribution, aimed at further validation and analysis, studying links between NSSS-SF Fr and anxiety and depressive symptoms (assessed with GAD7 and MDI), and attachment style (ECR-RS). The NSSS-SF Fr demonstrated robust psychometric properties. Key findings included its strong correlation with sexual health indicators, anxiety, depression, and attachment styles confirming its effectiveness as a reliable tool for evaluating sexual satisfaction in French-speaking populations. Comparisons with international studies highlighted its universal applicability and cultural sensitivity. The NSSS-SF French version stands as a critical tool for future research and clinical practice, bridging a vital gap in the assessment of sexual satisfaction among French-speaking individuals.

Keywords: sexual satisfaction; psychometric validation; mental health; attachment styles; assessment



Citation: Gouvernet, B. French Validation of the New Sexual Satisfaction Scale Short Form (NSSS-SF Fr). *Sexes* **2024**, *5*, 31–45. https://doi.org/10.3390/ sexes5010003

Academic Editor: Angel L. Montejo

Received: 28 December 2023 Revised: 30 January 2024 Accepted: 22 February 2024 Published: 28 February 2024



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## 1. Introduction

## 1.1. Mental Health and Sexual Satisfaction

The focus on providing support for individuals facing psychological and psychiatric vulnerabilities has gradually shifted from institutional care to psychological and social rehabilitation. The primary objective has shifted from symptom limitation to a broader aim, which is to determine the most suitable therapeutic approaches for enhanced quality of life while coping with the illness and its associated treatments. In recent years, driven by the joint influence of patient advocacy groups and the evolution of political agendas—as, in France, the National Sexual Health Strategy adopted by the Ministry of Health in 2017, this endeavor to improve daily life has also extended to emotional and intimate aspects. The emotional and sexual aspects of intimacy represent fundamental components of overall quality of life, areas that have frequently been understudied in the fields of psychopathology and psychiatry. Nevertheless, sexual satisfaction can serve as a pivotal determinant of an individual's overall well-being, impacting their treatment adherence and recovery. In light of this escalating recognition of the importance of emotional and intimate life, the necessity for the availability of valid tools to assess sexual satisfaction in individuals dealing with psychological or psychiatric disorders becomes self-evident.

Over the past decade, extensive research has been conducted on sexual satisfaction, revealing significant correlations between sexual satisfaction and sexual health [1–3], physical health [4–8], and psychological health [9–13]. Sexual satisfaction, defined as the subjective evaluation of positive and negative aspects related to one's sexual relationships resulting in an emotional reaction [14], has emerged as a crucial element for both individual and couple quality of life [4,7,15–17].

Since the pioneering work of Bowlby [18], it has been established that attachment styles are predictive of mental health. While early research on attachment primarily focused on the link between attachment insecurity and psychopathological disorders in children, more recent studies have been able to document similar relationships in adulthood [19]. Moreover, adult attachment styles [18,20,21] also represent major psychological dimensions impacting sexual satisfaction [22,23]. Specifically, individuals who have developed a positive model of self and others—i.e., secure individuals—tend to experience higher sexual satisfaction than insecure individuals—those who have internalized a negative image of themselves (anxious attachment) or those who have a negative view of others (avoidant attachment) [24].

# 1.2. Sexual Satisfaction, Which Evaluation Scales in France?

Various measurement methods have been employed in studies examining sexual satisfaction. Some studies [3,4] utilized standardized and validated measures such as the Global Measure of Sexual Satisfaction [14]. Others adapted existing scales by dichotomizing measurement scales [25] or developed specific measures for their research [1,2,17]. In the field of French sexual medicine, the Male Sexual Health Questionnaire and the Female Sexual Function Index are among the recommended scales [26], while the Sexual Satisfaction subscale of the Derogatis Sexual Functioning Inventory is frequently used for French-speaking subjects [27]. However, the availability of validated scales for assessing sexual satisfaction in the French language is limited. Recently, Wawrziczny et al. [28] validated the Index of Sexual Satisfaction (ISS, [29]) for the French population. The ISS, a 25-item scale, is widely used internationally [4], and it is currently the only validated sexual satisfaction scale for the French population. Although the ISS demonstrates good psychometric qualities, there are other recently developed scales that exhibit even better psychometric properties, including internal consistency, convergent validity (correlations with dyadic satisfaction), and test-retest reliability [17]. Furthermore, the ISS presents a unidimensional conceptualization of sexual satisfaction, while it is recognized as a complex and multidimensional construct encompassing individual aspects (e.g., sexual sensations, level of consciousness during sexual encounters), interpersonal aspects (e.g., partner's sexual pleasure, partner's sexual creativity), and behavioral aspects (e.g., diversity and frequency of sexual activities) [30]. The New Sexual Satisfaction Scale Short Form (NSSS-SF, [31]) is a brief 12-item version derived from the original 20-item NSSS, which addresses these limitations by providing a composite measure of sexual satisfaction. The development of the NSSS was based on therapeutic and clinical knowledge in sexology [14,32]. The NSSS-SF adopts a Likert-type response format ranging from 1 ("Not at all satisfied") to 5 ("Extremely satisfied") and allows for the assessment of sexual satisfaction as a multidimensional construct. It provides a more comprehensive approach to understanding sexual satisfaction as an experienced reality, compared to measures utilizing a single-item assessment. Furthermore, by grounding itself in the theoretical conceptualizations of sexual satisfaction, the NSSS-SF facilitates a nuanced understanding of the various dimensions of sexual satisfaction. It does so by not only examining intrapersonal aspects but also by incorporating the dyadic components of sexual satisfaction. Previous studies have validated the NSSS and NSSS-SF in various cultural contexts, including Croatian [31], American [17,31], and Spanish [33] populations.

# 1.3. Objectives

It is within this framework that the present paper offers a French validation of the NSSS-SF (NSSS-SF Fr, "Fr" for "French"), renowned for its brevity, clinical utility, and theoretical significance. In a first study, we will present its psychometric qualities. In a second one, we analyze its utility in the field of mental health by examining its relationships with psychopathological vulnerability factors such as anxiety, depression, or attachment styles.

## 2. Method

## 2.1. General Considerations

The data were collected as part of two different online studies with the explicit objective of investigating the determinants of sexual satisfaction. The survey's dissemination method was inspired by the principles of snowball sampling. Calls for participation informing people of the study's objectives were sent out on social networks, inviting those contacted to share the invitations with their own networks of acquaintances. The studies, conducted on a voluntary basis, adhered to the ethical and professional principles governing social science research in France (article R. 1121-1-1 in the public health code, decree 2017-884 of 9 May 2017 relating to research involving human beings). Participant anonymity was ensured, and obtaining informed and voluntary consent was a prerequisite for accessing the study materials. Participants had the freedom to discontinue their participation at any time and delete their data. No cookies or IP addresses were stored.

The first study was conducted between February and May 2018. The second one was conducted between April and June 2020. The only inclusion criteria were proficiency in the French language and being at least 18 years old to access and participate to the research.

## 2.2. French Translation of the NSSS-SF Fr

The original version of the NSSS-SF underwent a rigorous two-step translation process [34]. Independent bilingual English-speaking readers performed both forward and backward translations of the 12 items and the instructions.

## 2.3. Measures

# 2.3.1. First Study

The first study aimed to investigate the factorial structure of the NSSS-SF Fr and assess its convergent validity by examining the relationships between the obtained scores and sexual desire. To achieve this, in addition to collecting sociodemographic data (age, gender at birth, couple status, socioeconomic category) and information regarding intimate life (number of romantic partners/number of sexual partners to date), we evaluated sexual desire by addressing the following question, "How important is sexuality to you?" Three response options were provided: "not or little important", "moderately important", "important". In this first study, participants were included whether they were single or in a relationship, as the experience of sexuality with partners did not necessarily imply the existence of an established couple (e.g., friends with benefits, casual partners).

## 2.3.2. Second Study

The second study specifically aimed to investigate the correlation between scores obtained from the NSSS-SF Fr and mental health indicators, including anxiety, depression, and attachment styles. Standardized scales were employed for assessment. For this study, we exclusively focused on participants in a current relationship. The GAD-7 [35,36] was chosen to evaluate anxiety—a seven-item self-assessment scale capturing anxious symptoms experienced by individuals in the 15 days prior to its administration. Participants responded on a 5-point Likert scale (0: never; 4: almost every day) to indicate the frequency of these symptoms. Depressive symptoms were measured using the MDI (Major Depression Inventory [37]), a ten-item self-assessment scale covering various facets of depression, such as mood, energy, appetite, sleep, and concentration. Respondents assessed symptom frequency over a two-week period using a 6-point Likert scale (0: never; 5: all the time). Internal consistency, as derived from our data, demonstrated excellence for both scales ( $\alpha > 0.80$ ).

Attachment style was evaluated using the French version of the Fraley's Relationship Structure Questionnaire (ECR-RS [38,39]) in its 9-item version. This self-assessment scale comprises nine statements, with participants indicating their level of agreement on a 7-point Likert scale (1: strongly disagree, 7: strongly agree). The scale enables individuals to assess their attachment to four potential figures (mother, father, romantic partner, and best friend),

with a specific emphasis on romantic partnerships in this study. The questionnaire produces a score evaluating both anxiety and avoidance dimensions of attachment. Psychometric qualities were found to be satisfactory (overall scale:  $\alpha = 0.82$ , attachment anxiety:  $\alpha = 0.85$ , avoidance:  $\alpha = 0.85$ ).

## 2.4. Data Analysis

To evaluate the psychometric properties of the NSSS-SF Fr, we initially conducted descriptive analyses for each item composing the scale (mean, median, standard deviation, coefficient of variation (sd/mean), proportion of responses at each point of the Likert scale). Additionally, we calculated the item's difficulty index and discrimination index. In the context of Likert-type scales, the item's difficulty index is determined by dividing the item's mean by the score range, with values ranging from 0 (difficult item) to 1 (easy item). The discrimination index was calculated based on the item's correlation with the overall score of the scale. Higher scores indicate greater differentiating power for the item. Conversely, weak items (r < 0.30) exhibit limited discriminatory capacity [40].

To assess the adequacy of the NSSS-SF Fr compared to its original version, we employed several fit indices. The bootstrap chi-square ( $\chi^2$ ) with 1000 replications, following the recommendations and algorithm proposed by Bollen and Stine [41], was selected as the first adjustment index. Additionally, the relative chi-square ( $\chi^2$ /df) and the Root Mean Square Error Adjusted (RMSEA) were considered as indicators of model fit. Moreover, the Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Tucker Lewis Fit Index (TLI) were calculated, chosen for their complementary nature: TLI may be biased by overly complex models, while CFI can be sensitive to weak relationships between variables. These indices are less influenced by sample size compared to the chi-square and AGFI [42,43]. Table 1 presents the predetermined thresholds used to assess the validity of the statistical model.

Table 1. Fit criteria.

Indices	$\chi^2$	$\chi^2/df$	RMSEA [IC 90%]	AGFI	CFI	TLI
Fit Criteria	p > 0.05	<2	<0.05 [0.00-0.08]	>0.90	>0.97	>0.97

Note:  $\chi^2$  represents the chi-square statistic,  $\chi^2$ /df denotes the relative chi-square, RMSEA indicates the Root Mean Square Error Adjusted with its 90% confidence interval, AGFI refers to the Adjusted Goodness of Fit Index, CFI represents the Comparative Fit Index, and TLI stands for the Tucker Lewis Fit Index. The specified criteria were used to evaluate the adequacy of the model to the data.

## 3. Results

3.1. First Study

# 3.1.1. Participants

The participant characteristics are outlined in Table 2. The sample predominantly consisted of individuals assigned female at birth and young adult students. Approximately half of the participants reported being in a partnered relationship during the study.

**Table 2.** Participants characteristics.

	Value	N	Raw %
	Age	m = 25.81	SD = 8.89
	Number of sexual partners	m = 9.32	SD = 14.19
	Number of romantic partners	m = 3.02	SD = 3.29
Gender at birth	Female	290	77.75
Gender at birtir	Male	83	22.25
Couple Status	Single/separated/divorced	163	43.70
Couple Status	In relationship	210	56.30

Table 2. Cont.

	Value	N	Raw %
	Artisan, trader, company manager	9	2.41
Socio-professional	Student	165	44.24
	Managers, higher intellectual occupations	45	12.06
category (SPC)	Employee	60	16.09
	Inactive (unemployed, without professional activity)	44	11.80
	Workers	10	2.68
	Intermediate profession	37	9.92

# 3.1.2. Descriptive Statistics

The descriptive statistics are presented in Table 3. The table reveals that the measures of central tendency (mean, median) exhibit relatively elevated values (minimum mean: 3.09 for frequency of sexual activities, minimum median: 3) within the context of the utilized 5-point scale. Notably, for each of the 12 items comprising the NSSS-SF Fr, all response categories were chosen, indicating the questionnaire's sensitivity to capturing interindividual variations. The variability of responses remains consistent across the 12 items, ranging from 0.28 to 0.43. The items assessing the capacity of my partner to achieve orgasm and the pleasure I provide to my partner display minimal variability (with values of 0.28 and 0.29, respectively), while those exploring the diversity and frequency of sexual activities exhibit maximal variability (0.40 and 0.43, respectively). The examination of item difficulty and discrimination further supports the questionnaire's internal consistency. A closer analysis reveals that the item pertaining to the partner's ability to achieve orgasm is the least challenging to respond to (item difficulty: 0.80), whereas the item assessing the frequency of sexual activities presents the highest level of difficulty (difficulty = 0.62). Regarding item discrimination, the item eliciting the highest score relates to sexual responsiveness toward the partner (0.76), while the least discriminative item concerns the partner's ability to achieve orgasm (0.58).

**Table 3.** Descriptives statistics by items.

		Mean	SD	CVAR	Median	=1	=2	=3	=4	=5	Item Difficulty	Item Discrimination
								(%)				
NSSS1	The quality of my orgasms.	3.46	1.19	0.34	4.00	9.65	10.45	23.05	38.35	18.5	0.69	0.65
NSSS2	My "letting go" and surrender to sexual pleasure during sex.	3.24	1.31	0.40	3.00	14.21	13.94	24.4	28.15	19.3	0.65	0.62
NSSS3	The way I sexually react to my partner.	3.66	1.22	0.33	4.00	8.58	9.38	17.16	37.53	27.35	0.73	0.76
NSSS4	My body's sexual functioning.	3.47	1.17	0.34	4.00	9.11	8.85	27.35	35.12	19.57	0.69	0.58
NSSS5	My mood after sexual activity.	3.86	1.21	0.31	4.00	7.77	5.9	17.43	30.83	38.07	0.77	0.69
NSSS6	The pleasure I provide to my partner.	3.84	1.12	0.29	4.00	7.51	3.49	16.35	42.36	30.29	0.77	0.68
NSSS7	The balance between what I give and receive in sex.	3.44	1.22	0.35	4.00	9.38	12.33	24.13	32.98	21.18	0.69	0.73
NSSS8	My partner's emotional opening up during sex.	3.75	1.19	0.32	4.00	7.24	8.04	19.57	33.25	31.9	0.75	0.68
NSSS9	My partner's ability to orgasm.	3.99	1.13	0.28	4.00	6.43	4.56	11.8	37.8	39.41	0.8	0.58
NSSS10	My partner's sexual creativity.	3.31	1.28	0.39	3.00	12.06	14.48	24.13	29.49	19.84	0.66	0.67
NSSS11	The variety of my sexual activities.	3.19	1.26	0.4	3.00	13.67	14.48	27.08	28.42	16.35	0.64	0.73
NSSS12	The frequency of my sexual activity	3.09	1.32	0.43	3.00	16.62	15.82	27.08	23.32	17.16	0.62	0.62

## 3.1.3. Factorial Structure

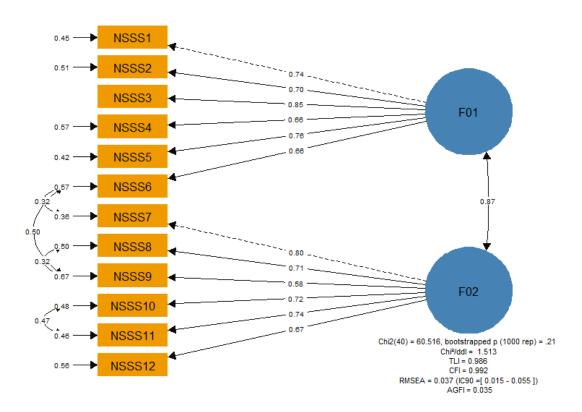
A confirmatory factor analysis was conducted according to the structure proposed by Stulhofer et al. [31]. The findings, presented in Figure 1, revealed that certain adjustments were required in relation to the initial theoretical model to optimize the model-data fit. These adjustments, identified through the examination of modification indices using the Lavaan package in R, led to the following residual correlations:

- The residual of item 6 was correlated with items 7 and 9.
- The residual of item 8 was correlated with item 9.
- The residual of item 10 was correlated with item 11.

These correlations are conceptually coherent with the nature of the items. For example, it is reasonable to expect a correlation between the pleasure given to the partner (item 6) and the items 7 ("balance between what I give and what I receive") and 9 ("the capacity of my partner to achieve orgasm"). Similarly, it is not surprising to observe a correlation between sexual creativity (item 10) and the variety of sexual activities (item 11), independent of the aspect of sexual satisfaction.

With a bootstrapped chi-square ( $\chi^2$ ) value of 60.516 for 40 degrees of freedom, we obtained a non-significant p-value at the  $\alpha$  = 0.05 level, indicating an optimal fit of the final model to the research data. This result is further supported by other statistical fit indices, including absolute fit indices ( $\chi^2/\text{df}$  = 1.513, AGFI = 0.948), relative fit indices (TLI = 0.986, CFI = 0.992), and the RMSEA (0.037) with a 90% confidence interval (CI90% = 0.015–0.055).

# NSSS-SF Fr - Confirmatory Analysis



Only path coefficients with an absolute value> .30 are presented

Figure 1. NSSS-SF Fr: Confirmatory Analysis.

Subsequently, Cronbach's alpha coefficients were computed for the overall scale and the two subscales of the NSSS-SF Fr. The results, presented in Table 4, demonstrate the robust psychometric properties of the French version of the NSSS-SF Fr, both in terms of the overall score and the two sub-dimensions. The Cronbach's alpha values obtained are consistent with those reported in the literature.

	Mean Sd Media		Median		Alpha	a	
				Present Research	Stulhofer [31]	Mark [17]	Strizzi [33]
Total Score	42.292	10.628	44	0.92	0.91	0.92	0.91
Ego Subscale Partner & Activity subscale	21.528 20.764	5.617 5.776	23 22	0.87 0.87	NA NA	NA NA	0.88 0.87

**Table 4.** NSSS-SF Fr: internal consistency. Note = NA: not available.

## 3.2. NSSS-SF Fr and Sexual Interest

We compared the results of the NSSS-SF Fr with participants' level of interest in sexuality. For this purpose, we examined the intersection of data regarding their response to the question "How important is sexuality to you?" and their scores on the NSSS-SF Fr. These scores were categorized into tertiles, resulting in three equivalent groups: a group characterized by low levels of sexual satisfaction, a group with moderate levels of sexual satisfaction, and a group with high levels of sexual satisfaction. A chi-square test was conducted on the categorical data matrix generated by this analysis, yielding a significant result ( $\chi^2(4) = 34.33$ , p < 0.001). Figure 2 illustrates the graphical representation of these results obtained through Correspondence Analysis (CA).

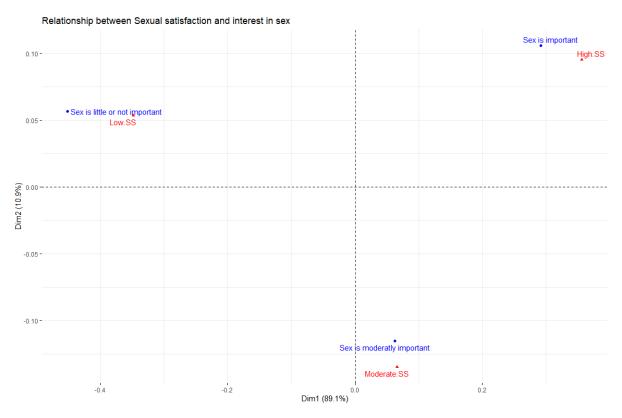


Figure 2. Relationship between sexual satisfaction and interest in sex.

# 3.3. Cross-Cultural Comparisons

We compared the results obtained from the French version of the NSSS with findings reported in the literature. Since our participants were drawn from a non-clinical population, the comparisons were made with data collected from non-clinical subjects. The results are presented in Table 5. Significant differences were mainly observed in comparisons with the subjects from the study by Stulhofer et al. [31]. Specifically, the differences were moderate when considering the overall sample or when examining female participants (effect sizes: g = 0.607 and g = 0.556, respectively). However, these differences can be considered

substantial when comparing Croatian male participants to our male subjects (effect size: g = 0.804). When comparing with North American samples (USA and Canada), the observed differences, if significant, were small (effect size: g < 0.30). Furthermore, no significant differences were found when comparing with Italian subjects, whether considering the entire scale (t = 0.671, p > 0.05) or the two subscales of the NSSS-SF Fr (Ego subscale: t = 1.096, p > 0.05; Partner & Activity Subscale: t = 0.272, p > 0.05).

**Table 5.** Cultural comparisons. Notes: \*: p < 0.05; \*\*\*: p < 0.001; ns: p > 0.05; NA: not applicable.

	Mean of Comparison Group (Sd)	t	p	Effect Size (Hedges g)
	Stulhofer [31]			
France vs. Croatia (all student sample: $n = 544$ )	47.99 (8.45)	9.023	***	0.607
Women France vs. Women Croatia (student sample: n = 359)	48.17 (8.41)	7.038	***	0.556
Men France vs. Men Croatia (student sample: n = 185)	47.64 (8.54)	6.229	***	0.804
France vs. USA (all student sample: $n = 212$ )	44.42 (9.17)	2.446	***	0.210
Women France vs. Women USA (student sample: $n = 138$ )	45.20 (8.80)	2.189	*	0.226
Men France vs. Men USA (student sample: $n = 74$ )	42.70 (9.93)	1.643	ns	NA
•	Mark et al. [17]			
All sample ( $n = 432$ with US: $n = 392$ )	42.210 (9.30)	0.116	ns	NA
Women sample (n = 214)	41.840	1.188	ns	NA
Men sample $(n = 211)$	42.58	2.069	*	0.268
• , ,	Strizzi et al. [33]			
University sample (n = $99$ ). Note: Total score/nb of items	3.59 (0.81)	0.671	ns	NA
University sample (n = 99). Ego subscale Note: Total score/nb of items	3.70 (0.77)	1.096	ns	NA
University sample (n = 99). Partner & activity subscale Note: Total score/nb of items	3.49 (0.87)	0.272	ns	NA

## 3.4. Second Study

## 3.4.1. Participants

The second study included 855 participants with an average age of 31.9 years (standard deviation = 9.49), all in committed relationships. Of these, 68.3% were born female (n = 584), 22.2% (n = 190) were married, 17.4% were in a French Civil Partnership (PACS; n = 149), and 60.4% were cohabiting (n = 516). The largest proportion of participants belonged to the categories of executives and higher intellectual professions (38.9%, n = 333) or students (22.5%, n = 192). Artisans, intermediate professionals, and employees made up 5.3%, 8.5%, and 18.5%, respectively. There were few retirees (n = 4), manual workers (n = 6), or farmers (n = 2).

## 3.4.2. Fit Measures

In this second sample, we also found excellent model-data fit indices ( $\chi^2(40) = 48.640$ ;  $\chi^2/df = 1.216$ ; bootstrapped *p*-value = 0.286; TLI = 0.997; CFI = 0.998; RMSEA = 0.014 [0.003; 0.028]) and good internal consistency (overall scale:  $\alpha = 0.91$ ; Ego ss:  $\alpha = 0.88$ ; Partner & activity:  $\alpha = 0.86$ ).

# 3.4.3. Correlations

Table 6 displays the bivariate correlation matrix between NSS-SF Fr scores and various psychological variables: anxious symptoms (evaluated with GAD7) and depressive symptoms (evaluated with MDI), and attachment scores (ECR) based on the commonly used axes (attachment anxiety, avoidance). Additionally, this table presents correlations between NSSS-SF Fr and the assessment of sexual satisfaction using a single item.

Table	6	Correl	ation	Matrix.
Iable	U.	COLLE	анон	IVIALITA.

	Anxiety (GAD)	Depression (MDI)	Anxious Attachment (ECR)	Avoidant Attachment (ECR)	Sexual Satisfaction Single Item	NSSS-SF Fr All	NSSS-SF Fr Ss 01 (Ego)	NSSS-SF Fr Ss 02 (Partner & Activity)
Anxity (GAD)	_							
Depression (MDI)	0.708 ***	_						
Anxious attachment (ECR)	0.150 ***	0.190 ***	_					
Avoidant attachment (ECR)	0.278 ***	0.265 ***	0.345 ***	_				
Sexual satisfaction single item	-0.122 ***	-0.186 ***	-0.288 ***	-0.140 ***	_			
NSSS-SF Fr all	-0.187 ***	-0.232 ***	-0.330 ***	-0.156 ***	0.701 ***	_		
NSSS-SF Fr Ss 01 (Ego)	-0.209 ***	-0.265 ***	-0.269 ***	-0.117 ***	0.606 ***	0.920 ***	_	
NSSS-SF Fr Ss02 (Partner & activity)	-0.138 ***	-0.166 ***	-0.340 ***	-0.170 ***	0.686 ***	0.926 ***	0.705 ***	_
Mean (sd)	6.48 (4.27)	18.36 (9.59)	8.31 (4.92)	11.68 (5.49)	3.10 (1.15)	42.96 (10.4)	22.23 (5.53)	20.74 (5.73)

Note: \*\*\*: p < 0.001.

All identified correlations are statistically significant. The overall NSSS-SF Fr score shows a negative correlation with GAD and MDI scores. Although these correlations are considered weak by conventional standards (r < 0.30), they are still noteworthy (r > 0.10). Notably:

The self-centered sexual satisfaction subscale exhibits stronger correlations compared to the one focused on the partner or activities.

Depressive symptomatology appears to have a stronger association with NSSS-SF Fr scores' variability than anxious symptomatology.

Negative correlations are also observed between both attachment dimensions and NSSS-SF Fr scores. In terms of attachment anxiety, the relationship's intensity surpasses that of simple anxious symptomatology, with a moderate strength observed for the overall score (r = -0.330, p < 0.001) and the subscale focused on the partner or sexual activities (r = -0.340, p < 0.001). Regarding the avoidance dimension, the relationships are half as strong as those with the anxious dimension of attachment but remain substantial.

Finally, examining the connections between sexual satisfaction assessment (using a single item) and NSSS-SF Fr scores reveals positive and robust relationships (r > 0.50, p < 0.001) for both the overall score and the two subscales.

# 3.4.4. Multiple Regressions

As both anxious and depressive symptomatology may vary based on gender and age, we aimed to complement our analyses with multiple regression analyses controlling for these two sociodemographic variables. We followed a similar logic to specifically account for the relationships between attachment style and NSSS-SF Fr. Additionally, tools such as GAD7 or MDI propose threshold scores to facilitate diagnostic classifications. Similarly, interventions in the field of attachment issues are often based on categorical foundations. These aim to diagnostically distinguish secure subjects (low levels of attachment anxiety, low levels of avoidance) from those exhibiting anxious profiles (high levels of attachment anxiety, low levels of avoidance), avoiding profiles (low levels of attachment anxiety, high levels of avoidance), or fearful profiles (high levels of attachment anxiety associated with high levels of avoidance as well). Therefore, in line with clinical practices, we also chose to categorize attachment styles in a categorical manner, discriminating subjects based on median scores of avoidance and anxiety from the ECR to distribute them into four groups: secure, anxious, avoiding, and fearful. Moreover, this categorization provides the added benefit of considering combinations of avoidance and fearful dimensions through the identification of fearful subjects.

# NSSS-SF Fr, Depression and Anxiety

The results of multiple regression analyses of NSSS-SF Fr scores based on categories of depression profiles are presented in Tables 7–9. Even when controlling for age and gender status at birth in the regression equations, we find:

• Significant differences between subjects exhibiting depressive (Table 7) or anxious symptomatology (Table 8) and those without, as indicated by the MDI or the GAD. Furthermore, as the intensity of symptoms increases, sexual satisfaction diminishes, whether considered globally (total NSSS-SF Fr score) or in its two sub-dimensions. The only notable exception pertains to individuals with mild symptoms, who do not appear significantly different from those with no symptoms, particularly in the partner and activities subscale.

**Table 7.** Regression coefficients of NSSS-SF Fr scores according to depression intensity (MDI), controlled by age and gender status at birth.

Predictor Estimate		Standard Error	t	р	β	95% Confide IC95–	ence Interval IC95+
		NSSS-	SF Fr: Total So	core			
Intercept	43.692	0.957	45.677	< 0.001			
MDI (ref: no depression)							
vs. mild	-2.423	1.088	-2.226	0.026	-0.233	-0.439	-0.028
vs. moderate	-3.508	1.248	-2.811	0.005	-0.337	-0.573	-0.102
vs. severe	-6.695	1.198	-5.588	< 0.001	-0.644	-0.870	-0.418
		NSSS-S	F Fr: Ego Sub	scale			
Intercept	23.362	0.512	45.639	< 0.001			
MDI (ref: no depression)							
vs. mild	-1.467	0.582	-2.518	0.012	-0.265	-0.472	-0.059
vs. moderate	-1.619	0.668	-2.425	0.016	-0.293	-0.530	-0.056
vs. severe	-3.648	0.641	-5.689	< 0.001	-0.660	-0.888	-0.432
		NSSS-SF Fr: Pa	artner & Activ	ity subscale			
Intercept	20.331	0.523	38.896	< 0.001			
MDI (ref: no depression)							
vs. mild	-0.956	0.595	-1.608	0.108	-0.167	-0.370	0.037
vs. moderate	-1.888	0.682	-2.769	0.006	-0.329	-0.563	-0.096
vs. severe	-3.048	0.655	-4.655	< 0.001	-0.532	-0.756	-0.307

**Table 8.** Regression coefficients of NSSS-SF Fr scores according to anxiety intensity (GAD7), controlled by age and gender status at birth.

Predictor Estimate		В	Standard Error	p	В	95% Confide IC95–	ence Interval IC95+
			NSSS-SF Fr: Total Sco	ore			
Intercept	44.264	0.973	45.515	< 0.001			
GAD (ref: no anxiety)							
vs. mild	-3.465	0.777	-4.460	< 0.001	-0.333	-0.480	-0.187
vs. moderate	-5.401	1.181	-4.574	< 0.001	-0.520	-0.742	-0.297
vs. severe	-6.822	1.617	-4.218	< 0.001	-0.656	-0.962	-0.351
			NSSS-SF Fr: Ego Subs	cale			
Intercept	23.643	0.521	45.375	< 0.001			
GAD (ref: no anxiety)							
vs. mild	-1.828	0.416	-4.391	< 0.001	-0.331	-0.479	-0.183
vs. moderate	-2.481	0.633	-3.923	< 0.001	-0.449	-0.674	-0.224
vs. severe	-3.985	0.867	-4.598	< 0.001	-0.721	-1.029	-0.413
		NSSS-S	SF Fr: Partner & Activi	ty subscale			
Intercept	20.621	0.531	38.832	< 0.001			
GAD (ref: no anxiety)							
vs. mild	-1.637	0.424	-3.859	< 0.001	-0.286	-0.431	-0.140
vs. moderate	-2.919	0.645	-4.528	< 0.001	-0.509	-0.730	-0.288
vs. severe	-2.837	0.883	-3.213	0.001	-0.495	-0.797	-0.193

**Table 9.** Regression coefficients of NSSS-SF Fr scores according to attachment styles (RSQ), controlled by age and gender status at birth.

Predictor	Estimate	Standard Error	t	p	β	95% Confide IC95–	ence Interval IC+
		NS	SS-SF Fr: Total S	Score			
Intercept	46,111	1079	42.75	< 0.001			
RSQ (ref: Secure)	,						
vs. Anxious	-3.052	0.974	-3.135	0.002	-0.294	-0.477	-0.110
vs. Avoidant	-4.529	1.001	-4.523	< 0.001	-0.436	-0.625	-0.247
vs. Fearful	-6.424	0.884	-7.271	< 0.001	-0.618	-0.785	-0.451
		NSS	S-SF Fr: Ego Sul	oscale			
Intercept	24,372	0.583	41.84	< 0.001			
RSQ (ref: Secure)	·						
vs. Anxious	-1.313	0.526	-2.498	0.013	-0.238	-0.424	-0.051
vs. Avoidant	-2.208	0.541	-4.082	< 0.001	-0.400	-0.592	-0.207
vs. Fearful	-2.890	0.477	-6.055	< 0.001	-0.523	-0.692	-0.353
		NSSS-SF Fr:	Partner & Acti	vity subscale			
Intercept	21.738	0.586	37.103	< 0.001			
RSQ (ref: Secure)							
vs. Anxious	-1.738	0.529	-3.287	0.001	-0.303	-0.484	-0.122
vs. Avoidant	-2.321	0.544	-4.268	< 0.001	-0.405	-0.591	-0.219
vs. Fearful	-3.535	0.480	-7.364	< 0.001	-0.617	-0.781	-0.452

## NSSS-SF Fr and Attachment Styles

Results regarding the regression analyses of NSSS-SF Fr scores based on attachment styles are presented in Table 9. We observe significant and negative differences between secure and insecure attachment subjects. Both for the overall score and the two subscales, insecure subjects have lower sexual satisfaction than secure subjects. Fearful subjects, scoring high in both anxiety and avoidance, appear to be the most affected.

# 4. Discussion

Our research initially aimed to address a gap in validated tools for assessing sexual satisfaction in French. Specifically, it sought to present the psychometric properties of the French version of the New Sexual Satisfaction Scale Short Form [31], which, according to recent studies, demonstrates better psychometric properties [17] than the Index of Sexual Satisfaction [29], recently validated for the French population [28].

Overall, our results demonstrate the psychometric robustness of the translated scale in its French version. We find positive and strong correlations between NSSS-SF Fr and sexual satisfaction measured by a single item which, although limited in our ability to finely understand sexual satisfaction, remains nonetheless a valid measure [17]. These results, combined with those regarding the relationships between NSSS-SF Fr scores and the subjective perception of the importance of sexuality, reinforce the convergent validity of the scale. The psychometric qualities of the scale are further supported by appropriate levels of difficulty and discriminant power for each item. Similarly, descriptive results reveal interesting trends in the studied population. Measures of central tendency indicate relatively high values for each item of NSSS-SF Fr, suggesting a general propensity for high levels of sexual satisfaction in our sample. However, indicators of dispersion and the distribution of subjects according to the response modalities of the scale also suggest an increased sensitivity of the scale to interindividual variations. Thus, while the overall trend is positive, the scale can capture nuances and individual differences in sexual satisfaction experiences within our study population. These results strengthen the credibility of NSSS-SF Fr as a sensitive and accurate tool for assessing sexual satisfaction in a French-speaking context. Additionally, internal consistency attests to the reliability of NSSS-SF Fr, both for the overall score and its sub-dimensions. These results align with psychometric properties reported in other cultural contexts [17,31,33]. Regarding this latter point, however, crosscultural comparisons indicate some moderate differences, highlighting the need to consider cultural contexts in the assessment of sexual satisfaction, which is not unexpected in light

of research on sexual satisfaction [4]. In line with this, our findings suggest that while cross-cultural variations exist, certain cultural and contextual factors may play pivotal roles in shaping sexual satisfaction. Notably, our study revealed a striking similarity in sexual satisfaction levels between France and Italy, two countries with a shared Latin cultural heritage. This common cultural backdrop, characterized by similar attitudes towards romance, passion, and sensuality embedded in cultural scripts, may underpin the convergence in sexual satisfaction levels observed. The French validation of the NSSS-SF takes a significant step toward addressing these cultural nuances. This methodological advancement enables a nuanced exploration of sexual satisfaction within the French context and facilitates comparisons with other cultures. It is a crucial preliminary step towards comprehensive cross-cultural research that aims to dissect the intricate interplay between cultural contexts and sexual satisfaction. Moreover, these cultural differences also underscore that sexual satisfaction is not an isolated phenomenon but rather a construct influenced by various biopsychosocial factors within specific cultural contexts. This holistic perspective acknowledges that individual, psychological, and social elements intersect and contribute to one's overall sexual satisfaction, highlighting the complex nature of this experience.

In comparison with other available scales in French, NSSS-SF Fr stands out for its aim to capture the diversity and richness of sexual experiences contributing to sexual satisfaction, providing a comprehensive, contextually relevant, and theoretically grounded assessment. ISS, one of the few available tools for evaluating sexual satisfaction in the French language, although demonstrating strong psychometric qualities, has limitations, especially in its unidimensional conceptualization of sexual satisfaction. Similarly, while single-item evaluations can provide an overall assessment, they often overlook the multidimensional richness of sexual satisfaction.

The analysis of the factor structure of NSSS-SF Fr, supported by methodological adjustments, confirms the relevance of this scale for understanding sexual satisfaction from a multidimensional perspective within the French-speaking population. However, this factor structure, evaluated by confirmatory factor analysis, required adjustments to optimize data fit. The residual correlations identified between certain items seem consistent with the nature of the concept evaluated, rooted in transactional models of sexual satisfaction proposed by Lawrence and Byers [14], reinforcing construct validity. Thus, the correlation between the pleasure given to the partner (item 6) and items 7 ("balance between what I give and what I receive") and 9 ("my partner's ability to reach orgasm") can be interpreted in light of the idea of reciprocal exchange of pleasure and satisfaction between partners. Similarly, the correlation between sexual creativity (item 10) and the variety of sexual activities (item 11) suggests that individuals who consider themselves sexually creative tend to explore and engage in a broader range of sexual activities in their relationship. This correlation can be interpreted within the framework of the sexual exchange model, where the variety of sexual activities can be perceived as a form of positive exchange, contributing to overall sexual satisfaction. In conclusion, the multidimensional approach of NSSS-SF Fr, validated by our analysis of the factor structure, provides significant added value in understanding sexual satisfaction compared to unidimensional measures. This more nuanced approach provides a solid foundation for clinical evaluation and research, more accurately reflecting the complexity of sexual satisfaction within the studied French-speaking population.

Beyond psychometric considerations, our project aimed to integrate the discussion of sexual health into the field of mental health, an emerging focus in France. In line with scientific literature, as well as international (WHO, UNESCO) and national recommendations (in France: National Strategy for Sexual Health), we explored the potential contribution of NSSS-SF Fr to psychopathological practices, with an emphasis on emotional and intimate aspects, often overlooked in the fields of psychopathology and psychiatry but crucial for overall quality of life. The results of our study, situated at the intersection of psychological care, mental health, and quality of life, offer enlightening perspectives. In the context of the shift from care to social rehabilitation, our research highlights significant correlations between mental health, assessed through depression and anxiety, and sexual satisfaction,

in line with international literature [9–11,13,25]. These findings align with contemporary trends, where improving quality of life extends beyond mere symptom alleviation, encompassing emotional and intimate spheres often neglected in traditional care protocols. They suggest the importance of systematically integrating the assessment of sexual satisfaction into mental health interventions [9,10]. Unlike depressive or anxious symptoms, attachment styles are generally considered dispositional vulnerability indicators. Thus, by highlighting associations between insecure attachment styles and sexual satisfaction, as observed in other studies, our research emphasizes the need for a holistic approach in individual care, considering both psychological and intimate dimensions as well as the diversity of psychological dimensions, which may reflect transient functioning or more stable individual characteristics.

## 5. Limits

In this study, several methodological and conceptual limitations must be considered. Methodologically, the use of a cross-sectional methodology limits the ability to establish causal links between attachment styles, mental health, and sexual satisfaction. Additionally, the use of self-selected samples may lead to selection bias, limiting representativeness and generalizability of results. While this research explored cultural differences by comparing the French NSSS-SF results with other international studies, this approach might not fully capture all cultural nuances and specificities. This limitation underscores the importance of further research with more diverse and representative samples to deepen our understanding of the cultural dynamics influencing sexual satisfaction. Finally, reliance on self-reported measures may introduce biases of social desirability and recall, affecting response reliability. These limitations suggest the need for longitudinal and multicentric studies, and the exploration of diverse data collection methods for a more comprehensive understanding of the phenomenon. Moreover, studying the links between mental health and sexual satisfaction from the general population may limit the specificity of results for groups with distinct psychopathological characteristics. This generalist approach might mask significant variations in sexual satisfaction and mental health in populations with specific conditions or experiences. Although the results provide useful insights for the general population, they may not be entirely transferable or applicable to specific subgroups.

## 6. Conclusions

The validation of the NSSS-SF in French represents a significant advance in the scientific assessment of sexual satisfaction in France, offering a tool aligned with contemporary theoretical frameworks. This advance, which fills a gap in the availability of suitable instruments in France, enables a detailed analysis of the links between sexual satisfaction and mental health. By opening up prospects for comparative studies on an international scale, this work makes a significant contribution to strengthening French research into the psychology of sexual health. In addition to its research value, this scale is also important for practitioners, both sexologists and psychologists. It provides them with an evaluation method capable of taking account of sexual satisfaction, which, far from being reduced to a state, is the result of a complex, transactional process, combining individual and interindividual dimensions. In this way, the NSSS-SF Fr facilitates a finer understanding of the psychological and relational issues associated with sexual satisfaction, which is essential for the development of adapted and personalized therapeutic strategies, thus contributing to the overall management of patients' mental health.

Funding: This research received no external funding.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study in accordance with the legal and ethical regulations applicable to research programs in the field of human and social sciences in France. Pursuant to Article R. 1121-1-1 of the French Public Health Code and the Decree of 9 May 2017, research in the field of psychology in France is not considered as research involving human subjects. Therefore, formal ethical review and approval by an Institutional

Review Board (IRB) were not required for this study. All research procedures were conducted in compliance with the ethical principles outlined in the Declaration of Helsinki by the World Medical Association. Informed consent was obtained from all participants, and measures were taken to ensure data confidentiality and minimize risks to participants.

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

**Data Availability Statement:** Data available on request from the authors.

Conflicts of Interest: The author declare no conflicts of interest.

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