



**USING THE SNAITH-HAMILTON PLEASURE SCALE IN UKRAINIAN IN-PATIENTS
WITH SCHIZOPHRENIA SPECTRUM DISORDERS AND HEALTHY CONTROLS**

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ABSTRACT

Background: Anhedonia is one of the negative symptoms of schizophrenia. For better understanding and creating a good strategy for patient's treatment sometimes we need to know the level of anhedonia. We conducted the study of adaptation and validation the Snaith-Hamilton pleasure scale for Ukrainian speaking persons. **Material and methods:** Totally 328 persons were randomized on schizophrenia spectrum and healthy controls groups: 205 Ukrainian-speaking inpatients with schizophrenia spectrum disorders and 123 healthy volunteers people. These groups were similar with respect to race (white Caucasian), gender, age, socioeconomic status. For assessment we used Ukrainian adaptation of the Snaith-Hamilton pleasure scale, Positive and Negative Syndrome Scale, Montgomery-Asberg depression rating scale. For calculating was used SPSS 20 for Windows. **Results:** In observed groups we found significant difference in age ($p < 0,05$), marital ($p < 0,01$) and occupational ($p < 0,01$) statuses, and in anhedonia level ($p < 0,05$). Among patients anhedonia had observed in 52,2% cases with a common average score on SHPS of $36,4 \pm 13,95$ points (normal ≥ 40 points). They had so called "Social" anhedonia. Patients were very anhedonic in interests and social interactions. Healthy controls in general were non-anhedonic. They had anhedonia in 21,1% cases. The common score on SHPS was $45,07 \pm 7,39$ points. The sensitivity of the scale is 58%, specificity 78%, PPV is 82%. Accuracy of the scale is 0,66. **Conclusions:** The Snaith-Hamilton Pleasure Scale Ukrainian language version had shown moderate sensitivity but good specificity. The scale has excellent reliability, good current validity, and good positive predictive value; its use may facilitate negative assessment in patients with schizophrenia spectrum disorders in daily psychiatry clinical practice and in research studies.

KEYWORDS: Pleasure Scale, Adaptation, Anhedonia, Schizophrenia.

INTRODUCTION

Lack of pleasure (anhedonia)^[1] is one of the negative symptoms of schizophrenia.^[2-4]

Nowadays, negative schizophrenia symptoms remain are most important for treatment in the aspect of neurocognitive functioning.^[5-7]

Anhedonia like pleasure deficit cover to primary negative symptoms,^[8] but some studies,^[9] tell us about its dependence from psychopharmacological treatment like hyperprolactinemia,^[10-15] and related on everyday skills and functional outcome as well.^[16]

The significance of hedonic tone requires further clarification. Several 'pleasure' scales exist. The best known are those of Fawcett et al. (1983),^[17] Chapman et al. (1976),^[18] the Temporal Experience of Pleasure Scale

(TEPS),^[19] and the Motivation and Pleasure Scale Revised (MAP-SR),^[20] etc.

Problems with these scales arise from their length and probable cultural bias. There is a need for a simpler scale, unlikely to be affected by socioeconomic status, sex, age, dietary habits or nationality. It will be a self-assessment scale and the statements must be simple and easy to understand. The scale should cover a wide range of domains of pleasure. Therefore, the Snaith-Hamilton pleasure scale (SHPS) was designed by R. Snaith and M. Hamilton in 1995 as a scale for the assessment of hedonic tone in depressive and schizophrenic patients, and for general population.^[21]

The SHPS has been translated into German,^[22] French.^[23,24] This English version was validated by many authors.^[25,26] Ukrainian language is one of the large spoken languages in post-soviet East European countries.

An adaptation and validation of the SHPS into Ukrainian language would help to further research in negative symptoms of schizophrenia as well as determining the cross-cultural validity of the SHPS and facilitating the comparison of the populations of patients with schizophrenia in many different countries.

Thus, the aim of our observational study is to test the reliability and validity of the SHPS Ukrainian language version in patients with schizophrenia and healthy controls.

Method: *1. Participants.* 348 persons were voluntarily and anonymously enrolled to the study. After completing the questionnaire, 11 people refused to accept further participation in the study and 9 people did not meet the inclusion criteria. So, 328 Ukrainian-speaking persons were randomized on schizophrenia spectrum and healthy controls groups.

205 native Ukrainian-speaking inpatients with schizophrenia spectrum disorders (SSD) (F20-29) on ICD-10^[27] in age range from 18 and older (mean 34,41±0,93 years) were recruited from different departments of Kiev city clinical psychoneurological hospital #1 in Kiev, Ukraine. 123 healthy volunteer's people from hospital staff members, students, and another volunteers (age range 20-69 years, (mean 36, 75±1,28), in Kiev were recruited anonymously and by word of mouth. They were mentally and somatically healthy individuals.

The groups were similar with respect to race (white Caucasian), gender, age, socioeconomic status.

Exclusion criteria for both samples were a history of brain injury or head trauma, seizures, current substance abuse or dependence disorder and any other major psychiatric disorder. The study was approved by the ethics committees of the hospital. All participants gave written informed consent of participation. The study was conducted in conformity with the Declaration of Helsinki.

2. Materials and assessment procedures. We propose null hypothesis that there is no association between schizophrenia and anhedonia in it. And alternative hypothesis is there is some association between two comparing parameters.^[28]

The SHPS.^[21] has 14 items and covers four domains of hedonic experience: interest/pastimes, social interaction, sensory experience, and food/drink.

For the Ukrainian adaptation, the SHPS was independently translated into Ukrainian by bilingual clinical psychologist and psychiatrist (author) first. Then the authors reconciled these two Ukrainian translations into one final version for independent back translation by a bilingual psychologist who was blind to the original

version. Back translations were subsequently reviewed as a way to check the conceptual equivalence between the English and Ukrainian versions of the SHPS. All the items were preserved.

Two validation measures were administered to all participants. All in-patients were clinically assessed by Positive and Negative Syndrome Scale (PANSS).^[29] and Montgomery-Asberg depression rating scale (MADRS).^[30] for postpsychotic depression patients.

3.Data analysis. We observed the bimodal distribution, so the data were described and compares in two groups by using nonparametric tests, which are used for the purpose of statistical study of the connection between phenomena.

For understanding the probability occurring anhedonia in groups and for specificity and sensitivity estimation we used odds ratio. Reliability calculated with a Cronbach's alpha. Concurrent validity of the SHPS was tested through Spirmen's correlations (r), chi-square for proportions.

The mean and S.D. of the healthy control group was used as the reference score for transformations. Additional, multiple regression analyses were carried out to control for the possible confounding variables (gender, years of study, severity of negative symptoms). All statistical tests were performed using SPSS 20 for Windows.

RESULTS

The groups were similar in age, education, but the SSD group included a higher proportion and scored significantly lower than controls on marital (single) and occupational status (jobless) levels (Table 1).

SSD group included patients (on ICD-10) with schizophrenia paranoid type 115 (56,1 %), postpsychotic depression 90 (43,9 %). The means and S.D. of the different subscales of the PANSS were for the positive subscale 10,0 (S.D.±2,16), for the negative subscale 26,4 (S.D. ±0,90) and 42,47 (S.D. ±0,82) for the general subscale. The MADRS score assessed as 25,63 (S.D. ±0,70).

Table 1: Demographics and clinical characteristics of the sample.

	Schizophrenia spectrum disorders		Controls		Spirmen's Correlation	P-value
	N	Mean (S.D.)	N	Mean (S.D.)		
<i>ALL</i>	205		123			
<i>Age (years)</i>	34,41	0,93	36,75	(1,28)	0,739*	0,05
<i>Educational level:</i>						
<i>middle school</i>	65	31,7%	20	16,3%		
<i>high school</i>	104	50,7%	51	41,5%		
<i>college</i>	36	17,6%	52	42,2%		
<i>Marital status:</i>						
<i>single</i>	139	67,8%	72	58,5%	1,000**	0,01
<i>married or living together</i>	51	35,2%	51	41,5%		
<i>Occupational status:</i>						
<i>Studying</i>	14	6,8%	82	66,6%	-1,000**	0,01
<i>working</i>	57	27,8%	41	33,4%		
<i>Jobless</i>	134	65,4%	0	0		
<i>Sex</i>						
<i>Male/Female</i>	109/96	---	75/48	---		
<i>Paranoid schizophrenia</i>	115	56,1%	0	0		
<i>Postpsychotic depression</i>	90	43,9%	0	0		
<i>Anhedonia</i>	120	58,5%	26	(21,1%)	0,839*	0,05
<i>PANSS</i>						
<i>Positive</i>	10,0	2,16				
<i>Negative</i>	26,4	0,90	0	0		
<i>General</i>	42,5	0,82				
<i>MADRS</i>	25,63	0,7	0	0		

*- 0,05, significant

** - 0,01, significant

We found significant positive relationships between anhedonia and schizophrenia in patients, $r=0,839$ ($p<0,05$) and control group. The p-value of the means

SHPS blocks scores in patients with schizophrenia and healthy controls is established in table 2.

Table 2: Comparison of the means SHPS blocks scores in patients with schizophrenia and healthy controls.

Blocks	Schizophrenia	Controls	p-value
	Mean (S.D.)	Mean (S.D.)	
Interest	1,54 (0,77)	2,38 (1,10)	0,05**
Social interaction	2,21 (0,88)	2,57 (0,93)	0,05**
Sensory experience	1,73(0,71)	2,61 (0,95)	0
Food/drink	1,34(0,65)	2,56 (1,05)	0

0,05** significant,

Among in-patients anhedonia had observed in 52,2% cases with a common average score $36,4\pm 13,95$ points (normal ≥ 40 points). They had so called "Social" anhedonia, when patients could not feel pleasure of being among people, communication, etc. (fig.1).

SSD group was very anhedonic in interests and social interactions. That means that they lack hedonic tone, for instance, in family and other social relationships.

Healthy controls in general were non-anhedonic. In healthy controls anhedonia occurred in 21,1% cases ($n=26$). The common score on SHPS was $45,07\pm 7,39$ points. Anhedonia was observed as a lack of interests like reading, TV watching, take up a hobby or look after oneself appearance.

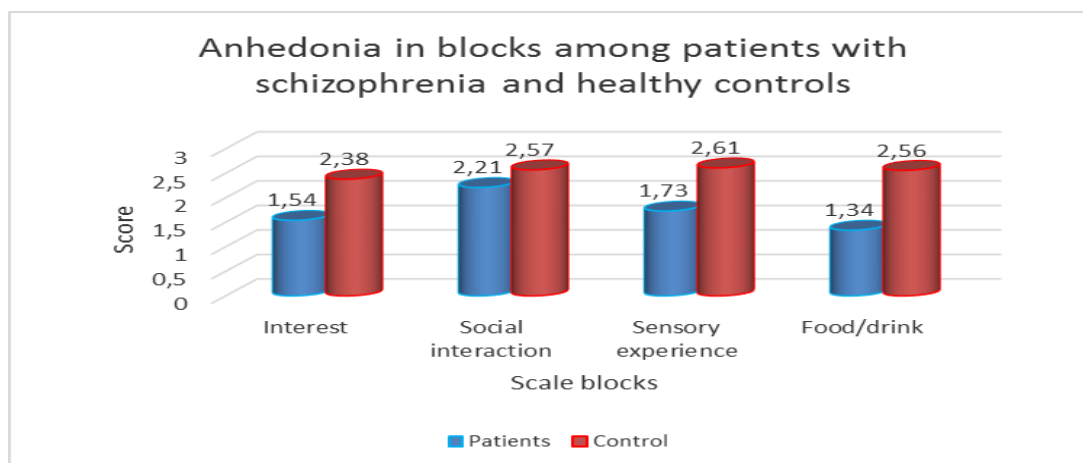


Fig. 1: Anhedonia in blocks among the patients with schizophrenia and healthy controls.

Using the disease/anhedonia cutoff (table 3) we concluded that SHPS is 58,5 % sensitive (58,5% in-patients with anhedonia in schizophrenia were identified) with 41,5% schizophrenic spectrum inpatients, who are probably incorrectly assessed as non-anhedonic. There have also a small amount (21,1%) of anhedonic healthy controls. So, the SHPS is good (78,9%) specific. Positive predictive value is estimated as 82,2%.

Probability, that a person with a schizophrenia spectrum disorder truly had anhedonia is 0,82 and had been non-anhedonic among all persons assessed as non-anhedonic is 0,46. So, the chance that a patient with schizophrenia has anhedonia is 82%.

Persons with schizophrenia in 1,76 time were more likely had been anhedonic than non-anhedonic. Whereas likelihood that healthy person truly is non-anhedonic

estimated as 0,53 and was anhedonic among all assessed people with anhedonia is 0,17. So, the chance that a healthy person actually was non-anhedonic is 53,3%. Risk of having anhedonia in healthy controls was lower than not having anhedonia.

The odds ratio (OR) estimated as 5,26. That means that among the participants in our observational analytic study, a person with schizophrenia spectrum disorders was 5 times more likely was anhedonic than a person without schizophrenia spectrum disorders.

66% of all tested participants were correctly identified by the test. It reflects the accuracy (validity) of the scale - 0,66. The calculated precision of the SHPS is 32,2±12,9. Calculated Cronbach's Alpha is 0,952. So, we can pronounce that the SHPS has shown excellent reliability in Ukrainian speaking groups.

Table 3: The disease/anhedonia cross-table.

Test results	Disease		Total	
	Schizophrenia spectrum	Healthy		
Anhedonia “+”	120 (58,5%)	26 (21,1%)	146 (44,5%)	PPV 82,2%
Anhedonia “-“	85 (41,5%)	97 (78,9%)	182 (55,5%)	NPV 53,3%
Total	205 (100%)	123 (100%)	328 (100%)	
	Sensitivity 58,5%	Specificity 78,9%		

PPV- positive predictive value; NPV- negative predictive value

DISCUSSION

The main goal of our study was to validate the Ukrainian translation of the SHPS in the Ukrainian population. Adapted SHPS allows assess hedonic tone and identify anhedonia severity in Ukrainian-speaking psychiatric patients with schizophrenia spectrum disorders and in healthy people.

However, we found that the adapted SHPS has some disadvantages for ill persons.

The in-patients had some difficulties with autonomously filling the self-evaluation points of the scale. The patient's assessment is possible only with the use of special techniques with the active participation of a

psychiatrist or psychologist conducting the study. The time required to administer the SHPS in patients was 15-32 min (average 23±3,30) minutes, compared with 14-19 min (average 15±0,85) minutes for the healthy individuals.

Patients and controls were similar in terms of education, but not in years of the study, socioeconomic status, or having negative symptoms. The same demographic limitation was found in the validation of the original English-language version.^[21]

Unfortunately, not yet known exact pathogenetic mechanisms of anhedonia in mentally ill as well as in the healthy. However, one of the main reasons for the

reduction of the hedonic response, according to the literature, is the dopaminergic transmission.^[13] or hyperprolactinemia.^[12,14,15]

Finally, we conclude that the Snaith-Hamilton Pleasure Scale Ukrainian language version

1. Is moderate sensitive but good specific in assessed groups. For further understanding it does require more another research studies;
2. Has excellent reliability, good current validity, and good positive predictive value;
3. Its use may facilitate negative assessment in patients with schizophrenia spectrum disorders in daily psychiatry clinical practice and in research studies.

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Disclosure statement

The authors declare no conflict of interest.

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