

## Research Paper

## Investigating the Psychometric Properties of Sex Addiction Screening Test-revised for Persian Population

Sina Shafieezadeh<sup>1</sup>, Hossein Mohajeri<sup>2</sup>, Atiyeh Mohammadshirazi<sup>3</sup>, Peyman Hassani-Abharian<sup>1,4\*</sup>

1. Institute for Cognitive Science Studies, Tehran, Iran.

2. Department of Psychology, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran.

3. Department of Brain and Cognitive Science, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, Tehran, Iran.

4. Department of Cognitive Rehabilitation, Institute for Cognitive Science Studies (ICSS), Brain and Cognition Clinic (BCC), Tehran, Iran.



**Citation** Shafieezadeh, S., Mohajeri, H., Mohammadshirazi, A., & Hassani-Abharian, P. (2023). Investigating the Psychometric Properties of Sex Addiction Screening Test-revised for Persian Population. *Basic and Clinical Neuroscience*, 14(3), 317-322. <http://dx.doi.org/10.32598/bcn.2022.1920.1>

**doi** <http://dx.doi.org/10.32598/bcn.2022.1920.1>

**Article info:****Received:** 06 Apr 2019**First Revision:** 30 Jun 2021**Accepted:** 30 Oct 2021**Available Online:** 01 May 2023**Keywords:**

Sexual addiction, Sexual hyperactivity, Sexual addiction screening test, Hypersexuality

**ABSTRACT**

**Introduction:** Sexual addiction is known as a disorder that afflicts a person with difficulty in controlling or delaying sexual behaviors. To prevent social, physical, and psychological consequences, validated screening tests are needed to diagnose this disorder. One of these tests is established by Carnes with the name of sexual addiction screening test-revised (SAST-R). In this study, SAST-R has been translated and verified in the Persian language.

**Methods:** The original screening test was translated into the Persian language and also back-translated for matching by two separate expert teams. The data was collected through an online survey of 1268 participants who were in the age range of 18 to 65 years (Mean±SD 29.44±6.90), and 56.1% and 43.9% of the population were women and men, respectively. Three questionnaires, including the SAST-R, the hypersexual behavior consequences scale, and the Connor-Davidson resilience scale as the principal, convergent, and divergent tests were administered to the participants.

**Results:** The reliability of the test's internal consistency (Cronbach  $\alpha=0.883$ ), split-half (Cronbach  $\alpha=0.779$ ), and Guttman (lambda coefficients were between 0.773 to 0.883) tests were used. In addition, 4 methods of content validity (sexual hyperactivity specialist approved), convergent structure validity ( $P<0.001$ ,  $R=0.731$ ), the validity of divergent structure ( $P<0.09$ ,  $R=-0.132$ ), and factor validity (comparative fit index=0.884, goodness of fit index=0.873, root mean square error of approximation=0.047) were measured and confirmed the validity of the test.

**Conclusion:** The Persian version of SAST-R is a reliable preclinical tool to assess the severity of sexual desire in patients.

**\* Corresponding Author:****Peyman Hassani-Abharian****Address:** Department of Cognitive Rehabilitation, Institute for Cognitive Science Studies (ICSS), Brain and Cognition Clinic (BCC), Tehran, Iran.**Tel:** +98 (21) 88802063**E-mail:** [abharian@iricss.org](mailto:abharian@iricss.org)

## Highlights

- The Persian version of sexual addiction screening test-revised (SAST-R) serves as a dependable pre-clinical instrument for evaluating the intensity of sexual desire in patients.
- Expose various subsets of the original questionnaire that explore different aspects, such as understanding sexual orientation.
- Proposed cutting-off scores as the guidelines for clinicians to distinguish various aspects of the original questionnaire.

## Plain Language Summary

This study translated and validated the sexual addiction screening test-revised (SAST-R) in Persian. The study involved 1,268 participants who completed the translated test and other questionnaires. Results showed that the Persian version of the SAST-R is a reliable tool for assessing the severity of sexual desire in patients. It demonstrated good internal consistency, reliability, and validity. This validated screening test is important for diagnosing sexual addiction in Persian-speaking individuals, enabling healthcare professionals to identify and support those struggling with the disorder.

### 1. Introduction

There are several names for sexual addiction, such as hypersexual disorder and sexual impulsivity (Karila et al., 2014; Mick & Hollander, 2006). A person who is sexually addicted has trouble controlling their sexual fantasies, desires, and behaviors (Carnes, 2013; Rosenberg & Feder, 2014).

Rush (Karila et al., 2014) reported the first case of extreme sexual behavior. Then, Krafft described some patients who showed a sign that he called sexual hyperesthesia, which he believed to be the first indication of an unnatural sexual desire (Krafft-Ebing & Von, 1965). Sexual affiliation or excessive nonparaphilic behavior was first introduced by Orford in 1978 (Orford, 1978), who found out-of-control sexual behavior to be similar to alcohol addiction (Orford, 1978).

An appreciable amount of sex desire increases high-risk sexual behavior, which can also provide a vector for sexually transmitted infections (STIs), such as HIV. It may influence social relations, work, and family ties, and affect the addicts themselves quality of life (Kalichman & Cain, 2004). People with forced sexual behaviors often have sexual fantasies and an overwhelming desire for sexual relations, which can influence and control their lives. They face social and legal pressures because some of their behaviors are repetitive and they cannot control their sexual desires (Coleman et al., 2001). Additionally,

they have problems with interpersonal and job-related communication, as well as endangering their health (Coleman et al., 2001). There are several problems associated with sexual addiction, including low self-esteem, anxiety, loneliness, impairment of social skills, job difficulties, and shame and guilt feelings (Ballester-Arnal et al., 2013).

There are a few studies regarding the prevalence of this disorder, for example, Langstrom and Hanson estimated that 12% of men and 6.8% of women in a sample of 2450 had sexual addiction (Langstrom & Hanson, 2006), based on multiple unnatural sexual behaviors or long-term unnatural behaviors (Karila et al., 2014). In the study, Laumann and his colleagues analyzed a sample of 1320 people aged 18 to 59 from the US and found 7.6% had 4 or more sexual relationships weekly and 1.2% masturbated at least once daily a year (Laumann et al., 1994). In most studies, sexual addiction is found in between 3% and 6% of adults, but it is higher in some special groups, such as HIV-positive people and criminals (Karila et al., 2014).

There has been an increase in studies about sexual addiction and screening tests. One such test is the hypersexual behavior consequences scale, in which the respondent chooses one of 5 options based on the Likert scale from 22 phrases. It describes the different effects that behavior and sexual activities can stimulate a person, make them enjoy sexual experiences, or have orgasms. These behaviors could be done in interaction with a partner, or alone while

masturbating or watching pornography (Reid et al., 2012). This questionnaire has a limitation in screening homosexual people like gays and lesbians; accordingly, another screening test can identify hypersexuality in homosexuals because it can also detect other types of sexual orientation (Reid et al., 2012). The sexual addiction screening test (SAST) has been developed by Carnes, who is one of the scientists to develop the sexual addiction assessment test (Carnes, 2001). The second edition of the sexual addiction screening test, the sexual addiction screening test-revised (SAST-R) can be used to measure sexual addiction by answering 45 yes/no questions. Based on the original questionnaire, obtaining 6 or more scores could be a sign of hypersexuality, and the original reference questionnaire had 4 subscales that were used to identify hypersexuality in certain attributes, which include men, women, gays, and the internet (Carnes, 2013). Using these subscales, the score of homosexuality in men could be measured and the use of the internet for accessing pornographic content could be assessed as a type of sexual activity (Carnes, 2013).

## 2. Materials and Methods

### Study participants

The data was collected through an online survey from 1268 participants in the age range of 18 to 65 years (Mean±SD 29.44±6.90) 56.1% and 43.9% of them were women and men, respectively. Among them, 65.9% were single, 28.9% married, and 5.2% were divorced, widows, or widowers. Additionally, their educational level was as follows: 3.2% under diploma, 31.8% diploma, 42.9% bachelor, 15.5% masters, and 6.6% PhD. To collect the data, a Telegram bot was used. At first, the screening tests were published in the telegram bot. Subsequently, the requests for convenience samples were submitted and then they were asked to refer other people to complete the questionnaire based on their self-motivation. By asking repeating questions, the quality of the collected data was evaluated so that a person who answered the same question differently was excluded from the data set.

### Study instruments

In this study, the original SAST-R was translated into Persian and then back-translated into English by an expert academic translator to provide an ecological sexual addiction screening test in Iran. A version of this questionnaire was presented to the authors of the original questionnaire (Carnes, 2001) for verification, and then the final version of the test was used in the validation study (Carnes, 2013).

The hypersexual behavior consequences scale was used for the convergent questionnaire as it works well over time in terms of measuring hypersexual involvement (Reid et al., 2012). In addition, the Connor-Davidson resilience scale was used for the divergent questionnaire because it is a concise and self-assessing measure of resilience that is not necessarily associated with hypersexuality. In addition, the scale has 25 questions, with responses based on a 5-option spectrum and a score of 0 to 4. At last, the questionnaire gave a total score of 100. A closer score of 0 demonstrates a less resilient participant. Meanwhile, a closer score of 100 demonstrates a more resilient participant. In this test, the threshold between high and low resilience is 50 points.

### Reliability methods

The internal consistency of the test was assessed via the split-half and the Guttman methods. In the internal consistency method, Cronbach  $\alpha$  is calculated for the questionnaire, and its coefficients are used to determine the total score. To compute reliable coefficients, the questions of the questionnaire were divided in half, and the scores of the first half and the second half were computed. For the reliable evaluation of the whole test, the correlation coefficient was used. Finally, 6 Guttman validity coefficients were used to determine the reliability.

### Validity methods

To check the validity of the test, 4 methods were used, including content validity, convergent structure validity, divergent structure validity, and factor validity. To ensure content validity, the translated and edited questionnaires were checked by an expert to ensure they matched the characteristics of the original questionnaire with the domestic culture.

For the convergent structure validity method, the hypersexual behavior consequences scale points were compared with the SAST-R scores (Reid et al., 2012). Both questionnaires measure the same factor, and the correlation of the results was expected. Accordingly, the validity test for the divergent structure method should not be correlated with the Connor-Davidson resilience scale simultaneously (Connor & Davidson, 2003) during the test.

The factor validity test considered 3 indicators as follows: The eigenvalue, the variance ratio of each factor, and the eigenvalue chart. After exploratory factor analysis, confirmatory factor analysis was used to validate the new factor model. The chi-square indices, adequacy

fit index (CFI), root mean square error of approximation (RMSEA), goodness fitness index (GFI), and adjusted fitness goodness (AGFI) were considered for this purpose. The SPSS software, version 19 and Lisrel software, version 8 were used to test the validity and reliability of the questionnaire.

### 3. Results

#### The reliability of the study

To test the reliability of the questionnaire, the Cronbach  $\alpha$  coefficient of 0.883 was obtained via the internal consistency methods, which is the first step toward reliability. In the split-half test, the Cronbach  $\alpha$  coefficient for the first half was 0.837, while for the second half, it was 0.761, and for the total questionnaire, the value was equal to 0.779. In Guttman's third test, the lambda coefficients were 0.773, 0.864, 0.883, 0.779, 0.791, and 0.888, respectively.

#### The validity of the study

The sexual hyperactivity specialist confirmed the translated questionnaire was adapted to all SAST-R attributes and its content validity was verified. The Pearson correlation coefficient between the two questionnaires was 0.731 ( $P < 0.001$ ) for the convergent structure validity test. The Pearson correlation coefficient between the two questionnaires was -0.132 ( $P < 0.09$ ) in the validity of divergent structure. Table 1 demonstrates that 11 factors had eigenvalues more than one which show 48.9% of the total variance of all questions. Table 2 presents the results of the confirmatory factor analysis.

### 4. Discussion

The analysis of the collected data in this study showed that the verified SAST-R questionnaire in the Persian language can be used as a screening tool for the Iranian population using different methods of measuring reliability and validity. Moreover, to verify this claim, the

**Table 1.** Factor analysis results: Eigenvalues and variance explained by 11 factors

Questions	Eigenvalue	Percentage of Variance	Concentration Variance Percentage
1	8.04	17.88	17.88
2	2.56	5.7	23.58
3	1.78	3.97	27.55
4	1.5	3.34	30.90
5	1.3	3.08	33.98
6	1.20	2.27	63.71
7	1.19	2.64	39.35
8	1.12	2.50	41.89
9	1.09	2.42	44.29
10	1.06	2.35	46.65
11	1.01	2.25	48.9

NEURSCIENCE

Notes: The exploratory factor analysis showed that 11 factors had eigenvalues more than one which shows 48.9% of the total variance of all questions.

**Table 2.** Confirmatory factor analysis indicators

Chi-square	Comparative Fit Index	Root Mean Square Error of Approximation	Goodness of Fit Index	Adjusted Goodness of Fit Index
603.923	0.884	0.047	0.873	0.825

NEURSCIENCE

obtained results in this study have been compared with the values of similar studies. Following confirmation that the Persian version of the questionnaire was adaptable by experts, Cronbach  $\alpha$  was used as one of the most common methods to measure the reliability of various questionnaires. An  $\alpha$  value of more than 0.7 indicates that the questionnaire is reliable (Karila et al., 2014). Using Cronbach  $\alpha$ , the obtained value for this study was 0.883, indicating that the Persian version of the questionnaire is reliable. This value is also close to the  $\alpha$  value of the original article, which ranged from 0.821 to 0.892, with different subscales for heterosexual men, women, and homosexual men (Carnes et al., 2010). Additionally, comparing test scores by gender reveals two points. First, the proximity of Mean $\pm$ SD of men and women in this study (men: Mean $\pm$ SD 15.43 $\pm$ 7.894; women: Mean $\pm$ SD 0.42 $\pm$ 6.511) and for the original test (men: Mean $\pm$ SD 18.02 $\pm$ 4.835; women: Mean $\pm$ SD 14.40 $\pm$ 4.220). Secondly, the mean score of men in both studies is higher than the scores of women. However, the difference between the mean scores in the men and women groups in this study is 5.01 and in the original study was 3.62 (Carnes et al., 2010). Another study on the validation of the same questionnaire in the Polish language shows the Cronbach  $\alpha$  to be 0.904 (Kołodziej et al., 2017). In addition to Cronbach  $\alpha$ , other validation methods were used, such as the split-half (first half=0.837, second half=0.761, and total questionnaire=0.779) are all above 0.7, and based on lambda Gutmann coefficients (highest=0.888 and lowest=0.772), the questionnaire is reliable.

The Persian-validated version of the SAST-R has a significant correlation with both the original SAST-R and hypersexual behavior consequences scale. Conversely, the original SAST-R (Ballester-Arnal et al., 2013) and the Persian-validated version of this questionnaire had no significant correlation with the used divergent instruments. Using these two methods, the results obtained in this study show a significant correlation with the convergent validation questionnaire ( $P<0.001$ ,  $R=0.731$ ) and no correlation with the divergent tool ( $P<0.09$ ,  $R=-0.132$ ).

Adaptive fitness indices close to the standard (0.95) and the root of the mean square error ranging from 0.0 to 0.5 indicates the validity of the questionnaire (Kołodziej et al., 2017). Accordingly, the values obtained by the root of the mean square error approximation (0.047) and adaptive fitness index (0.884) in this study indicate that the questionnaire based on the factor validity method is valid. As in another study involving the same questionnaire, the root of the mean square error approximation was 0.07 (Kołodziej et al., 2017).

## Study limitations

As a limitation of this study, only the Iranian Persian language-speaking individuals took part in this study. Evaluation of the validity of SAST-R for other Persian language-speaking countries is suggestible. Furthermore, the whole population of Iranian Persian Language speakers was considered in this study. So, we suggest evaluating the validity of this instrument among special societies, such as drug-addicted subjects or the sex-worker populations.

## 5. Conclusion

Using the verified SAST-R Persian questionnaire in this study, therapists and specialists can screen sex addict patients. However, a clinical diagnosis is required to approve the addiction. Along with this tool for screening sexual addiction, there are several sub-scales in the original test and scores for cut-off that can be used according to the table in the supplementary data.

## Ethical Considerations

### Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information. They were free to leave the study whenever they wished, and if desired, the research results would be available to them.

### Funding

The Institute for Cognitive Science Studies (ICSS) in Tehran, Iran, funded this research.

### Authors' contributions

All authors equally contributed to preparing this article.

### Conflict of interest

All authors declared no conflict of interest.

### Acknowledgments

The authors would like to express their gratitude toward Samuel Moseman for his edition

## References

- Ballester-Arnal, R., Gómez-Martínez, S., Llarío, M. D., & Salmerrón-Sánchez, P. (2013). Sexual compulsivity scale: Adaptation and validation in the Spanish population. *Journal of Sex and Marital Therapy*, 39(6), 526-540. [DOI:10.1080/0092623X.2012.665816] [PMID]
- Carnes, P. (2001). *Out of the Shadows: Understanding sexual addiction*. New York: Hazelden Publishing. [Link]
- Carnes, P. (2013). *Don't call it love: Recovery from sexual addiction*. New York: Random House Publishing Group. [Link]
- Carnes, P., Green, B., & Carnes, S. (2010). The same yet different: Refocusing the Sexual Addiction Screening Test (SAST) to reflect orientation and gender. *Sexual Addiction & Compulsivity*, 17(1), 7-30. [Link]
- Coleman, E., Miner, M., Ohlerking, F., & Raymond, N. (2001). Compulsive sexual behavior inventory: A preliminary study of reliability and validity. *Journal of Sex and Marital Therapy*, 27(4), 325-332. [DOI:10.1080/009262301317081070] [PMID]
- Connor, K. M., & Davidson, J. R. (2003). Development of a new Resilience scale: The Connor-Davidson Resilience scale (CD-RISC). *Depression and Anxiety*, 18(2), 76-82. [DOI:10.1002/da.10113] [PMID]
- Kalichman, S. C., & Cain, D. (2004). The relationship between indicators of sexual compulsivity and high risk sexual practices among men and women receiving services from a sexually transmitted infection clinic. *Journal of Sex Research*, 41(3), 235-241. [DOI:10.1080/00224490409552231] [PMID]
- Karila, L., Wéry, A., Weinstein, A., Cottencin, O., Petit, A., & Reynaud, M., et al. (2014). Sexual addiction or hypersexual disorder: Different terms for the same problem? A review of the literature. *Current Pharmaceutical Design*, 20(25), 4012-4020. [DOI:10.2174/13816128113199990619] [PMID]
- Gola, M., Skorko, M., Kowalewska, E., Kołodziej, A., Sikora, M., & Wodyk, M., et al. (2017). Polish adaptation of Sexual Addiction Screening Test - Revised. *Psychiatria Polska*, 51(1), 95-115. [DOI:10.12740/PP/OnlineFirst/61414] [PMID]
- Krafft-Ebing. (1965). *Psychopathia sexualis*. New York: ARCADE
- Långström, N., & Hanson, R. K. (2006). High rates of sexual behavior in the general population: Correlates and predictors. *Archives Of Sexual Behavior*, 35(1), 37-52. [DOI:10.1007/s10508-006-8993-y] [PMID]
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (2000). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press. [Link]
- Mick, T. M., & Hollander, E. (2006). Impulsive-compulsive sexual behavior. *CNS Spectrums*, 11(12), 944-955. [DOI:10.1017/S1092852900015133] [PMID]
- Orford, J. (1978). Hypersexuality: Implications for a theory of dependence. *British Journal of Addiction to Alcohol and Other Drugs*, 73(3), 299-310. [DOI:https://doi.org/10.1111/j.1360-0443.1978.tb00157.x] [PMID]
- Reid, R. C., Garos, S., & Fong, T. (2012). Psychometric development of the hypersexual behavior consequences scale. *Journal of Behavioral Addictions*, 1(3), 115-122. [DOI:10.1556/JBA.1.2012.001] [PMID]
- Rosenberg, K. P., & Feder, L. C. (2014). *Behavioral addictions: Criteria, evidence, and treatment*. Amsterdam: Elsevier Science. [Link]