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Sexual Compulsivity Scale: Adaptation and Validation in Spanish Population 2

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10	Sexual compulsivity has been studied in relation to high-risk behav-	
11	ior for sexually transmitted infections. The aim of this study was	
12	the adaptation and validation of the Sexual Compulsivity Scale	
13	to a sample of Spanish young people. This scale was applied to	
14	1,196 (891 female, 305 male) Spanish college students. The results	
15	of principal components factor analysis using a varimax rotation	
16	indicated a two-factor solution; similar results were obtained in	
17	another study. The reliability of the Sexual Compulsivity Scale was	Q2
18	found to be high. Moreover, the scale showed good temporal sta-	
19	bility. External correlates were examined through Pearson correla-	
20	tions between the Sexual Compulsivity Scale and other constructs related with HIV prevention. The authors' results suggest that the	
21 22	Sexual Compulsivity Scale is an appropriate measure for assessing	
23	sexual compulsivity, showing adequate psychometric properties in	
24	the Spanish population.	
	we optimize population	
25	According to Kalichman and Cain (2004), sexual compulsivity is a propensity	
26	to experience sexual disinhibition and under controlled sexual impulses and	
27	behaviors as self-identified by individuals. It can be considered a heteroge-	
28	neous psychological construct that includes a concern for and increase—in	
29	intensity and frequency—in sexual fantasies, behavior patterns, and de-	
30	sires that can lead to problems in daily life as (Kalichman & Cain, 2004;	

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 Bancroft, 2008). low self-esteem, anxiety, loneliness, impaired social skills, occupational difficulties, guilt, and shame (Black, Kehrberg, Flumerfelt, & Schlosser, 1997; Kalichman & Rompa, 1995). Furthermore, researchers have defined various symptoms related to sexual compulsivity, such as excessive pornography use, sex with multiple anonymous partners, an excessive use of Internet for sexual purposes, and increased anxiety when not engaged in sexual behavior (Parsons et al., 2008; Parsons, Severino, Grov, Bimbi, & Morgenstern, 2007).

Sexual compulsivity has also health implications because of increased risk of HIV infection and other sexually transmitted infections (Dodge, Reece, Cole, & Sandfort, 2004; Kalichman & Rompa, 1995; McCoul & Haslam, 2001). Benotsch, Kalichman, and Kelly (1999), in a study carried out with HIV-positive self-identified gay and bisexual men, found that people who scored higher in sexual compulsivity reported more frequent receptive and totally unprotected anal and oral sex acts with more partners have found similar results (e.g., Grov, Parson, & Bimbi, 2010; Kalichman & Rompa, 2001; Kelly, Bimbi, Nanin, Izienicki, & Parsons, 2009).

As a result of this growing interest in the relation between sexual compulsivity and high-risk behavior for HIV infection, some authors have proposed different questionnaires to evaluate sexual compulsivity (Table 1). Kalichman et al.'s (1994) study was the first attempt to assess sexual compulsivity specifically. They proposed the Sexual Compulsivity Scale (SCS) as a tool for studying underlying compulsive personality traits that may be associated with resistance to changing sexual behavior patterns despite exposure to messages and initiatives aimed at preventing HIV. We subsequently describe in detail the characteristics of this instrument.

After reviewing the literature, we decided to translate and validate the SCS because it is a short questionnaire with good psychometric properties and has been used in different studies to analyze associations between personality traits and behavior change for HIV. In this sense, the scale has been shown to be useful in the prediction of unprotected sex (Grov et al., 2010). It has also been used in different types of populations, including college students (Gullete & Lyons, 2005).

This instrument consists of 10 statements largely based on a 12-step self-help manual (CompCare, 1987) for people seeking recovery from sexual addiction. The pilot study of the scale (Kalichman et al., 1994) was conducted with a sample of sexually active men who considered themselves homosexuals (n=160). The results showed high levels of reliability ($\alpha=.89$). Later, Kalichman and Rompa (1995) used the scale in two different samples: (a) one of gay men (n=296) and (b) one of African American men (n=60) and African American women (n=98) from inner-city areas and low-income groups. The scale showed high levels of internal consistency ($\alpha=.86$ for gay men and $\alpha=.87$ for African American men and women). In

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TABLE 1. Review of Sexual Compulsivity Scales

Questionnaire	Items and factors	Sample	Psychometrics properties: Internal consistency
The Perceived Sexual Control Scale (Exner, Meyer-Bahlburg & Ehrhardt, 1992)	20 items grouped into two factors: Control of sex drive and Control of risk	Community members and college students (mostly gay men)	0.67 to 0.87
Compulsive Sexual Behavior Inventory (Coleman, Miner, Ohlerking and Raymond 2001)	42 items grouped into three factors: control, abuse, and violence	Psychotherapy clients, community members and college students (male, female, say and hererosexual)	0.67 to 0.87
Yale—Brown) Cossive Compulsive Scale-Compulsive Sexual Behavior (Morgenstern, Parsons, Muench, Hollander Bimbi & Irwin 2004)	10 items	Gay and bisexual male community members.	0.80 to 0.91
Sexual Symptom Assessment Scale (Raymond, Lloyd, Miner & Kim, 2007)	12 items	Male psychotherapy clients	0.92
Compulsive Sexual Behavior Consequences Scale (Muench et al., 2007)	21 items	Gay and bisexual male community members	0.86 to 0.89
Cognitive and Behavioral Outcomes of Sexual Behavior Scale (McBride, Reece & Sanders, 2007).	36 items grouped into two scales: cognitive outcomes scale and behavioral outcomes scale	College students	0.86 to 0.89

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both samples, there are significant correlations between sexual compulsivity, 74 75 high-risk sexual behavior, and drug use before sex.

Although this scale has been used to evaluate sexual compulsivity, especially among individuals belonging to groups deemed at high risk or HIVpositive individuals, the few studies conducted in college students suggest that higher scores in sexual compulsivity are associated with a higher number of unprotected sexual encounters (Dodge et al., 2004; Gullete & Lions, 2005). To design optimal prevention campaigns, it is necessary to identify the characteristics of those most likely to engage in high-risk behavior (McBride, Reece, & Sanders, 2008).

The aim of our study was therefore to translate, adapt, and validate the SCS of Kalichman et al. (1994) in a Spanish population that has been little studied—young people—represented here by a sample of college students. Although college students have not been identified as a risk population theoretically eral studies in Spain and in other countries have emphasized the high prevarence of risky sexual behavior in this population (Ballester,

Q6 90 Gil, Giménez, & Ruiz, 2009; McBride et al., 2008; Rolison, 2002).

METHOD 91

- **Participants** 92
- The questionnaire was responded by 1,196 Spanish college students of the 93
- Jaume I University and the University of Valencia, ranging between 18 and 26
- years of age. Most participants were women (74.5%) who were 18–20 years
- old (60.9%; M = 20.22, SD = 2.11), heterosexual (95.5%) and nonpracticing
- Catholics (44.7%) or atheists (43.9%).
- Measures and Instruments
- Participants responded individually to the SCS. To assess convergent and di-99
- vergent validity, the participants also answered the Sexual Sensation Seeking
- Scale (Kalichman et al., 1994), the Spanish version of the Beck Depres-
- sion Inventory (Beck, Rush, Shaw, & Emery, 1979 [translated by Sanz & 102
- Vázquez, 1998) and The Brief Version of the Fear of Negative Evaluation 103
- Scale (Leary, 1983). Last, they responded to the Cuestionario de Prevención
- del Sida ("AIDS rention Questionnaire"; Ballester, Gil, Guirado, & Bravo,
- 2004), which was acveloped in Spanish. **Q7** 106
 - We subsequently explain these questionnaires: 107
 - SCS (Kalichman et al., 1994): This scale consists of 10 Likert-type items that 108 assess sexual compulsivity, measured on a scale ranging from 1 (not at all
 - like me) to 4 (very much like me), with a total score between 10 and 40. 110
 - The internal consistency of the instrument applied to a sample of college 111

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- students was .76 for men and .81 for women (Reece, Plate, & Daughtry, 2001).
- Sexual Sensation Seeking Scale (Kalichman et al., 1994): This scale is designed to measure "the propensity to attain optimal levels of sexual excite-
- ment and to engage in novel sexual experiences." It consists of 9 Likert-type
- items measured on a 4-point scale ranging from 1 (*not at all like me*) to
- 4 (*very much like me*), with a total score range between 9 and 36. The
- instrument has shown an internal consistency of .81 in various samples,
- such as gay men (Kalichman & Rompa, 1995) and college students (Gray
- 121 & Wilson, 2007).
- Beck Depression Inventory in its Spanish Version (Sanz & Vázquez, 1998):
- This scale is a 21-question multiple-choice self-report inventory that reflects
- cognitive, affective, behavioral, and somatic symptoms of depression in
- relation to the 7 previous days. The items are answered according to
- a 4-point scale denoting different levels of severity and intensity. The
- Spanish version has shown good internal consistency in a sample of college
- 128 students (.83).
- 129 Cuestionario de Prevención del Sida (CPS; "AIDS Prevention Question-
- naire"): This questionnaire, by Ballester et al. (2004), consists of 65 items
- referring to HIV infection, transmission routes, preventive methods and
- behaviors, antibodies test, and attitude toward HIV-positive people. Inter-
- nal consistency of the scale in a sample of college students was properly
- analyzed ($\alpha = .70$; Ballester, Gil, & Giménez, 2007).
- 135 We present the SCS validated in this work for the Spanish population in
- 136 Appendix A.
- 137 Procedure
- 138 We informed 1,196 participants of the purpose of the study. The research
- 139 team told participants that they would be assessed on several sexual be-
- 140 haviors in young people. Then, they completed the SCS voluntarily, anony-
- 141 mously, and confidentially in one sitting during class time thanks to the
- 142 collaboration of lecturers in different degree courses. In addition, the first
- 143 300 tested students also responded to questionnaires described earlier. After
- a week, 100 randomly selected participants answered the SCS a second time.
- Our research group translated the Sexual Sensation Seeking Scale (Kalichman
- et al., 1994) and the SCS (Kalichman et al., 1994) according to the established
- international strategies (Hambleton, Merenda, & Spielberger, 2005).
- 148 Statistical Analysis
- 149 We used SPSS to perform all of our analyses. We used a principal compo-
- nent factor analysis using varimax rotation to ascertain the factorial structure

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- of the questionnaire. In addition, we performed a descriptive analysis of 151 items and calculated internal consistency using Cronbach's alpha coefficient.
- We examined convergent validity through Pearson correlations between the 153
- SCS and other constructs related to HIV prevention (total score of Sexual 154
- Sensation Seeking Scale, Beck Depression Inventory, and an item from the 155
- Cuestionario de Prevención del Sida that requested information about the 156
- number of sexual partners). Selection was carried out according to the re-157
- lationship between these elements and sexual compulsivity in the literature
- (Benostch et al., 1999; Gullete & Lions, 2005; Kalichman, Greenberg, & Abel, 159
- 160 1997; Kalichman & Rompa, 1995, 2001; Raymond, Coleman, & Miner, 2003).
- We calculated test-retest reliability through Pearson's correlation coefficient. 161

RESULTS 162

- 163 Factorial Structure of the SCS
- We obtained an index of .896 in the Kaiser-Meyer-Olkin test, and Bartlett test 164
- of sphericity results of $\chi^2(45) = 3551.851$, p < .001. We therefore concluded 165
- 166 that factor analysis was appropriate.
- We performed a factor analysis by extracting the principal components 167
- 168 with varimax rotation, revealing a two-factor solution with eigenvalues higher
- than one, which explained 52.74% of total variance (Table 2). The first fac-
- tor, with an eigenvalue of 4.237, accounted for 42.37% of the variance and 170 included five items (1, 2, 3, 4, and 10) that represented an "interference of 171
- sexual behavior" whereby sexual compulsivity caused interpersonal relation-
- 172
- ship problems and social maladjustment. The second one, with an eigenvalue 173
- of 1.037, accounted for 10.37% of variance and represented a "failure to con-174
- trol sexual impulses" and entailed personal discomfort associated with sexual 175
- compulsivity (Items 5, 6, 7, 8, and 9). 176
- 177 Descriptive Analysis of Items
- In the total sample, the ratings given to the items ranged between 1.141 and 178
- 1.623 Table 3 shows that Items 5 and 6 had the highest scores and Items 2 179
- 180 and 4 had the lowest. In the men sample, the scores ranged between 1.24
- and 1.84. Items 6 and 9 scored higher, while Items 2 and 4 scored lower. In
- the female sample, Items 5 and 6 were rated higher. In both samples, Items
- 2 and 4 were rated lower. 183
- Internal Consistency 184
- To analyze internal consistency, we calculated Cronbach's alpha coefficient
- for total scale ($\alpha = .837$). Correlations of individual items with corrected total

TABLE 2. Results of a Principal Components Analysis

Subscale and items	Factor 1	Factor 2	Communalities
Interference of sexual behavior			
 My sexual appetite has gotten in the way of my relationships. 	0.690	0.221	0.525
My sexual thoughts and behaviors are causing problems in my life.	0.751	0.128	0.581
My desires to have sex have disrupted my daily life.	0.674	0.315	0.553
 I sometimes fail to meet my commitments and responsibilities because of my sexual behaviors. 	0.603	0.174	0.394
10. It has been difficult for me to find sex partners who desire having sex as much as I want to.	0.547	0.223	0.349
Failure to control sexual impulses			
I sometimes get so horny I could lose control.	0.118	0.765	0.600
I find myself thinking about sex while at work.	0.181	0.708	0.534
7. I feel that my sexual thoughts and feeling are stronger than I am.	0.265	0.773	0.669
8. I have to struggle to control my sexual thoughts and behavior.	0.399	0.682	0.624
9. I think about sex more than I would like to.	0.413	0.524	0.445

- score of the SCS, that is, the total score regardless of the item concerned,
- ranged between 0.434 and 0.675 (see Table 3). In the interference subscale,
- correlations ranged between 0.402 and 0.549. In the failure to control sexual
- impulses subscale, correlations ranged between 0.505 and 0.661.

Construct Validity

- To examine convergent validity, we used data from 300 participants who
- answered the SCS, the Sexual Sensation Seeking Scale (Kalichman & Rompa,
- 1995), the Beck Depression Inventory (Beck et al., 1979), and the Cues-
- tionario de Prevención del Sida (Ballester et al., 2004). Of total participants,
- 18 were removed because of a failure to respond to all items in the ques-
- tionnaires. Therefore, we used data from 282 participants.

Convergent Validity 198

- We calculated convergent validity using Pearson's correlation coefficient be-
- tween the SCS, the Sexual Sensation Seeking Scale (Kalichman & Rompa,
- 1995), the Beck Depression Inventory (Beck et al., 1979) and the number
- of sexual partners, an item included in CPS (Ballester et al., 2004). Sexual

 TABLE 3. Descriptive Analysis of Items

	Total $(N = 1,196)$	tal 1,196)	Men $(n = 302)$	en 302)	Women $(n = 891)$	nen 891)	Item-to-total correlation for Sexual	Item-to-total	Item-to-total
Item	M	SD	M	SD	М	SD	Scale	for Factor 1	for Factor 2
1. My sexual appetite has gotten in the way of my relationships.	1.192	0.512	1.37	0.65	1.13	0.44	0.530	0.542	
2. My sexual thoughts and behaviors are causing problems in my life.	1.159	0.466	1.27	09.0	1.12	0.40	0.493	0.524	
3. My desires to have sex have disrupted my daily life.	1.185	0.487	1.35	0.65	1.13	0.40	0.584	0.549	
4. I sometimes fail to meet my commitments and responsibilities because of my sexual behaviors.	1.141	0.407	1.24	0.52	1.10	0.36	0.434	0.424	
5. I sometimes get so horny I could lose control.	1.515	0.787	1.67	0.91	1.46	0.74	0.525		0.546
I find myself thinking about sex while at work.	1.623	0.801	1.84	0.88	1.55	92.0	0.536		0.545
7. I feel that my sexual thoughts and feeling are stronger than I am.	1.285	0.587	1.47	0.74	1.22	0.51	0.650		0.661
8. I have to struggle to control my sexual thoughts and behavior.	1.288	0.573	1.50	0.75	1.22	0.47	0.675		0.642
9. I think about sex more than I would like to.	1.434	0.722	1.75	98.0	1.33	0.64	0.560		0.505
10. It has been difficult for me to find sex	1.249	0.598	1.53	0.78	1.16	0.50	0.435	0.402	
partners who desire having sex as much as I									
want to.									

compulsivity rarely—if ever—stands alone. There are often comorbid issues in sexual compulsivity such as sexual dysfunction, physiological issues, other 204 substances or addictions, depression and anxiety, or posttraumatic stress dis-205 order (Delmonico & Griffin, 2011). Furthermore, there are several studies in 206 literature that have concluded that sexual compulsivity and sexual sensation 207 seeking had a significant contribution to realization of sexual risk behaviors 208 (Beck, Thombs, Mahoney, & Fingar, 1995; Reece et al., 2001). As expected, 209 our results show that the scale had a significant positive correlation with Sexual Sensation Seeking Scale (r = 0.444, p < .000), Beck Depression In-211 ventory (r = 0.161, p < .007) and with the number of sexual partners, an item of Cuestionario de Prevención del Sida (r = .203, p < .001). 213

214 Test–Retest Reliability

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Of the total sample (N = 1,196), 100 young people answered the SCS a week later, but 9 of these were excluded because of their failure to answer any of the items. We therefore analyzed test–retest reliability with 91 participants by calculating Pearson's correlation coefficient. There were significant correlations in both total scale and subscales between the two occasions of administration. Thus, correlation between total scale score in each pass was $0.725 \ (p < .01)$.

DISCUSSION

In previous studies, Kalichman and Cain (2004) and McBride et al. (2008) 223 found a two-factor solution for the SCS. Both called these factors in the same way: Factor 1 was called social disruptiveness and Factor 2 was called 225 226 personal discomfort. However, some items (2, 5, 6, and 7) are grouped on opposite factors on these studies. In our study, there is also a two-227 factor solution, but we have named them differently. Factor 1 was labeled as interference of sexual behavior, while Factor 2 was called "failure to control 229 sexual impulses When analyzing the two factors obtained, it is apparent that 230 they both reflect variations in factor loadings of individual items compared 231 to those obtained in the study by McBride et al. (2008), which was also 232 conducted with a sample of young people. However, our results are similar 233 234 to those obtained by Kalichman and Cain (2004) in a sample of men and women receiving services from sexually transmitted infection clinic with 235 different ages to those in our study. There is a difference in factor loading of 236 237 Item 10, "It has been difficult for me to find sex partners who desire having sex as much as I want to." The item belongs to the personal discomfort factor 238 in the study of Kalichman et al. (2004), while it belongs to the *interference* of sexual behavior factor in our sample.

Relating to descriptive analysis of the items, the sample of the present study has the lowest scores of sexual compulsivity compared with other samples in other studies.

Because sexual compulsivity has been associated to risky sexual behaviors and increased sexual frequency, it is reasonable that means obtained in the college students sample were lower than those of other that assessed M/MSMW campus cruisers (Reece & Dodge, 2004), people living with HIV penotsch, Kalichman, & Pinkerton, 2001; Kalichman & Rompa, 2001; Reece, 2003) or gay/bisexual male sex workers (Parson et al., 2001). In contrast, it is important to note that in all studies the mean score of sexual compulsivity is higher in men than in women; educational and social factors may possibly account for these differences.

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In terms of reliability, SCS has shown good internal consistency in total scale ($\alpha=.837$) and in subscales. (Internal consistency of the scale obtained in this study is slightly higher than that found by Dodge et al. (2004) among students aged 18 to 25 years old ($\alpha=.82$). However, our result is slightly lower than the pilot study of the scale undertaken by Kalichman et al. (1994) in which participants were sexually active men who considered themselves homosexual ($\alpha=.89$). It was also been slightly lower than the original study by Kalichman and Rompa (1995) of gay men ($\alpha=.86$) and of primarily African American men and women in inner-city areas on low incomes ($\alpha=.88$). In any case, few differences are mere hundredths, that is, the results are virtually identical.

In relation to convergent validity, this study found significant relationships between SCS and another measures. As expected, the Sexual Sensation Seeking Scale, the number of sexual partners and the participation in risky behavior correlated positively and significantly with SCS. Our result is consistent with those obtained in previous studies, where it was concluded that the Sensation seeking and sexual compulsivity had a significant contribution to realization of risky sexual behaviors (Beck et al, 1995; Reece et al., 2001). In another study, age, sexual sensation seeking, and sexual compulsivity were shown as predictors of risk behaviors (Gullette & Lyons, 2005). Referring to depression, our results show significant positive correlations between this variable and sexual compulsivity. This is also in line with the literature reviewed. Across studies, people with high scores on compulsivity have extremely high rates of psychological disorders, in particular depression, anxiety disorders and substance use disorders (Black et al., 1997; Raymond et al., 2003).

As for the scale's temporal stability, the results of this study show that it is high for the scale. That value is similar to previous studies (Kalichman & Rompa, 1995). The results obtained suggest that the SCS built by Kalichman et al. (1994) and translated by our team for Spanish population, is an appropriate measure for evaluating sexual compulsivity related with

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HIV prevention in young people. The scale shows adequate psychometric 284 properties. 285

Our study has some limitations that should be considered in future research, such as number of participants of each sex—there were many more women than men in this study— and sexual orientation—most of the individuals in this sample were heterosexual students.

It is highly desirable to complete the sample with more men and people with different sexual orientations. Furthermore, it would be interesting to use a clinical group of patients suffering from sexual compulsivity to compare their scores with those of the general population and thus to establish a cutoff point with greater clinical significance.

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14 R. B. Arnal et al. APPENDIX I 400 ESCALA DE COMPULSIVIDAD SEXUAL 401 Ballester, Gil, Ruiz, Giménez y Gómez (Traducida de 402 Kalichman et al., 1994) 403 **Q18** 404 A continuación se presentan una serie de afirmaciones sobre tu comportamiento sexual. Por favor, contesta con sinceridad, tus respuestas son anónimas y confidenciales. Ξĺ Bastante característico de Muy característico de mí Nada característico de Algo característico de 1. Mi gran apetito sexual ha sido un obstáculo en mis 2. Mis pensamientos y comportamientos sexuales me están causando problemas en la vida. 3. Mis deseos de tener sexo han afectado a mi vida cotidiana. 4. A veces no consigo cumplir con compromisos y responsabilidades a causa de mis comportamientos sexuales. 5. A veces llego a ponerme tan caliente que podría perder el 6. Me sorprendo a mi mismo pensando sobre sexo en el trabajo. 7. Siento que mis pensamientos y sensaciones sexuales son П más fuertes que yo. 8. Tengo que luchar para controlar mis pensamientos y comportamientos sexuales.

> desearan tener sexo tanto como yo. Total score: Sum of all items rated from 1 to 4.

Subscale "Interference": Sum of items 1, 2, 3, 4 and 10.

9. Pienso en sexo más de lo que me gustaría.

Subscale "Failure to control sexual impulses": Sum of items 5, 6, 7, 8, 9.

10. Me ha resultado difícil encontrar parejas sexuales que

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