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Polish adaptation of Sexual Addiction Screening Test – Revised

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Summary

Introduction. Addictive sexual behaviours are gaining more and more attention from researchers. There are actually 25 different questionnaires for assessing the level of loss of control over sexual behaviours (LoCoSB). None of them have been adapted and validated in a Polish language version.

Aim. The main aim of this work was to make such an adaptation of the Sexual Addiction Screening Test-Revised (SAST-R; the most popular and questionnaire).

Methods. For the purpose of psychometric features examination and validation of the Polish version of SAST-R (SAST-PL-M), we recruited 116 heterosexual men receiving psychological treatment due to LoCoSB and meeting the criteria for hypersexual disorder. The control group consisted of 442 heterosexual males having never looked for any psychological or psychiatric help due to LoCoSB.

Results. SAST-PL-M has high reliability (Cronbach's alpha = 0.904) and good filtering characteristics for identification of people who are potentially experiencing difficulty with control over sexual behaviours (the ROC curve for a threshold of 5 out of a maximum 20 points is characterised by a sensitivity of 99.1% and a specificity of 78.3%).

Conclusions. SAST-PL-M can be used as an efficient screening test for symptoms of LoCoSB in clinical and research setups. Results below 5 points indicate a high probability of no problems, while more than 5 points can indicate the need for additional clinical interviews.

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SAST-PL-M results may be successfully referred to the results of SAST-R when used with heterosexual male populations for research purposes.

Key words: hypersexual disorder, test, compulsive sexual behaviour, SAST

Introduction

Problems with control of sexual behaviours are identified in the practices of psychology, psychiatry, and sexology [1]. These problems are also more and more frequently discussed in both mass media outlets and specialist literature. The source of these types of problems is not well understood. Some researchers point to the ever easier access to sexual stimuli and pornographic material [2–4], while others point to societal changes driven by the fact that the topic of sexuality is no longer taboo in many western cultures [5].

People seeking psychological help in response to a perceived loss of control over sexual behaviours most often report problems related to the control of time spent on watching pornography (usually via the Internet) and frequency of masturbation (they may sometimes fall into multi-hour sessions of watching pornography that are accompanied by repeated masturbation, or masturbate in public toilets due to sudden arousal). Some people also report problems related to loss of control over their frequency of using paid sexual services and the amount of money spent on them, or engage in adventurous (and often risky) sexual contact [6–12]. The common denominator of the above described symptoms is their compulsive nature and the inability to stop a given type of behaviour despite many attempts and associated costs.

According to various sources the problem of losing control over sexual behaviours may affect from 0.58% [13, 14] to 4% [15] of the male population and from 0.4% [13, 14] to 3% [15] of the female population in the United States. Statistics gathered by 12-step groups in Poland and provided to us for research purposes indicate that the number of self-help group members dedicated to compulsive sexual behaviours increased by 340% between 2009 and 2012 [16].

Despite the extensive number of clinical studies on this topic, the mechanisms underlying problems with the control of sexual behaviours have not yet been well understood. The literature describes these problems as: sexual dependence [17], sexual addiction [6, 7, 18–22], hypersexuality [23–29], compulsive sexual disorder [30–34], paraphilia-related disorder [35, 36], sexual impulsivity [35, 37], nymphomania, out of control sexual behaviour [38], or compulsive sexual behaviour [11, 39, 40, 41]. The number of labels reflects the lack of consensus regarding what role compulsive and impulsive mechanisms play in the occurrence of symptoms, and to what extent the problem should be treated as an addiction or a sex drive disorder. Results of recent neuroimaging and pharmacological studies suggest that compulsive sexual behaviours resemble substance addictions and pathological gambling [39, 42–46].

One of the most widely accepted definitions of the problem is that it is a "hypersexual disorder" (HD) [36], which very accurately describes symptoms that are

typical for compulsive sexual behaviours but does not propose any mechanism for their occurrence.

A HD diagnosis requires that the patient exhibits – in the last six months – 3 out of 5 symptom criteria (A) and one subjective criterion (B), while simultaneously not exhibiting any exclusion criteria (C):

A1. Spending a large amount of time on fantasies or sexual behaviours and habitually neglecting other important (unrelated to sex) goals, activities, and responsibilities.
A2. Repeated engagement in sexual behaviours or fantasies in response to a dysphoric emotional state (anxiety, depression, boredom, irritation).
A3. Repeated engagement in sexual behaviours or fantasies in response to stressful occurrences in life.
A4. Repeated but unsuccessful attempts to control or significantly reduce sexual behaviours or fantasies.
A5. Repeated engagement in sexual behaviours while downplaying the risk of negative consequences or causing others physical or emotional harm.
B. In relation to the frequency or intensity of sexual behaviours and fantasies, the patient is visibly under a high level of stress, social or professional dysfunction, or dysfunction encompassing other important life aspects.
C. Sexual behaviours and fantasies are not the direct physiological effect of using external substances (e.g. narcotics or pharmaceuticals drugs).

HD was not added to the final version of the DSM-5 due to a lack of both a sufficient amount of research data and a proposal for the underlying mechanisms of this disorder. In order to successfully gather such data it is necessary to not only have clearly defined qualitative criteria (such as the criteria proposed by Kafka), but also valid and reliable diagnostic tests that allow for quantitative measures. In research settings this is a necessary tool for accurate recruitment of subjects, while in clinical practice it is necessary for fast and effective diagnosis of problems. People suffering due to a loss of control over their sexual behaviours often search for effective help for years while not knowing what is happening to them. Specialists that come across their problems, due to a lack of adequate diagnostic tools, may sometimes entirely fail to consider their comments. We believe that providing Polish clinical practitioners with a reliable and valid test that measures the level of intensity of the loss of control over sexual behaviours will be exceptionally helpful in recognising this type of problem, and that it will allow researchers to conduct studies with precisely defined and comparable clinical groups.

SAST and other questionnaire methods

There is currently no (to our knowledge) Polish language research-validated psychometric tool for measuring the level of loss of control over sexual behaviours. In 2013 [47] there were 24 self-report questionnaires of this type available in English.

Another questionnaire tool [48] that can be included in this category was published in 2014. Out of the 25 available psychometric tools of this type, four are successive versions of the SAST:

- Sexual Addiction Screening Test [49] (SAST; Carnes, 1989) – first version of SAST;
- Sexual Addiction Screening Test for Gay Men [50] (G-SAST; Corley, 1999) – adaptation of SAST for men with homosexual orientation;
- Sexual Addiction Screening Test for Women [51] (W-SAST; O'Hara, 1999) – adaptation of SAST for women;
- Sexual Addiction Screening Test-Revised [52] (SAST-R; Carnes et al., 2010) – revised version of SAST for women and men.

The SAST questionnaire was the first published [49] psychometric tool for testing the level of intensity of loss of control over sexual behaviours. Due to its 25 year history it has been translated into many languages and has been used in dozens of research and clinical studies. It is also one of the most widespread tests relating to sexual behaviours on the Polish Internet. The high popularity and large number of unauthorised translations speaks for the popularity of Patrick Carnes's books, which have been translated into Polish since the 90's (e.g. [53]).

Characteristics of the English language SAST-R

The most recent version of the Sexual Addiction Screening Test-Revised [52] is comprised of 20 basic test items and 25 additional items that are included in four subscales that concern, respectively: women, heterosexual men, homosexual men, and use of the Internet for sexual acts. The 20 key items were validated on very large groups of patients (565 males and 85 females) and control subjects (252 males and 119 females). Internal consistency of the tool (measured using Cronbach's alpha), depending on the group, ranged from 0.868 to 0.904 (see Table 1). In the initial version of SAST [49], which was comprised of 25 test items, four factors of this tool were identified using factor analysis:

1) Affect Disturbance/Cannot Stop
2) Relationship Disturbance
3) Preoccupation/Loss of Control
4) Associated Features, such as the experience of sexual abuse in childhood, sexual problems of parents, or undertaking sexual activities with minors.

Together the four factors outlined above explain 44% of the variance in results. In the revised version of SAST-R [52] the results of factor analysis for the 20 basic items were not given. Nevertheless, the authors maintain categorisation of the scale on five measures, described as:

1) Affect Disturbance – significant decrease in mood, with the possibility of depressive states or high levels of anxiety related to own sexual behaviours and their consequences (items 4, 5, 11, 13, and 14; see Table 1 or Appendix 1);
2) Relationship Disturbance – the occurrence of significant difficulties in close relationships due to own sexual behaviours (items 6, 8, and 16);
3) Preoccupation – the occurrence of persistent, obsessive thoughts on the topic of own sexual behaviours (items 3, 18, 19, and 20);
4) Loss of Control – inability to stop specific sexual behaviours despite the problems and costs that are entailed (items 10, 12, 15, and 17);
5) Associated Features – four questions related to experience of sexual abuse in childhood, sexual problems of parents, and undertaking sexual activities with minors (items 1, 2, 7, and 9).

According to Carnes and collaborators the first four factors describe crucial symptoms of addiction [52], and traumatic sexual experiences are frequently associated with compulsive sexual behaviours [53].

A very important characteristic of SAST-R is its high ability to discriminate people from clinical and control populations. In studies by Carnes et al., [52] a clinical population is described as people who have the subjective experience of feeling a loss of control over sexual behaviours and as a result use psychological assistance.

The ROC curve (Receiver Operating Characteristic Curve) for the male group captured 86% of the potential area for the 20 test items and is characterised by a 95% confidence interval of 83.3% and 88.7%. The cut-off score of six test points is characterised by a maximum sensitivity (81.7%) and specificity (77.8%).

SAST-R is also characterised by a relatively high compatibility with the diagnostic criteria of HD (a comparison of 24 tools in this respect can be found in Womack et al., 2013 [47]). Four of the five previously described symptom criteria can be found in the questionnaire: A1 (items 3, 6, 16, and 18; see Table 1), A3 (item 19), A4 (items 10 and 12), and A5 (items 8, 9, and 13). Criterion B is also partially tested by items 3, 7, and 11, though due to the rather wide formulation of dysfunction areas in this criterion ("high level of stress, social and professional dysfunction, or a dysfunction including other important life areas") an additional clinical assessment is necessary. Criterion C, which excludes people experiencing compulsive sexual behaviours as a result of chemical use, is not tested by the SAST-R. The time aspect of HD is also not tested, specifying a minimum symptom duration of six months.

The widespread use of SAST-R, its long presence in studies on compulsive sexual behaviours, and its good psychometric properties prompted us to make the effort to create a Polish adaptation and validation of this tool. Due to the research tasks being carried out by our team, we chose to adapt the well validated basic version of SAST-R containing 20 test items in translation of the male version.

Method

In order to adapt the basic male version of the SAST-R, three concurrent professional translations of the original test items from English to Polish were conducted. Next, after consulting with 20 independent assessors, we chose the translation that was indicated as best by the largest number of people. All of the chosen test items were then back-translated into English and presented to the authors of the original questionnaire for verification. After addressing their comments we created the final version of the test items that were used in the validation study. Data were gathered from June 2014 to January 2015.

Material

Main study participants

116 heterosexual men (ages 18–67; M = 28.35; SD = 7.33) took part in the study, all of whom were receiving psychological or sexological care due to loss of control over their sexual behaviours and met the criteria for HD diagnosis. Patients were recruited from therapy centres in various Polish cities (mainly Warsaw, Krakow, Wroclaw, and Lublin) via self-help groups and the Internet.

The control group consisted of 442 heterosexual males (ages 18–51; M = 28.35; SD = 7.33) who had used internet pornography at least once in the past year and had never received psychological, sexological, or psychiatric help due to loss of control over sexual behaviours. Participants in the control group were mainly recruited via the Internet. As a control of whether these people were experiencing compulsive sexual behaviours, we asked them if they ever received psychological, psychiatric, or sexological help due to sexual behaviours. People who responded positively (N = 9) were excluded from analysis. All participants were informed that they are taking part in a study that is intended to help understand the phenomenon of feeling a loss of control over sexual behaviours. Sexual orientation was controlled using a Polish language adaptation of the self-report Kinsey's Sexual Orientation Scale [54]. The feeling of loss of control over sexual behaviours was assessed in terms of frequency on a five point scale (0 – never, 1 – once or twice in my life, 2 – once in a while, 3 – once a week, 4 – more than once a week).

Replication study participants

Due to replication of results obtained in the main study, 106 additional heterosexual males were assessed (ages 18–46; M = 28.45; SD = 8.17). Among them 96.2% were using pornography during the last year.

Results

Reliability analysis indicated high internal consistency of the Polish adaptation (SAST-PL-M) of the SAST-R questionnaire. Cronbach's alpha coefficient was 0.904 in the main study and 0.931 in the replication study (see Table 1).

Table 1. **Content of each test item in Polish and its original counterpart**

Item	Question	Scale	HD Criteria	Item Correlation with Questionnaire		
				α = 0.904	α = 0.904	α = 0.931
				USA (N = 508)	PL (N = 540)	PL (N = 106)
1	Czy doświadczyłeś wykorzystania seksualnego w dzieciństwie lub młodości?	F			0.136	0.114
	Were you sexually abused as a child or adolescent?			0.168		
2	Czy twoi rodzice mieli jakieś problemy z życiem seksualnym?	F			0.337	0.541
	Did your parents have trouble with sexual behaviour?			0.317		
3	Czy często łapiesz się na tym, że myślisz o sprawach związanych z seksem?	P	A1		0.220	0.357
	Do you often find yourself preoccupied with sexual thoughts?			0.634		
4	Czy masz poczucie, że twoje zachowania seksualne nie są normalne?	A			0.621	0.751
	Do you feel that your sexual behaviour is not normal?			0.638		
5	Czy kiedykolwiek zdarzyło się, że czułeś się źle z powodu swoich zachowań seksualnych?	A			0.637	0.725
	Do you ever feel bad about your sexual behaviour?			0.723		
6	Czy twoje zachowania seksualne kiedykolwiek spowodowały problemy w twoim życiu lub w życiu osób z twojej rodziny?	R	A1		0.669	0.816
	Has your sexual behaviour ever created problems for you and your family?			0.495		
7	Czy kiedykolwiek poszukiwałeś pomocy z powodu swoich zachowań seksualnych?	F			0.718	0.820
	Have you ever sought help for sexual behaviour you did not like?			0.541		

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8	Czy skrzywdziłeś kogoś z powodu swoich zachowań seksualnych?	R	A5		0.397	0.492
	Has anyone been hurt emotionally because of your sexual behaviour?			0.239		
9	Czy którekolwiek z twoich zachowań seksualnych było związane z łamaniem prawa?	F	A5		0.210	0.525
	Are any of your sexual activities against the law?			0.261		
10	Czy podejmowałeś wysiłki, aby zaprzestać któregoś ze swoich zachowań seksualnych, ale nie udało ci się to?	C	A4		0.724	0.820
	Have you made efforts to quit a type of sexual activity and failed?			0.700		
11	Czy są takie zachowania seksualne, które ukrywasz przed innymi ludźmi?	A			0.439	0.561
	Do you hide some of your sexual behaviors from others?			0.657		
12	Czy podejmowałeś próby, aby zaprzestać, któregoś rodzaju swojej aktywności seksualnej?	C	A4		0.704	0.823
	Have you attempted to stop some parts of your sexual activity?			0.650		
13	Czy czułeś się zagrożony lub poniżony z powodu swoich zachowań seksualnych?	A	A5		0.694	0.742
	Have you felt degraded by your sexual behaviours?			0.579		
14	Czy po aktywności seksualnej czujesz się przygnębiony?	A			0.755	0.822
	When you have sex, do you feel depressed afterwards?			0.486		
15	Czy masz wrażenie, że twój popęd seksualny ma nad tobą kontrolę?	C			0.688	0.781
	Do you feel controlled by your sexual desire?			0.696		
16	Czy zaniedbywałeś ważne obszary swojego życia (tj, pracę, rodzinę, przyjaciół, rozrywkę w wolnym czasie) z powodu poświęcania zbyt dużej ilości czasu na seks?	R	A1		0.648	0.828
	Have important parts of your life (such as job, family, friends, leisure activities) been neglected because you were spending too much time on sex?			0.628		
17	Czy kiedykolwiek miałeś poczucie, że popęd seksualny jest silniejszy od ciebie?	C			0.586	0.671
	Do you ever think your sexual desire is stronger than you are?			0.703		

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18	Czy seks jest prawie wszystkim, o czym myślisz?	P	A1		0.387	0.475
	Is sex almost all you think about?			0.335		
19	Czy kiedykolwiek seks lub fantazje romantyczne były dla ciebie ucieczką od problemów?	P	A3		0.458	0.564
	Has sex (or romantic fantasies) been a way for you to escape your problems?			0.641		
20	Czy seks stał się najważniejszą rzeczą w twoim życiu?	P			0.460	0.614
	Has sex become the most important thing in your life?			0.384		

Information about the scale that test items belong to (A – AFFECT Disturbance; R – RELATIONSHIP Disturbance; P – PREOCCUPATION; C – Loss of CONTROL; F – Associated FEATURES). Relation to HD diagnostic criteria (see above). Cronbach's alpha coefficients for groups of Americans [47] and Poles (main study and replication), along with correlation values of individual test items with the questionnaire.

Due to the lack of research on the factor structure of the SAST-R questionnaire, we decided to perform both exploratory and confirmatory factor analysis. Theoretical assumptions of Carnes et al. [52] provided the five factor structure in SAST-R, whereas the exploratory analysis of the previous version [49] pointed to four factors. We conducted an exploratory factor analysis with principal components estimation and oblique Oblimin rotation with a delta parameter equal to zero in both Polish samples (the main study and the replication study). For the main sample, three factors with eigenvalues greater than 1 were obtained, which explained a total of 63.64% of the variance in results. The main factor explains 37.53% of the variance in results; the further factors explained (respectively) 7.61% and 6.24% of the variance in results. The sum of squares of factor 1 loadings was 7.51, factor 2 – 1.52, and factor 3 – 1.25 (Table 2).

Table 2. **Matrix model for the three main factors obtained via exploratory factor analysis, with principal components estimation and oblique Oblimin rotation (delta = 0) of all 20 test items in a group of 558 heterosexual men**

		Factors		
Eigen Value:		7.51	1.52	1.25
Scale	Item	1	2	3
F	1	0.039	0.588	0.352
F	2	0.207	0.529	0.183
P	3	0.085	-0.120	-0.512
A	4	0.551	0.203	-0.122
A	5	0.781	0.001	0.071
R	6	0.374	0.500	-0.192

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F	7	0.514	0.335	-0.199
R	8	0.038	0.657	-0.122
F	9	-0.167	0.565	-0.196
C	10	0.916	-0.092	0.058
A	11	0.648	-0.021	0.210
C	12	0.893	-0.089	0.063
A	13	0.563	0.272	-0.146
A	14	0.722	0.074	-0.163
C	15	0.716	-0.064	-0.196
R	16	0.444	0.217	-0.347
C	17	0.646	-0.084	-0.154
P	18	0.068	0.056	-0.703
P	19	0.382	0.116	-0.164
P	20	0.105	0.252	-0.065

A similar analysis was conducted for a sample of the replication study. As a result, four factors were obtained with eigenvalue values greater than 1, which explained a total of 63.22% of the variance in results. The main factor explains 44.40% of the variance in results, and the further factors explain, respectively, 7.59%, 5.82%, and 5.42% of the variance in results. The sum of squares of factor 1 was 8.88, factor 2 – 1.52, factor 3 – 1.16, and factor 4 – 1.09 (Table 3).

Tabela 3. **Matrix model for the four main factors obtained via exploratory factor analysis, with principal components estimation and oblique Oblimin rotation (delta = 0) of all 20 test items in a group of 106 heterosexual men**

		Factors			
Eigen Value:		8.88	1.52	1.16	1.09
Scale	Item	1	2	3	4
F	1	-0.176	0.072	0.869	-0.162
F	2	0.332	-0.004	0.464	0.168
P	3	-0.123	0.107	-0.140	0.845
A	4	0.553	0.403	-0.024	-0.050
A	5	0.923	-0.113	-0.011	-0.089
R	6	0.476	0.480	0.096	0.032
F	7	0.588	0.426	0.076	-0.065
R	8	-0.101	0.682	0.181	0.073
F	9	0.048	0.475	0.187	0.182

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C	10	0.897	0.018	-0.021	-0.018
A	11	0.476	-0.220	0.386	0.288
C	12	0.909	-0.039	-0.009	0.021
A	13	0.468	0.528	0.002	-0.135
A	14	0.695	0.221	0.116	0.002
C	15	0.576	0.194	-0.040	0.253
R	16	0.584	0.361	-0.031	0.121
C	17	0.597	-0.091	-0.038	0.383
P	18	-0.028	0.651	-0.164	0.187
P	19	0.157	0.165	0.165	0.496
P	20	0.185	0.694	-0.066	-0.038

In view of the fact that the results of exploratory analyses (4 and 3 factors) and the theoretical assumptions of Carnes et al. [52] about a 5 factor design of the questionnaire proved to be divergent, we used a confirmatory factor analysis to verify the hypothesis of a five, four, three, and one (control condition) factor design of the tool. The fit of the five-factor model proved to be the most adequate in both samples (Table 4). The results of the analysis are shown in Figure 1.

Table 4. **Results of confirmatory factor analysis: comparison of alternative models fit of the SAST-R questionnaire, consisting of 20 items in groups of 558 heterosexual men and 106 heterosexual men**

Model	Five-factor		Four-factor		Three-factor		One-factor	
	N = 558	N = 106	N = 558	N = 106	N = 558	N = 106	N = 558	N = 106
X^2(df)	546.57* (160)	288.24* (160)	695.49* (164)	351.44* (164)	708.28* (167)	-	904.53* (170)	382.72* (170)
RMSEA	0.07	0.09	0.08	0.10	0.08	-	0.09	0.11
CFI	0.92	0.89	0.88	0.84	0.88	-	0.84	0.82
SRMR	0.05	0.07	0.05	0.06	0.05	-	0.06	0.07
GFI	0.90	0.80	0.87	0.75	0.87	-	0.83	0.73
Δx^2	-	-	148.92	63.20	161.71	-	357.96	94.48

* $p < 0.001$; Fit Indices: RMSEA (Root Mean Square Error of Approximation) – values below 0.05 indicate a close approximate fit, values below 0.08 suggest reasonable error of approximation; CFI (Comparative Fit Index) – standard is above 0.95, values greater than 0.90 may indicate reasonably good fit; SRMR (Standarized Root Mean Square Residual) – standard is below 0.05, values less than 0.08 are generally considered favourable; GFI (Goodness of Fit Index) – acceptable values equal to or greater than 0.90.

In order to validate the diagnostic characteristics of the SAST-PL-M we split the control group from the main study into two subgroups:

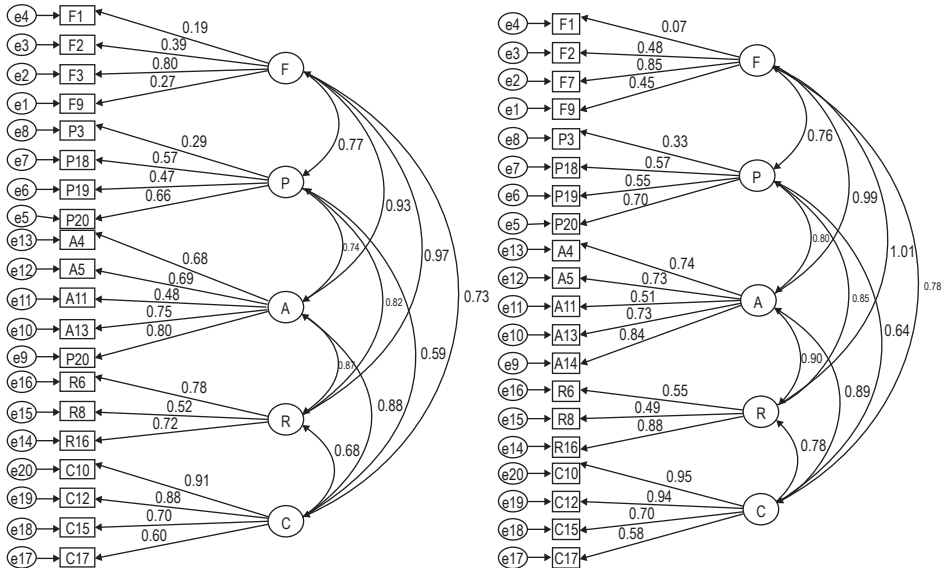

Figure 1. **Results of confirmatory factor analysis for the sample of 558 men from the main study (left) and 106 men from the replication study (right)**

(F – Associated FEATURES; P – Preoccupation; A – AFFECT Disturbance; R – RELATIONSHIP Disturbance; C – Loss of CONTROL). Maximum likelihood method was used in confirmatory factor analysis.

1) Internet pornography users who have not experienced loss of control over their sexual behaviours or experience them sporadically (scores of 0 of 1 on the subjective scale of loss of control; N = 237);
2) Internet pornography users who have experienced loss of control over their sexual behaviours frequently, once a week, or more than once a week (scores of 2 to 4 on the subjective scale of loss of control; N = 187).

Mean error bars depict 95% confidence intervals.

Comparison of mean SAST-PL-M test results for each of the groups using analysis of variance (ANOVA) revealed statistically significant differences between all groups ($F(2.537) = 436.15$, $p < 0.001$; Figure 2). The group that had not previously experienced loss of control of their sexual behaviours was characterised by a mean score of 3.30 (SD = 2.67). The group that experienced loss of control frequently but was not receiving help as a result had a mean result of 8.20 (SD = 3.99), while patients getting help as a result of compulsive sexual behaviours were characterised by a mean score of 13.88 (SD = 3.40). Post-hoc analyses (Bonferroni corrected) revealed statistically significant differences between all group pairs ($p < 0.001$). The distribution of results for each group is presented in Figure 3. The correlation of SAST-PL-M test results

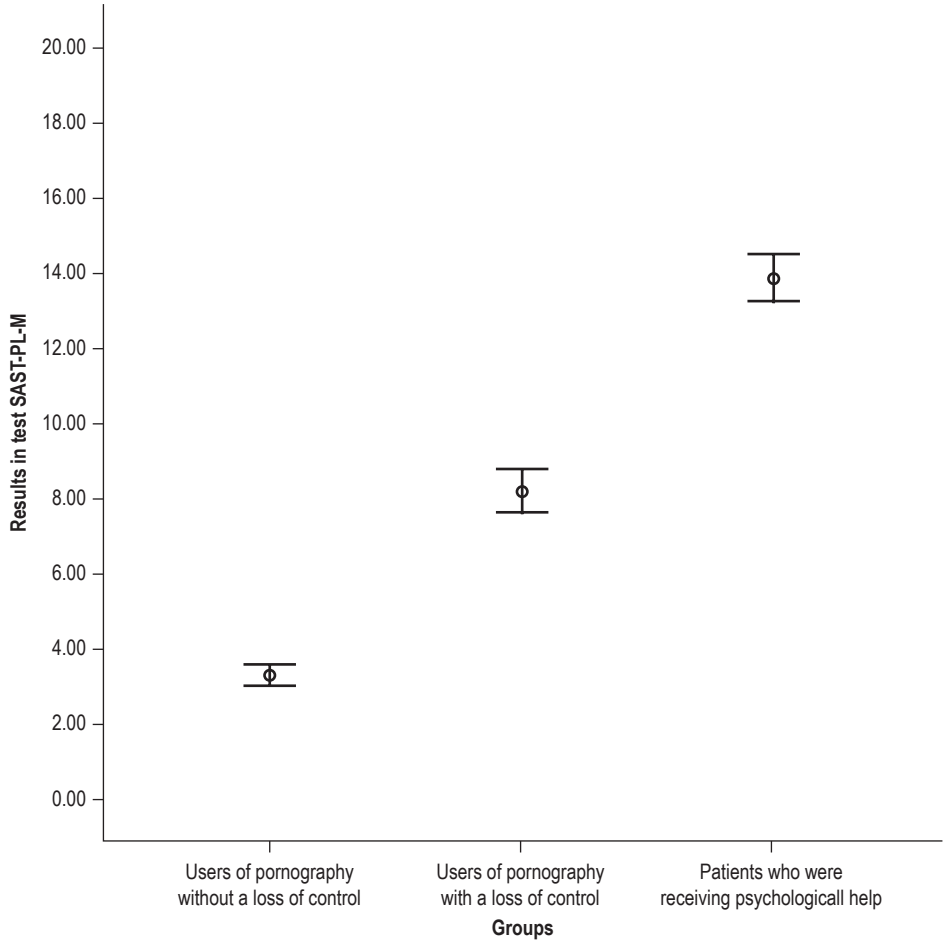

Figure 2. **Comparison of mean SAST-PL-M test results between pornography users who had not experienced a loss of control over their sexual behaviours, users who had such experiences (but did not use psychological help), and patients who were receiving psychological help as a result of compulsive sexual behaviours**

Error bars show 95% confidence interval

(using Spearman's rho) with the subjective feeling of loss of control over sexual behaviours amounted to 0.79, $p < 0.001$.

Next, analysing the attributes of the ROC curve, we assessed the classification quality of the *a priori* selected group of patients who were using psychological or sexological help as a result of loss of control over sexual behaviours (N = 116) against the control group (Figure 4). The ROC curve for the male group captured an area of 86.2% of the 20 test items (SE = 0.021; $p < 0.001$) and is characterised by 95% confidence

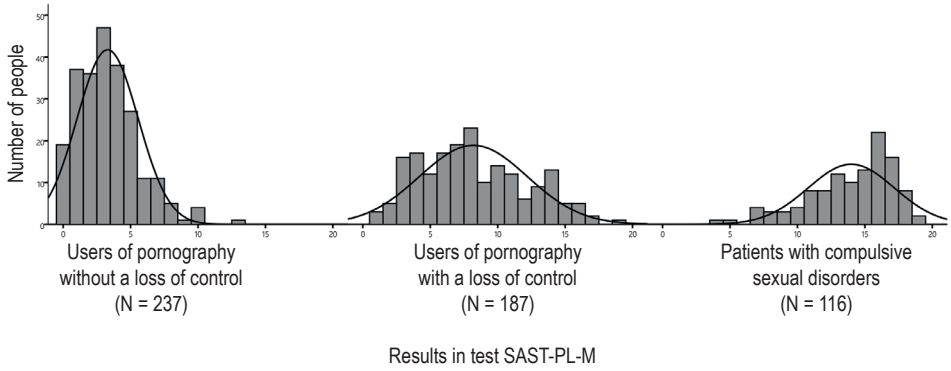

Figure 3. **Distribution of SAST-PL-M test results with normal distribution curve (from the left): Pornography user without feelings of loss of control over sexual behaviours (N = 237), pornography users who have experienced feelings of loss of control over sexual behaviours (N = 187), patients with compulsive sexual behaviours (N = 116)**

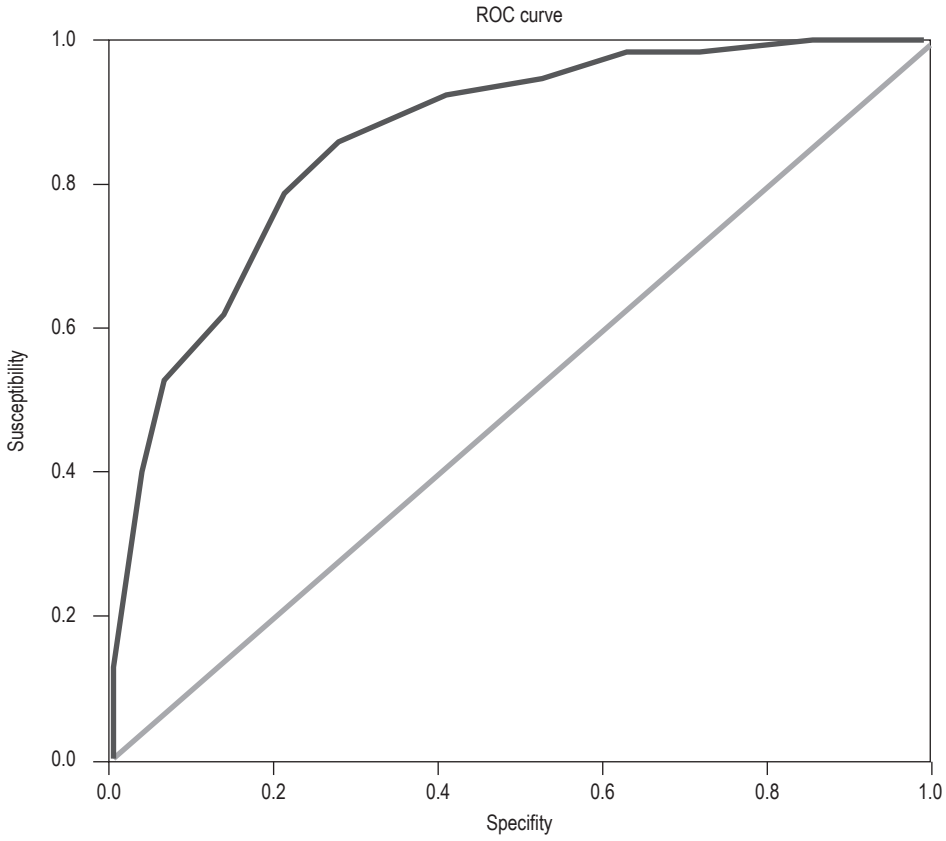

Figure 4. **ROC curve for patients compared to control group**

intervals with limits of 82.1% and 90.3%. The most optimal cut-off value seems to be five test points, for which sensitivity is 99.1% with a specificity of 78.3%. A cut-off value of six test points (as in the original version of the questionnaire) is characterised by a sensitivity of 98.3% and a specificity of 72.0%.

Discussion

The analyses we conducted indicate that the Polish adaptation of the SAST-R is characterised by parameters that are very close to the original version and very high internal consistency. Cronbach's alpha coefficients were identical to those in the original version ($\alpha = 0.904$) in the main study and a little higher in the replication study ($\alpha = 0.931$; see Table 1). Values of individual item correlations with the scale indicate high similarity to the English version (see Table 1), with the exception of item 3 ("Do you often find yourself preoccupied with sexual thoughts?"), which has a significantly lower correlation with the scale than in the original version ($r = 0.22$ compared to $r = 0.63$). Despite this the item is related to other items measuring the preoccupation category (Table 3 and 4).

The results of factor analysis (not conducted on the English version of the tool); [52] confirm the author's assumption of five subscales that measure affect disturbance, relationship disturbance, preoccupation, loss of control, and associated features (Table 2 and 3). Also, confirmatory factor analysis confirms that the best-fitting model is the model assuming five-factor structure (Table 4 and Figure 1).

A very important characteristic is the discriminatory value of the test as described through the ROC curve parameters. The most optimal cut-off value for classification of clinical groups seems to be five test points, for which the sensitivity is 99.1% and specificity 78.3%. In the original version the cut-off value was set to six test points and was characterised by a sensitivity of 81.7% and specificity of 77.8%. Though the specificity of the test is comparable in both versions, the sensitivity of the Polish version is surprisingly high. It may be the result of a rather rigorous selection of subjects to the clinical group that assumed the fulfilment of hypersexual disorder criteria and also the use of psychological and/or sexological help as a result of loss of control over sexual behaviours. We know from our own research [11] that people who decided to reach out for help due to the feeling of loss of control over their own sexual behaviours are characterised by a significantly higher indication of atypical compulsive behaviours (e.g. watching pornography at work in the presence of others who are unaware of it, masturbating in public toilets, etc.) than people who watch pornography (in this study it was a minimum of seven hours weekly) and masturbate (eight times per week on average) just as often but have never decided to seek help due to it. Part of the SAST-PL-M test items measure similar behaviours, so results in the group of people who do get help may indeed have high values (which can be seen in Figure 2).

Test limitations

In contrast to the English version, the Polish version of the tool requires preparation of separate male and female versions. We translated the SAST-R for both genders (the female version is available to anyone who is interested), though due to the research goals being realised by our team and the large amount of work associated with reliably testing and validating the tool we only checked its psychometric characteristics on a group of heterosexual men. We do not know what parameters will characterise the Polish translation of the test in the case of women and the homosexual population. Neither do we know whether the SAST-R measures the intensity of compulsive sexual behaviour as a temporary state or as a constant feature over time. It has not been examined so far. Based on the content of questions that do not apply to temporary states, but rather to repetitive circumstances and the past (e.g. "Do you feel that your sexual behaviour is not normal?" or "Has anyone been hurt emotionally because of your sexual behaviour?"), we can assume that this questionnaire will show similar results in repeated measurements, but it needs to be verified in future research. We will gladly provide support for anyone who would like to run such a study.

Conclusions and method of SAST-PL-M use

The relatively short form (20 test items) and good psychometric and classification qualities of the SAST-PL-M lends to it being a good screening tool, which may be successfully used by therapists and also by researchers for recruitment of study subjects. 10 out of 20 questions in the questionnaire may also be used to test the diagnostic criteria of hypersexual disorder (the items can be found in Table).

The method of filling out the questionnaire (Appendix 1) is exceptionally simple and fast. Subjects are asked to answer each of the 20 test items by responding "Yes" or "No". The "Yes" answers are then summed, and this sum is the final score.

In accordance with the ROC properties, we can interpret results below five points as a lack of problems with control over sexual behaviours with a high probability. Interpretation of scores above five points is not quite so clear. From the data that we gathered (Figure 2), 13% (31 out of 237 people) of pornography users who had not experienced a loss of control over their sexual behaviours (or experienced it very rarely) had scores from 6 to 10 points (one person scored 13 points). A score above five points can certainly indicate the need for a deeper interview in this direction, but in and of itself should not be treated as a diagnosis.

In the case of classifying patients with hypersexual disorder [36] for research studies, we recommend caution and to attempt to establish classification at a significantly higher level (see Figures 2 and 3), e.g. 10 points when concurrently using other measures and an in-depth interview testing all criteria of hypersexual disorder.

One should also remember that the test was validated on a group of heterosexual males only. Its characteristics in the case of female groups or people with a homosexual orientation may be different than those presented in this article.

Thanks to characteristics that are very close to the original, results from the SAST-PL-M on groups of heterosexual males may be referred to the results of research conducted using the English version of the tool. Considering the over 25 year presence of this tool in psychological practices and research in English speaking countries, the number of studies and clinical reports that made use of it is relatively large.

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Appendix 1. **Sexual Addiction Screening Test-Revised (Test przesiewowy na uzależnienie od zachowań seksualnych) SAST-PL-M**

Poniżej znajdziesz 20 stwierdzeń. Ustosunkuj się do nich, udzielając odpowiedzi TAK lub NIE. W tym teście nie ma odpowiedzi dobrych ani złych.

Czy doświadczyłeś wykorzystania seksualnego w dzieciństwie lub młodości?	❒ TAK	❒ NIE
Czy Twoi rodzice mieli jakieś problemy z życiem seksualnym?	❒ TAK	❒ NIE
Czy często łapiesz się na tym, że myślisz o sprawach związanych z seksem?	❒ TAK	❒ NIE
Czy masz poczucie, że twoje zachowania seksualne nie są normalne?	❒ TAK	❒ NIE
Czy kiedykolwiek zdarzyło się, że czułeś się źle z powodu swoich zachowań seksualnych?	❒ TAK	❒ NIE
Czy Twoje zachowania seksualne kiedykolwiek spowodowały problemy w Twoim życiu lub w życiu osób z Twojej rodziny?	❒ TAK	❒ NIE
Czy kiedykolwiek poszukiwałeś pomocy z powodu swoich zachowań seksualnych?	❒ TAK	❒ NIE
Czy skrzywdziłeś kogoś z powodu swoich zachowań seksualnych?	❒ TAK	❒ NIE
Czy którekolwiek z Twoich zachowań seksualnych było związane z łamaniem prawa?	❒ TAK	❒ NIE
Czy podejmowałeś wysiłki, aby zaprzestać któregoś ze swoich zachowań seksualnych, ale nie udało ci się to?	❒ TAK	❒ NIE
Czy są takie zachowania seksualne, które ukrywasz przed innymi ludźmi?	❒ TAK	❒ NIE
Czy podejmowałeś próby, aby zaprzestać, któregoś rodzaju swojej aktywności seksualnej?	❒ TAK	❒ NIE
Czy czułeś się zagrożony lub poniżony z powodu swoich zachowań seksualnych?	❒ TAK	❒ NIE
Czy po aktywności seksualnej czujesz się przygnębiony?	❒ TAK	❒ NIE
Czy masz wrażenie, że twój popęd seksualny ma nad tobą kontrolę?	❒ TAK	❒ NIE
Czy zaniedbywałeś ważne obszary swojego życia (tj. pracę, rodzinę, przyjaciół, rozrywkę w wolnym czasie) z powodu poświęcania zbyt dużej ilości czasu na seks?	❒ TAK	❒ NIE
Czy kiedykolwiek miałeś poczucie, że popęd seksualny jest silniejszy od ciebie?	❒ TAK	❒ NIE
Czy seks jest prawie wszystkim, o czym myślisz?	❒ TAK	❒ NIE
Czy kiedykolwiek seks lub fantazje romantyczne były dla ciebie ucieczką od problemów?	❒ TAK	❒ NIE
Czy seks stał się najważniejszą rzeczą w Twoim życiu?	❒ TAK	❒ NIE

The test is a Polish adaptation of the Sexual Addiction Screening Test-Revised Sexual (P. Carnes, B. Green and S. Carnes; 2010) made with the consent of the original authors by M. Gola, M. Skorko, E. Kowalewska, A. Kołodziej, M. Sikora, M. Wodyk, Z. Wodyk and P. Dobrowolski (2015).