Title: Sociosexuality and correlates of condom use in Colombia: Validation of the Latin American version of the SOI-R.

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The authors have declared they have no competing interests to disclose.

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Number of words (just work body): 4230

Abstract

Sociosexuality has been widely studied throughout the world, but there are no psychometric analyses of an instrument to obtain objective measures of this construct in Spanish-speaking America. The Sociosexual Orientation Inventory-Revised (SOI-R) is proposed as a valid and reliable instrument to assess sociosexuality in this region. Exploratory Factorial Analysis (EFA) followed by Confirmatory Factorial Analysis (CFA) was performed to determine the psychometric properties of the SOI-R. Associations between sociosexuality with AIDS phobia and condom use established as measures of external validity. The results show that in a sample of Colombian participants, the three-dimensional structure of the SOI-R is valid and presents high- reliability indices. Likewise, it established that sociosexual behavior, but not attitude and desire, is associated with the frequency of condom use and that sociosexuality has significant associations with AIDS phobia. Finally, we discussed the implications of these findings for Spanish-speaking America.

Keywords: Sociosexuality; Validation; Latin America; Condomess; AIDS phobia.

Introduction

The sociosexuality construct was originally advanced by Kinsey et al. (1948) to refer to an individual disposition to have casual sex without expecting commitment or affective bonds. Sociosexuality was conceptualized as a one-factor construct reflecting past behaviors (e.g., frequency of sex in the past month), behavioral intentions (e.g., number of casual partners foreseen for the future), and attitudes toward casual sex (Simpson & Gangestad, 1991). This was later revised, because multi-factor models showed better fit indexes (for discussions, see Jackson & Kirkpatrick, 2007; Penke & Asendorpf, 2008;

Webster & Bryan, 2007). For example, Webster and Bryan (2007) found empirical support for a two-factor model that differentiated between behavioral and attitudinal aspects of sociosexuality (for similar results, see Banai & Pavela, 2015). Further detailing the sociosexuality construct, Penke and Asendorpf (2008) reasoned that the original sociosexuality conceptualization did not contemplate evolutionary psychological mechanisms that could influence mating strategies. Hence, the authors added sociosexual desire to the conceptualization of the construct and proposed the SOI-R. This psychometrically sound instrument assesses (1) sociosexual behaviors, i.e., frequency of casual sex activities, (2) sociosexual attitudes, i.e., cognitive evaluations of casual sex, and (3) sociosexual desire, i.e., interest in having sex without commitment motivated by sexual fantasies and arousal. Since its proposal, the SOI-R has been validated and implemented in different socio-cultural contexts including Spain (Barrada et al., 2018), Hungary (Meskó et al., 2014), Portugal (Neto, 2016; Rodrigues & Lopes, 2017), Chile (Figuerola et al., 2018), Costa Rica (Hofer et al., 2010), Mexico (García & Díaz-Loving, 2011; Trejo et al., 2013), and Brazil (Bártová et al., 2020; Correa et al., 2014; Fernandes et al., 2016; Mafra et al., 2020; Nascimento et al., 2018; Natividade & Medeiros, 2015; Valentova et al., 2019, 2020), and became one of the most widely used instruments to assess sociosexuality.

Despite the number of studies examining sociosexuality in Latin America using the SOI-R, researchers have failed to properly examine its psychometric characteristics (with the exception of Brazil; Nascimento et al., 2018). Moreover, in Colombia there is a dearth of studies examining sociosexuality and how this individual difference shapes sexual activity and sexual risk taking (for an exception with a limited Colombian sample, see Marcinkowska et al. 2019). Therefore, our main goal was to validate the SOI-R in a Spanish-speaking Latin American sample of people. This provided objective indicators of

the adequacy of this measure to assess sociosexuality across different countries in Latin America, and extended the cross-cultural generalizability of this measure. Likewise, this study will provide researchers with a valid and reliable tool that allows them to understand sociosexual patterns and their implications for sexual behavior and decision-making to a greater extent.

Sociosexuality and Sexual Behaviors

In their seminal work, Simpson and Gangestad (1991) found that people with unrestricted sociosexuality were more likely to have sex with extradyadic partners and had fewer expressions of love and commitment to the romantic relationships, when compared to people with restricted sociosexuality. Several studies have contributed to understand the relevance of sociosexuality for short-term and long-term mating (e.g., Arnocky et al., 2016; Correa et al., 2017; Holtzman & Strube, 2013; Marcinkowska et al., 2019; Martins et al., 2016; Perilloux et al., 2013; Rodrigues & Lopes, 2017; Weiser, et al., 2018; Wlodarski, 2015; Zheng & Zheng, 2014; Rodrigues et al., 2016; Rodrigues et al., 2017). For example, heterosexual men tend to report a more unrestricted sociosexuality when they perceive to have more ability to capture and understand the emotions of others (Wlodarski, 2015). Heterosexual women, on the other hand, tend to report a more unrestricted sociosexuality when perceive themselves as more attractive (Perilloux et al., 2013). People with unrestricted sociosexuality are also more likely to engage in a wider array of online and offline sexual behaviors (Martins et al., 2016; Rodrigues et al., 2016; Weiser, et al, 2018; Zheng and Zheng, 2014), are more likely to engage in extradyadic behaviors, especially men, when they have more potential partners available (Arnocky et al., 2016; Weiser, et al., 2018), tend to report less quality in their relationships (Hall & Pichon, 2014; Rodrigues et al., 2019; Rodrigues et al., 2016, Rodrigues et al., 2017), and perceive to be more

dissatisfied in their monogamous relationship (Rodrigues et al., 2016). Furthermore, people with unrestricted sociosexuality are sexual sensation-seekers (Koomson & Teye-Kwadjo, 2020; Zheng, & Zheng, 2014), are more extraverted and less conscientious (Schmitt & Shackelford, 2008), score higher on the dark triad traits (i.e., machiavellism, psychopathy, and narcissism; Holtzman & Strube, 2013; Schmitt, et al., 2017), and tend to be less religious (Correa et al., 2017; Hall & Pichon, 2014; Koomson & Teye-Kwadjo, 2020).

Sociosexuality and Risk Taking

The relevance of sociosexuality extends beyond interpersonal and dyadic processes, and can help understand sexual health and the decision to use condoms. Indeed, people with unrestricted sociosexuality are more focused on sexual pleasure, perceive fewer sexual health threats, are less able to restrain their behavior in a risky situation, and perceive themselves as more vulnerable to HIV (Corbin, et al., 2016; Hall, 2012; Hall & Pichon, 2014; Rodrigues et al., 2019; Rodrigues et al., 2016, Rodrigues et al., 2017). For example, Corbin et al. (2016) found that unrestricted sociosexuality favors the excessive consumption of alcohol, and Seal and Agostinelli (1994) found that people with unrestricted sociosexuality used condoms less frequently, despite manifesting greater knowledge about their correct use. This shows that sociosexuality is crucial to understand individual predispositions toward sexual health protection and sexual risk-taking, and mainly, condom use decision-making.

Despite a large amount of research framed by different theoretical models (Espada, et al., 2016; Gomes & Nunes, 2018; Morales, et al., 2018; Plaza-Vidal et al., 2020) and informed by several interventions (Morales, et al., 2019, 2020), research has shown that consistent condom use is far from desirable. For example, a cross-national study with Latin American women showed that 4%-20% of the participants never used a condom when

having sex (Mejia et al., 2020). In another study, Ramírez-Correa and Ramírez-Santana (2018) found that 31% of the Chilean participants did not use condoms consistently in the past month, despite reporting sexual activity during that time. Particularly in the Colombian context, Valencia and Canaval (2012) found that although 73% of the participants reported more condom use self-efficacy (e.g., using condoms correctly), only 33% used condoms on a regular basis. Likewise, Arrivillaga et al. (2012) found that only 17.4% of Colombian participants used condoms at last intercourse. The authors also found that condom use rate was even lower (6.5%) among participants who were diagnosed with a sexually transmitted infection (STI). Following these findings, there is an urgent need to examine if sociosexuality is associated with condom use decision-making, in order to propose future initiatives and evidence-based strategies to foster consistent condom use in Latin American people.

Sociosexuality and AIDS phobia

Since the emergence of HIV, many people felt worried about the possibility of being infected and eventually dying. AIDS phobia can manifest itself as a recurrent fear of becoming infected with HIV, even when the risk infection is unlikely, with negative consequences for satisfaction with sexuality and life (Martins et al., 2019; Vallejo-Medina et al., 2018). Taking into account that one of the characteristics of phobias is enacting avoidance behaviors, people with AIDS phobia should avoid situations that can increase the risk of HIV infection. However, some studies suggest that this is not necessarily the case. Indeed, there is evidence showing that even though unrestricted sociosexuality is associated with the perception of more vulnerability to AIDS, both variables are also associated with greater likelihood of risky sexual behaviors (Hall, 2012; Hall & Witherspoon, 2011). In other words, people who are unrestricted in their casual sexual

behavior acknowledge the increased risk of infection, but still maintain their risk-taking behavior. Hence, we want to replicate which past studies found and examine if this association holds even when controlling for sociosexuality.

Current Study

This study had two main goals. First, we aimed to establish the validity and reliability of the Spanish version of the SOI-R in a sample of Colombian adults. This will allow us to have a reliable psychometric instrument to objectively measure sociosexuality in this region. Second, we aim to examine if sociosexuality is a correlate of retrospective condom use even when considering other known predictors of condom use such as demographic variables (e.g., gender, age, marital status) and AIDS phobia. This will allow us to deepen our understanding of the aspects that can influence decision-making about condom use and highlight the specific role of sociosexuality.

Method

Participants

A total of 1,033 people assessed the online survey. Of these, 221 abandoned the survey before completion ($n = 166$) or did not respond correctly to the control item ($n = 55$). The final sample included 812 participants (64% women) with ages varying between 18 and 60 years ($M = 22.99$, $SD = 7.24$, $Q3 = 23$). Most participants identified themselves as heterosexual (87%), were college students (75.1%), were living in Colombia's Caribbean coast (96%), and were moderately religious ($M = 2.47$, $SD = 0.99$). Nearly half the sample indicated to be single (46.7%) or in a romantic relationship (41.7%).

Measures

Revised Sociosexual Orientation Inventory (SOI-R)

The SOI-R is a 9-item self-report test developed by Penke and Asendorpf (2008) that assesses the three components of sociosexuality: a) sociosexual behavior (e.g., "How many partners have you had penetrative sex with in your life?"), b) sociosexual attitudes (e.g., "Sex without love is okay"), and c) sociosexual desire (e.g., "How often do you experience sexual arousal when you are in contact with someone you are not in a committed romantic relationship?"). Responses were given in 5-point response scales (anchors differ according to the item). In this study we used the Spanish version of the SOI-R validated by Barrada et al. (2018) with a Spanish sample.

Multicomponent AIDS Phobia Scale (MAPS)

We used the Colombian version of the MAPS (Vallejo-Medina et al., 2018). This measure includes 11 items and assesses fear of AIDS (e.g., "I can't stop worrying about AIDS") and fear of people with AIDS (e.g., "I would go to a neighborhood where someone with AIDS lives"). Responses were given in 5-point rating scales (1 = *Completely agree* to 5 = *Completely disagree*). The MAPS showed good reliability indexes in the current study ($\Omega=.82$) and was used to determine the convergent validity of SOI-R.

Frequency of Condom Use

We used a single item asking participants how frequently they use condoms with their partners in general. Responses were given in a 5-point rating scale (1 = *Never* to 5 = *Always*).

Procedure

Data were collected through an online survey on Google forms from April 2019 to May 2020. People were invited to participate in an online study about sexual behaviors through public posts on social media (the dataset is available at https://osf.io/d3kxr/?view_only=322489ce838e41c295120f6d8307f7d4). To be eligible to

participate, people had to have at least 18 years old, be sexually active, and live in Colombia. To ensure the quality of the data, we included one attention check item (Please check the option "*Completely agree*"). Participants agreed to the terms and conditions of the study. The informed consent included contact information for psychological care centers in case participants experienced any adverse emotional responses during the survey. This research was approved by the Ethical Committee at [*blinded for review*], Colombia (No. 185/2019).

Data analysis

We started by computing the factor analysis. We followed the guidelines of the two-step method (Anderson & Gerbing, 1988; Hair et al., 2014; Lloret-Segura et al., 2014), a method widely used in psychometric studies (e.g., Gravini-donado et al., 2019; Millán et al., 2016; 2013; Restrepo et al., 2020), that consists in the random split of the sample into two groups. We computed an EFA in the first group of participants ($n = 405$), using the 'fa' function of the 'psych' package (Revelle, 2020) in version R 4.0.2 (RCoreTeam, 2020) . We used the main axis method with promax rotation due to the theoretical obliquity of the sociosexuality subdimensions. To assess the appropriateness of implementing an EFA from both matrices, we examined the Kaiser-Meyer-Olkin test (KMO) and the Bartlett sphericity test for the Pearson and Polychoric correlation matrix. The EFA allowed us to test different factorial structures of the Latin American version of the SOI-R in Colombia, based on the criteria mentioned by Lloret-Segura et al. (2014).

In the second group of participants ($n = 407$), we computed a CFA using Lisrel 8.80 (Jöreskog & Sörbom, 2006). We also used the CFA to evaluate each factorial model identified in the EFA, by calculating its absolute, incremental, and parsimony adjustment indexes. The absolute fit indices were: Chi-square (χ^2), ratio χ^2 / degrees of freedom (df),

significance of χ^2 , Goodness of Fit Index (GFI), Approximation Mean Square Error (RMSEA), significance of RMSEA, Non-Centrality Parameter (NCP), Expected Cross Validation Index (ECVI) and Root Mean Square Residue (RMSR). The incremental adjustment indexes were: Goodness of Fit Index (AGFI), Tucker-Lewis Index (TLI), Normalized Fit Index (NFI) and Comparative Fit Index (CFI). The parsimony adjustment measures were: Parsimony Adjustment Normalized Index (PNFI) and Parsimony Adjustment Goodness Index (PGFI). We additionally tested models with a second-order factor representing an overall score of global sociosexuality, and a unidimensional model of SOI-R. Each model was estimated by both Maximum Likelihood (ML) and Unweighted Least Squares (ULS). The internal consistency of the final model was calculated using the Omega coefficient (McDonald, 1999). Once the validity and reliability of the SOI-R was established, we ran sensitivity analyses by comparing participants according to demographic variables (e.g., gender), and determined convergent validity by computing correlations with the MAPS scale. Lastly, we examined sociosexuality as a correlate of condom use frequency, with hierarchical regression models using R, version 4.0.2 (RCoreTeam, 2020). In the first step, we included demographic variables, and then added SOI-R and MAPS scores in the second step.

Results

EFA

Pearson correlation matrix ($KMO = .85$, Bartlett Sphericity Test, $\chi^2(36) = 2162.8$, $p < .001$) and polychoric correlation matrix ($KMO = .85$, Bartlett Sphericity Test, $\chi^2(36) = 682.6$, $p < .001$) showed it was pertinent to continue with the EFA in our sample. We identified four models based on the different criteria. Based on parallel analysis criteria the polychoric correlation matrix suggested the model 1, with two factors (66.8% cumulative

variance) that combined sociosexual attitudes and sociosexual desire into a single factor, while keeping sociosexual behavior as an independent factor. Eigenvalues obtained from both correlation matrices (Pearson = 64.8% cumulative variance; polychoric = 72.6% cumulative variance) allowed the identification of model 2 (eigenvalues criteria). This second model had three factors that replicated past studies (Barrada et al., 2018; Meskó et al., 2014; Nascimento et al., 2018; Neto, 2016; Penke & Asendorpf, 2008; Rodrigues & Lopes, 2017). Lastly, the sedimentation graph based on eigenvalues indicated two different structures based on each correlation matrix, which were discarded because they did not agglomerate enough items into the factors.

CFA

Based on the models obtained in the EFA, we added two models that included a global factor of second-order (model 1a and 2a, respectively). Lastly, we tested a unifactorial model (model 3). Tables 1 and 2 summarize the information regarding absolute, incremental, and parsimony adjustment indices of each model in its different parameters, and table 3 presents the matrix of rotated loads with the descriptive statistics of the test items, respectively. Results showed model 2a as the best adjusted to our sample. This model included the three original factors of the SOI-R with the expected distribution of items across factors, plus a fourth second-order factor referring to a global measure of sociosexuality. The absolute, incremental and parsimony fit indexes of the best model are as follows: $\chi^2(24) = 38.3$, $p < .001$; GFI = .98; RMSR = .028; RMSEA = .038, $p > .05$; ECVI = .2; NCP = 14.36; AGFI = .96; CFI = 1; TLI = .99; NFI = .99; PNFI = .66; PGFI = .52. χ^2 is affected when the sample size is large, so the statistics were calculated based on the ratio $\chi^2/\text{degrees of freedom}$.

[INSERT TABLE 1]

[INSERT TABLE 2]

[INSERT TABLE 3]

Reliability and sensitivity analyses

Results showed adequate reliability indexes from the global SOI-R score, $\Omega = .94$, as well as sociosexual behavior, $\Omega = .90$, sociosexual attitudes, $\Omega = .85$, and sociosexual desire, $\Omega = .87$. The SOI-R scores for each participant were calculated using the regression method (DiStefano et al., 2009). Correlations are summarized in Table 4. As expected, global sociosexuality was positively associated with sociosexual behavior, $r = .37$, $p < .001$, sociosexual attitudes, $r = .29$, $p < .001$, and sociosexual desire, $r = .33$, $p < .001$. Sociosexual behavior was associated with less sociosexual attitude, $r = -.25$, $p < .001$, less sociosexual desire, $r = -.31$, $p < .001$, and sociosexual attitude had negative association with sociosexual desire ($r = -.42$, $p < .001$).

[INSERT TABLE 4]

Global sociosexuality was related to frequency of condom use ($r = .12$; $p < .001$), and negatively to fear of people with AIDS ($r = -.02$; $p < .001$). Sociosexual behavior was associated with less frequent condom use ($r = -.09$; $p < .001$), more fear of AIDS ($r = .11$; $p < .001$), and more fear of people with AIDS ($r = .14$; $p < .001$). Also, sociosexual attitude had positive correlations with fear of AIDS ($r = .03$; $p < .001$) and condom use ($r = .11$; $p < .001$). Sociosexual desire was more frequently associated with condom use ($r = .09$; $p < .001$) and negatively associated with fear of people with AIDS ($r = -.02$; $p < .001$).

The level of overall sociosexuality was higher in men ($t(612) = 13.9$, $p < .001$), as was sociosexual behavior ($t(499) = 4.9$, $p < .001$), sociosexual attitudes ($t(601) = 3.7$, $p < .01$), and sociosexual desire ($t(506) = 3.35$, $p < .001$). From sexual orientation, there were differences in overall sociosexuality ($f(1) = 16.41$, $p < .001$), sociosexual attitude ($f(1) =$

21.6, $p < .38$), but there was no difference in desire ($f(1) = .001$, $p = .97$) and sociosexual behavior ($f(1) = .75$, $p = .38$). Similarly, there were differences according to marital status in the level of overall sociosexuality ($f(1) = 58.6$, $p < .001$), sociosexual desire ($f(1) = 47.8$, $p < .001$), sociosexual attitude ($f(1) = 6.27$, $p = .012$) and, in sociosexual behavior ($f(1) = 4.12$, $p = .042$). Post-hoc Tukey test determined that single participants showed higher levels of overall sociosexuality ($p < .001$) and sociosexual desire ($p < .001$). Respect to the condom use, men reported using condoms more frequently than women ($t(666) = 5.04$, $p < .001$), as well as singles with respect to those who are committed in a relationship ($f(1) = 90.13$, $p < .001$). Were not differences according sex orientation ($f(1) = 2.51$, $p = .11$). Tables 5, 6, and 7 present comparisons between groups according to gender, sexual orientation, and marital status, respectively.

[INSERT TABLE 5]

[INSERT TABLE 6]

[INSERT TABLE 7]

Predictive validity

Results from the first step of the hierarchical multiple hierarchical regression (see Table 8) showed that condom use was less frequent among older participants, $b = -.03$, $SE = .01$, $p = .004$, participants who were dating, $b = -.59$, $SE = .09$, $p < .01$, those who were cohabiting with their partner, $b = -.89$, $SE = .24$, $p < .001$, and married, $b = -.89$, $SE = .28$, $p < .001$; meanwhile, among men condom use was more frequent, $b = .42$, $SE = 0.1$, $p < .001$. No other associations with demographic variables reached significance, $ps > .05$. Results from the second step showed that condom use was more frequent among younger participants, $b = -.02$, $SE = .01$, $p = .017$, men, $b = .48$, $SE = .11$, $p < .001$, and less frequent among dating, $b = -.62$, $SE = .10$, $p < .001$, cohabiting, $b = -.92$, $SE = .24$, $p < .001$, and

married participants, $b = -1.0$ SE = .29, $p < .001$, and among those with more unrestricted sociosexual behavior ($b = -.15$, SE = .05, $p = .007$). Non-significant associations emerged for sociosexual attitudes, $p = .75$, sociosexual desire, $p = .68$, fear of AIDS, $p = .63$, and fear of people with AIDS, $p = .71$. Final model explained 14% of variance, $R^2 \text{ adj} = .14$, and there was no presence of multicollinearity ($VIF < 5$). The results of model 2 of the regression analysis are presented in Table 9.

[INSERT TABLE 8]

[INSERT TABLE 9]

Discussion

We conducted a study with a sample of Colombian adults to examine the psychometric properties of the Spanish Latin American Version of the SOI-R. Overall, results replicated past studies (Barrada et al., 2018; Meskó et al., 2014; Nascimento et al., 2018; Neto, 2016; Rodrigues & Lopes, 2017; Penke and Asendorpf, 2008). Indeed, the three factor intercorrelated structure with a correlated second-order global sociosexuality factor was deemed the most adequate to our sample. Likewise, we found adequate indexes of internal consistency for the global scale and each of its factors separately. These findings showed for the first time the validity and reliability of the SOI-R in this context, therefore providing evidence supporting the use of this measure to develop more studies focused on sociosexuality in this socio-cultural context, and allow for a broader understanding of how this individual variable can shape different processes in sexuality and sexual behavior.

We also found evidence of construct validity, by showing that correlations between dimensions of SOI-R was from low to moderate, which is in accordance with the findings reported by Barrada et al. (2018), Meskó et al. (2014) and Nascimento et al. (2018) in their psychometric studies about SOI-R. Gender differences and marital status differences were

observed in SOI-R scores, as also found reported by Simpson and Gangestad (1991), Meskó et al. (2014) and Rodrigues and Lopes (2017), which shows the sensitivity of the measure.

We also found evidence of convergent validity because sociosexuality dimensions show associations with MAPS scores. It is known that high levels of sociosexuality are associated with the perception of vulnerability to HIV (Hall & Witherspoon, 2011). For this reason, determining the association between AIDS phobia and sociosexuality would allow obtaining a convergent validity of the SOI-R and identifying the meaning of such variables since studies previously had not. As expected, AIDS phobia showed significant correlations with all the dimensions of sociosexuality measured by the SOI-R.

The results also reveal that people with higher overall sociosexuality scores (i.e., with unrestricted sociosexuality), have less AIDS phobia. Hall and Witherspoon (2011) found that sociosexually unrestricted African American youth perceive themselves as more susceptible to HIV/AIDS. The fact that the relationship between sociosexual behavior and both dimensions of AIDS phobia is positive suggests the existence of mediating variables that could be influencing people with a high sociosexual behavior continuing in such practices despite expressing fear of AIDS. Therefore, more studies are needed to clarify the relationship between sociosexuality and AIDS phobia. Our findings could reflect the particular characteristics of Colombian participants, which would mean that the greater the willingness to engage in casual and noncommittal sex, the less vulnerability is perceived to acquire HIV.

The final objective of this study was to establish the predictive validity of dimensions of sociosexuality. For this, SOI-R, AIDS phobia scores and sociodemographic factors were added to a regression model to predict condom use. We found that participants

who are younger, male, single, and have restricted sociosexual behavior indicated using condoms more frequently. These results are consistent with those reported by Correa et al. (2017) who found that young people tended to make more use of condoms. Also, Sheeran et al. (1999) found that men are more likely than women to report condom use. The finding that condom use is less frequent among people in a relationship is also consistent with past research (e.g., Sheeran et al., 2019). Arguably, people in relationships tend to abandon condom use as an intimacy enhancing strategy (Conley & Rabinowitz, 2004) and perceive monogamy as an STI prevention strategy (Conley et al. 2015; Conley & Rabinowitz, 2004). We also found that having a more unrestricted sociosexual behavior, but not sociosexual attitude or desire, was associated with less frequent condom use. This finding resonates with past findings. For example, Rodrigues, Lopes, et al., (2019, 2020) found that sociosexually unrestricted people were less likely to restrain their behavior in risky sexual situations (e.g., having sex when a condom was not readily available) and less likely to be focused on preventing risks for their sexual health, and instead were more focused on promoting their sexual pleasure. To the extent that pleasure reduction is often highlighted as a barrier against condom use (Conley & Rabinowitz, 2004; Pinyaphong, et al., 2018), sociosexually unrestricted people should be more likely to make poorer sexual health decisions (e.g., having condomless sex) to pursue their sexual pleasure.

Conclusion and Implications

This research is the first to study the psychometric properties of the SOI-R in the Spanish-speaking Latin American context, which facilitates future research to evaluate sociosexuality across different countries. The results show the importance of the influence of individual characteristics on condom use, in this sense future intervention proposals that seek to strengthen condom use should consider such factors when formulating procedures.

Despite the initiatives of the different interventions that seek to promote the use of condoms (Morales, et al., 2019, 2020), condom use rates in Latin America clearly show that those efforts are far from efficient in fostering consistent condom use (Mejia et al., 2020; Ramírez-Correa & Ramírez-Santana, 2018; Valencia & Canaval, 2012). Hence, new variables that could influence decision-making about condom use should be considered when developing programs to promote the use of this protection strategy. According to our findings, there are socio-demographic factors as well as individual differences that have an effect on condom use decision making and it is proposed that interventions should take into account these characteristics to encourage condom use in sexual relations.

Given the characteristics of the sample for this study, future research could benefit from having participants with more diverse demographic characteristics. To ensure the reliability of the results of this study, it is recommended that future research replicate the procedure and test the findings of this study, by measuring condom use with a multi-item instrument for more information on the subject than that obtained in this study as proposed by Diamantopoulos et al. (2012). Finally, a strength of this study is that we implemented a method that made it possible to test different models of the SOI-R from empirical criteria as well as from past research, which significantly reduced factorial indeterminacy, confirmatory, and chance capitalization biases.

Acknowledgments

The authors thank all the people who participated as respondents in this study.

Declaration of interest statement

The authors declare that there is no conflict of interest related to this research.

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Appendix

Table 1. Absolute fit indexes of each model.

Model	Correlation matrix	Estimator	Explained cumulative variance	gl	χ^2	χ^2/ gl	Absolute fit indexes				
							GFI	RMSR	RMSEA	ECVI	NCP
1	Polychoric	ML	66.8%	26	389.4	14.98	.82	.086	.190*	1.05	363.36
1	Polychoric	ULS	66.8%	26	401.5	15.44	.98	.083	.190*	1.08	375.47
2	Pearson	ML	64.8%	24	38.4	1.60	.98	.028	.038	.2	14.36
2	Pearson	ULS	64.8%	24	38.4	1.60	1	.026	.038	.2	14.39
2	Polychoric	ML	72.6%	24	38.4	1.60	.98	.028	.038	.2	14.36
2	Polychoric	ULS	72.6%	24	38.4	1.60	1	.026	.038	.2	14.39
3	Pearson	ML	47.8%	27	1155.2	42.79	.61	.170	.320*	2.93	1128.20
3	Pearson	ULS	47.8%	27	1039.4	38.50	.94	.140	.300*	2.65	1012.39
3	Polychoric	ML	54%	27	1155.2	42.79	.61	.170	.320*	2.93	1128.20
3	Polychoric	ULS	54%	27	1039.4	38.50	.94	.140	.300*	2.65	1012.39
1a	Polychoric	ULS	66.8%	25	31.3	12.41	.98	.083	.170*	.86	285.32
2a ^x	Pearson	ML	64.8%	24	38.3	1.59	.98	.028	.038	.2	14.36
2a	Pearson	ULS	64.8%	24	38.4	1.60	1	.026	.038	.2	14.39
2a	Polychoric	ML	72.6%	24	38.4	1.60	.98	.028	.038	.2	14.36
2a	Polychoric	ULS	72.6%	24	38.4	1.60	1	.026	.038	.2	14.39

p<.05 = *; Best model = X; Maximum Likelihood = ML; Unweighted least squares = ULS;
 1^a Polychoric ML did not converge, hence were not included in the table.

Table 2. Incremental and parsimony fit indexes of each model.

Model	Correlation matrix	Estimator	Explained cumulative variance	Incremental fit indexes				Parsimony fit indexes	
				AGFI	CFI	TLI	NFI	PNFI	PGFI
1	Polychoric	ML	66.8%	.70	.91	.87	.9	.65	.48
1	Polychoric	ULS	66.8%	.96	1	1.01	1	.72	.56
2	Pearson	ML	64.8%	.96	1	.99	.99	.66	.52
2	Pearson	ULS	64.8%	1	1	1.01	1	.67	.53
2	Polychoric	ML	72.6%	.96	1	.99	.99	.66	.52
2	Polychoric	ULS	72.6%	1	1	1.01	1	.67	.53
3	Pearson	ML	47.8%	.35	.74	.65	.73	.55	.37
3	Pearson	ULS	47.8%	.91	1	1.01	1	.75	.57
3	Polychoric	ML	54%	.35	.74	.65	.73	.55	.37
3	Polychoric	ULS	54%	.91	1	1.01	1	.75	.57
1a	Polychoric	ULS	66.8%	.96	1	1.01	1	.69	.54
2a ^x	Pearson	ML	64.8%	.96	1	.99	.99	.66	.52
2a	Pearson	ULS	64.8%	1	1	1.01	1	.67	.53
2a	Polychoric	ML	72.6%	.96	1	.99	.99	.66	.52
2a	Polychoric	ULS	72.6%	1	1	1.01	1	.67	.53

p<.05 = *; Best model = X; Maximum Likelihood = ML; Unweighted least squares = ULS;
 1^a Polychoric ML did not converge, hence were not included in the table.

Table 3. Matrix of rotated loads, means, standard deviations and measure of sample adequacy of the SOI-R

	Sociosexual behavior	Sociosexual Attitude	Sociosexual desire	M	SD	MSA
SOIR1	.86			3.35	1.09	.83
SOIR2	.81			2.21	1.16	.87
SOIR3	.90			2.33	1.25	.81
SOIR4		.87		3.07	1.45	.84
SOIR5		.87		2.69	1.53	.84
SOIR6		.61		3.21	1.45	.92
SOIR7			.80	2.73	1.25	.86
SOIR8			.92	2.48	1.24	.83
SOIR9			.72	2.17	1.23	.90
Omega	.90	.85	.87	-	-	-

Table 4. Correlations between religiosity level, condom use, sociosexuality dimensions and MAPS scores.

	1	2	3	4	5	6	7
1. Religiosity level	-						
2. Condom use	-.09**	-					
3. Sociosexual Behavior	.016	-.1**	-				
4. Sociosexual Attitude	.02**	.11**	-.25**	-			
5. Sociosexual Desire	-.307	.09**	-.31**	-.42**	-		
6. Global sociosexuality	-.31**	.12**	.37**	.29**	.33**	-	
7. Fear of AIDS	.19**	-.08*	.11**	.03**	-.237	.105**	-
8. Fear of people with AIDS	-.049	.030	.14**	.095	-.02**	.208**	-.035

<.05 = *; <.01=**

Table 5. Differences according to the gender

	Male		Female		df	t
	n = 293		n = 519			
	M	SD	M	SD		
Global sociosexuality	.54	.83	-.30	.84	612	13.9**
Sociosexual behavior	.27	1.28	-.15	1.02	499	4.9**
Sociosexual attitude	.20	1.18	-.11	1.17	601	3.7**
Sociosexual desire	.18	1.3	-.1	1.04	506	3.35**
Fear of AIDS	-.03	.97	.01	.91	576	-.7
Fear of people with AIDS	.07	.87	-.04	.80	568	2*
Condom use	3.35	1.28	2.85	1.44	666	5.04**

p<.05=*; p<.01=**

Table 6. Differences according to the sexual orientation

	Heterosexual		Homosexual		Bisexual		df	f
	n = 710		n = 24		n = 74			
	M	SD	M	SD	M	SD		
Global sociosexuality	-.06	.91	.58	1.01	1.02	.97	1	16.41**
Sociosexual behavior	.00	1.09	1.01	1.21	-.15	1.35	1	.75
Sociosexual attitude	-.06	1.19	.05	.93	.58	1.00	1	21.62**
Sociosexual desire	-.00	1.15	.23	1.00	-.10	1.40	1	.00
Fear of AIDS	.08	.93	-.84	.76	-.47	.85	1	36.32**
Fear of people with AIDS	-.05	.79	.70	1.10	-.31	.94	1	16.97**
Condom use	2.99	1.40	3.75	1.1	3.18	1.33	1	2.51

p<.05=*; p<.01=**

Table 7. Differences according to the marital status

	Single n = 379		Dating n = 339		Cohabiting n = 34		Married n= 53		d f	f
	M	SD	M	SD	M	SD	M	SD		
Global sociosexuality	.30	.87	-.23	.88	-.22	.97	-.59	.97	1	58.61**
Sociosexual behavior	.00	1.13	-.07	1.14	.05	.99	.35	1.15	1	4.12*
Sociosexual attitude	-.00	1.16	.13	1.22	-.23	1.12	-.70	.85	1	6.27*
Sociosexual desire	.38	1.15	-.35	1.01	-.08	1.23	-.35	.96	1	49.7**
Fear of AIDS	-.06	.92	-.02	.93	.34	.98	.35	.98	1	15.22**
Fear of people with AIDS	.12	.88	-.12	.73	.05	.91	-.15	.90	1	9.53**
Condom use	3.4 7	1.26	2.8 1	1.43	2.26	1.33	1.88	.99	1	9.13**

p<.05=*; p<.01=**

Table 8. Predictors in the regression analysis (only demographics).

	Estimate	Std. Error	t value	Fitted VIF
(Intercept)	3.36*	1.34	2.49	
Age	-.03*	.01	-2.85	1.66
Gender (Male)	.42**	.10	-4.11	1.08
Sexual orientation (homosexual)	.29	.27	1.06	1.03
Sexual orientation (bisexual)	.04	.16	.25	1.03
Sexual orientation (other)	-.27	.66	-.4	1.03
Marital status (engagement)	-.59**	.09	-6.03	1.10
Marital status (cohabitating)	-.89**	.24	-3.6	1.10
Marital status (married)	-.89*	.28	-3.1	1.10
Marital status (divorced)	-.56	.57	-.9	1.10
Marital status (widower)	.26	1.31	.19	1.10
Socio-economic level (2)	-.03	.18	-.1	1.03
Socio-economic level (3)	-.13	.18	-.7	1.03
Socio-economic level (4)	-.28	.18	-1.5	1.03
Socio-economic level (5)	.01	.20	.08	1.03
Socio-economic level (6)	-.32	.21	-1.4	1.03
Education (High school)	.92	1.33	.69	1.06
Education (technical studies)	.95	1.33	.72	1.06
Education (technological studies)	1.10	1.35	.81	1.06
Education (undergraduate studies)	.82	1.33	.61	1.06
Education (graduate studies)	1.02	1.34	.76	1.06
Religion (christianity no catholic)	-.00	.14	-.0	1.05
Religion (Islam)	-.79	1.31	-.6	1.05
Religion (Hinduism)	.42	.93	.45	1.05
Religion (Buddishm)	-.29	.76	-.3	1.05
Religion (other)	-.01	.22	-.0	1.05
Religion (none)	.25*	.13	1.87	1.05

Religiosity level	.05	.05	.89	1.29
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p<.05 = *; p<.01=**

Table 9. Predictors in the regression analysis (step 2).

	Estimate	Std. Error	t value	Fitted VIF
(Intercept)	3.30*	1.35	2.44	
Age	-.02*	.01	-2.38	1.69
Gender (Male)	.48**	.11	-4.34	1.17
Sexual orientation (homosexual)	.42	.28	1.49	1.05
Sexual orientation (bisexual)	.05	.16	.32	1.05
Sexual orientation (other)	-.48	.66	-.73	1.05
Marital status (engagement)	-.62**	.10	-5.85	1.12
Marital status (cohabitating)	-.92**	.24	-3.72	1.12
Marital status (married)	-1**	.29	-3.45	1.12
Marital status (divorced)	-.58	.58	-1.00	1.12
Marital status (widower)	.28	1.31	.22	1.12
Socio-economic level (2)	-.04	.18	-.25	1.03
Socio-economic level (3)	-.14	.18	-.80	1.03
Socio-economic level (4)	-.27	.18	-1.50	1.03
Socio-economic level (5)	.05	.20	.28	1.03
Socio-economic level (6)	-.26	.22	-1.21	1.03
Education (High school)	.87	1.33	.65	1.07
Education (technical studies)	.93	1.33	.70	1.07
Education (technological studies)	1.06	1.35	.78	1.07
Education (undergraduate studies)	.79	1.33	.59	1.07
Education (graduate studies)	1.08	1.34	.80	1.07
Religion (christianity no catholic)	.05	.14	.35	1.06
Religion (Islam)	-.68	1.32	-.52	1.06
Religion (Hinduism)	.55	.93	.59	1.06
Religion (Buddishm)	-.27	.76	-.35	1.06
Religion (other)	.05	.22	.25	1.06
Religion (none)	.26	.13	1.91	1.06

Religiosity level	.05	.06	.92	1.06
Sociosexual Behavior	-.15*	.05	-2.66	1.41
Sociosexual Attitude	-.01	.06	-.28	1.57
Sociosexual Desire	-.02	.06	-.38	1.52
Fear of aids	-.02	.05	-.47	1.07
Fear of other people	-.02	.05	-.36	1.08

p<.05 = *; p<.01=**