



Reliability and Construct Validity of the Portuguese Version of the Changes in Sexual Functioning Questionnaire - Short-Form (CSFQ-14) and Its Association with Subjective Sexual Well-being

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Authors' contributions

This work was collaboratively carried out by the authors. Author HP collected and analyzed data, provided material support, drafted the manuscript, conceived and designed the study and carried out statistical analyses. Authors SM, GE, RMA and ML drafted and reviewed the manuscript for intellectual content. All authors read and approved the final manuscript.

Article Information

DOI:10.9734/ACRI/2016/28167

Editor(s):

(1) Cosimo Urgesi, Department of Human Sciences, University of Udine and Scientific Institute (IRCCS) Eugenio Medea, Italy and School of Psychology, Bangor University, UK.

Reviewers:

(1) Ana Simunic, University of Zadar, Croatia.

(2) Valter Javaroni, Universidade do Estado do Rio de Janeiro, Brazil.

Complete Peer review History: <http://www.sciencedomain.org/review-history/15712>

Short Research Article

Received 5th July 2016
Accepted 2nd August 2016
Published 9th August 2016

ABSTRACT

Background: The psychometric properties of an instrument should be evaluated routinely when using different samples. This study evaluated the psychometric properties of the Changes in Sexual Functioning Questionnaire - Short-Form (CSFQ-14) in order to validate it when applied to a sample of Portuguese participants.

Methods: Confirmatory factor analysis (CFA) was conducted the ratio chi-square by degrees of freedom (χ^2/df). The comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA) as indices. The sample consists of 1.416 Portuguese adults with a mean age of 38.74 years (SD = 13.63). Participants completed the Changes in Sexual Functioning Questionnaire-Short Form (CSFQ-14) and the "Subjective sexual well-being" questionnaire.

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Results: Levels of sexual functioning among our sample were found to be moderately high. CFA showed that the factor structure of the CSFQ-14 was satisfactory fit to the sample ($\lambda = .40$ to $.88$; $\chi^2/df = 4.426$. CFI = $.914$. TLI = $.905$. RMSEA = $.095$). The correlation matrix between the CSFQ-14 and the items of the Subjective Sexual Well-being items demonstrated that there were high correlations between all variables.

Conclusion: The CSFQ-14 was found to be a valid and reliable assessment of sexual-related quality of life in anon-clinical Portuguese sample.

Keywords: Sexual functioning; validity; reliability; Portugal.

1. BACKGROUND

The sexual response cycle can be influenced negatively by various psychological factors, including anxiety low self-esteem, disturbances in perception of body image, fear of rejection, sexual performance anxiety, traumatic sexual experiences, history of abuse, and even the quality of relationships [1].

Sexuality is an integral part of human life and it promotes intimacy, connection, and pleasure [2,3,4]. It turns out that sexuality is responsible for a set of personal and social needs, hence sexual health and well-being are linked inseparably to physical and mental health [5]. Sexuality is also connected to the operation of sexual mechanisms, which are based on patterns of sexual response for men and women (desire, arousal, orgasm, and resolution) [6], and which are also important variables in the self-assessment of relationship satisfaction and overall well-being. As a result, it is understood that sexual problems can be a source of suffering and dissatisfaction [5,6].

Subjective sexual well-being refers to the perception of the quality of one's sexuality and sexual life [7]. Studies on sexual well-being examined sexual satisfaction in several areas, including satisfaction with the physical and emotional aspects of relationships, satisfaction with sexual functioning, and the importance of sexuality in life in general [8]. Based upon this research, the concept of subjective sexual well-being is defined as a cognitive and emotional evaluation of the sexuality of a subject [9,10], which results from the subject's perceptions concerning his / her emotional and physical satisfaction in several areas of sexuality and health. Subjective sexual well-being is particularly useful because it is a much more encompassing term than sexual satisfaction [9].

A number of sexual functioning assessment tools are available [11,12,13,14], including the

Changes in Sexual Functioning Questionnaire [15], a clinical and research instrument with five subscales of sexual functioning in parallel versions for males and females that provides assessments of current and lifetime sexual functioning. It was developed for use with patients of heterosexual and homosexual orientation; sexual acts and frequency questions are phrased to be equally suitable to homosexual or heterosexual activity. The CSFQ includes a demographic section (i.e. age, race, sex, marital status, living arrangements, educational attainment, employment, comorbid medical conditions, and use of alcohol and other recreational drugs) and has been normed for depressed and nonclinical populations.

Subjects of validation studies for the CSFQ have included medical students and residents, women attending a Midlife Health Clinic, men and women diagnosed with major depressive disorder or dysthymia, and a Spanish study including both normal and depressed men and women [16,17]. The contribution of this questionnaire is that it can be applied both to clinical and research settings, identifying five scales of sexual functioning analogue to the human sexual response cycle.

The aim of the present study is to translate and evaluate psychometric characteristics of the CSFQ in Portuguese participants and to explore the association of this construct with subjective sexual well-being.

2. METHODS

2.1 Participants

The study's sample consists of 1.416 Portuguese-speaking adults of whom 604 (42.70%) are male and 812 (57.30%) are female. Regarding age, the mean age is 38.74 (SD = 13.63) years old.

2.2 Instruments

In order to compile information about the participants in the survey, we put together a socio-demographic questionnaire, which included items such as age, gender, current place of residence, level of education, marital status, sexual orientation, whether participants have children or not, and employment status.

To assess changes in sexual functioning, we used the Changes in Sexual Functioning Questionnaire-Short Form (CSFQ-14). This questionnaire is a clinical and research instrument which initially consisted of 36 Likert-type items concerning five scales of sexual functioning [18]. Later, a smaller version of the instrument with 14 items was created, and factor analysis confirms the validity of this construct as a global measure of sexual dysfunction. Some of the items included questions such as: "Are you able to maintain an erection?"; "Do you have adequate vaginal lubrication during sexual activity?"; "How often do you desire to engage in sexual activity?"; or "How often do you experience an orgasm?".

Subjective sexual well-being was assessed according to Laumann et al.'s [8] proposal and consists of four items. The first item evaluates the "level of satisfaction with the physical pleasure felt in relation to your partner in the last 12 months". The second investigates the "level of satisfaction with the emotional pleasure felt in relation to your partner in the last 12 months." The third item asks participants "If you had to spend the rest of your life with the sexual life that you have today (sexual relationships and sexual health), how would you feel?" Finally, the fourth item addresses "the importance that sex has on your overall life". The responses are scored in a Likert-type scale where responses for items 1, 2, and 3 vary between "completely unsatisfied", "moderately dissatisfied", "neither dissatisfied, nor satisfied", "moderately satisfied", and "extremely satisfied". The possible responses for item 4 are "not important at all", "not very important", "somewhat important", "very important", and "extremely important." The original alpha was 0.80, consistent with the value obtained in the present study (also 0.80), representing a very good level of internal consistency [19].

2.3 Procedures

Participants were recruited online and were invited to fill out the survey, which was conducted

between October 2014 and February 2015. A specific link for the purposes of this investigation was put together, and was disseminated through mailing lists, contacts with organizations, and social networks.

The online page presented the goals of the study and included all of the principles of traditional research ethics, namely the perseverance of confidentiality and anonymity, as well as informed consent, which were met.

Recruitment focused on obtaining a normative sample of the Portuguese population. Direct requests for voluntary participation were sent out. Explaining the study's objectives, along with instructions and the contact information of the research team.

The Scientific Committee of the Department of Psychology and Education at the University of Beira Interior approved this study. The study also complies with all ethical principles set by the Portuguese Board of Psychologists for research development as well as the guidelines of the American Psychological Association regarding conducting studies involving human beings.

2.4 Transcultural Adaptation of the CSFQ-14

2.4.1 Face validity

An authorization to use the CSFQ-14 was obtained from the original authors in order to create a Portuguese version. To analyze face validity, we used the guidelines proposed by Guillemin et al. [20] and Beaton et al. [21]. The instrument translation was independently performed by three bilingual translators who were native Portuguese speakers and had knowledge and experience in an English-speaking country. This study's researchers evaluated translations in order to obtain a consensus for a single Portuguese version. This version was back translated by a bilingual individual who was a native English speaker. The final Portuguese version was then evaluated by a team of three teachers and three Portuguese sexology experts to ensure that the semantic, idiomatic, cultural, and conceptual aspects of the instrument were comparable to those of the original version.

Our final version was compared to the original version of the instrument and to the original Portuguese version proposed by the original

authors. It was not necessary to alter the Portuguese version.

2.4.2 Content validity

The content validity of the CSFQ-14 was estimated using the Content Validity Ratio (CVR) proposed by Lawshe [22]. In this stage, 12 judges/experts in the field of sexology rated each item according to its essentiality. To evaluate the CVR, we used Wilson et al.'s [23] proposal of $\alpha = 5\%$.

2.5 Evaluation of Psychometric Characteristics

To evaluate the psychometric sensitivity of the items, summary and shape measures were estimated. Items with absolute values of skewness (Sk) and kurtosis (Ku) greater than 3 and 7 respectively [24], were considered to present a severe violation of normality. The construct validity of the instrument was estimated by measuring factorial, convergent, and discriminant validity. Applying these criteria, no items were excluded.

We conducted confirmatory factor analysis (CFA) using the matrix of polychoric correlations and the Weighed Least Squares Mean and Variance Adjusted (WLSMV) using AMOS software (IBM). We used CFA to test whether measures of the construct were consistent with the understanding of the nature of the original construct. As such, we wanted to test whether the data fit the hypothesized measurement model originally proposed by previous analytic research. To evaluate the goodness of fit, we used the ratio chi-square by degrees of freedom (χ^2/df), CFI, TLI, and RMSEA as indices [24]. The model's fit was considered adequate when $\chi^2/df \leq 2.0$, CFI and TLI $\geq .9$, and RMSEA $\leq .08$ [25,26]. Because no items had factor weights (λ) $< .40$, none was removed. The modification indices were also used to verify the correlation between the item errors [24].

3. RESULTS

Table 1 shows all the results regarding the sociodemographic characteristics of the participants in the study.

The individual scales exhibit a strong level of internal reliability with a Cronbach's alpha of 0.90. The Cronbach's alpha of the version used

in this study is 0.85, which indicates high levels of internal consistency [19].

Table 1. Sociodemographic characteristics (N = 1.416)

	N	%
Gender		
Male	604	42.70
Female	812	57.30
Marital status		
Single	490	33.40
Married	548	38.10
Civil union	129	10.00
Widowed	16	1.10
Emotional commitment	129	10.00
Other	104	7.40
Education		
Up to 4 years	1	0.20
Up to 6 years	4	0.50
Up to 9 years	30	2.20
Up to 12 years	185	12.90
University training	3	0.37
Undergraduate	464	32.80
Postgraduate	535	37.40
Ph.D.	191	13.63
Sexual orientation		
Heterosexual	1320	93.40
Bisexual	27	1.90
Homosexual	69	4.70
Children		
No	767	54.20
Yes	649	45.80
Place of residence		
Rural area	164	11.60
Urban area	1252	88.40
Professional status		
Unemployed	82	6.20
Student	202	15.30
Employed	1061	72.30
Retired	56	4.60
Other	15	1.60

When assessing the levels of sexual functioning among our sample, it is found that the participants have moderately high indicators in the various areas studied. When considering the "pleasure" scale, the expected median (expected value of sample median given the sample mean) was 3.4 and the observed mean was 3.45 (SD = 1.13). In regards to the "desire and sexual frequency" dimension, the expected median was 6 and the observed mean was 6.69 (SD = 1.69). For the "desire and interest" scale, the expected median was 9 and the observed mean was 9.32 (SD = 2.63). The "Arousal" scale had an expected median of 9 and an observed mean of

2.11 (SD = 2.46). The “Orgasm” scale showed an expected median of 9 and an observed mean of 11.77 (SD = 2.62). Finally, in regards to overall sexual functioning, the expected average was 42.00 and the observed mean was 45.63 (SD = 8.19).

When it comes to sexual functioning, male participants indicate higher values in all parameters, which signifies that men report higher levels of pleasure, desire, frequency of desire, and interest, arousal, and orgasm. Regarding overall sexual functioning, men also have higher values when compared with women. Finally, with respect to variables related to subjective sexual well-being, men also possess higher values in most variables. Men had greater satisfaction with emotional pleasure, concerning the idea of having to spend the rest of their lives with their current sex life, and in regards to the importance they attach to sex in their overall life. In turn, women had higher levels of satisfaction in regards to physical pleasure. All of these results are shown in Table 2.

Fig. 1 presents the factor structure of the CSFQ-14 and showed satisfactory fit to the sample ($\lambda = .40$ to $.88$; $\chi^2/df = 4.426$; CFI = $.914$; TLI = $.905$; RMSEA = $.095$). The model was not invariant for independent samples ($\Delta\chi^2: \mu: p < .001$. i: $p < .958$. Cov: $p < .001$. Res: $p < .001$)

when specifying the grouping independent variables (males vs females). This was the best version of the model considering the model fit. The reliability was adequate (CR = $.76-.89$ and $\alpha = .85$). We respected the original factor model that did not contemplate items 1, 10 and 14 in any of the four dimensions established.

The correlation matrix between the CSFQ-14 and the items of the Subjective Sexual Well-being items is presented in Table 3. Specifically, almost all correlations were higher than $.30$.

4. DISCUSSION

This study tested and determined the validity and reliability of the CSFQ-14 when applied to a sample of Portuguese sample and its association with items of Subjective Sexual Well-being.

The CSFQ-14 can now be a widely used instrument in research and clinical practice for the evaluation of sexual functioning of Portuguese people.

Correlational analysis shows significant levels of association between sexual functioning and subjective sexual well-being. Congruent with the observations of other studies [26,27,25], we find that sexual functioning has a strong association with sexual well-being.

Table 2. Results of gender differences in sexual functioning and subjective sexual well-being

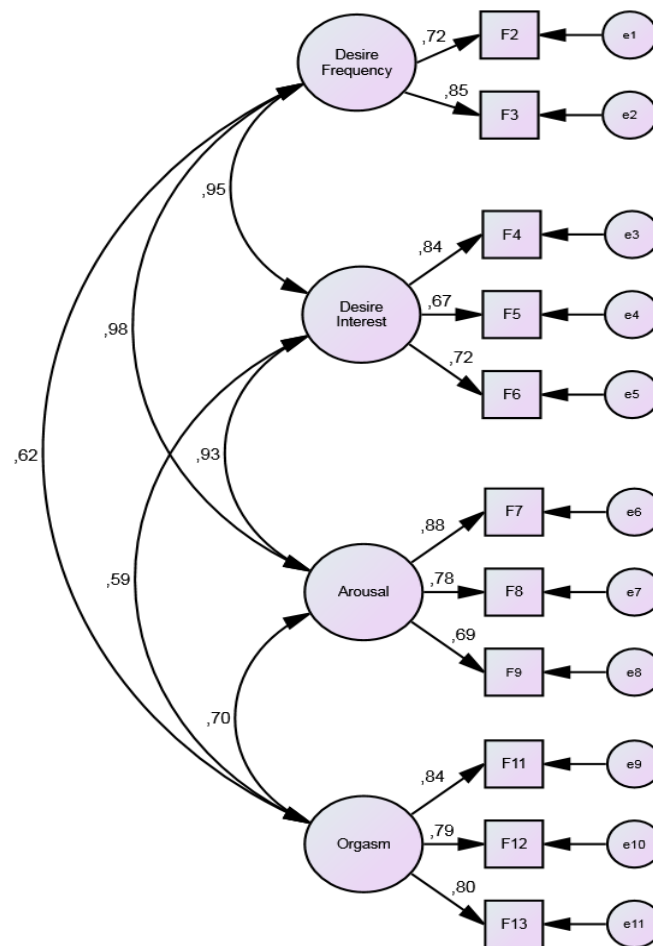
	Gender	Mean	Standard deviation (SD)	t(df)	p - value
Pleasure	Male	3.62	0.98	t(1401)=5.09	0.000**
	Female	3.31	1.21		
Desire and frequency	Male	7.45	1.41	t(1395)=15.63	0.013*
	Female	6.13	1.67		
Desire and interest	Male	10.65	2.27	t(1380)=18.09	0.272
	Female	8.33	2.43		
Arousal	Male	12.21	2.03	t(1248)=14.31	0.000**
	Female	10.31	2.42		
Orgasm	Male	13.04	1.89	t(1252)=14.49	0.000**
	Female	10.99	2.69		
Overall sexual functioning	Male	50.08	6.49	t(1173)=16.17	0.000**
	Female	42.89	7.92		
Satisfaction with physical pleasure	Male	4.03	1.08	t(1189)= -0.43	0.452
	Female	4.05	1.08		
Satisfaction with emotional pleasure	Male	3.64	1.59	t(1410)=4.26	0.000**
	Female	3.24	1.89		
Spending the rest of their life with their current sex life	Male	3.38	1.68	t(1410)=3.77	0.000**
	Female	3.01	1.89		
Importance of sex in the overall life	Male	3.48	1.45	t(1410)=8.06	0.000**
	Female	2.81	1.59		

* $< .05$; ** $< .001$

Table 3. Correlation's matrix of factors of the CSFQ-14 and subjective sexual well-being items

	1	2	3	4	5	6	7	8	9	10
1. Pleasure	1									
2. Desire frequency	.605**	1								
3. Desire interest	.371**	.676**	1							
4. Arousal	.471**	.723**	.679**	1						
5. Orgasm	.425**	.484**	.453**	.631**	1					
6. Overall sexual functioning	.610**	.831**	.823**	.879**	.757**	1				
7. Satisfaction with physical pleasure	.551**	.342**	.173**	.317**	.382**	.385**	1			
8. Satisfaction with emotional pleasure	.509**	.345**	.152**	.245**	.293**	.324**	.720**	1		
9. Spending the rest of their life with their current sex life	.594**	.369**	.148**	.244**	.296**	.352**	.669**	.842**	1	
10. Importance of sex in the overall life	.461**	.453**	.318**	.397**	.351**	.462**	.300**	.758**	.695**	1

* < .05; ** < .001

**Fig. 1. Factor structure of the model of CSFQ-14 fitted to the sample of Portuguese participants ($\lambda = .40$ to $.88$; $\chi^2/df = 4.426$. CFI = $.914$. TLI = $.905$. RMSEA = $.095$)**

Regarding sexual function and subjective sexual well-being, the sample showed normative scores, which is consistent with other population-based studies [28]. Nevertheless, when comparing men and women, there were statistically significant differences in all dimensions except for “desire and interest” and “satisfaction with physical pleasure”. These differences indicate that men score higher in all areas of sexual function. These differences can possibly be explained by biological, psychological, and social reasons that invite us to reflect on gender differences in specific social contexts. Portuguese society can be considered religious and conservative and tends to generate different social norms by gender. These norms are usually more permissive for men [29], which end up conditioning sexual functionality.

An increasing amount of research emphasizes the basic similarities in the sexual responses in men and women and the vast majority concludes that significant differences exist at every stage when comparing men with women. For example, some studies have shown that men have higher levels of sexual satisfaction than women, regardless of the socio-cultural context [30]. Thus, as in the present study, the average levels of sexual functioning were generally lower in women than in men in all groups and in all aspects of subjective sexual well-being. These differences can be attributed to stereotypical socially constructed beliefs that regulate behavior and sexual attitudes by gender according to cultural norms [31]. These differences can also be ascribed to the anatomical structural and neuroanatomical differences between men and women that are still largely unexplored. As Basson [32] and Carpenter, Nathanson, and Kim [33] tell us, women seem to be more affected by emotional variables such as security or emotional closeness, and this may interfere with their thoughts, fantasies, or sexual behaviors.

5. CONCLUSION

A limitation of this study may be the adoption of a non-probabilistic sampling design. Which inevitably exerted influence on sample characteristics. However, this strategy has been commonly utilized in validation studies. The use of sufficient sample size ensures credibility in the decision-making resulting from the statistical tests. Thus, it is suggested that structural model we have presented be tested in other samples, with different clinical and socio-demographic characteristics to confirm its stability and increase its representativeness.

Like its original version, the Portuguese version of the CSFQ-14 provides a brief measure of sexual functioning adapted to Portuguese people with good construct validity and internal reliability that may be particularly useful in community practice settings. As a male and female parallel-assessment instrument, it may have an additional advantage when working with couples who report problems with sexual function related to illness or medication side effects.

Although, in general, self-report questionnaires are often considered to yield less clinically valid information than structured or semi-structured interviews, a brief self-report questionnaire on sexual functioning may well be more acceptable to many patients—and some health care providers—than a personal interview on this sensitive topic.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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The peer review history for this paper can be accessed here:
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