Psychometric properties and validation of the sexual sensation seeking scale in Spanish adolescents: Brief screening method for use in research and clinical practice

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\section*{ABSTRACT}

Sexual sensation seeking among adolescents has been mostly associated with unprotected sex and other risky behaviors. This paper presents the Spanish adaptation and validation of the Sexual Sensation Seeking Scale (SSSS). This cross-sectional study included 1350 adolescents (601 male and 749 female), aged between 15 and 18 years (\(M = 16.1, SD = 0.97\)). Exploratory Factor Analysis (EFA) yielded two components: Physical Sensations Attraction (PSA), and New Experiences Seeking (NES), which together accounted for 48.98% of the total variance. That structure was later verified through Confirmatory Factor Analysis (CFA). Internal consistency was 0.82 for the total scale, and 0.76 and 0.82 for each factor. Moreover, the measure had adequate convergent validity and was positively related to sexual compulsivity, number of sexual partners in the last six months, and consumption of alcohol and other drugs. In conclusion, this self-administered instrument is a useful brief screening measure in research and clinical practice for Spanish-speaking people.

\section*{Introduction}

The dimension sensation seeking has been widely used in the scientific literature and has been investigated from different theories of individual differences. Eysenck (1965) and Gray (1967) related it to the trait of extraversion, which refers to subjects with low cortical activation, who seek exciting experiences to raise their low levels of arousal, and are more sensitive to reward signals. Cloninger (1986) used the term novelty seeking to refer to an individual’s reaction to cues of emotionally salient stimulation. Individuals with higher levels of novelty-seeking show frequent exploratory activity, intense excitement during the anticipation of emotional stimulation, and approach behaviors to reward signals. This leads to inconsistencies in relationships and instability in efforts.

Zuckerman suggested that sensation seeking is a trait that has evolved due to its adaptive value for survival. The Alternative Five-Factor Model, based on sensory deprivation experiments and theories about the optimal level of stimulation and arousal (OLS, OLA), highlights the importance of biological mechanisms and neuroscience to consider the basic personality traits (Carrol, Zuckerman, & Vogel, 1982; Zuckerman, Buchsbaum, & Murphy, 1980). The conceptual framework of Zuckerman’s theory considers three impulsive forms (Experience Seeking, Disinhibition, and Boredom Susceptibility) and one non-impulsive form (Thrill and Adventure Seeking) of sensation seeking. This scheme was taken as the basis to develop the Sensation Seeking Scale (SSS), which has been the most widely used (Altmann, Liebe, Schönefeld, & Roth, 2017). Moreover, it has demonstrated its validity and reliability in intercultural samples (Zuckerman, 1971; Zuckerman, 1994). The construct has evolved and the most comprehensive definition, put forward by Zuckerman, states that it is “a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience” (Zuckerman, 1994, p. 27). The idea that sensation seeking is related to risky behaviors was initially based on research conducted by Zuckerman. He found that participants scoring higher on sensation seeking were less concerned about the consequences of their behavior. Decades of research, summarized in his book \textit{Sensation Seeking and Risky Behavior}, has identified the biological and behavioral correlates of this trait: reckless driving, extreme sports, high-risk vocations, abuse of alcohol and other illegal substances,
sexual risk behavior or antisocial behavior (Zuckerman, 2007).

However, due to the importance of this dimension in risky sexual behavior (Hoyle, Fejar, & Miller, 2000) and the limitations of the SSS as a means to predict the risk of HIV infection, Kalichman and colleagues developed a new specific measure for sexual behavior. The Sexual Sensation Seeking Scale (SSSS) was created by adapting items from Zuckerman's scale. Thus, this construct was conceptualized as “the propensity to attain optimal levels of sexual excitement and to engage in novel sexual experiences” (Kalichman et al., 1994, p. 387). This scale has demonstrated adequate psychometric properties in several studies using the original language version among homosexually active men (Kalichman et al., 1994), sexually active men and inner city low-income men and women (Kalichman & Rompa, 1995), or heterosexual college students (Gaither & Sellbom, 2003). Likewise, adequate psychometric properties have been found in the German validation in men who have sex with male Internet users (Hammelstein, 2005), the Spanish validation in young undergraduate students (Santos-Iglesias, Moyano, Castro, Granados, & Sierra, 2017), and the Portuguese validation in adults (Santos et al., 2015). Only two validations were based on a group of adolescents. One of them was conducted among 715 African American adolescents ranging from 15 to 21 years and among 103 African American adolescent women detained in youth detention centers (DiClemente et al., 2010). The other was a Spanish adaptation using a non-probability sample of only 199 adolescents from a specific region of the country and with a wide variability of ages (13 to 18 years old) (Teva & Bermúdez, 2008). They showed high internal consistency, Cronbach’s alpha between 0.75 and 0.86, and good convergent, discriminant and concurrent validity scores. They also reported a correlation of 0.30–0.50 between SSSS and unprotected intercourse, number of sexual partners or number of sexual behaviors, and a correlation of 0.60–0.70 between SSSS and nonsexual experience seeking, sexual compulsivity, sexual permissiveness, sexual excitation, sexual motivation or sexual esteem. No other assessment instruments that measure the shades of meaning of the sensation seeking construct in the sexual context. Some of the revised scales may include subfactors that might approximate some of the components of Zuckerman’s conceptualization. For example, the Sexual Inhibition-Sexual Excitation Scales include a factor called Sexual Excitation in the version for men (Granados, Salinas, & Sierra, 2017a) and another denominated Arousalability in the version for women (Granados, Salinas, & Sierra, 2017b). On the other hand, the two versions of the Sexual Opinion Survey contain a dimension related to the disposition toward sexual stimulation in the continuum of erotophobia-erogenousia (del Río Olvera, Lópe, & Cabello, 2013; Vallejo-Medina, Reina, & Sierra, 2014). All of them have been validated in the adult population or in young adults aged 18 or above.

Sexual sensation seeking has been mostly associated with unprotected sex and more sexual partners in different risk groups of adults, such as drugs users (Vu et al., 2017), men who have sex with men (Heidinger, Gorgens, & Morgenstern, 2015), male sex workers (Salmerón-Sánchez, Ballester-Arnal, Gil-Llorio, & Morell-Menguí, 2017), people living with HIV (Bancroft, Carnes, & Janssen, 2005) or clinical patients (Burri, 2017). However, little research has examined the influence of this domain on the adolescent population. Adolescence is a period for self-exploration and experimentation, and more specifically mid-adolescence is the stage of sexual debut and where sexual risk-taking is higher. The developmental characteristics of the evolutionary stage and a peak in the sensation-seeking score at around 15 years old make this period the one with the greatest vulnerability for sexually transmitted infections and unwanted pregnancies (Collado, Felton, MacPherson, & Lejuen, 2014; Stief, Rieger, & Savin-Williams, 2014; Voisin, King, Scheneider, DiClemente, & Tan, 2012; Zhang, Zhang, & Shang, 2016). Some authors emphasize that adolescents with high scores on sexual sensation seeking have lower partner sexual communication, diminished self-efficacy to refuse sex, and a higher fear of condom negotiation (Voisin, Tan, & DiClemente, 2013). By contrast, low sensation seekers tend to carry out safer sexual behaviors such as condom use (Orgilés, Carratalá, Carballo, Piqueras, & Espada, 2013; Ritchwood, Penn, DiClemente, Rose, & Sales, 2014).

Overall, studies with adolescents have confirmed two types of relationships. Firstly, there is a direct relationship between sexual sensation seeking, unprotected sex, and frequency of sexual partners both offline and online (DiClemente et al., 2010; Oshri, Tubman, Morgan-López, Saavedra, & Csizmadia, 2013; Spitalnick et al., 2007; Voisin et al., 2013; Whiteley et al., 2012). Secondly, an indirect relationship is observed between sexual sensation seeking and risky sexual behaviors through alcohol consumption and positive alcohol expectancies in sexual situations (DiClemente et al., 2010; Oshri et al., 2013).

Furthermore, most studies point to gender differences, higher scores being identified in males (Cyclers, Dzemidzic, Euler, & Kareken, 2016; Voisin et al., 2012; Whiteley et al., 2012). However, few of them evaluate the equivalence or invariance of scale measurement in the multi-group analysis. This may lead to erroneous conclusions about validity in the comparison between genders (Santos-Iglesias et al., 2017).

Personality is an important predictor of development and underscores the importance of conducting research on the processes by which personality influences health behavior (Atkins, 2008). Specifically, sexual sensation seeking can offer an explanation for maintaining risky sexual behavior despite the possibility of HIV infection. This study presents the adaptation and validation of the Adolescent Sexual Sensation Seeking Scale (SSSS-A). It is the first to examine this construct in mid-adolescence among a larger number of participants representing a broad cross-section of the geographic regions of Spain. The scale was designed specifically for individual or collective use in educational and clinical settings, with the aim of assessing the level of adolescents as regards the trait of sensation seeking in the sexual context.

Methods

Participants

A total of 1350 adolescents aged between 15 and 18 years ($M_{age} = 16.1; SD = 0.97$) were included in a cross-sectional study. The sample was recruited by accidental sampling. Twenty-two participants were removed because they omitted gender or sexual orientation data. Female adolescents accounted for 55.5% of the sample, the remaining 44.5% being male adolescents. The age distribution was divided into 32.7% of 15-year-olds, 40.1% of 16-year-olds, 15.5% of 17-year-olds, and 11.70% of 18-year-olds. The majority self-identified themselves as heterosexual (92.5%), 3.5% stated that they were bisexual, and 4% said they were homosexual. Only 35.2% of the total sample reported having had sexual intercourse (male: 37.7%; female: 33.3%).

The initial group of 1350 participants was randomly divided into two subgroups. The first subgroup (Group I) was used to perform Exploratory Factor Analyses (EFA) and consisted of 676 adolescents (44.4% men and 55.6% women) with a mean age of 16.1 years ($SD = 0.98$). The second subgroup (Group II) was used to perform Confirmatory Factor Analyses (CFA) and consisted of 674 adolescents (45% male and 55% female) with a mean age of 16.1 years ($SD = 0.97$). No statistically significant differences were found by gender, $\chi^2 = 0.048, p = 0.87$, or by age, $t_{(1350)} = 0.025, p = 0.98$.

Measures

Sexual Sensation Seeking Scale (SSSS) (Kalichman & Rompa, 1995).

This scale is an 11-item, Likert-type measure that asks respondents if they agree with a series of statements related to the personality disposition sensation seeking. The answers range from 1 (not at all like me) to 4 (very much like me). The original version has an internal consistency of 0.79. As for construct validity, the SSSS correlated with frequencies of drug and alcohol use prior to sexual relations, unprotected intercourse, and sexual compulsivity (Gaither & Sellbom, 2003; Kalichman & Rompa, 1995).
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