



# Questionnaire of Cognitive Schema Activation in Sexual Context: translation and psychometric properties of the Italian version

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## Abstract

The Questionnaire of Cognitive Schema Activation in Sexual Context (QCSASC) is a validated and widespread used measure to assess the self-schemas elicited during sexual negative events in both men and women. The current study aimed to test the psychometric characteristics of the Italian version of the QCSASC in both heterosexual men and women. After linguistic translation, the psychometric properties (internal consistency, construct and discriminant validity) were evaluated in 1038 participants (435 men and 603 women, 767 healthy and 271 clinicals complaining of sexual problems). Confirmatory factor analyses showed a not satisfactory fit of the original factor structure of the QCSASC versions. Principal component analyses were performed highlighting two new factorial structures, further validated with CFAs (“Helpless” and “Unlovable”). Cronbach’s alpha, composite reliability and average variance extracted were used as internal consistency measures. Moreover, the QCSASC showed a strong association with emotional response and sexual functioning, being able to differentiate between sexually clinical and control group. Current findings support the validity and the internal consistency of the QCSASC Italian version and allows to assess dysfunctional cognitive schemas activated when facing sexual problematic situations for both clinical and research purposes.

## Introduction

Schemas are described as core structures of the cognitive system [1]. They represent patterns of internal experience (including memories, beliefs, emotions, thoughts, scripts and stereotypes) developed during childhood and further elaborated throughout the lifetime [2]. Schemas organize incoming information giving significance to what it is perceived, and they consequently guide emotional and behavioral responses to stimuli [1]. The organization of new perceptions into schemas is fast, to better evaluate and react reaching an aim or protecting from danger (real or

perceived). Experience and environment select and reinforce the more adaptive schemas in specific circumstances [3]. They can be both functional or dysfunctional, depending on the content, the rigidity and the emotional/behavioral response associated [4]. Usually, schemas are stable and difficult to modify. Part of the cognitive therapy approach is focused on dealing with rigid schemas to reach a wider cognitive flexibility. As a matter of fact, rigid dysfunctional schemas are involved in the onset of many psychopathologies such as depression (mainly characterized by negative self-schemas) and anxiety (in which the “self” is perceived as inadequate or mistreated by the others) [5].

Although a growing body of literature underlines the importance of cognitions in sexual functioning [6–13], the specific cognitive-affective mechanisms involved in the activation and regulation of subjective and genital response are still not completely understood. When people become aware of being aroused, they cognitively elaborate the sexual stimuli and maintain the attention to them. When this process results in a positive evaluation, feelings of sexual desire and arousal can be experienced [14, 15]. According to Barlow’s model of sexual functioning (1986), during a sexual stimulation sexually healthy men and women tend to respond with positive affect and focus on sexual cues, whereas people

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with sexual problems usually focus their attention to non-relevant non-sexual stimuli and are more likely to experience negative affect [13, 16–18]. Cognitions (e.g., performance anxiety and attitude toward sex) were also included in the Basson's circular model [19], stating that the cognitive appraisal of sexual stimuli influences women's experience of subjective sexual arousal. Positive attitudes toward sex and low levels of performance anxiety may facilitate a pleasurable experience of sex and higher levels of sexual motivation in both men and women [20–23]. An inappropriate attentional focus that involves attending to negative consequences of not performing or some other issues, can inhibit the arousal through the mechanism of cognitive interference, distraction or spectating [24–26]. Thus, sexually functional and dysfunctional subjects react very differently to a variety of cognitive sets related to sex [26].

Cognitive schemas role in onset and maintenance of sexual complaints has been emphasized in the last years [27–36]. Starting from the notion of “sexual scripts” (cognitive framework responsible for planning, coordinating and expressing social conduct including sexual behavior) conceptualized by Gagnon and Simon [37], and the pioneering research of Andersen et al. [38, 39] on the “sexual self-schema”, cognitive schemas have been under active research in matter of relational issues and sexual dysfunctions [40–47]. Several studies have shown that cognitive factors (such as distraction, efficacy expectancies, causal attributions, schemas, sexual beliefs and automatic thoughts) play a significant role in determining sexual response [43].

In order to assess the influence of some dysfunctional cognitive self-schemas in heterosexual oriented sexual problematic situations, Nobre and Pinto-Gouveia created [9] and validated [43] the Questionnaire of Cognitive Schema Activation in Sexual Context (QCSASC). The questionnaire is based on Beck's theory [48, 49] in which two principal categories of negative schemas are generally related to psychopathological symptomatology: “Helpless” schema is referred to the idea of feeling personally powerless, weak, vulnerable, incompetent, inferior and without hope; “Unlovable” schema is related to the feeling of not deserving to be loved, accepted, appreciated or desired by the others. The QCSASC items are inferred from Beck taxonomy [48], counting for 28 core beliefs (14 for “Helpless” and 14 for “Unlovable”). Clinical evidences suggested that men are more used to report Helpless schemas in association with sexual dysfunctions compared with women, because they usually interpret sexual dysfunctions as a sign of personal weakness and incompetence [50–52]. Women are more used to respond with Unlovable schemas, supported by the idea that mainly social/interpersonal issues are involved in female sexual dysfunctions [53, 54]. Nobre and Pinto-Gouveia [43] confirmed only partially the two factors structure, identifying other three domains (incompetence,

self-depreciation and difference/loneliness). About genders, Nobre and Pinto-Gouveia [44] found that incompetence-related attribution to sexual failures play a significant role in both men and women. QCSASC was shown as a good measure of dysfunctional cognitive schemas compared with others available (e.g., “Schema Questionnaire” by Young and Brown [55] “Sexual Self-Schema” by Andersen and Cyranowski [38] and Andersen et al. [39], also able to distinguish between sexually clinical and healthy people. Specifically, data indicated that QCSASC total score was significantly higher ( $F_{(1,227)} = 14.63$ ;  $p < 0.001$ ) for the clinical sample ( $M = 46.76$ ) compared with controls ( $M = 35.81$ ) [43]. Moreover, they found a strong association between the identification with unsuccessful sexual episodes (sexual problems events) and higher negative self-schemas [43, 44]. A detailed description of the questionnaire is reported in “Measures”.

The QCSASC was assessed in many researches [7, 10, 41, 45, 46, 56–65]. Exploring male sexual response, Quinta-Gomes and Nobre [63, 66] found that men with lower sexual functioning scores showed a significantly higher frequency of dysfunctional schemas such as “Difference/Loneliness”, “Self-Depreciation”, “Incompetence” and “Undesirability/Rejection” in unsuccessful sexual situations. On sexual desire, Nimbi et al. [7, 56, 57] did not find any direct effect of the QCSASC domains on the levels of sexual desire in men. Regarding to females [10, 45], most of the women with sexual dysfunctions reported the activation of “Incompetence” schemas when facing unsuccessful sexual situations. For example, Viozzi et al. [64, 65] showed significant higher scores in “Incompetence”, “Helpless” and “Difference/Loneliness” subscales in a group of women claiming for sexual pain compared with healthy women. Regarding to different sexual orientations, similar pathways were observed in gay men and lesbian women using a QCSASC adapted form for homosexual orientation [46]. A moderation role of dysfunctional sexual beliefs was shown in the association between the frequency of negative sexual episodes and incompetence schemas in homosexual and heterosexual men and women [60–62].

Therefore, the assessment of dysfunctional cognitive schemas could be an important domain to be considered in the evaluation and treatment of sexual problems, and, as a result, the spreading of tools such as the QCSASC could facilitate multicultural research and increase the adoption of holistic care taking for patients. Apart from the utility to have a language translation of a questionnaire, testing the validity of a psycho-sociological measure every 10–15 years is strongly recommended in psychometry. The following study will also show data on the use of cognitive schemas in sexual context in the Italian population. Schemas are also culture dependent and related to general messages about sex and genders. We expect to confirm the

difference between men and women on the activation of different schemas (incompetence for man and unlovable/rejection for women) and the association between the presence of sexual dysfunctions and negative schemas.

## Aims

The current study aimed to explore the internal reliability, construct and discriminant validity of the QCSASC Italian versions for heterosexual men and women. The discriminant validity was tested comparing the scores of sexually clinical and healthy groups. Clinical implications are discussed.

## Methods

### Participants and procedures

A total of 1038 volunteers (435 males and 603 females) from the general population participated in the study. People were recruited with a snowball technique from the Department of Dynamic and Clinical Psychology, “Sapienza” University of Rome and by advertisements on website ([www.sessuologiaclinicaroma.it](http://www.sessuologiaclinicaroma.it)) and social networks (Facebook and LinkedIn). Participants were given a personal ID code to access a web-survey (available on “Google docs” platform) to restrict one response per person. Data were collected online, protected by private ID and encrypted password, and then downloaded and locked up in an external hard disk at the Institute of Clinical Sexology. About 13.2% of the people willing to be involved did not complete the online survey. Non-responses were allowed in the survey, but incomplete questionnaires (4.2%) were excluded from the current analyses. Participants completed an informed consent. The questionnaire administered was anonymous and no remuneration was provided. Inclusion criteria were being Italian citizens, at least 18 years old, being predominantly heterosexual (we considered the first two points measured by the seven-points Kinsey scale because the QCSASC items are heterosexually oriented) and sexually active (at least one sexual intercourse) in the last 6 months. Exclusion criteria were the presence of clinical psychopathological levels measured by SCL-90-R (Global Score Index < 1) or previous hospitalization for psychiatric diseases. For the discriminant analyses, participants were split into four subgroups (sexually healthy and clinical men and women) based on the self-declaration at four items: “During the last 6 months, did you have any sexual problem?”, “If Yes, please describe your sexual difficulty”, “How long have you been claiming this sexual problem?”, and “Did you report a significant personal distress about this problem?”. Only people declaring having at least a distressing sexual problem for 6 months or more were put in the “clinical group”. The institutional ethics committee of the \*\*\* expressed the consent to conduct the study on 21 January 2015. Data were collected from June 2015 to December 2016.

## Measures

### Sociodemographic questionnaire

Participants answered a brief sociodemographic form to collect general information such as age, sexual orientation (seven-points Kinsey scale), relationship and marital status, educational level, work status, children and sexual difficulties.

### Questionnaire of Cognitive Schema Activation in Sexual Context

QCSASC [43] is a 28-item instrument able to assesses cognitive self-schemas activated when facing sexual problematic situations. The first part of the test consists of the presentation of four sexual common episodes related to the most known sexual dysfunctions: hypoactive sexual desire disorder (HSDD), erectile disorder (ED), premature (PE) and delayed ejaculation (DE) in the male version, and HSDD, subjective arousal difficulties (SAD), anorgasmia (AO) and vaginismus (VA) in the female one. Participants are asked to indicate the frequency of these events from 1 (never happened) to 5 (happened often). Bearing in mind the most recurrent situation (if any) among these mentioned above, participants are asked to indicate the feelings usually associated to the situation from a list of 10 emotions: worry, sadness, disillusion, fear, guilt, shame, anger, hurt, pleasure and satisfaction. Still focusing on the most recurrent sexual episode endorsed, participants are asked to rate on a five-point Likert scale (“1 – completely false” to “5 – completely true”), the degree of agreement with 28 self-statements reproducing the self-schemas presented by Beck [48]. Five domains were identified in the original Portuguese version:

1. “Undesirability/Rejection” – domain reflecting self-beliefs related to social undesirability and rejection (e.g., “I’m defective”, “I’m bound to be rejected” or “I’m unwanted”);
2. “Incompetence” – dimension characterized by self-beliefs of failure, incompetence, and powerlessness (e.g., “I’m incompetent” and “I’m powerless”);
3. “Self-Depreciation” – factor represented by beliefs related to the self-worthiness and self-defective ideas (e.g., “I’m bad” and “I’m unlikable”);
4. “Difference/Loneliness” – dimension characterized by a belief of being different and lonely (e.g., “I’m different” and “I’m bound to be alone”);
5. “Helpless” – domain represented by beliefs of being helpless and needy (e.g., “I’m needy” and “I’m helpless”).

Specific indexes for the five domains and for the total scale can be calculated through the sum of schema items (higher scores reflecting higher negative schema activation).

The five-factor structure found by Nobre and Pinto-Gouveia [43] was different from the two-factor model (Helpless and Unlovable) proposed by Beck [48]. Anyhow, Factor 1 (Undesirability/Rejection) and Factor 2 (Incompetence) represent the two broad domains of unlovability and helplessness [43]. The original measure presented good reliability and validity, and can discriminate between sexually clinical and healthy participants.

### International index of erectile function (IIEF)

IIEF [67] is a widely used, multidimensional 15-item instrument for the evaluation of male sexual function. A general index of sexual function and five specific dimensions can be calculated: erectile function, orgasmic function, sexual desire, satisfaction with intercourse and overall satisfaction. Higher scores indicate better sexual functioning. Psychometric studies reported good reliability, validity and the ability to discriminate between sexually clinical and healthy people. The Cronbach's alpha values for this measure in the current study ranged from 0.87 (sexual desire) to 0.91 (overall satisfaction).

### Female sexual function index (FSFI)

FSFI [68] is a well-known 19-item instrument providing detailed information on the general sexual functioning and six specific dimensions: sexual desire, sexual arousal, lubrication, orgasm, sexual satisfaction and sexual pain. Higher scores indicate better sexual functioning. The measure presents acceptable test–retest reliability, internal consistency, validity and the ability to discriminate between sexually clinical and healthy people. The Cronbach's alpha values for this measure in the current study ranged from 0.82 (sexual arousal) to 0.90 (sexual pain).

### Linguistic validation

The two original versions of QCSASC were translated into Italian by the authors. The translation was controlled by a professional supervisor and then translated back into English by a mother-tongue language expert with a specific scientific expertise. The English version was checked with the original questionnaire to avoid main significance bias and tested in a small group of 20 men and 20 women to identify comprehension problems. Questionnaires and scoring are reported in (Appendix A, B and C (Table 9)).

### Statistical analysis

The psychometric properties of the Italian version of the QCSASC were assessed by several statistical tests following

the guidelines of Sakaluk and Short [69]. Construct validity was estimated at item level with Principal Component Analysis (PCA) to find the underlying constructs of the questionnaires. In this phase, a direct oblimin rotation was used. After reaching two satisfying models, they were organized as Path Diagrams and tested with Confirmatory Factor Analysis (CFA). Composite reliability (CR) and average variance extracted (AVE) values were examined. Internal consistency was assessed using Cronbach's alpha. Pearson correlations, one-way Multivariate Analyses of Covariance (MANCOVAs) and Mann–Whitney *U*-test were used to analyze associations with affective response and differences between clinical and sexually healthy men and women. Age and educational level were controlled considering them as covariates in the MANCOVAs because of their well-established direct association with sexual problems (higher in older people) and dysfunctional schema activation (higher in lower education). Two-tailed results were considered. PCAs, Cronbach's alphas, Pearson correlations and MANCOVAs and Mann-Whitney *U*-test were performed using IBM SPSS v. 23.0; CFAs were tested with IBM SPSS Amos v.22 (SPSS Inc., Chicago, IL, USA).

## Results

Participants mean age was  $30.02 \pm 9.42$  (range 18–76) and sociodemographic characteristics of male and female groups are reported in Table 1.

### Validity and reliability of the male QCSASC

First, CFA was assessed to verify the consistency of the original structure of the QCSASC (5 factors, 28 items) [43]. Maximum likelihood (ML) estimation method was used following Tabachnick and Fidell [70]. CFA reported non-satisfactory model fit, comparison and parsimony results ( $\chi^2 = 2825.41$ ,  $df = 292$ , root mean square error of approximation (RMSEA) = 0.108, goodness of fit index (GFI) = 0.75, normed fit index (NFI) = 0.82, comparative fit index (CFI) = 0.85). Moreover, data showed very high correlations between some of the factors ( $r > 0.90$ ). For these reasons, PCAs were conducted on the 28 items of the Italian version to explore the most representative factorial structure using a direct oblimin rotation. Kaiser-Meyer-Olkin (KMO) value of 0.96 supported the adequacy of the sample. The significance of Bartlett's test of sphericity ( $\chi^2 = 10,573.02$ ;  $p < 0.001$ ) meant that correlations between items were largely enough to conduct a PCA. PCAs were run following the Monte Carlo parallel analysis. This procedure identified two components accounting for 61.42% of total variance. Item selection was based on loadings higher than 0.4 on the respective factors. Table 2 shows the

**Table 1** Sociodemographic characteristics of the participants ( $n = 1038$ )

	Men ( $n=435$ )	Women ( $n=603$ )
	Mean $\pm$ SD (min–max)	Mean $\pm$ SD (min–max)
Age	31.32 $\pm$ 10.57 (18–76)	29.08 $\pm$ 8.59 (18–72)
	<b><i>n</i> (%)</b>	<b><i>n</i> (%)</b>
Marital status		
Unmarried	354 (81.4%)	509 (84.4%)
Married	69 (15.8%)	76 (12.6%)
Divorced	12 (2.8%)	18 (3.0%)
Relationship status		
Single	165 (37.9%)	187 (31.0%)
No cohabitant couple	155 (35.7%)	256 (42.5%)
Cohabitant couple	115 (26.4%)	160 (26.5%)
Children		
No	376 (86.4%)	536 (88.9%)
Yes	59 (13.6%)	67 (11.1%)
Educational level		
Middle school	16 (3.7%)	12 (2.0%)
High school	161 (37.0%)	148 (24.5%)
Degree or higher	258 (59.3%)	443 (73.5%)
Work status		
Employed	221 (50.8%)	236 (39.1%)
Unemployed	33 (7.6%)	48 (8.0%)
Student	174 (40.0%)	316 (52.4%)
Retired	7 (1.6%)	3 (0.5%)
Sexual problems (in the last 6 months) declared		
No sexual problems declared	311 (71.5%)	456 (75.6%)
At least one sexual problem declared	124 (28.5%)	147 (24.4%)

component loadings after rotation (pattern matrix) for each item included. Intercorrelation between factors was statistically significant ( $r = 0.76$ ;  $p < 0.001$ ).

CFA was conducted on the two-factor solution (28 items) measuring indices of model fit, comparison and parsimony. ML estimation method was used following Tabachnick and Fidell [70]. To increase the model fit, pathways between error variance for items inside the same factor were inserted. Chi-square for the model (Fig. 1) was significant ( $\chi^2 = 572.66$ ;  $df = 253$ ;  $p < 0.001$ ). RMSEA with 90% confidence intervals was 0.054 (CI = 0.048–0.060). Other fit indices evaluated included GFI = 0.92, NFI = 0.95 and CFI = 0.97. Acceptable fit was reached in all measures except for chi-square because of its sensitivity to sample size [71, 72]. Regression coefficients for this model ranged from 0.51 to 0.85 and were all statistically significant ( $p < 0.001$ ).

**Table 2** Male QCSASC PCA with direct oblimin rotation ( $n = 435$ )

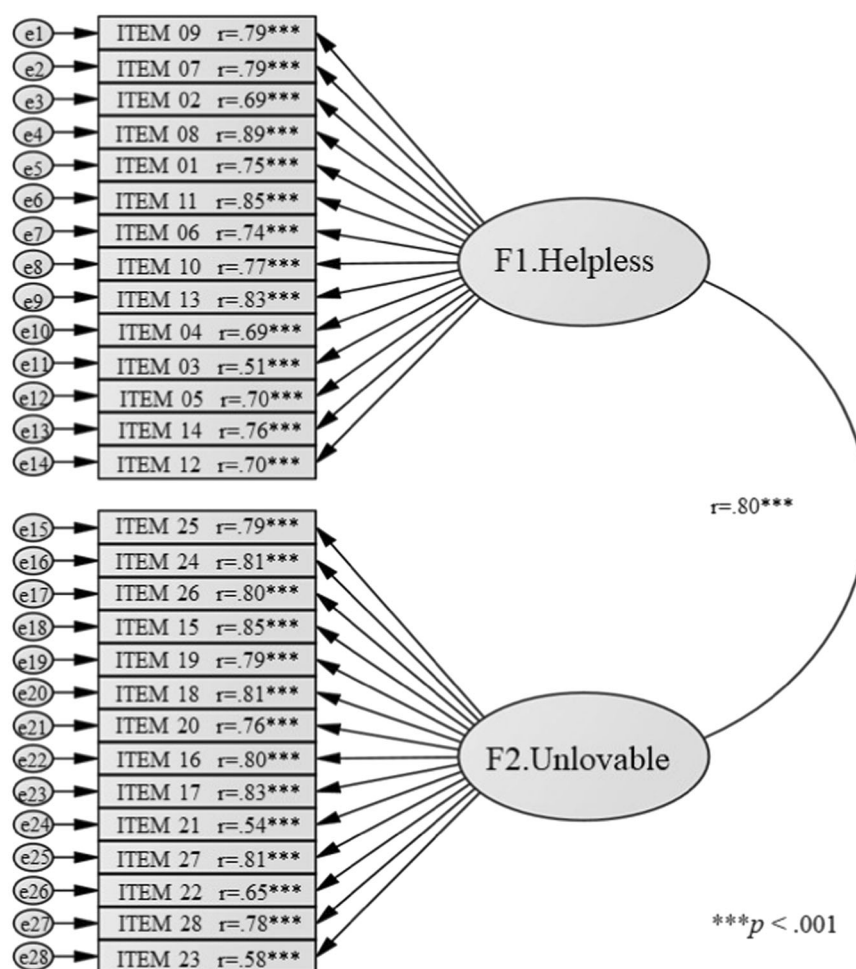
QCSASC items for men	Factors	
	1	2
Factor 1. Helpless		
09. I'm ineffective	0.908	
07. I'm trapped	0.863	
02. I'm powerless	0.830	
08. I'm inadequate	0.825	
01. I'm helpless	0.823	
11. I'm a failure	0.794	
06. I'm needy	0.775	
10. I'm incompetent	0.705	
13. I'm defective (less than others)	0.622	
04. I'm weak	0.575	
03. I'm out of control	0.568	
05. I'm vulnerable	0.545	
14. I'm not good enough (achieve)	0.503	
12. I'm disrespected	0.439	
Factor 2. Unlovable		
25. I'm not good enough (not loved)		0.904
24. I'm defective (not loved)		0.877
26. I'm bound to be rejected		0.861
15. I'm unlovable		0.809
19. I'm unwanted		0.805
18. I'm unattractive		0.798
20. I'm uncared for		0.781
16. I'm unlikable		0.727
17. I'm undesirable		0.710
21. I'm bad		0.708
27. I'm bound to be abandoned		0.673
22. I'm unworthy		0.666
28. I'm bound to be alone		0.636
23. I'm different		0.406

Internal consistency was assessed using Cronbach's alpha for each factor and total score. The Cronbach's alpha coefficients were satisfactory (Helpless = 0.95; Unlovable = 0.95; QCSASC Total Score = 0.97). The CR for each construct is above the expected thresholds of 0.70 (Helpless = 0.93; Unlovable = 0.95; Total Score = 0.94). The AVE for each construct is above the expected thresholds of 0.50 (Helpless = 0.51; Unlovable = 0.56; Total Score = 0.53).

### Validity and reliability of the female QCSASC

CFA was assessed to verify the consistency of the original structure of the QCSASC (5 factors, 28 items) [43]. ML estimation method was used following Tabachnick and Fidell [70]. CFA reported non-satisfactory model fit,

**Fig. 1** CFA of QCSASC male version



comparison and parsimony results ( $\chi^2 = 2894.31$ ,  $df = 292$ ,  $RMSEA = 0.121$ ,  $GFI = 0.71$ ,  $NFI = 0.80$ ,  $CFI = 0.81$ ). Moreover, data showed very high correlations between some of the factors ( $r > 0.90$ ). For these reasons, PCAs were conducted on the 28 items of the Italian version using a direct oblimin rotation. KMO value of 0.95 supported the adequacy of the sample and the significance of Bartlett's test of sphericity ( $\chi^2 = 15,170.75$ ;  $p < 0.001$ ) validated the PCA results. PCAs were run following the Monte Carlo parallel analysis. The most suitable and interpretable PCA was identified in two components, which accounted for 60.55% of total variance. Item selection was based on loadings higher than 0.4 on the respective factors. Table 3 shows the component loadings after rotation (pattern matrix) for each item included. Intercorrelation between factors was significant ( $r = 0.78$ ;  $p < 0.001$ ).

CFA was conducted on the two-factor solution (28 items) measuring indices of model fit, comparison and parsimony. ML estimation method was used following Tabachnick and Fidell [70]. To increase the model fit, pathways between error variance for items inside the same factor were inserted. Chi-square for the model (Fig. 2) was

significant ( $\chi^2 = 696.35$ ;  $df = 228$ ;  $p < 0.001$ ). RMSEA with 90% confidence intervals was 0.058 (CI = 0.053–0.063). Other fit indices evaluated were  $GFI = 0.93$ ,  $NFI = 0.96$  and  $CFI = 0.97$ . Acceptable fit was reached in all measures except for chi-square because of its sensitivity to sample size [71, 72]. Regression coefficients for this model ranged from 0.52 to 0.89 and were all statistically significant ( $p < 0.001$ ).

Internal consistency was assessed using Cronbach's alpha for both factors and total score. The Cronbach's alpha coefficients were satisfactory (Helpless = 0.94; Unlovable = 0.95; QCSASC Total Score = 0.97). The CR for each construct is above the expected thresholds of 0.70 (Helpless = 0.94; Unlovable = 0.95; Total Score = 0.95). The AVE for each construct is above the expected thresholds of 0.50 (Helpless = 0.52; Unlovable = 0.57; Total Score = 0.55).

### Discriminant validity

In order to analyze discriminant validity, we used one-way MANCOVAs (controlling for age and educational level)

**Table 3** Female QCSASC PCA with direct oblimin rotation ( $n = 603$ )

QCSASC items for women	Factors	
	1	2
Factor 1. Helpless		
01. I'm helpless	0.900	
07. I'm trapped	0.823	
06. I'm needy	0.805	
09. I'm ineffective	0.800	
02. I'm powerless	0.798	
11. I'm a failure	0.767	
08. I'm inadequate	0.745	
10. I'm incompetent	0.739	
04. I'm weak	0.714	
13. I'm defective (less than others)	0.645	
05. I'm vulnerable	0.631	
03. I'm out of control	0.590	
14. I'm not good enough (achieve)	0.541	
12. I'm disrespected	0.434	
Factor 2. Unlovable		
26. I'm bound to be rejected		0.937
27. I'm bound to be abandoned		0.909
25. I'm not good enough (not loved)		0.906
28. I'm bound to be alone		0.894
19. I'm unwanted		0.826
24. I'm defective (not loved)		0.815
20. I'm uncared for		0.791
16. I'm unlikable		0.673
15. I'm unlovable		0.653
17. I'm undesirable		0.646
18. I'm unattractive		0.633
22. I'm unworthy		0.622
21. I'm bad		0.591
23. I'm different		0.546

between the clinical (participants declaring having sexual problems in the last 6 months) and the control group (sexually healthy participants) (Table 4). We expected that the clinical group would present higher scores on both male and female QCSASC scales, supporting the hypothesis that the questionnaires evaluate clusters of thoughts, which are conceptualized as vulnerability factors for the development or maintenance of sexual dysfunctions. The models were significant for both males ( $\lambda = 0.83$ ;  $p < 0.001$ ) and females ( $\lambda = 0.88$ ;  $p < 0.001$ ). Results showed that the clinical group presented higher significant scores on all domains of the QCSASC compared with controls in both men and women.

As the QCSASC subscales were not normally distributed, we also tested for clinical and control differences employing nonparametric statistical analyses. In particular, men and women distributions were

compared using the Mann–Whitney  $U$ -test. As reported in Table 5, results confirmed that control and clinical participants were significantly different in each domain, with clinical groups reporting higher dysfunctional schema activation scores.

### Associations between sexual situations, emotions and cognitive schemas

The most reported sexual complaints in the sexually healthy group were PE (27.4%) and DE (26.4%) for man and AO (27.1%) and HSDD (16.7%) for women. In the clinical group, the most reported complaints were ED (48.4%) and PE (41.9%) for males and VA (50.3%) and SAD (47.6%) for females. Correlations between sexual situations and emotions are showed in Table 6. For men, the identification with sexual dysfunctions was more often associated with the endorsement of sadness, disillusion, fear, guilt, pleasure and satisfaction. Women more often reported the association with worry, sadness, disillusion, fear and shame. When facing sexual problems, both men and women were characterized by negative emotional response: in particular men reported less positive feelings (e.g., pleasure and satisfaction) and women endorsed more negative emotions (e.g., disillusion and sadness).

With regard to the associations between sexual situations and cognitive schemas (Table 7), the analysis showed significant correlations in all domains for both genders, in particular for arousal and orgasm complaints.

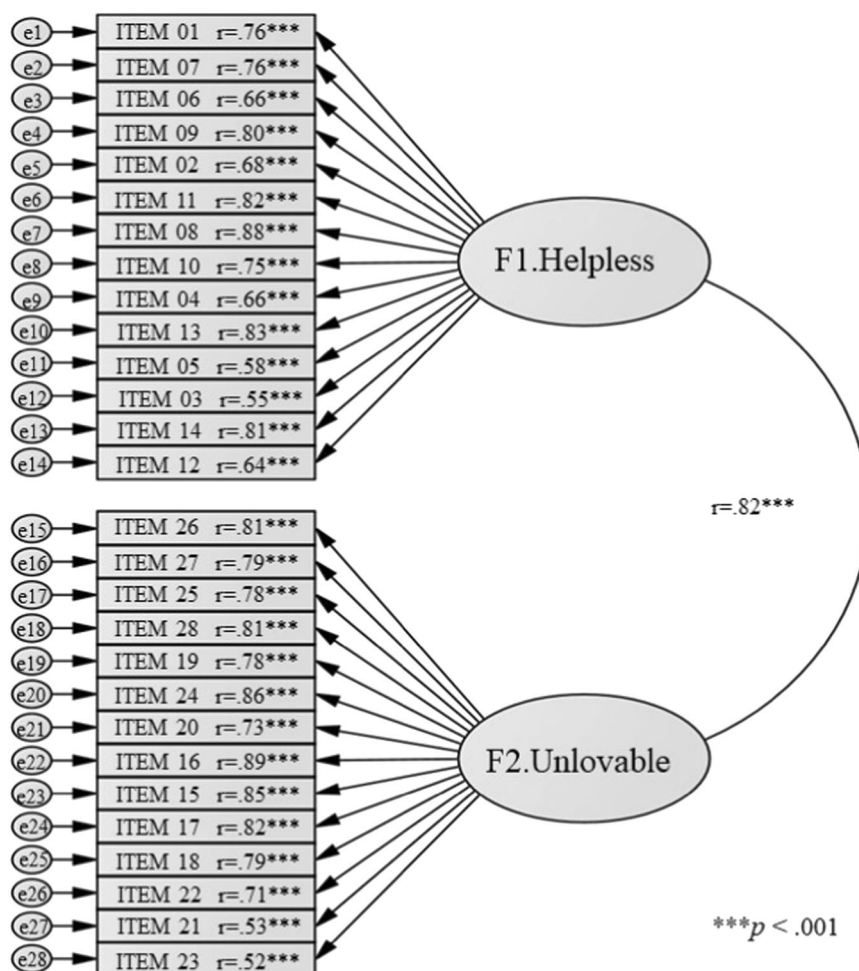
### Associations between cognitive schemas and sexual function

It was also verified if the scores of the Italian QCSASC were directly correlated to sexual function. All statistically significant results (Table 8) were found, showing that a major endorsement of Helpless and Unlovable self-schemas is associated with worse sexual functioning in all areas for both genders.

## Discussion

The main purpose of the current study was to investigate the psychometric properties of the Italian version of the QCSASC. After linguistic translation, CFAs were run, failing to confirm the original questionnaire structure in both males and females [43]. The unsatisfactory model fit suggested that a new structure was needed to better explain data. For this reason, PCAs were necessary to find a new structure for both genders. To be more accurate, the Monte Carlo parallel analyses was performed. The best structures were identified in two components, identical for males and

**Fig. 2** CFA of QCSASC female version



**Table 4** One-way MANCOVAs between clinical and control groups

QCSASC	Male clinical group (n=124) (Mean ± SD)	Male control group (n=311) (Mean ± SD)	F (1,430)	η <sup>2</sup>
Helpless	29.13 ± 11.24	19.99 ± 8.40	80.19***	0.16
Unlovable	24.89 ± 10.94	20.09 ± 8.70	24.98***	0.06
Total score	54.02 ± 20.55	40.08 ± 16.14	55.24***	0.11

QCSASC	Female clinical group (n = 147) (Mean ± SD)	Female control group (n = 456) (Mean ± SD)	F (1, 599)	η <sup>2</sup>
Helpless	27.18 ± 10.88	19.71 ± 8.37	74.01***	0.11
Unlovable	26.59 ± 11.14	21.41 ± 9.93	26.71***	0.04
Total score	53.77 ± 20.65	41.13 ± 17.25	51.94***	0.08

Covariates = age and educational level

\*\*\*p < 0.001

females. Factors found reflected the original structure suggested by Beck [48]: “Helpless” (characterized by the idea of one self as weak and hopeless) and “Unlovable”

**Table 5** Test of Mann–Whitney U for control and clinical groups

Male groups		
Dependent variables	Mann–Whitney U	z
Helpless	9027.50	−8.78***
Unlovable	13,490.00	−5.04***
Total score	10,469.50	−7.50***

Female groups		
Dependent variables	Mann–Whitney U	z
Helpless	19,527.50	−7.71***
Unlovable	22,772.50	−5.95***
Total score	20,343.00	−7.21***

Note: \*\*\*p < 0.001 (two-tailed)

(referred to beliefs like being undesirable and unworthy). CFAs confirmed the good fit of the new versions: even if chi-square was significant, other indices reported (RMSEA, GFI, NFI and CFI) were satisfying on both versions. The final versions counted 28 items for both



**Table 6** Pearson correlations of sexual situations and emotions endorsed ( $n = 1038$ )

Emotions	Male				Female			
	HSDD	ED	PE	DE	HSDD	SAD	AO	VA
Worry	0.036	0.170**	0.055	0.041	0.175***	0.181***	-0.009	0.129*
Sadness	0.213***	0.211***	0.042	0.081	0.198***	0.235***	0.152**	0.216***
Disillusion	0.057	0.161**	0.239***	0.026	0.239***	0.322***	0.154**	0.156**
Fear	0.141*	0.093	0.142*	0.073	-0.003	0.151**	0.119*	0.124*
Guilt	0.133*	0.111	0.130*	0.165**	0.196***	0.211***	0.074	0.075
Shame	0.108	0.108	0.100	0.089	0.069	0.157**	0.110*	0.138**
Anger	0.065	0.187**	0.090	0.095	0.090	0.277***	0.070	0.221***
Hurt	0.021	0.066	-0.019	0.088	0.062	0.141**	0.084	0.062
Pleasure	-0.242***	-0.313***	-0.200***	-0.162**	-0.146**	-0.184***	-0.057	-0.109*
Satisfaction	-0.131*	-0.261***	-0.221***	-0.088	-0.093	-0.144**	-0.105*	-0.086

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ **Table 7** Pearson correlations of sexual situations and cognitive schemas ( $n = 1038$ )

QCSASC	Man				Women			
	HSDD	ED	PE	DE	HSDD	SAD	AO	VA
Helpless	0.230***	0.497***	0.307***	0.175***	0.181***	0.376***	0.386***	0.302***
Unlovable	0.219***	0.281***	0.218***	0.101*	0.130**	0.319***	0.207***	0.210***
Total score	0.239***	0.417***	0.281***	0.148**	0.164***	0.367***	0.310***	0.269***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ **Table 8** Pearson correlations of sexual functioning and cognitive schemas

QCSASC	IIEF – male sexual functioning						
	Erectile function	Orgasmic function	Desire function	Intercourse satisfaction	Overall satisfaction	IIEF total score	
Helpless	-0.252***	-0.096*	-0.202***	-0.201***	-0.318***	-0.256***	
Unlovable	-0.264***	-0.128**	-0.145**	-0.253***	-0.306***	-0.274***	
Total score	-0.274***	-0.119*	-0.186***	-0.241***	-0.332***	-0.282***	
QCSASC	FSFI – female sexual functioning						
	Desire function	Arousal function	Lubrication function	Orgasm function	Satisfaction	Pain	FSFI total score
Helpless	-0.261***	-0.310***	-0.281***	-0.314***	-0.340***	-0.328***	-0.357***
Unlovable	-0.231***	-0.336***	-0.306***	-0.305***	-0.396***	-0.361***	-0.379***
Total score	-0.260***	-0.343***	-0.312***	-0.328***	-0.392***	-0.366***	-0.391***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ 

genders, explaining 61.42 and 60.55% of variance for males and females, respectively. Moreover, internal consistency showed good results reporting satisfactory Cronbach's alpha, CR and AVE values. Overall, the Italian version of QCSASC demonstrated good psychometric properties.

The differences with the original version need to be further discussed. The original solution was not supported [43] and two new structures consistent with Beck's dysfunctional schemas theory [48, 49] were reported. "Helpless" and

"Unlovable" factors describe two of the main sexual self-schemas, which clinicians could observe and face in sexual therapy. Part of integrated sexual approach is focused on replacing rigid schemas with more flexible cognitions about sexuality, allowing the patient to have a more functional reaction to adverse sexual events [42, 47, 73].

The modification of item/factor structure is common in PCAs and it could depend on both statistical and cultural reasons. Statistically, in the validation study on a different sample, some minor fluctuations and intersections between

similar factors are possible. This happens more frequently when the subscales are closely connected (as in this case) or when the sample size is small. Culturally, the background in which the original QCSASC has been validated should be considered: some minor cultural differences could be identified within Italy and Portugal (both referring to the “Mediterranean – Catholic background”) [74]. Time could be an important variable in play: in fact, the original questionnaire was developed in 2000 and validated in 2009 [9, 43]. Psychometry is strongly recommended to update the validation studies of a psychosociological measure every 10–15 years: the behavior and the beliefs about sexuality may change a lot, and probably repeating the psychometric study in Portugal today could show a new QCSASC structure, closer to the one presented in this paper.

The findings for cognitive schemas, emotions and sexual functioning seem to support the biopsychosocial model, which is focused on the integration of different aspects of sexuality for a holistic understanding [73]. Self-schemas elicited in sexual problematic situations were associated with more negative emotions in women and fewer positive emotions in men. Women and men reported to use both Helpless and Unlovable self-schemas facing negative sexual situations. Contrary to the literature supporting a gender difference in sexual schema activation [50–54], similar scores on schemas referring to feeling Helpless and Unlovable in men and women were also noticed by Nobre and Pinto-Gouveia [43]. These authors suggested that the traditional “double standard” (in which men’s sexuality is mostly performance related if compared with women, characterized by love and commitment) seems not to influence directly the self-schemas activation. Another possible explanation is that women nowadays could be more focused on performance and men on relationship than before. Moreover, the use of schemas presented was correlated with lower sexual functioning in both genders. This is consistent with previous studies [10, 41, 43–46, 58–65] and could suggest that the QCSASC may detect two variables that have a role on the development and maintenance of sexual dysfunctions. Its use could be useful to facilitate the assessment and evaluate the psychological treatment.

The research presented has some limitations. First, participants were selected with a “snowball” technique and therefore is not possible to generalize the results for the Italian population. Second, test–retest reliability, convergent, divergent, concurrent or discriminant validity were not assessed in this study. For these reasons, further studies should be conducted to replicate current findings and extend the psychometric understanding of the QCSASC. Moreover, next studies should also consider extending the evaluation of the schemas activated in other sexual contexts: the QCSASC reports only some of the main negative events

that can occur in heterosexual sexual situations, but the variability of cases of sexual problems is much wider (e.g., pain during intercourses, hypersexuality, persistent genital arousal, different sexual orientations, etc.). Multicultural studies about the interaction between cognition, affection and sexual response to explore differences and similarities between countries are also needed. In general, our results seem to validate the idea that cognitive schemas activated in sexual negative events could have a role on the onset and on the maintenance of sexual dysfunctions.

## Conclusions

The present study tries to extend the psychometric knowledge of the QCSASC on an Italian group. Results seem to be promising, but they should be deepened by further studies. The use of the QCSASC could be recommended in both clinical and research field. The benefits for a clinician, as well as for a researcher, may be diverse: firstly, this psychometric tool may help to better explain the nature of the sexual dysfunctions etiology (onset and maintenance); second, it may give important cues to the clinician to cope with for the resolution of a sexual symptom and it may help to verify the efficacy of a sexual therapy. Therapists should deal with the negative cognitive schemas activated when facing unsuccessful sexual episodes and give the possibility to the patient to understand and to break the cycle (negative thoughts, anxiety response, symptom and distress).

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## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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