



# From Prevention to Promotion in Women's Sexual Self-Perceptions of Efficacy: The Sexual Self-Efficacy Questionnaire

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## Abstract

**Introduction** Available sexual self-efficacy (SSE) measures are mostly focused on self-perceptions of efficacy regarding engaging in specific preventive sexual behaviors, and do not include beliefs and expectations regarding behaviors aimed at achieving a more agentic and pleasurable sexual health in positive terms, nor do they consider the varied sexual orientations or relationship options.

**Methods** This self-report-based, cross-sectional study sought to validate a new instrument to assess SSE for both preventive and health promotion sexual behaviors: the Sexual Self-Efficacy Questionnaire (SSEQ), among a non-probabilistic sample of 1080 women aged 18–50 years old. Data were gathered from January 2015 to December 2021. For validation purposes, reliability, factorial structure, and convergent construct validity with other well-known instruments measuring SSE were analyzed.

**Results** Exploratory and confirmatory factor analyses revealed a bifactorial structure of the SSEQ, with 10 items in the factor *SSE for health-promotive actions* and 10 items in the factor *SSE for preventive actions*. Furthermore, the SSEQ showed good reliability and convergent validity.

**Conclusions** Our findings support the use of the SSEQ as an alternative tool with appropriate psychometric characteristics that assesses cognitions related to achieving a healthier sexuality through the performance of preventive behaviors aimed at avoiding potentially negative outcomes and those promotive actions leading to more gratifying consequences for women.

**Policy Implications** The SSEQ can be used in research, educative, and clinical contexts to develop interventions to improve women's behavioral competences and perceived confidence in their skills to achieve a healthier and more pleasurable and agentic sexuality.

**Keywords** Sexual self-efficacy · Women's sexuality · Sexual well-being · Sexual health promotion · Validation

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## Introduction

Self-efficacy, people's beliefs regarding their ability to successfully perform an action to achieve desired consequences (Bandura, 1977), is a strong predictor of behaviors, including those leading to health-related outcomes (Leman et al., 2021). Sexual self-efficacy (SSE) refers to the confidence in one's own ability to make decisions and actions regarding sexuality — particularly when faced with barriers and obstacles — including avoiding high-risk sexual behaviors (e.g., having sex after alcohol intake) and performing healthy protective and promotive behaviors to prevent undesired outcomes (e.g., using a condom) and to enhance positive aspects, such as sexual satisfaction (e.g., communicating personal desires), respectively. SSE plays a significant role in people's control over their sexual life (Assarzadeh

et al., 2019), as it is associated with behaviors and outcomes related to a healthy sexuality, e.g., sexual communication (Pariera, 2018), non-risky sexual behaviors (Van Campen & Romero, 2012), and sexual satisfaction (De Guzman, 2022). Notwithstanding the above, research regarding the relations between SSE and sexual health promotion or sexual satisfaction, in positive terms, is scarce, as it has focused on the relation between (lack of) SSE and risky sexual behaviors such as unprotected sex, having multiple sexual partners, alcohol/drug use or an early sexual debut (e.g., Guzmán & Dello Stritto, 2012; Penner et al., 2019; Viseskul et al., 2015), and their relationship with undesired outcomes such as unplanned/unwanted pregnancy and sexually transmitted diseases (STDs). Additionally, women's sexuality has traditionally involved more negative expectations, social roles, associations, and outcomes than male sexuality, thus producing fewer opportunities to experience it positively (Conley & Klein, 2022). As such, research and intervention approaches have been mostly focused on dysfunctions and the medicalization of women's sexuality, "a process of establishing universal norms and then declaring all variations disordered and in need of treatment" (Tiefer, 2003, p. 35); however, a critical position is increasingly being adopted; nonetheless, research on sexual health topics is usually based on general and stereotyped statements (Klein et al., 2022), not taking into account the cultural, social, and psychological distinctions between males', females', and non-binary persons' sexuality.

Most of the tools used to date to assess SSE are ad hoc instruments (e.g., Carlson & Soller, 2019; Closson et al., 2018; Ferrer-Urbina et al., 2019) or measures that include SSE as a component of a broader construct (e.g., self-conceptions, Bond et al., 2020). Most of them have been created to measure self-efficacy regarding preventive sexual behaviors, such as the Self-efficacy Instrument for Protective Sexual Behaviors (SEA) (Kasen et al., 1992), the Self-Efficacy Instrument for Condom Negotiation and Condom Use (Pratte et al., 2010), the Self-Efficacy Subscale for Condom Use (CPS-AE) (Ballester et al., 2007, 2013), the Condom Use Self-Efficacy Scale (CUSES) (Brafford & Beck, 1991), the Contraceptive Self-Efficacy Scale (CSE) (Levinson & Beamer, 1998), and the Sexual Risk Behavior Beliefs and Self-Efficacy Scales (SRBBS) (Basen-Engquist et al., 1998). Appropriate psychometric properties have been reported for all these measures (Fisher et al., 1998; Milhausen et al., 2020).

There are many similarities between these tools. Most of them were created to measure male condom use during heterosexual dyadic relationships as a preventive sexual behavior: e.g., negotiation of its use, "Insist on using a condom even if your partner does not want to use it" (SEA). They also assess the ability to reject having sexual intercourse in condom-use-related situations: e.g., "If my boyfriend and I are getting "turned-on" sexually and I don't really want to have sexual intercourse, I can easily stop things so that we don't have intercourse" (CSE), or the sureness to be able to purchase condoms: e.g., "Be embarrassed to buy a condom" (Pratte et al., 2010). The CPS-AE includes the efficacy expectations to use other contraceptive methods (hormonal pills, diaphragm...), and the SRBBS also includes other types of beliefs, such as abstinence (e.g., "Most of my friends believe people of my age should wait until they are older before they have sex").

All the above-mentioned measures include situations in which SSE is important to practice preventive behaviors in different sexual situations, but none of them include other behaviors besides the use of condoms or birth control for intercourse or rejection/management of sexual activities, nor do they include any sexual behavior specifically aimed at improving sexual satisfaction or a healthier sexuality (e.g., the confidence to perform pleasurable sexual behaviors or new techniques beyond intercourse, or one's own ability to talk with the partner(s) about desired sexual behaviors, feelings, satisfactory experiences, etc.). Also, neither considers other sexual orientations except for heterosexual dyadic relations, and are always centered around intercourse.

Due to the limitations of the existing tools for assessing efficacy expectations surrounding a holistic, agentic, healthier, and positively viewed sexuality, this study aimed to validate a comprehensive measure of SSE, considering self-efficacy expectations to engage not only in preventive sexual behaviors but also in actions that promote sexual health and satisfaction (e.g., using fantasies, communication of desires, building personal strengths). In doing this, we carefully considered women's and non-binary gender individuals' perspective and inclusive language to extend the use of the measure to a broader population in terms of sexual identities and options, activities, and methods (e.g., protective aids), not limiting its boundaries to dyadic coital and heterosexual relationships. We thus developed an extensive self-report of SSE, the Sexual Self-Efficacy Questionnaire (SSEQ), and explored its reliability and validity in a wide sample of Spanish women.

## Materials and Methods

### Participants

An initial sample ( $N=1877$ ) was obtained through non-probabilistic sampling. Eleven cases were removed according to methodological criteria (i.e., test cases, duplicates). Additionally, 512 individuals left the main measures of the study unanswered, and 274 were discarded for not meeting the inclusion criteria, i.e., being of self-identified female gender, 18–50 years old, resident in Spain for at least 1 year (being either Spanish or foreign), and able to read and write in Spanish. The rationale for selecting women between 18 (legal age of majority) and 50 years of age is that these are the cohorts that have experienced the political, cultural, and social developments resulting from the establishment of democracy in Spain, and they were not peri- or post-menopausal women (Dam et al., 2019; Larroy et al., 2020), key factors influencing females' sexuality. Exclusion criteria additionally included not suffering from any severe physical or mental disease that would impede participation or introduce bias in responses.

Finally, 1080 women aged 18–50 years ( $M=24.48$ ,  $SD=6.11$ ) participated. Of these, 1050 (97.2%) were Spanish citizens who were born and had lived in Spain for their whole lives, whereas 30 were European (1.8%), Latin-American (0.8%), or Asian (0.2%); of these, 94.3% had lived in Spain all their lives, 1.8% for more than 20 years, 2.5% between 11 and 20 years, 0.6% between 6 and 10 years, and only 0.8% had lived in Spain between 1 and 5 years. Thus, the foreigners included in the sample reported having lived in Spain their whole or most part of their lives (98.6%), and cultural variability influences were expected to be minimal. Irrespective of their gender orientation, 80.3% considered themselves heterosexual, 13% bisexual, 3.1% lesbian, and 3.4% had not yet defined their sexual orientation. Additionally, 68.9% had a sexual partner(s) at the time of the study. Table 1 shows other participants' sociodemographic characteristics. Further details on the participants are detailed elsewhere (Ogallar-Blanco et al., 2017).

### Measure

We developed a measure of SSE based on the above-commented and other self-reports and new items specifically aimed at measuring beliefs related to the perceived confidence in performing protective, healthy, and satisfaction-oriented sexual behaviors (e.g., using sexual fantasies, communicating desired new activities). Firstly, we developed an initial item-pool structured in two areas: the ability to talk with a partner(s) (i.e., communication area) and the ability to perform certain

**Table 1** Socio-demographic and personal data ( $N=1080$ )

	<i>N</i>	%
Educational level		
Uneducated	2	.2
Primary school	12	1.1
Secondary school	23	2.1
Professional training	53	4.9
University	862	79.8
University postgraduate (Master/PhD)	128	11.9
Cohabitation		
Alone	56	5.2
With friends	375	34.7
With partner	143	14.8
With family of origin (parents, siblings...)	444	39.6
With family of procreation (offspring)	57	5.2
Student residence	5	.5
Number of sporadic sexual partners		
None	487	45.1
1 to 5	315	29.2
5 to 10	144	13.3
10 to 20	104	9.6
More than 20	30	2.8
Number of committed sexual partners		
None	368	34.1
1 to 5	621	57.5
5 to 10	73	6.7
10 to 20	16	1.5
More than 20	2	.2
Sexual/romantic partner at the time of the study		
In a relationship for less than 1 year	178	16.5
In a relationship between 1 and 5 years	322	29.9
In a relationship for more than 5 years	243	22.5
Not in a relationship or with no sexual partner(s)	336	31.1

sexual behaviors, including preventive ones and, specially, those aimed at improving well-being, joy, and pleasure or sexual satisfaction (i.e., actions area). These items were developed based on an in-depth revision of the literature and measures of SSE, information regarding sexuality obtained through previous qualitative and quantitative research of the authors (e.g., Ogallar-Blanco et al., 2017), and authors' experience in clinical practice. This first instrument was reviewed by a Delphi group of experts participating in a parent study where a complete survey on sexuality was included. Based on their feedback, some items were reformulated or eliminated. After this, it was applied to a pilot sample of 20 healthy women for its revision and correction. The resulting reviewed version was used to create the Sexual Self-Efficacy Questionnaire (SSEQ) (see Table 2; see Appendix for the final version). This version included 40 items (10 for the communication area, 30 for the actions area) assessed on a Likert-type scale (0 = very unconfident; 4 = very confident). Higher agreement responses indicate greater efficacy expectations in conducting such behavior.

**Table 2** Oblique rotated factor loadings for the SSEQ items in the EFA

Structure matrix	1. SSE for Promotion	2. SSE for Prevention
C_1 Discussing preventing STDs (Prev1)		.51
C_2 Discussing preventing pregnancy (Prev2)		.48
C_3 Discussing previous/current sexual partners (Prom)		
C_4 Discussing previous/current efforts to prevent STDs (Prev)		.44
C_5 Discussing previous/current STDs (Prev)		.42
C_6 Discussing what is liked or desired (Prom1)	.75	
C_7 Discussing fears and doubts (Prom)	.66	
C_8 Discussing personal states (e.g., bleeding, fatigue) (Prom)	.66	
C_9 Discussing what is disliked or unwanted (Prom)	.69	
C_10 Discussing previous sexual experiences (Prom2)	.49	
A_1 Using a condom/latex barrier correctly (Prev)		.54
A_2 Proposing sex to the partner(s) (Prom3)	.63	
A_3 Always using a protection method (Prev3)		.68
A_4 Using protection correctly after alcohol intake (Prev4)		.58
A_5 Practicing sexual fantasies (Prom4)	.62	
A_6 Initiating sexual relationships (Prom5)	.65	
A_7 Using protection even when partner(s) do(es) not want to (Prev)		.63
A_8 Consulting an expert on protection or contraception (Prev5)		.4
A_9 Rejecting unprotected sex (Prev6)		.66
A_10 Making sex more satisfactory for yourself (Prom6)	.63	
A_11 Always carrying protection (e.g., handbag) (Prev)		
A_12 Negotiating using protection/contraception with the partner(s) (Prev7)		.64
A_13 Behaving the same with individuals of different sexual orientations (Prom)		
A_14 Using protection without disruption (Prev8)		.69
A_15 Using contraception when pregnancy is unwanted (Prev9)		.57
A_16 Practicing and enjoying oral sex (Prom7)	.54	
A_17 Making sex more satisfactory for the partner(s) (Prom8)	.6	
A_18 Using efficaciously/discussing hormonal contraceptives (Prev)		
A_19 Using/discussing using the morning-after pill if needed (Prev)		
A_20 Learning how to correctly use protection/contraception (Prev)		.46
A_21 Acquiring the morning-after pill (Prev)		
A_22 Enjoying autoerotic activities (e.g., masturbation) (Prom)		
A_23 Buying protection methods (Prev)		
A_24 Proposing, innovating, being creative (Prom9)	.72	
A_25 Discussing anything regarding sexuality (Prom10)	.76	
A_26 Rejecting a non-desired sexual encounter (Prev10)		.5
A_27 Rejecting sex when feeling unconfident or insecure (Prev)		.5
A_28 Rejecting sex when not feeling attracted to someone (Prev)		
A_29 Rejecting sex when high risk for STDs (Prev)		
A_30 Doing something disliked but satisfactory for the partner(s) (Prom)		

Extraction method: maximum likelihood. Rotation method: oblimin with Kaiser normalization. Weights for items with communalities < .2 and factor weights < .4 are not shown (discarded for the forced 2-factor model). Original coding of items is offered (C = subdimension communication; A = subdimension actions), along with a brief description of their content and the main feature of each one (i.e., promotion/prevention); besides, the corresponding coding in the subsequent CFA is shown

Participants also completed the 7-item CPS-AE (original in Spanish; Ballester et al., 2007, 2013), assessing self-efficacy for performing behaviors related with male condom use (Cronbach's  $\alpha=0.6$  in the present study); the 17-item SEA (Kasen et al., 1992; Spanish version by López-Rosales & Moral-de la Rubia, 2001), assessing self-efficacy for rejecting sex, talking with the partner regarding AIDS/STD prevention, and performing other preventive sexual behaviors ( $\alpha=0.86$  in the present study); and the 18-item CSE (Levinson & Beamer, 1998; Spanish version by Arias et al., 2017), assessing self-efficacy for performing a wide range of preventive sexual behaviors ( $\alpha=0.78$  in the present study). Appropriate psychometric properties have been reported for all these self-reports, and available validation studies of the Spanish versions also support their psychometric soundness.

We also included a socio-demographic data form and questions regarding current and past personal experiences with sexual and romantic partner(s) and sexuality (see “Participants” and Table 1).

## Procedure

The assessment protocol was available online (Limesurvey®, Limesurvey GmbH, Germany). It was publicized through traditional media (e.g., direct request for participating and/or sharing the survey) and online media (e.g., specialized web pages, social networks of Psychology and Sexology professionals, institutional e-mailing, global social media networks) to recruit a large nation-wide sample.

Participants were informed about the study, their rights, and aspects such as confidentiality of their responses and its exclusive use for scientific purposes. Once informed consent was given, they could access the survey. No compensation or feedback was offered to the participants. Data were gathered from January 2015 to December 2021. Ethical approbation was obtained from the Ethics Committee on Human Research of the University of Granada (Spain), reg. CEFM-44521-0511.

## Study Design and Data Analyses

This is a correlational, cross-sectional study with validation purposes. Statistical analyses were conducted using SPSS 28.0 and AMOS 22 (SPSS BMI Inc., Chicago, IL, EE.UU., 2021). Once the database was downloaded and checked for depuration, preliminary and exploratory analyses were conducted to check data assumptions as well as to detect errors in data entry, missing data, or outliers. Four univariate

and 12 multivariate outliers were detected, and these cases were removed for the analyses. Missing data were treated with listwise deletion in each analysis. Descriptive analyses (mean and standard deviation for continuous variables;  $n$  and percentage for categorical variables) were conducted. Reliability was analyzed by means of internal consistency using Cronbach's  $\alpha$ . In addition, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to explore the factorial validity of the SSEQ. The minimum amount of data for factor analysis was satisfied, with a ratio of 27 cases per variable (Kassim et al., 2013).

For the EFA, maximum likelihood estimation (MLE) method with Oblimin rotation of the matrix of loadings to obtain oblique (dependent) factors was conducted, after checking criteria for factorability (univariate and multivariate normality, homoscedasticity, independence of sampling, linearity, no collinearity, and multicollinearity) and that items were factorable (Kaiser–Meyer–Olkin test of sampling adequacy above the recommended value of 0.6 and Barlett's test of sphericity of identity matrix significant at  $p < 0.05$ ) (Stevens, 2012). As our primary goal was to identify latent constructs underlying measured variables, we selected MLE as the factor extraction technique (Kassim et al., 2013). The criterion of item loading  $> 0.4$  was used for interpreting the resulting factors (Howard, 2015).

CFA is a common analytic tool for developing and refining measurement instruments (Jackson et al., 2009), used to determine factors and factor loadings to confirm a pre-established theoretical structure based on the EFA findings (Thompson, 2004). It allowed the exploration of the relationships between observed variables (i.e., SSEQ responses) and latent variables or factors (i.e., the dimensions assessed by the SSEQ), helping in determining construct validity. CFA was conducted with structural equation modeling (SEM), with maximum likelihood (ML) method (Brown, 2015; Hair et al., 2019). Standardized structure coefficients were reported. Following recent recommendations (Brown, 2015; Jackson et al., 2009), the chi-square goodness of fit test, its ratio considering degrees of freedom (CMIN/DF), one incremental fit index: the comparative fit index (CFI), and one residuals-based fit index: the root-mean square error of approximation (RMSEA) were calculated as goodness of fit indices. A non-significant chi-square index, a CMIN/DF below 3, and recommended cutoffs of 0.95 for incremental fit indices and of 0.06 for residual-based indices were adopted as criteria (Hu & Bentler, 1999). A model was determined to exhibit “good” (i.e., at least three fit indices meeting the minimum threshold for fit), “marginal” (i.e., any two of the fit indices meeting the minimum threshold

for fit), or “poor” model-data fit (i.e., at least two fit indices failing to exceed the minimum threshold for fit) based on the fit indices obtained (Bentler, 1990).

Convergent construct validity was approached by conducting parametric pairwise Pearson’s correlation analysis with three measures of SSE: the CPS-AE, the SEA, and the CSE.

## Results

As a first step, factorial validity was tested to verify the scale composition. Firstly, an EFA was conducted with MLE method for factor extraction and Oblimin rotation of the factor loading matrix. A Kaiser–Meyer–Olkin index of 0.91, Bartlett’s sphericity chi-square = 16,835.784,  $p < 0.001$ , and Goodness of fit (chi-square = 6,806.734,  $p < 0.001$ ) indicated the appropriateness of the EFA. The communalities found for most of the items were appropriate, ranging from 0.3 to 0.7. At this step, 11 items were definitively excluded from further analyses due to communality values  $< 0.2$  and rotated weights  $< 0.4$ . Furthermore, the 5-factor eigenvalue-based initial solution was hardly meaningful; thus, we forced a two-factor solution, which was supported by (a) the conceptualization of the items to assess efficacy expectations for both preventive and health-promotive actions, (b) the leveling off of eigenvalues on the scree plot after the non-forced factor solution, and (c) the number of primary loadings in each factor and the difficulty of interpreting the original five-factor solution. Thus, the two-factor solution was preferred given its support for the bidimensional structure of the SSEQ and its easiness for interpreting. The two-factor solution (eigenvalues  $> 2.5$ ) explained 34.5% of the variance. The factor loading matrix for this model is presented in Table 2, with item loadings  $> 0.4$ . The factors identified were the following: Factor 1, labeled *SSE for health promotion actions*, included 13 (of the initial 17) items assessing

self-efficacy regarding the ability to perform behaviors aimed at achieving a potentially healthier and more pleasurable sexuality or talk about it with the partner(s), and Factor 2, labeled *SSE for preventive actions*, included 16 (of the initial 23) items assessing self-efficacy regarding the ability to perform certain preventive/protective behaviors or to talk with the partner(s) about prevention.

Secondly, a CFA was conducted with ML method. Initially, a bifactorial model (M1) following the EFA solution for the 29 final items was tested, showing a good model-data fit. Nonetheless, re-specified models were tested following the modification indices provided by AMOS, such as the exclusion of some items with factor loadings  $< 0.3$  (M2), or the elimination of the poorest items in order to achieve an item-equilibrium in each factor composition (M3), both models showing better model-data fit. The final solution (M3) supported the bifactorial structure of the SSEQ. Table 3 shows goodness of fit of all models tested. Figure 1 shows the last model, selected as the one presenting the best model-data fit, according to both the goodness of fit indices and the theoretical approach. Furthermore, this final model had a “good” goodness of fit, according to the criteria adopted of reaching the cutoffs for three of the four goodness of fit indices.

Reliability for the 20-item SSEQ was high, with Cronbach’s  $\alpha = 0.89$  for the complete questionnaire. Internal consistency would not be improved if any of the items were excluded ( $\alpha$ , if items were removed, ranged from 0.889 to 0.881). Reliability for each factor was also appropriate,  $\alpha = 0.87$  for Factor 1 *SSE for health promotion actions* and  $\alpha = 0.82$  for Factor 2 *SSE for preventive actions*.

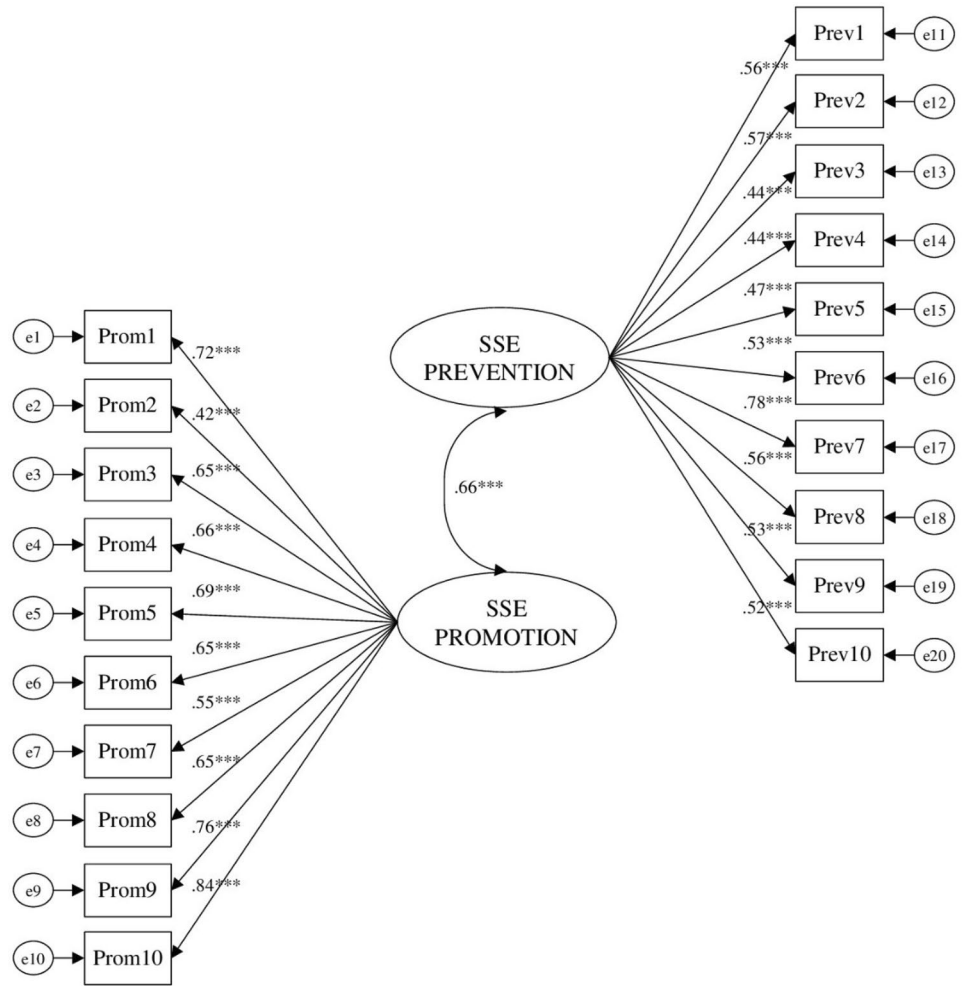
Finally, Pearson’s correlation analyses were conducted to explore convergent validity of the SSEQ. Table 4 shows the findings, which indicated that all the variables were positively intercorrelated. Table 4 also shows the descriptive results obtained. All the scores on the four measures of SSE, including SSEQ subscales, were high and quite homogeneous.

**Table 3** Goodness of fit for the three bifactorial models tested by CFA

Model	$\chi^2$	$p$	d.f	CMIN/DF	RMSEA	CFI
M1	681.817	.000	182	3.746	.056	.955
M2	445.447	.000	142	3.137	.049	.969
M3	274.311	.000	112	2.449	.040	.977

d.f. degrees of freedom, *CMIN/DF* chi-square fit statistics/degree of freedom, *RMSEA* root-mean-square error of approximation, *CFI* comparative fit index

**Fig. 1** Factorial model from the CFA (Model 3). \*\*\* $p < .001$



**Table 4** Descriptive results and Pearson’s zero-order correlations for the study variables

Variable (possible score range)	M ± SD [min–max]	2	3	4	5	6	7	8	9
1. SSEQ total (0–4)	3.39 ± .50 [0–4]	.89**	.84**	.58**	.70**	.34**	.59**	.65**	.64**
2. SSEQ promotive actions (0–4)	3.32 ± .63 [0–4]	—	.51**	.39**	.46**	.21**	.54**	.36**	.51**
3. SSEQ preventive actions (0–4)	3.45 ± .52 [0–4]		—	.63**	.76**	.39**	.47**	.79**	.61**
4. CPS-AE total (0–5)	3.85 ± .79 [0–5]			—	.62**	.31**	.36**	.65**	.66**
5. SEA total (1–5)	4.27 ± .56 [2–5]				—	.77**	.58**	.80**	.58**
6. SEA reject (1–5)	4.07 ± .85 [1–5]					—	.19**	.34**	.32**
7. SEA communication (1–5)	4.47 ± .71 [1–5]						—	.33**	.38**
8. SEA behavior (1–5)	4.32 ± .70 [1–5]							—	.56**
9. CSE total (1–5)	4.15 ± .52 [1–5]								—

Values displayed are significant at \*\* $p < .01$

## Discussion

This study presented the development and explored the psychometric properties of the SSEQ, aimed at assessing two complementary dimensions of SSE: the perceived confidence in performing both preventive sexual behaviors and, specially, those promoting a potentially healthier and more satisfying sexuality, counting on women's perspective and other realities beyond intercourse and dyadic heterosexual relationships and hence overcoming the main limitations of the existing SSE self-reports.

An initial version with 40 items from a preliminary pool of elements was created. To refine the measure, factorial validity was explored. Then, the final 20-item version was further analyzed in terms of convergent validity and reliability. We thus followed a psychometrics-based sequential procedure to obtain the SSEQ.

The EFA and CFA conducted to explore the factorial structure of the SSEQ supported its bi-factoriality. Although in EFA it is common to determine the number of factors to retain following Kaiser's criterion (Kaiser, 1960), it has been argued that it could result in an overestimation of the number of factors (Yong & Pearce, 2013). Consequently, we retained only the two factors above the point of inflexion shown in the scree test, a solution reliable in samples  $\geq 200$  participants (Yong & Pearce, 2013). This was coherent with the rationale underlying the construction of the measure and the contents of its items: one factor grouped items measuring self-efficacy expectations for conducting preventive-protective behaviors, whereas the other factor grouped items assessing self-efficacy for conducting overall well-being and sexual satisfaction promotion behaviors.

Based on the EFA results, a first model was tested with CFA that showed good but upgradeable model-data fit. Consequently, we re-specified the model and better model-fit indices were obtained. The final solution included 10 items for the factor SSE for promotive actions, such as the perceived confidence in freely and safely communicating on diverse aspects, innovating and being creative, practicing and enjoying oral sex, using fantasies; initiating sexual relations, and participating proactively in making sex more satisfying. All these contents relate to women's sexual satisfaction and health (e.g., Mallory, 2022; Rausch & Rettenberger, 2021). The complementary factor, SSE for preventive actions, includes items about the perceived efficacy for discussing with the partner(s) and engaging in actions intended to prevent STDs or unwanted pregnancy, but also about the perseverance in these behaviors, inquiring about seeking information to effectively use

contraceptive methods, condom negotiation with partner(s), or rejecting unprotected or unwanted sexual approaches (e.g., Casey et al., 2009).

Reliability for the SSEQ and its two dimensions was excellent. Although values  $\geq 0.7$  indicate an appropriate internal consistency, some authors have proposed that values too near to 1 could implicate the existence of redundant items that do not really add relevant information when assessing a construct (Rodríguez-Rodríguez & Reguant-Álvarez, 2020).

We also explored SSEQ convergent validity with some common measures used to assess SSE. All these measures were intercorrelated, as was expected given that all of them are validated instruments that assess SSE. Since these tools are mainly focused on dyadic, heterosexual relationships, and preventive behaviors, correlations between the SSEQ and them were modest, and more robust for the subdimension surrounding preventive actions. Moreover, the relation between both dimensions of the SSEQ is moderate, given that they are measuring complementary, yet different constructs. The comparison of the descriptive results obtained with the SSEQ and the remaining tools of SSE add value to the convergent validity of the SSEQ.

Regarding SSEQ, descriptive results showed that the participants were a homogeneous group with high SSE, with perceptions of self-efficacy for promotive actions as high as for preventive actions. The rest of SSE measures confirmed this high SSE and homogeneity. Hence, women in our study benefit in their sexual life from having high confidence in themselves for conducting behaviors intended to both maximize well-being and satisfaction and minimize risks and negative consequences, yet measures to date were not able to address efficacy expectations for the former ones.

Considered together, our findings support the use of the SSEQ as an alternative and psychometrically sound tool to gather information on two complementary SSE beliefs: those related to behaviors seeking to achieve an agentic, healthier, more pleasurable sexuality, and those related to behaviors aimed at preventing unwanted, potentially risky consequences derived from sexual activities.

Nonetheless, some limitations must be noted. Firstly, our findings were obtained with a sample of young and middle-aged females and replication with a more heterogeneous sample in terms of gender identity and sexual orientation is advisable. Indeed, it is possible that our findings are partly derived from the composition of the sample; for instance, it is possible that some items, such as practicing autoerotic activities like masturbation or correctly using a condom, would



have obtained better results in a multi-gender identity sample (i.e., higher scores in a male sample; Carvalheira et al., 2015) and would have led to other decisions. For the same reasons, future lines of inquiry could focus on its application in other cultural backgrounds and age groups. Secondly, the reduction of the measure from the initial 40 items pool was based on the loadings obtained in the sample recruited. Some of the items excluded following EFA and CFA could be rewritten in order to improve their quality, such as efficacy expectations for using the emergency contraceptive pill (a safe and appropriate preventive behavior when risk of pregnancy is elevated due to unprotected or incorrectly protected intercourse, but current redaction of the item may have led participants to reject it as a “regular” protective behavior) or for rejecting a sexual relationship when suspicions regarding the risk of STDs are elevated (maybe by adding “and there is no possibility for safe protection” would have helped the respondents to consider its truly intended content). Some other items were unexpectedly discarded from the final measure (e.g., self-efficacy for communicating with the partner(s) about personal states or non-desired/non-wanted encounters, activities, or behaviors or for being able to acquire and carry protection methods or the emergency contraceptive pill) and future research might re-explore their contribution. In addition, some statements might be more determined by personal history and attitudinal background than efficacy expectations (e.g., communicating with the partner about prevention when having *more than one* sexual partner), and further research is warranted to establish the influence of personal experiences, values, and attitudes regarding sexuality. Finally, this is a cross-sectional study with validation purposes; further investigation incorporating the SSEQ in research and clinical contexts is warranted to confirm its generalizability and usefulness.

## Conclusions

We validated a bidimensional measure of SSE including efficacy beliefs and expectations regarding actions with preventive and promotive goals from women’s perspective. This tool intends to solve the limitations of other measures, focused only on the first dimension. As long as females’ — and human — sexuality is much more than avoiding undesired aspects, and is mainly aimed at pleasure, joy, and fulfillment, a comprehensive measure of efficacy expectations was warranted. Furthermore, the SSEQ explores self-efficacy beliefs beyond the heterosexual, dyadic, and intercourse-focused frame. The psychometric soundness of the SSEQ in terms of reliability and factorial and convergent validity has been supported.

## Social and Public Policy Implications

Since SSE is a strong predictor of sexual behaviors, the assessment of self-efficacy in the context of sexuality and sexual behaviors has potential uses in educative, research, and clinical contexts. The SSEQ is useful to assess which cognitions are related to, and in need of being enhanced in order to achieve a healthier sexuality, by means of preventing potentially negative outcomes, but also by promoting more pleasurable and satisfying experiences, in addition to proper managing skills. It is important to consider the empirical findings on predictors (as SSE) of a healthier, more pleasurable, and satisfactory sexuality to gain comprehensive knowledge for developing educational and clinical interventions designed to enhance women’s perceived and real skills to achieve a healthier, more free, and self-agentic and more fulfilling sexuality, i.e., how women conquer desire and pleasure, alone or with others.

## Appendix

**CUESTIONARIO DE AUTOEFICACIA SEXUAL (CASEX)****[SEXUAL SELF-EFFICACY QUESTIONNAIRE (SSEQ)]**

La autoeficacia sexual es la confianza o seguridad que tenemos en nuestra capacidad para desenvolvernó con éxito en un contexto sexual, es decir, para realizar eficazmente ciertos comportamientos para obtener resultados deseados ante situaciones relacionadas con la sexualidad, particularmente cuando encontramos barreras, obstáculos o dificultades. [Sexual self-efficacy is the confidence in our ability to successfully carry out certain behaviors to obtain the desired outcome in sexuality-related contexts, particularly when facing barriers, obstacles or difficulties]

Por favor, indica a continuación en qué medida sientes confianza en ti misma a la hora de realizar las siguientes acciones: [Please, indicate below to what extent do you have confidence in yourself to perform the following actions:]

¿Qué confianza sientes en ti misma para...? [How confident in yourself are you when...?]	Muy insegura [Very unconfident]	Bastante insegura [Quite unconfident]	Ni segura ni insegura [Not confident nor unconfident]	Bastante segura [Quite confident]	Muy segura [Very confident]
(Prev1) Hablar con tu(s) pareja(s) sexual(es) sobre la prevención de enfermedades de transmisión sexual (p.e.: SIDA, herpes) [Discussing sexually transmitted diseases prevention (e.g., AIDS, herpes) with your sexual partner(s)]					
(Prev2) Hablar con tu(s) pareja(s) sexual(es) sobre la prevención de embarazos no deseados [Discussing					

unwanted pregnancy prevention with your sexual partner(s)]					
(Prom1) Hablar con tu(s) pareja(s) sexual(es) sobre lo que te gusta o gustaría hacer durante tus actividades sexuales (nuevas técnicas, situaciones o lugares diferentes, uso de juguetes, etc.) [Discussing what you like or would like to do during sex (new techniques, different situations or places, use of toys, etc.) with your partner(s)]					
(Prom2) Hablar con tu(s) pareja(s) sexual(es) sobre tus experiencias sexuales anteriores (positivas o negativas) [Discussing your previous sexual experiences (positive or negative ones) with your partner(s)]					
(Prom3) Proponer practicar sexo a tu(s) pareja(s) sexual(es) [Proposing sex to your partner(s)]					
(Prev3) Usar siempre un preservativo/barrera de látex para prevenir enfermedades de transmisión sexual o embarazos no deseados (si esto se aplica a tu caso) [Always using a condom/latex barrier to prevent sexually transmitted diseases or unwanted pregnancy (if this last option were applicable to your case)]					
(Prev4) Usar correctamente un preservativo/barrera de látex después de consumir alcohol [Using a condom/latex barrier correctly after consuming alcohol]					
(Prom4) Incluir las fantasías sexuales en tus relaciones con tu(s) pareja(s) sexual(es) [Including sexual fantasies during sex with your partner(s)]					

(Prom5) Tomar la iniciativa a la hora de iniciar relaciones sexuales con otra(s) persona(s) [Taking the initiative when having sex with other(s)]					
(Prev5) Consultar a una persona experta sobre enfermedades de transmisión sexual o anticoncepción [Consulting an expert about sexually transmitted diseases or contraception]					
(Prev6) Negarte a tener sexo si tu(s) pareja(s) sexual(es) se niega(n) a usar un preservativo/barrera de látex [Refusing to practice sex if your partner(s) refuse(s) to use a condom/latex barrier]					
(Prom6) Hacer que tus relaciones sexuales sean más satisfactorias para ti misma [Making your sexual relationships more satisfactory for yourself]					
(Prev7) Negociar la protección o la anticoncepción con tu(s) pareja(s) sexual(es) [Negotiating the use of protective/contraceptive methods with your partner(s)]					
(Prev8) Utilizar un preservativo/barrera de látex sin “cortar el rollo” durante el sexo [Using a condom/latex barrier without “killing the mood” in a sexual relationship]					
(Prev9) Utilizar siempre un método anticonceptivo cuando practicas el sexo con otra(s) persona(s) (si no deseas un embarazo) [Always using a contraceptive method when having sex with others (in the case that pregnancy is not pursued)]					

(Prom7) Practicar y disfrutar del sexo oral [Practicing and enjoying oral sex]					
(Prom8) Hacer algo para que tus actividades sexuales sean más satisfactorias para tu(s) pareja(s) sexual(es) [Doing something to make sex more enjoyable for your partner(s)]					
(Prom9) Proponer otras técnicas, innovar, ser creativa cuando tienes sexo con tu(s) pareja(s) sexual(es) [Proposing different techniques, innovating, being creative when having sex with your partner(s)]					
(Prom10) Hablar con tu pareja sobre cualquier aspecto relacionado con la sexualidad [Discussing any aspect surrounding sex and sexuality with your partner(s)]					
(Prev10) Rechazar una relación sexual si no te apetece [Rejecting having sex if you are not in the mood]					

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**Availability of Data and Material** Upon request.

**Code Availability** Not applicable.

## Declarations

**Disclaimer** The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; nor in the decision to publish the results.

**Ethics Approval** This research was conducted in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee on Human Research of the University of Granada on May 2011/reg. CEFM-44521–0511.

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Consent for Publication** The authors affirm that participants provided informed consent for publication of the data collected.

**Conflict of Interest** The authors declare no competing interests.

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