

Sexual Assertiveness Across Cultures, Genders, and Sexual Orientations: Validation of the Short Sexual Assertiveness Questionnaire (SAQ-9)

Assessment

1–21

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Abstract

Sexual assertiveness (SA) is an important concept in understanding sexual well-being and decision-making. However, psychometric evaluation of existing measures of SA in diverse populations is largely lacking, hindering cross-cultural and comparative studies. This study validated the short version of the Sexual Assertiveness Questionnaire (SAQ-9) and examined its measurement invariance across several languages, countries, genders, sexual orientations, and relationship statuses among 65,448 sexually-active adults ($M_{age} = 32.98$ years, $SD = 12.08$, 58% women, 2.74% gender-diverse individuals) taking part in the International Sex Survey. The scale demonstrated adequate psychometric properties. Measurement invariance tests indicated that the SAQ-9 is suitable for comparing individuals from different cultures, genders, sexual orientations, and relationship statuses, and significant group differences were also noted (e.g., gender-diverse individuals reported the highest levels of

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SA). Findings suggest that the SAQ-9 is a reliable and valid measure of SA and appropriate for use in diverse populations, with specific populations exhibiting varying levels of SA.

Keywords

sexual assertiveness, cross-cultural, gender difference, sexual and gender minorities, International Sex Survey (ISS), validation, SAQ-9

Sexual assertiveness (SA) is defined as an individual's ability or tendency to recognize, prioritize, and effectively communicate one's own limits, needs, and desires in sexual interactions and is often linked with safer and more satisfying sexual experiences, healthier and more equal relationships, and prevention of harm such as

sexually transmitted infections (STIs; Zerubavel & Messman-Moore, 2013). Understanding SA is important for expanding and organizing our knowledge about sexual decision-making and the strategies people use to accomplish goals of sexual autonomy (Darden et al., 2019; Morokoff et al., 1997). Research interest in SA

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has been growing over the last three decades; yet important gaps have remained in the literature. To date, no studies have directly examined cross-cultural comparisons, and results on gender-related differences appear inconsistent. Moreover, little knowledge is available about SA among sexual and gender minority groups, potentially perpetuating stereotypes and hindering effective interventions that cater to these individuals. To address these research gaps, we aimed to psychometrically test a short, valid, and reliable measure across many languages and demographic groups.

SA encompasses various behavioral and attitudinal domains. Authors generally emphasize social competence to initiate sexual activity, reject participation in unwanted sexual activity, negotiate protection and contraceptive use, communicate about risk, and express sexual desires and preferences (Loshek & Terrell, 2015; Morokoff et al., 1997; Quina et al., 2000). SA relies on the awareness of oneself as a sexual being and knowledge of sexual and assertive rights and reflects an attitude that one is deserving of bodily integrity and pleasure. The framework inherently implies that people have the right to make independent decisions about their sexual experiences and that consensual, safe, and mutually pleasurable sexual activity is an essential element of sexual health and well-being (Dunn et al., 1979; Morokoff et al., 1997). SA, as a construct, is closely related to sexual self-esteem but is conceptually different from it. While sexual self-esteem reflects an individual's internal perception of their sexual worth and competence, SA pertains to their external behavior in advocating for their sexual needs and boundaries within interpersonal interactions (Ménard & Offman, 2009). Although an individual's level of SA is recognized to vary across different sexual situations and partners, it is usually conceptualized as a relatively stable individual feature (Morokoff et al., 1997; Pierce & Hurlbert, 1999).

Empirical research has found SA to be associated with higher sexual self-esteem, sexual and relationship satisfaction, and better sexual functioning (Leclerc et al., 2015; McNicoll et al., 2017; Ménard & Offman, 2009; Santos-Iglesias et al., 2013). It is also linked to safer sexual practices (Noar et al., 2002) and the avoidance of harm, such as HIV and other STIs (Morokoff et al., 2009; Onuoha & Munakata, 2005; Stulhofer et al., 2009). It has both a correlational and a predictive relationship with sexual victimization (Livingston et al., 2007; Rickert et al., 2002; Schry & White, 2013; Walker et al., 2011; Zerubavel & Messman-Moore, 2013) and re-victimization (Katz et al., 2010; Kelley et al., 2016). Furthermore, higher SA is not only negatively associated with sexual victimization but also with sexual aggressiveness and abuse, among both

men and women (Ho et al., 2021; Lyons et al., 2022; Struckman-Johnson et al., 2020). These findings highlight the central role SA has in sexual health.

Gender and Cultural Differences in SA

Men have typically exhibited higher levels of SA than women in earlier studies (Haavio-Mannila & Kontula, 1997; Pierce & Hurlbert, 1999; Snell et al., 1991); however, more recent results are mixed (Gil-Llario et al., 2022; Lammers & Stoker, 2019; Lopez-Alvarado et al., 2022; Stulhofer et al., 2009). Theories explaining gender-related differences usually rely on gendered socialization and scripts in intimate relationships. In more traditional cultures, men are encouraged to seek sexual pleasure and to take the initiative, while women are expected to be more passive and prioritize the partner's pleasure (Sanchez et al., 2012; Tolman et al., 2016; Vannier & O'Sullivan, 2011; Zhang & Yip, 2018). Women are also expected to act as a gatekeeper to sexuality, which potentially contributes to ambivalence in initiation and facilitates refusal in some situations (Gagnon & Simon, 2005; Goodcase et al., 2021). However, gradually changing gender roles may generate changes in SA tendencies. Besides differences often observed between cisgender and heterosexual men and women, the SA of gender and sexual minority individuals remains largely unexplored to date (Ho et al., 2021).

SA is embedded in cultural contexts through norms, values, and culturally influenced gendered scripts. Studies have been conducted outside of North America in the past decade, including in China (Dai et al., 2021), South Korea (Kim et al., 2019), Hong Kong (Zhang et al., 2022; Zhang & Yip, 2018), Ecuador (Lopez-Alvarado et al., 2020, 2022), Iran (Azmodé et al., 2016; NasrollahiMola et al., 2023), and Spain (e.g., Santos-Iglesias et al., 2014; Sierra et al., 2021). However, no comparative cross-cultural studies have been published to date, and comparing results reported in separate studies is challenging due to methodological differences and varying measurement tools used to operationalize SA. Knowledge gaps and inconsistent results may also stem from non-invariance of the available scales (i.e., invalid cross-population comparisons affected by measurement bias).

Domains and Measurement of SA

In most measures of SA, domains have been derived theoretically and from exploratory factor analyses of survey measures. Initially, SA was thought to be best represented by only one latent factor (Hurlbert, 1991), but

over time, separate domains emerged (e.g., initiation of sexual contact, refusal of unwanted sexual contact). To date, there is no unified theory on SA, and the presumed attitudinal and behavioral domains included in the construct vary across studies and measurements, although sexual initiation, refusal, and safer sex negotiation can be considered recurring key elements (Couture et al., 2024; Loshek & Terrell, 2015; Morokoff et al., 1997; Quina et al., 2000; Santos-Iglesias & Carlos Sierra, 2010). The correlations between these domains vary in effect size, suggesting that although the domains of SA are associated with each other, they assess different aspects of SA, and individuals may report varying levels on each domain (Santos-Iglesias et al., 2013).

Multiple questionnaires have been developed to assess SA, although important questions remain regarding their validity with diverse groups. The psychometric properties of some questionnaires, like the *Hurlbert Index of Sexual Assertiveness* (HISA; Hurlbert, 1991) or the *Sexual Assertiveness Scale* (SAS; Morokoff et al., 1997), have arguably received more attention, although none of the existing measures are widely used currently. The examination of the psychometric properties has often not utilized current analytic methods or standards or has yielded seeming contradictions regarding their factor structure. The scales have at times been criticized for not being generalizable to various populations due to their wording (e.g., condom-specific wording that might not be applicable for individuals in monogamous relationships) (Loshek & Terrell, 2015; Quina et al., 2000). In addition, the measurement invariance of SA scales has not been thoroughly investigated yet (except for Santos-Iglesias et al. (2014) and Sierra et al. (2012) examining the invariance of the SAS and the HISA across sexes), thereby limiting the generalizability and comparability of findings across diverse populations and contexts (i.e., genders, sexual orientations, cultures, languages, and different relationship statuses). Moreover, existing questionnaires may be too long (i.e., 18–25 items) to be included in large-scale survey studies, and thus, shorter versions should be developed. In response to this gap, the current study aimed to validate a short scale to assess SA and previously described SA domains, with a goal of demonstrating its appropriateness for diverse groups of individuals, to make it available in many languages, and have robust psychometric evidence to support its use.

The Sexual Assertiveness Questionnaire

The 18-item *Sexual Assertiveness Questionnaire* (SAQ; Loshek & Terrell, 2015) was developed as a composite questionnaire of the HISA, SAS, and *Assertive Sexual Communication Scale* (ASCS; Quina et al., 2000). The

SAQ aimed to assess previously described dimensions of SA (i.e., initiation of desired sex and communication about sexual satisfaction, refusal of unwanted sex, and sexual risk communication). Condom-specific items were omitted based on the suggestion that insistence on using contraception is not applicable across life stages and relationships (Loshek & Terrell, 2015; Quina et al., 2000). In addition, it has been suggested that in sexual minority individuals, sexual history communication may capture SA's risk-reduction domain better than contraception behavior. Although Loshek and Terrell (2015) focused on female participants in their validation study, they noted that SA is likely an important construct across genders. All items were formulated in a gender-neutral way, and items referring to sexual activity did not specify any sex acts to allow diverse groups of individuals to respond meaningfully.

The primary aim of the present study was to translate and validate a short version of the Sexual Assertiveness Questionnaire (SAQ-9) (Loshek & Terrell, 2015) in 26 languages and to provide a comprehensive examination of its psychometric properties. First, we examined the factor structure of the scale. Second, we examined its measurement invariance across different language versions, countries, genders, sexual orientations, and relationship statuses to ensure that meaningful comparisons could be made across these groups. Then, we assessed its reliability and compared country-, gender-identity-, sexual-orientation-, and relationship-status-based groups along SA and its domains, to provide further insights into potential differences across different demographic groups. To our knowledge, no prior studies have compared individuals' SA across countries or sexual orientations, and evidence regarding gender differences has been arguably inconsistent and/or not applicable for individuals outside of the gender binary. To our knowledge, only one recent paper examined relationship status in relation to SA, which found no association between the constructs (Lopez-Alvarado et al., 2022). Therefore, we examined these differences in an exploratory manner.

Method

Procedure and Participants

Data were drawn from the International Sex Survey (ISS, <http://internationalsexsurvey.org/>), a 42-country, multi-language study using cross-sectional, self-report survey methods (for detailed study protocol, see the article by Bøthe et al., 2021, pre-registered study design: <https://osf.io/uyfra>, list of publications: <https://osf.io/jb6ey>).¹ The survey battery was translated into 26

languages following the translation protocol of Beaton et al. (2000) (list of translations: <https://osf.io/jcz96/>).

The study was conducted in accordance with the Helsinki Declaration. Ethical approval was obtained from all participating country's respective authorities, and respondents completed informed consent in accordance with their country's institutional review board before participating. A community sample was collected between October 2021 and May 2022 via news media appearances, research panels, and social media ads. The online survey took 25–45 min to complete, and participation was anonymous. Participants who completed the survey could choose a global sexual health organization to which a donation of 50 US cents would be made (up to 1,000 USD of donation) (see the protocol in the article by Bóthe et al., 2021).

To be eligible, participants had to be at least 18 years old (or the legal age to provide informed consent) and understand any of the languages in which the survey was available. The test battery included three questions to test sustained attention. Participants who failed at least two out of these three questions or produced otherwise unengaged response patterns were excluded from analyses. The detailed data-cleaning procedure is described at https://osf.io/8kdzv/?view_only=dadcfc82666140a6a-b5a1c3f63b679be. Participants who reported that they did not have sex with a partner in the past 12 months did not receive the SAQ-9 and, therefore, were not included in this study ($n = 16,795$). The reason for this was to adapt to the 12-month time frame included in the SAQ-9's instructions and to avoid recall bias.

The original dataset contained 82,243 participants ($M_{age} = 32.39$ years, $SD = 12.52$), out of which 65,448 participants were sexually active and completed the SAQ-9 (analytic sample; $M_{age} = 32.98$ years, $SD = 12.08$). A total of 58.08% of the analytic sample identified as women, 39.14% as men, and 2.28% as a gender-diverse individual (e.g., non-binary, gender-fluid)²; 69.65% reported to be heterosexual, 5.53% gay or lesbian, 9.53% bisexual, 3.46% queer or pansexual, 8.67% homo-flexible or hetero-flexible, 0.46% asexual, or 0.79% other sexual orientation; and 1.63% of respondents reported that they were unsure about or questioning their sexual orientation. A detailed description of the analytic sample is presented in Table 1.

Measures

Participant Characteristics. Participants were asked to complete a sociodemographic questionnaire assessing age, gender, sexual orientation, relationship status, education, and work status. A complete list of survey measures is described in the study protocol (Bóthe et al., 2021).

Table 1. Sociodemographic Characteristics of the Total Sample.

Variables	N = 65,237–65,445	%
Country of residence		
Algeria	12	0.02
Australia	483	0.74
Austria	665	1.02
Bangladesh	81	0.12
Belgium	542	0.83
Bolivia	290	0.44
Brazil	3,102	4.74
Canada	2,118	3.24
Chile	809	1.24
China	1,331	2.03
Colombia	1,367	2.09
Croatia	1,962	3.00
Czech Republic	1,220	1.86
Ecuador	217	0.33
France	1,387	2.12
Germany	2,717	4.15
Gibraltar	55	0.08
Hungary	9,960	15.22
India	127	0.19
Iraq	54	0.08
Ireland	1,316	2.01
Israel	1,183	1.81
Italy	2,070	3.16
Japan	343	0.52
Lithuania	1,637	2.50
Malaysia	502	0.77
Mexico	1,618	2.47
New Zealand	2,347	3.59
North Macedonia	995	1.52
Panama	267	0.41
Peru	2,159	3.30
Poland	8,535	13.04
Portugal	1,974	3.02
Slovakia	891	1.36
South Africa	1,285	1.96
South Korea	998	1.52
Spain	1,906	2.91
Switzerland	990	1.51
Taiwan	1,553	2.37
Turkey	607	0.93
United Kingdom	1,149	1.76
United States of America	1,766	2.70
Other	655	1.30
Language		
Arabic	76	0.12
Bangla	74	0.11
Croatian	2,072	3.17
Czech	1,175	1.80
Dutch	425	0.65
English	10,171	15.54
French	3,335	5.10
German	2,915	4.45
Hebrew	1,168	1.78
Hindi	12	0.02
Hungarian	9,855	15.06
Italian	2,104	3.21
Japanese	271	0.41
Korean	983	1.50

(continued)

Table 1 (continued)

Variables	N = 65,237–65,445	%
Lithuanian	1,705	2.61
Macedonian	1,038	1.59
Mandarin—simplified	1,346	2.06
Mandarin—traditional	1,559	2.38
Polish	8,980	13.72
Portuguese—Brazil	3,175	4.85
Portuguese—Portugal	1,984	3.03
Slovak	1,660	2.54
Spanish—Latin America	6,767	10.34
Spanish—Spain	1,897	2.90
Turkish	638	0.97
Sex assigned at birth		
Male	26,099	39.88
Female	39,340	60.11
Gender identity (original answer options in the survey)		
Masculine/Man	25,617	39.14
Feminine/Woman	38,010	58.08
Indigenous or other cultural gender minority identity (e.g., two-spirit)	121	0.18
Non-binary, gender fluid, or something else (e.g., genderqueer)	1491	2.28
Other	184	0.28
Gender identity (categories used in the analyses)		
Man	25,617	39.14
Woman	38,010	58.08
Gender-diverse individuals	1,796	2.74
Trans status		
No, I am not a trans person	63,607	97.19
Yes, I am a trans man	238	0.36
Yes, I am a trans woman	195	0.30
Yes, I am a non-binary trans person	550	0.84
I am questioning my gender identity	684	1.05
I don't know what it means	156	0.24
Sexual orientation (original answer options in the survey)		
Heterosexual/Straight	45,580	69.65
Gay or lesbian	3,622	5.53
Hetero-flexible	5,248	8.02
Homo-flexible	425	0.65
Bisexual	6,237	9.53
Queer	690	1.05
Pansexual	1,574	2.41
Asexual	302	0.46
I do not know yet or I am currently questioning my sexual orientation	1,067	1.63
None of the above	515	0.79
I don't want to answer	162	0.25
Sexual orientation (categories used in the analyses)		
Heterosexual	45,580	69.65
Gay or lesbian	3,622	5.53
Bisexual	6,237	9.53
Queer and pansexual	2,264	3.46
Homo- and hetero-flexible identities	5,673	8.67
Asexual	302	0.46
Questioning	1,067	1.63
Other	515	0.79
Highest level of education		
Primary (e.g., elementary school)	687	1.05
Secondary (e.g., high school)	15,341	23.44

Table 1 (continued)

Variables	N = 65,237–65,445	%
Tertiary (e.g., college or university)	49,404	75.49
Currently being in education		
Not being in education	41,954	64.11
Being in primary education (e.g., elementary school)	36	0.06
Being in secondary education (e.g., high school)	974	1.49
Being in tertiary education (e.g., college or university)	22,449	34.30
Work status		
Not working	13,493	20.62
Working full time	37,378	57.11
Working part-time	9,152	13.98
Doing odd jobs	5,404	8.26
Socioeconomic status		
My life circumstances are among the worst	121	0.18
My life circumstances are much worse than average	432	0.66
My life circumstances are worse than average	2,794	4.27
My life circumstances are average	20,300	31.02
My life circumstances are better than average	25,959	39.67
My life circumstances are much better than average	12,469	19.05
My life circumstances are among the best	3,362	5.14
Residence		
Metropolis (population is over 1 million people)	21,082	32.21
City (population is between 100,000 and 999,999 people)	23,640	36.12
Town (population is between 1,000 and 99,999 people)	16,910	25.84
Village (population is below 1,000 people)	3,800	5.81
Relationship status		
Single	14,687	22.44
In a relationship	25,957	39.66
Married or common-law partners	22,721	34.72
Widow or widower	230	0.35
Divorced	1,830	2.80
Relationship status (categories used in the analyses)		
Single	16,747	25.59
In a relationship	48,678	74.38
Having children		
No	43,681	66.74
Yes, 1	7,564	11.56
Yes, 2	9,265	14.16
Yes, 3	34,29	5.24
Yes, 4	906	1.38
Yes, 5	263	0.40
Yes, 6–9	111	0.17
Yes, 10 or more	18	0.03
M		SD
Age	32.98	12.08

Note. Percentages might not add up to 100% due to missing data.
M = mean, SD = standard deviation.

(continued)

Sexual Assertiveness. The SAQ (Loshek & Terrell, 2015) consists of 18 items with strong psychometric properties and meaningfulness for multiple populations (i.e., items related to condom insistence were rephrased or omitted as they were deemed not appropriate for individuals using other types of contraception in monogamous relationships, in some same-sex monogamous relationships, or for those desiring to become pregnant). In the present study, SAQ-9 was used that consisted of nine items (three items from each factor) that demonstrated the strongest factor loadings on their respective factors and most strongly represented their factors in the original validation study (Loshek & Terrell, 2015). The three factors describe communication about sexual initiation and satisfaction (*Initiation* factor, three items, e.g., “*It is easy for me to discuss sex with my partner*”), tendencies to refuse unwanted sexual acts (*Refusal* factor, three items, e.g., “*I refuse to have sex if I don’t want to*”), and tendencies to communicate about sexual risk (*Risk communication* factor, three items, e.g., “*I ask my partner if he or she has practiced safe sex with other partners*”). Items were rated on a seven-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). The translations of the SAQ-9 in all 26 languages can be found at <https://osf.io/jcz96>.

Statistical Analysis

This study followed a pre-registered analysis plan that can be found at https://osf.io/8kdzv/?view_only=dadcf-c82666140a6ab5a1c3f63b679be. Data were analyzed using statistical software tools SPSS v28.0 (IBM, 2021) and R v4.1.3 (R Core Team, 2021), specifically the *lavaan* package (Rosseel, 2012).

Structural Validity. The original SAQ demonstrated a three-factor structure (Loshek & Terrell, 2015), and the short version was developed in accordance with that structure (see the Measures section). Confirmatory factor analysis (CFA) was performed on the total sample to examine whether the factor structure could be replicated. The model fit was established using common goodness-of-fit indices: Comparative Fit Index (CFI; $\geq .90$ adequate; $\geq .95$ good), Tucker–Lewis Index (TLI; $\geq .90$ adequate; $\geq .95$ good), and Root-Mean-Square Error of Approximation with a 90% confidence interval (RMSEA; $\leq .10$ acceptable, $\leq .08$ adequate, and $\leq .05$ good; T. A. Brown, 2015). To establish the structural validity of the scale, we expected an acceptable model fit and standardized factor loadings $\geq .45$ for each item (Comrey & Lee, 1992). We used weighted least square mean and variance adjusted (WLSMV) estimator

for the CFA tests due to the non-normal distribution of the data.

Measurement Invariance Analysis Across Languages, Countries, Genders, Sexual Orientations, and Relationship Statuses. To ensure that comparisons of SA levels were meaningful across subpopulations, we tested measurement invariance across languages, countries, genders, sexual orientations, and relationship statuses. Measurement invariance analysis can be considered an omnibus test in the context of structural equation modeling (SEM) and CFA, in which cross-group equality constraints are incrementally added to the initial unconstrained model’s parameters. It evaluates whether the constraints imposed at each level significantly degrade the model fit compared to the less-constrained model. If a more constrained model does not significantly worsen the model fit compared to the previous, less-constrained model, it suggests that the assumption of measurement invariance holds across given subpopulations (Milfont & Fischer, 2010). Six increasingly constrained models were tested: configural (i.e., invariance of the factor structure across groups), metric (i.e., invariance of the factor loadings across groups), scalar (i.e., invariance of the item intercepts across groups), residual (i.e., invariance of the error variance across groups), latent variance and covariance (i.e., invariance of the factor variance and covariance across groups), and latent mean (i.e., invariance of the factor mean across groups). The first four steps examine the presence of potential measurement biases and differences (i.e., measurement invariance in a narrower sense), while the last two steps examine the presence of group-based differences on the level of variance, covariance, and means (i.e., structural invariance).

Model fit is reported for each test of invariance. Substantial decreases in CFI ($\Delta\text{CFI} \leq .010$) and increases in RMSEA ($\Delta\text{RMSEA} \leq .015$) indicate a significant decrease in the model fit across subgroups, meaning that measurement invariance is not established on that level (Chen, 2007). Changes in TLI were also reported to account for parsimony, with a higher value representing a better fit (Marsh et al., 2005; Williams & Holahan, 1994). When testing measurement invariance with large samples and/or large number of groups, a more liberal ΔRMSEA (i.e., .030) and ΔCFI (i.e., .020) might be acceptable when evaluating metric invariance (Rutkowski & Svetina, 2014). We did not use the Chi-square differences to evaluate the changes of the model fit, as it is not recommended when testing measurement invariance under these conditions (Marsh et al., 2004; Rutkowski & Svetina, 2014). Accepted models in the invariance analyses (i.e., residual model) did have not only below-threshold changes-of-fit indices (ΔCFI and

Δ RMSEA) but also adequate or good CFI, TLI, and RMSEA model fit indices.

If measurement invariance could not be established, partial invariance was tested (i.e., models in which a subset of parameters was allowed to vary across groups; Milfont & Fischer, 2010). For example, if the changes in fit indices were greater than the recommended cutoff values on the residual level, we examined the modification indices (MIs) and relaxed equality constraints on the residuals of the specific item and population that generated the misfit (i.e., had the highest MI value), until it resulted in a partial residual invariant model. Then, we used this model for further steps of the analysis. In addition, when full measurement invariance could not be established, we calculated measurement invariance effect sizes for each group to quantify the practical consequences of the deviation from the fully invariant model (see Supplemental Material Table S7). Measurement invariance effect size is represented by the correlations between the latent variable estimates of the best-fitting model (e.g., residual) and the fully invariant (latent mean) model in each group-based measurement invariance analysis. Consistently high ($r > .90$) correlations indicate that deviation from the fully invariant model has minimal practical consequences on the latent scores.

Monte Carlo simulation was conducted to establish the minimum sample sizes for groups involved in the CFA and the measurement invariance analysis and to ensure adequate power (of .80 or higher). The previously described three-factor, nine-indicator model was specified. Sample sizes ranging from 10 to 500 were considered, with the number of replications set at 50. Results indicated that groups needed to reach a minimum sample size of 460 to be included in the analyses (for further details, see https://osf.io/8kdzv/?view_only=dadcf82666140a6ab5a1c3f63b679be).

First, we tested measurement invariance across 20 languages out of the 26 (see Supplemental Material Table S1), and 33 countries out of the 42, as these groups reached the minimum sample size for the measurement invariance tests (see Supplemental Material Table S2). Next, gender-identity-based invariance was tested across three subgroups of men, women, and gender-diverse individuals. The gender-diverse subgroup was created for individuals indicating (a) non-binary, gender-fluid, or genderqueer identity; (b) an indigenous or other cultural gender minority identity (e.g., two-spirit); or (c) other gender identity not fitting the previous categories as some of these gender minority groups did not amount to the required minimum sample size.³ As the fourth step, eight subgroups (i.e., heterosexual, gay and lesbian, bisexual, queer and pansexual, homo- and hetero-flexible identities, asexual, questioning, and

other) were tested for measurement invariance across sexual orientations as more current literature indicates that grouping sexually diverse identities into one sexually diverse group might not be appropriate (Borgogna et al., 2019; Feinstein et al., 2021). For the details and the rationale of creating the gender-identity- and sexual-orientation-based subgroups, see https://osf.io/8kdzv/?view_only=dadcf82666140a6ab5a1c3f63b679be. As an additional last step of the invariance testing, we examined two subgroups of respondents across different relationship statuses as the relationship status might relate to an individual's SA. Self-identified single, divorced, and widowed participants were categorized as single, while married and common-law partners and people reporting being in a relationship were categorized as partnered individuals.⁴

Reliability and Validity. Cronbach's alpha and McDonald's omega were used to test the questionnaire's reliability. Values between 0.7 and 0.8 were considered acceptable, and values ≥ 0.8 were considered good or better (Goodboy & Martin, 2020; Nunnally, 1978).

Country-, Gender-Identity-, Sexual-Orientation-, and Relationship-Status-Based Group Comparisons. Finally, we compared SA data across 33 countries, three categories of gender, eight categories of sexual orientation, and two categories of relationship status. Due to deviation from the normal distribution, we used nonparametric tests (Kruskal-Wallis test and Mann-Whitney U-test) to compare means of the total scale, as well as the three subscales. Eta-squared effect sizes were calculated for each group comparisons, using benchmarks defined as small ($\eta^2 = .01$), medium ($\eta^2 = .06$), and large ($\eta^2 = .14$) by Cohen (1988).

Results

Descriptive Analysis and Handling of Missing Data

Descriptive information (ranges, means, standard deviations, skewness, and kurtosis) on the items and factors of the SAQ-9 is presented in Table 2 and Figure 1. Missing values were present in the analyzed domains, and based on Little's Missing Completely at Random (MCAR, $\chi^2 = 391.409$, $df = 312$, $p < .001$). Although the pre-registered analytic plan called for the Full Information Maximum Likelihood (FIML) method to handle missing values, this was not available in *lavaan*'s CFA function with the appropriate WLSMV estimator. Instead, we used *lavaan*'s default listwise deletion method, as the rate of missing data was negligible (0%–

Table 2. Descriptive Statistics of the Items of the Short Sexual Assertiveness Questionnaire (SAQ-9).

Items	Range	M	SD	Skew.	SE	Kurt.	SE
<i>Initiation</i>	3–21	16.66	3.83	–1.09	0.01	0.91	0.02
1. I am open with my partner about my sexual needs.	1–7	5.45	1.49	–1.07	0.01	0.55	0.02
2. I let my partner know if I want to have sex.	1–7	5.75	1.31	–1.44	0.01	2.09	0.02
3. It is easy for me to discuss sex with my partner.	1–7	5.46	1.59	–1.06	0.01	0.33	0.02
<i>Refusal</i>	3–21	15.16	3.93	–0.45	0.01	–0.37	0.02
4. I refuse to have sex if I don't want to.	1–7	5.31	1.55	–0.91	0.01	0.09	0.02
5. I find myself having sex when I do not really want it.	1–7	4.91	1.74	–0.43	0.01	–1.02	0.02
6. It is easy for me to say no if I don't want to have sex.	1–7	4.95	1.68	–0.62	0.01	–0.63	0.02
<i>Risk communication</i>	3–21	12.91	5.64	–0.25	0.01	–1.10	0.02
7. I ask my partner if he or she has practiced safe sex with other partners.	1–7	4.19	2.19	–0.19	0.01	–1.45	0.02
8. I ask my partners about their sexual history.	1–7	4.49	2.05	–0.42	0.01	–1.19	0.02
9. I ask my partners whether they have ever had a sexually transmitted infection/disease.	1–7	4.24	2.17	–0.19	0.01	–1.44	0.02
Total score	9–63	44.74	9.62	–0.31	0.10	–0.33	0.02

Note. M = mean, SD = standard deviation, Skew. = skewness, SE = standard error, Kurt. = kurtosis. Item 5 has been reverse-coded.

1%). All possible response levels were endorsed on all nine items of the SAQ-9.

Structural Validity

The SAQ was originally found to be a three-factor scale (Loshek & Terrell, 2015), and the shortened version was expected to keep this structure. Therefore, a first-order, three-factor model was tested on the total sample. The CFA demonstrated an excellent model fit (CFI = .996, TLI = .994, RMSEA = .025, 90% CI = [.023, .067]). Factor loadings ranged between .75 and .85, except for one item in the *Refusal* dimension (i.e., *I find myself having sex when I do not really want it.*), which had a factor loading of .45, the lower threshold of acceptable factor loadings based on Comrey and Lee (1992). Descriptive data of the items, standardized factor loadings, and inter-factor correlations are reported in Table 3.

Measurement Invariance Tests Across Languages, Countries, Genders, Sexual Orientations, and Relationship Statuses

As a first step, we tested measurement invariance across languages (Supplemental Material Table S1). Examining the changes in goodness-of-fit indices, a metric-level invariance was achieved. Following the pre-registered analysis plan, we tested partial scalar invariance. Based on the MIs, we relaxed constraints of scalar (intercept) equivalence for Item 5 (*Refusal* subscale, *I find myself having sex when I do not really want it*) in the Czech translation (MI = 1333.983). With the partial scalar invariance, we achieved residual-level invariance.

Second, we examined invariance across country-based subgroups (Supplemental Material Table S2).

Because we had too many groups to be included in one measurement invariance analysis, we then split them into two random sets based on their alphabetical order, and we conducted two separate measurement invariance tests. As a result, metric invariance was established in both sets. Again, based on the MIs calculated for each set, we relaxed scalar constraints for Item 5 in the Israeli (MI = 599.542) and Mexican samples (MI = 757.04). Changes in the fit indices were adequate for the partial scalar model, and we established residual-level invariance in both sets of countries.

As a third step, gender-identity-based subgroups (i.e., men, women, and gender-diverse individuals) were tested for measurement invariance (Supplemental Material Table S3). Based on the changes in the fit indices, metric but not scalar invariance was achieved. Based on the MIs, we relaxed the constraints of scalar equivalence for Item 5 in the “women” subgroup (MI = 1955.819), resulting in latent variance-covariance invariance across groups.

Next, subgroups of sexual orientations (i.e., heterosexual, gay and lesbian, bisexual, queer and pansexual, homo- and hetero-flexible identities, asexual, questioning, and other) were tested for measurement invariance (Supplemental Material Table S4). Examining the changes in the fit indices, latent variance-covariance invariance was achieved.

In the last step of invariance testing, subgroups based on relationship statuses (i.e., single or in a relationship) were analyzed (Supplemental Material Table S5). Latent mean invariance was achieved across subgroups, indicating that there are no latent mean differences between partnered and single individuals.⁵ Measurement invariance effect sizes were $r \geq .996$ across language-, country-, gender-identity-, and sexual-orientation-based

Table 3. Standardized Factor Loadings in the Confirmatory Factor Analysis, Reliability Indices, and Inter-Factor Correlations of the Short Sexual Assertiveness Questionnaire (SAQ-9) on the Total Sample.

Items	Standardized factor loadings	α	ω
<i>Initiation</i>			
1. I am open with my partner about my sexual needs.	0.80	0.84	0.85
2. I let my partner know if I want to have sex.	0.77		
3. It is easy for me to discuss sex with my partner.	0.83		
<i>Refusal</i>			
4. I refuse to have sex if I don't want to.	0.74	0.70	0.72
5. <i>I find myself having sex when I do not really want it.</i>	0.47		
6. It is easy for me to say no if I don't want to have sex.	0.80		
<i>Risk communication</i>			
7. I ask my partner if he or she has practiced safe sex with other partners.	0.80	0.85	0.85
8. I ask my partners about their sexual history.	0.83		
9. I ask my partners whether they have ever had a sexually transmitted infection/disease.	0.82		
Total score		0.78	0.75

Inter-factor correlations of the SAQ-9			
	Initiation	Refusal	Risk communication
Initiation	—		
Refusal	.37	—	
Risk communication	.35	.29	—

Note. All factor loadings and correlations were statistically significant at $p < .001$; α = Cronbach's alpha, ω = McDonald's omega. Item 5 has been reverse-coded.

groups, indicating that discrepancies between the best-fitting model and the latent mean model have negligible practical impact on the latent scores (Supplemental Material Table S7).

Reliability Analysis

Cronbach's alpha and McDonald's omega coefficients and inter-factor correlations are presented in Table 3. The *Initiation*, *Refusal* and *Risk communication* subscales demonstrated acceptable to good internal consistency (total $\alpha = .78$, total $\omega = .75$) and moderate inter-factor correlations (p values range between .29 and .37, $p < .001$).

Country-, Gender-Identity-, Sexual-Orientation-, and Relationship-Status-Based Group Comparisons

Significant differences were observed between the countries that were included in the measurement invariance tests ($H(33) = 2,185.03$, $p < .001$, $\eta^2 = .035$). Croatia, Spain, and North Macedonia had the highest total scores on overall SA, while Lithuania, South Korea, and the Czech Republic had the lowest ones. The ranking of high- and low-scoring countries, however, differed for each subscale: North Macedonia, Italy, and Bangladesh

reached the highest mean scores on the *Initiation* subscale; Spain, Portugal, and France on the *Refusal* subscale; and Croatia, Colombia, and Italy on the *Risk communication* subscale. Lithuania, Germany, and Taiwan were among the lowest-scoring countries on the *Initiation* subscale; Hungary, China, and Taiwan on the *Refusal* subscale; and Brazil, South Korea, and the Czech Republic on the *Risk communication* subscale. In each country, participants reached the highest mean scores on the *Initiation* subscale and scored the lowest on the *Risk communication* subscale. Taiwan was the only exception for this, where the mean score of the *Refusal* subscale was the lowest.

Means of the overall scale differed significantly across the three gender-identity-based groups ($H(3) = 1,764.80$, $p < .001$, $\eta^2 = .027$) and the eight sexual-orientation groups ($H(8) = 577.124$, $p < .001$, $\eta^2 = .009$). Men scored the lowest, while gender-diverse individuals scored the highest. Men scored significantly lower on the *Initiation*, *Refusal*, and *Risk communication* subscales than women and gender-diverse individuals. Gender-diverse individuals exhibited the highest scores on all subscales. However, they only differed significantly from women in *Risk communication*. Asexual individuals and participants who indicated that they were unsure or questioning their sexual orientation scored the lowest on overall SA, as well as in the

Table 4. Means and Standard Deviations of the Sexual Assertiveness Questionnaire (SAQ-9) and Its Subscales by Countries.

	SAQ-9 total score		Initiation		Refusal		Risk communication	
	M	SD	M	SD	M	SD	M	SD
Algeria	43.00	11.09	15.08	4.32	15.83	3.41	12.08	6.93
Australia	44.09	9.79	16.25	3.95	15.31	3.99	12.54	5.60
Austria	44.49	9.38	16.52	3.73	15.31	4.07	12.65	5.53
Bangladesh	44.16	10.26	17.49	3.70	15.69	3.90	11.14	6.77
Belgium	43.74	9.63	15.95	4.13	15.51	3.75	12.25	5.60
Bolivia	43.97	9.66	16.65	3.86	14.83	4.05	12.48	5.18
Brazil	42.66	10.42	16.27	4.24	14.98	4.08	11.39	5.99
Canada	45.64	9.76	16.53	3.96	15.89	4.03	13.20	5.73
Chile	45.79	9.14	17.15	3.44	15.50	3.84	13.14	5.33
China	44.39	8.05	16.53	3.29	14.28	3.32	13.57	5.26
Colombia	47.10	9.46	16.76	3.68	15.82	3.71	14.52	5.16
Croatia	48.24	8.99	17.40	3.42	16.16	3.71	14.68	5.36
Czech Republic	41.00	8.61	15.97	3.77	14.45	3.40	10.57	5.15
Ecuador	44.95	9.71	16.78	3.68	15.35	3.85	12.83	5.71
France	45.92	9.95	17.06	3.93	16.35	4.13	12.49	5.77
Germany	42.76	9.39	15.78	3.84	15.16	3.72	11.82	5.66
Gibraltar	45.64	11.30	16.64	4.68	15.95	4.07	13.05	6.11
Hungary	43.13	9.06	17.13	3.47	14.35	4.02	11.60	5.67
India	44.13	10.87	16.94	4.04	14.96	3.89	12.19	6.19
Iraq	36.17	12.16	13.52	6.36	12.83	3.41	9.83	6.41
Ireland	44.24	10.40	16.16	4.08	15.50	4.12	12.56	5.83
Israel	44.03	10.11	16.41	4.13	15.21	3.84	12.35	6.06
Italy	47.15	9.38	17.60	3.67	15.44	4.09	14.10	5.32
Japan	38.29	9.84	14.83	4.53	13.80	3.70	9.65	5.87
Lithuania	42.58	9.52	15.90	3.93	14.96	3.84	11.70	5.65
Malaysia	45.92	9.26	16.67	3.74	15.36	3.61	13.89	5.51
Mexico	47.50	9.03	17.37	3.57	16.12	3.73	14.01	5.20
New Zealand	43.64	9.98	15.94	4.13	15.14	4.05	12.56	5.51
North Macedonia	47.84	9.16	17.62	3.58	16.20	3.64	14.01	5.52
Panama	45.76	9.53	16.62	3.92	16.03	3.69	13.11	5.69
Peru	45.82	9.59	17.08	3.77	15.51	3.94	13.21	5.58
Poland	45.27	9.03	16.33	3.72	14.86	3.63	14.08	5.16
Portugal	47.52	9.83	17.27	3.80	16.39	3.87	13.86	5.69
Slovakia	45.05	8.90	17.29	3.63	15.10	3.85	12.63	5.32
South Africa	45.41	10.29	16.48	4.15	15.04	4.15	13.88	5.87
South Korea	42.04	9.78	16.02	4.12	14.96	3.87	11.06	5.58
Spain	47.86	9.43	17.43	3.56	16.39	3.82	14.03	5.51
Switzerland	45.86	9.94	17.04	3.80	15.86	4.11	12.94	5.68
Taiwan	43.51	8.33	15.66	3.73	13.80	3.10	14.06	4.85
Turkey	44.82	9.32	17.27	3.47	14.38	4.22	13.17	5.57
United Kingdom	44.67	9.62	16.12	4.10	15.51	4.03	13.02	5.31
United States of America	45.60	10.38	16.42	4.18	15.32	4.33	13.85	5.70
Other	44.31	9.85	16.64	3.98	14.89	4.02	12.76	5.61
Kruskal-Wallis test								
	H	η^2	H	η^2	H	η^2	H	η^2
	2,185.03*	.035	1,540.98*	.025	1,833.23*	.030	2,399.42*	.039

Note. M = mean; SD = standard deviation; η^2 = eta-squared; H = Kruskal–Wallis test statistics. Only countries with a minimum sample size of 460 (in bold) were included in the measurement invariance analysis and the country-based group comparisons. The minimum sample size was determined with Monte Carlo simulation.

* $p < .001$.

Initiation and *Refusal* subscales. Heterosexual participants scored significantly lower on the *Risk communication* subscale than all other groups of sexual

orientations. Queer and pansexual, as well as bisexual participants, scored the highest on all three subscales. Participants who were in a relationship reported

Table 5. Groups of Genders, Sexual Orientations, and Relationship Statuses Compared Across Sexual Assertiveness and Its Domains.

Variables	SAQ-9 total score		Initiation total score		Refusal total score		Risk communication total score	
	M	SD	M	SD	M	SD	M	SD
Gender								
Man	42.87	9.39	16.57	3.82	14.74	3.86	11.53	5.67
Woman	45.94	9.54	16.71	3.83	15.44	3.94	13.78	5.44
Gender-diverse individuals	46.59	9.83	16.86	3.84	15.43	4.32	14.29	5.36
Kruskal-Wallis test								
	H	η^2	H	η^2	H	η^2	H	η^2
	1,764.80*	.027	41.53*	.001	563.95*	.009	2,487.62*	.038
	M	SD	M	SD	M	SD	M	SD
Sexual orientation								
Heterosexual	44.28	9.58	16.63	3.82	15.08	3.87	12.55	5.71
Gay or lesbian	45.55	9.42	16.48	3.91	15.85	3.90	13.21	5.47
Bisexual	46.44	9.57	17.02	3.74	15.46	4.10	13.95	5.40
Queer and pansexual	47.28	9.67	17.13	3.77	15.56	4.29	14.59	5.21
Homo- and hetero-flexible identities	45.52	9.29	16.71	3.74	15.15	3.92	13.65	5.31
Asexual	43.16	10.88	15.42	4.41	14.14	4.64	13.65	5.49
Questioning	43.67	10.19	15.96	4.19	14.39	4.31	13.32	5.49
Other	45.09	10.34	16.38	4.36	14.89	4.31	13.83	5.54
Kruskal-Wallis test								
	H	η^2	H	η^2	H	η^2	H	η^2
	577.124*	.009	186.39*	.003	292.23*	.004	697.18*	.011
	M	SD	M	SD	M	SD	M	SD
Relationship status								
Single	44.10	9.45	16.47	3.79	15.16	4.09	12.47	5.30
In a relationship	44.98	9.66	16.72	3.84	15.17	3.88	13.07	5.75
Mann-Whitney U test								
	U	η^2	U	η^2	U	η^2	U	η^2
	424,260,588.50*	.001	422,814,374.00*	.001	399,911,241.50	.000	428,724,823.50*	.002

Note. M = mean; SD = standard deviation; η^2 = eta-squared; H = Kruskal-Wallis test statistics; U = Mann-Whitney U test coefficient.

* $p < .001$.

significantly higher levels of overall SA ($U = 424,260,588.50$, $p < .001$, $\eta^2 = .001$), *Initiation*, and *Risk communication* than single individuals; however, there was no significant difference on the *Refusal* domain ($U = 399,911,241.50$, $p > .05$, $\eta^2 = .001$).

Effect sizes related to the group differences were small, mostly $\eta^2 < .01$. The largest effect sizes were observed between overall SA, *Refusal*, and *Risk communication* scores in country-based groups and between overall SA and *Risk communication* scores in gender-identity-based groups. Yet, these were still considered to be small ($\eta^2 < .04$). Detailed test statistics, effect sizes, and means and standard deviations by country-, gender-

, identity-, sexual-orientation-, and relationship-status-based groups are presented in Tables 4 and 5.

Discussion

Research of SA has increased over the last three decades. However, important questions about scales' validity with diverse demographic groups have remained largely unanswered, hindering cross-cultural and comparative research of SA. Therefore, the present study validated a short measure that assesses the three commonly described SA domains (i.e., initiation of and communication about desired sexual activity, rejection of

unwanted sexual activity, and communication about sexual risk) and examined its measurement invariance across different cultures, genders, sexual orientation, and relationship statuses. SAQ-9 demonstrated good structural validity and reliability, as well as measurement invariance across the aforementioned groups. We observed significant differences between genders, with men being significantly less assertive than women and gender-diverse individuals. We also reported on SA differences between sexual orientations, where bisexual, pansexual, and queer individuals exhibited significantly higher SA, and asexual and questioning participants exhibited significantly lower SA relative to other sexual orientations. Moreover, we made translations freely available in 26 languages to further cross-cultural research investigating SA.

Psychometric Properties of the SAQ-9

As the first study assessing the internal structure of the short Sexual Assertiveness Questionnaire, the SAQ-9 replicated the three-factor model previously identified in a women-only study by Loshek and Terrell (2015) in a large and diverse sample. All items' factor loadings were acceptable, although one in the *Refusal* subscale (i.e., Item 5, *I find myself having sex when I do not really want it*) was on the lower threshold of fair factor loading (Comrey & Lee, 1992). This may suggest that the item is less effective in measuring the underlying construct of refusal assertiveness than the others. The lower factor loading indicates that the item is less strongly correlated with the latent construct, meaning that it may not be as good of an indicator of the construct as the other items on the factor. It is important, however, to consider practical factors when interpreting poorer item performance. This item was the only reversed item in the questionnaire, which was in the middle of a relatively long survey battery. In addition to reversed item bias (Weijters et al., 2013), participants' fatigue may have contributed to the item's performance. When respondents are tired or experiencing reduced attention, cognitive processing can become more challenging, and reversed items may be particularly difficult to comprehend. Therefore, it is common for reversed items to have lower factor loadings and higher MIs, especially when placed in the middle of a lengthy survey battery (Egleston et al., 2011). It may be worthwhile to conduct further research to determine the causes of the poorer item performance and whether there may be ways to improve the item's effectiveness in measuring the construct.

To ensure that the constructs measured are consistent across different demographic populations and that the SAQ-9 is a valid and reliable tool to compare scores across groups, we conducted measurement invariance analysis across languages, countries, genders, sexual orientations,

and relationship statuses (Milfont & Fischer, 2010). Both language- and country-based invariance were achieved on a residual level, suggesting that observed differences in scores can be attributed to true group differences rather than measurement bias. The gender-identity-based invariance analysis across groups of men, women, and gender-diverse individuals also resulted in latent variance-covariance invariance, suggesting that the scale is suitable for cross-gender comparisons (Meuleman, 2012). Following the pre-registered analytic plan, we tested for partial scalar invariance in the language-, country-, and gender-identity-based groups where only metric invariance was achieved initially. To achieve at least partial scalar invariance, we examined the MIs and relaxed the constraints of intercept equivalence for the indicated item and group. In all cases, Item 5 had the highest MI, suggesting that the poor item performance may be a result of its reversed nature. In addition, some authors have previously proposed that only two indicators (items) are needed to be fully invariant to make meaningful comparisons between groups, which was a criterion fulfilled in these cases (Steenkamp & Baumgartner, 1998).

The SAQ-9 was found to be an invariant measure across groups of different sexual orientations, suggesting that the scale measures the same constructs similarly across all eight groups of sexual orientations. Similarly, we corroborated measurement invariance across groups of single and partnered individuals. These results suggest that the scale can be used to compare SA levels across these groups, which can provide important insights into the experiences and needs of individuals with different sexual orientations and relationships. Although the language-, country-, gender-identity-, and sexual-orientation-based groups had highly unbalanced sample sizes, sub-sampled measurement invariance tests (Yoon & Lai, 2018) corroborated the conclusion of the original measurement invariance tests, suggesting that cross-group comparisons of SA are feasible and valid with the SAQ-9.

Overall, the measurement invariance tests provided strong evidence for the utility of the SAQ-9 in research among diverse populations. Our findings suggest that the SAQ-9 is a suitable measure for comparing groups of different cultures, genders, relationships, and sexual orientations, including those of lesbian, gay, bisexual, transgender, queer and other sexual and gender minority (LGBTQ +) identities—groups previously rarely represented in studies of SA (Ho et al., 2021).

Findings on Demographic Differences

Regarding country differences, Croatia, Spain, and North Macedonia emerged as countries with the highest overall SA, whereas Lithuania, South Korea, and the Czech Republic exhibited the lowest scores. Of note, the

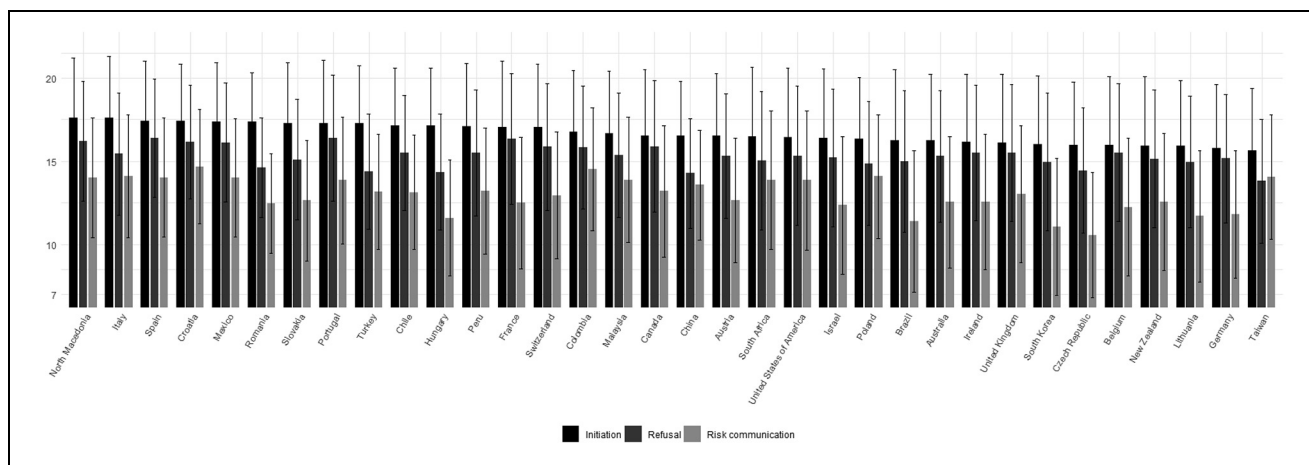


Figure 1. Mean Scores of the Initiation, Refusal, and Risk Communication Subscales by Countries

Note. Only countries with a minimum sample size of 460 were involved in the measurement invariance analysis and the country-based group comparisons. The minimum sample size was determined with Monte Carlo simulation, see details in the main text.

rankings of high- and low-scoring countries varied for each domain, and effect sizes of group differences were relatively low. Examining the rankings of the participating countries, no clear geographical, cultural, or religious patterns emerged, although Lithuania, Germany, Brazil, South Korea, the Czech Republic, Hungary, China, and Taiwan were among the lowest-scoring countries across at least two domains, while North Macedonia, Italy, Spain, Croatia, Mexico, and Portugal were among the highest. In almost all countries, participants appeared the most comfortable initiating sex or sexual talk, less comfortable with refusing sex, and the least comfortable with discussing sexual risk-related topics with a partner. However, these results are to be interpreted with caution due to the non-representative sampling methods.

Previous research on differences in SA between men and women has been somewhat inconsistent, and gender-related SA research has largely neglected individuals outside the gender binary. Although earlier studies have tended to find that men are more sexually assertive than women (Haavio-Mannila & Kontula, 1997; Pierce & Hurlbert, 1999; Snell et al., 1991), more recent research has produced seemingly conflicting results (Gil-Llario et al., 2022; Lammers & Stoker, 2019; Lopez-Alvarado et al., 2022; Stulhofer et al., 2009). In our study, significant gender-related differences were observed between men, women, and gender-diverse individuals. Men exhibited significantly lower levels of assertiveness than women and gender-diverse individuals on all three domains, while women and gender-diverse individuals only differed significantly in one domain. Gender-diverse participants demonstrated higher levels of risk communication assertiveness than women,

indicating that they may be better at communicating and negotiating about STI risks associated with sexual activities.

The findings of significantly lower SA in men are in line with some recent reports (Gil-Llario et al., 2022; Lopez-Alvarado et al., 2022; Stulhofer et al., 2009) and suggest the possibility of changing gender roles potentially affecting sexual dynamics. However, it remains ambiguous as to how this lack of assertiveness is expressed, as it could manifest as either passivity and withdrawal or alternatively as aggression and disregard for the needs and preferences of sexual partners. For example, in some recent studies, lower assertiveness in men was associated with both passive withdrawing communication due to sexual shame and aggressive initiation or even sexual coercion (Gil-Llario et al., 2022; Lyons et al., 2022). Another potential explanation for this finding is that certain aspects of SA, such as refusal and communication about risk, may be of greater importance for women than for men as women are generally at higher risk of unwanted sexual contact and negative sexual and reproductive health outcomes. Supporting this notion, a study reported that higher SA was associated with better general mental well-being and higher relationship satisfaction in women, but not in men (Lopez-Alvarado et al., 2022). This implies that SA may be more important for the mental and relational well-being of women than for men. We speculate that a similar mechanism may explain the higher levels of SA observed in gender-diverse and multisexual individuals as they have been shown to be at greater risk of sexual coercion and intimate partner violence (T. N. T. Brown & Herman, 2015; Dworkin et al., 2021; Rothman et al., 2011; Scandurra et al., 2019).

To date, no prior comparative study has examined SA across different sexual orientations. Our findings revealed that individuals who identify as asexual or were unsure about their sexual orientation exhibited particularly low levels of SA, especially assertive initiation and refusal skills, while heterosexual participants reported the lowest levels of assertiveness in risk communication. In contrast, participants identifying as queer, pansexual, or bisexual demonstrated higher SA levels across all three domains than others. These findings have important implications for sexual health education and interventions. SA is related to healthier and more satisfying experiences, and the low levels of SA observed among individuals with asexual and uncertain orientation are particularly concerning given their vulnerability to heteronormative and allosexual pressure (Gupta, 2017; Lund, 2021; Mollet & Black, 2023). Similarly, the low level of risk-communication competence among heterosexual individuals suggests a need for improved sexual health education for this group.

To our knowledge, only one study has explicitly compared single and partnered individuals according to their levels of SA, but no significant differences were found in men or women (Lopez-Alvarado et al., 2022). One might hypothesize that partnered individuals would have higher levels of SA than their single counterparts, as being in a committed relationship may provide a sense of safety and security that allows for greater expression of one's sexual desires and preferences. Conversely, single individuals may be more assertive in their sexual communication and behaviors, as they may have greater autonomy and less concern for the expectations or judgments of a partner. Our findings were in line with the former notion that individuals in a relationship showed higher levels of initiation and risk communication assertiveness, while there was no difference in the refusal domain. Although the effect size of this difference was small, our results suggest that it may be worth considering relationship status as a factor affecting individuals' SA in both future research and sexual health interventions.

Limitations and Future Studies

The current study has limitations, which should be considered when interpreting the results. Using a convenience sample may limit the generalizability of the findings to the population, self-report survey measures are vulnerable to recall and social desirability biases, and online sampling methods may introduce selection bias. General limitations related to the ISS are discussed further on the study's OSF page (https://osf.io/n3k2c/view_only=838146f6027c4e6bb68371%20d9d1%204220b5). A specific limitation that stems from a

self-selected sample is that probably those individuals decided to participate in the study who had a genuine interest toward sexuality and motivation to share details on their intimate experiences with the research team. This indirectly suggests that many participants might have had above-average communication skills and assertiveness, which in turn might have led to better SA. Therefore, we might have seen higher SA than what would have been observed in a study with a probabilistic sample.

In addition, non-verbal styles of sexual communication are not well-represented in the SAQ-9 or SA research in general. It is possible that our understanding of assertive social competence in the context of sexual communication is limited by a focus on verbalized assertiveness, as other forms of assertive behavior such as non-verbal cues for initiation or refusal may be equally or more important (Mercer Kollar et al., 2016). This suggests a need for further research to explore the role of non-verbal communication in SA. There is also a lack of specificity regarding which socio-sexual interactions are considered to be contexts for sexually assertive behaviors (e.g., whether online dating or other digital contexts are included). Such considerations may impact the generalizability of findings across different socio-sexual contexts.

The comparative results in a uniquely large and diverse international sample facilitate an understanding of demographic factors related to differences in SA. However, further investigation is needed to understand how the intersections of gender, culture, sexual orientation, and relationship status relate to SA. In addition, the associations between SA and these variables are complex and likely influenced by multiple other intra- and inter-personal and contextual factors (e.g., individual personality differences, relationship dynamics). Future research should investigate these and other complexities to further develop a comprehensive understanding of SA. Importantly, in this study, binary trans men and women were grouped with binary cis men and women due to their low numbers in the sample. Future studies should examine this population with more nuance as their experiences, identities, and needs may differ significantly from those of cisgender individuals.

Conclusions and Implications

Our study fills a methodological gap and proposes a short measure available in 26 languages, conceptualizing the three key domains of SA. Based on the results from our large-scale cross-cultural survey, the SAQ-9 is a valid and reliable measure of sexual initiation, refusal, and risk-communication assertiveness across different languages, countries, genders, sexual orientations, and

relationship statuses. Our study is anticipated to facilitate future research to explore cross-cultural and other demographic differences in the construct with increased detail and nuance.

The findings corroborated recent results (Gil-Llario et al., 2022; Stulhofer et al., 2009) regarding lower SA in men than in women, extended knowledge to gender-diverse individuals, and identified vulnerable groups of sexual minorities (i.e., asexual individuals and individuals unsure about their sexual orientation). The study specifically provided insights into heterosexual participants' reduced safe-sex communication skills relative to sexual minorities. Furthermore, as the first comparative study of SA surveying gender and sexual minorities, significantly higher levels of assertive skills were observed among participants identifying as gender-diverse or women, as well as bisexual, pansexual, and queer-identified participants. Our results revealed significant differences between single and partnered individuals' SA, with those in relationships reporting more robust initiation and risk-communication SA. Assertive refusal tendencies, however, did not differ in the relationship-status-based groups.

Finally, significant cross-cultural differences in all domains of SA were observed, although no clear religious, cultural, or geographical patterns emerged, and the results are to be interpreted with caution due to the described sample bias. Of the three factors, *Risk communication* assertiveness is the most crucial for STI-related public health outcomes, while the *Refusal* domain also holds significant importance due to its association with increased vulnerability to unwanted or unsafe sexual encounters. Therefore, increasing a focus on SA in sexual education and public health interventions may be especially beneficial in lower-scoring countries, such as Brazil, South Korea, the Czech Republic, Hungary, China, and Taiwan.

In conclusion, identifying significant—although small—demographic differences in SA across gender-identity-, sexual-orientation-, relationship-status-, and country-based groups holds several implications. The findings suggest that while demographic factors may shape SA, the impact of each may be relatively limited. Therefore, findings highlight the importance of investigating and better understanding other potential factors that may have a more substantial influence on SA, such as individual and couple-level factors (NasrollahiMola et al., 2023; Santos-Iglesias et al., 2013; Zhang & Yip, 2018). Nevertheless, the recognition of demographic differences emphasizes the importance of promoting comprehensive sexual education and empowerment initiatives that target individuals across diverse demographic backgrounds, ensuring equal access to resources

regardless of gender, sexual orientation, relationship status, or cultural background.

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Author Contributions

Study concept and design: L.N., M.K., S.W.K., Z.D., M.N.P., and B.B.; Investigation and data collection: all authors; Formal analysis: L.N. and B.B.; Funding acquisition: L.N., M.K., S.W.K., Z.D., H.F., K. Lewczuk, and B.B.; Methodology: L.N., M.K., S.W.K., Z.D., M.N.P., and B.B.; Project administration: L.N., M.K., and B.B.; Software: L.N., M.K., and B.B.; Supervision: B.B.; Validation: L.N., M.K., S.W.K., Z.D., M.N.P., and B.B.; Visualization: L.N.; Writing—original draft: L.N.; Revising it critically for important intellectual content: all authors; Final approval of the version to be published: all authors.

Declaration of Conflicting Interests

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performed grant reviews; edited journals/journal sections; given academic lectures in grand rounds, CME events, and other clinical/scientific venues; and generated books or chapters for publishers of mental health texts. The University of Gibraltar receives funding from the Gibraltar Gambling Care Foundation, an independent, not-for-profit charity. ELTE Eötvös Loránd University receives funding from Szerencsejáték Ltd. (the gambling operator of the Hungarian government) to maintain a telephone helpline service for problematic gambling. However, these funding sources are not related to this study, and the funding institution had no role in the study design or the collection, analysis, and interpretation of the data, the writing of the manuscript, or the decision to submit the paper for publication. J. Burkauskas works as a consultant at Cronos.

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Ethics Approval

The authors assert that all procedures contributing to this work comply with the relevant national and institutional committees’ ethical standards on human experimentation and the Helsinki Declaration. The study was approved by all collaborating countries’ national/institutional ethics review boards: <https://osf.io/e93kf>.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. Egypt, Iran, Pakistan, and Romania were included in the study protocol paper as collaborating countries (Bóthe et al., 2021); however, it was not possible to get ethical approval for the study in a timely manner in these countries. Chile was not included in the study protocol paper as a collaborating country (Bóthe et al., 2021) as it joined the study after publishing the study protocol. Therefore, instead of the planned 45 countries (Bóthe et al., 2021), only 42 countries are included in the present study.
2. In our study, we consistently and exclusively use the term “gender-diverse individuals” for gender minorities who do not identify with the binary genders of “men” and “women,” regardless of their trans status (e.g., genderqueer, genderfluid, non-binary, indigenous or other cultural gender minority identity [e.g., two-spirit], and other gender identities). The term “gender minority individual” is used more broadly, referring to both non-binary gender identities and transgender individuals. Binary trans men and women were coded as men and women in all gender-identity-based analyses in this study.
3. Binary trans men and women were grouped with binary cis men and women, respectively, due to their low counts ($n_{\text{trans men}} = 178$, $n_{\text{trans women}} = 119$) in the sample. Although we acknowledge that more nuance is needed in researching the assertiveness of trans individuals, we opted to group them based on their gender identity, rather than merging the experiences of binary trans men, binary trans women, and nonbinary gender-diverse individuals or omitting them from the analysis.
4. Highly unbalanced sample sizes across groups might affect the outcomes of measurement invariance analysis. Therefore, as requested during the review process, to test the robustness of our results, we conducted sub-sampled invariance tests across language-, country-, gender-identity-, and sexual-orientation-based groups, following the instructions of Yoon and Lai (2018). As this was in addition to the pre-registered analytic plan, the detailed description of the process is presented in the Supplemental Materials (Table S6).
5. Highly unbalanced sample sizes across groups might affect the outcomes of the measurement invariance analysis. Therefore, to test the robustness of our results, we conducted sub-sampled invariance tests across language-, country-, gender-identity-, and sexual-orientation-based groups, following the instructions of Yoon and Lai (2018). The detailed description of the process and the results are presented in the Supplemental Materials (Table S6). Even though they somewhat nuance the results of the full-sample invariance analyses, they do not change the conclusions about the cross-groups comparability of the SAQ-9 scores.

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