

## Polish version of the Self-evaluation of Negative Symptoms (SNS)

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### Summary

**Aim.** The aim of the study was to create a Polish version of the Self-evaluation of Negative Symptoms (SNS) scale, to assess its internal consistency, and to make correlations between the SNS scores and the Brief Negative Symptom Scale (BNSS) scores in the group of patients with schizophrenia.

**Methods.** The procedure of Polish adaptation of the French-language version of the SNS scale, comprising 20 items organized in 5 subscales: asociality, blunted affect, alogia, avolition and anhedonia, was carried out. Psychometric tests were performed in 40 patients with paranoid schizophrenia (20 men and 20 women) with severity of symptoms on the Positive and Negative Syndrome Scale (PANSS)  $56 \pm 16$  points, receiving unchanged pharmacological treatment in the last 3 months.

**Results.** The Polish version of the SNS scale was accepted by the author of the scale, Professor Sonia Dollfus. The reliability analysis showed high values of the Cronbach's alpha coefficient for the whole scale (0.91) and for the subscales (0.61–0.85). The SNS and its subscales showed significant correlations with the total BNSS score and with the scores of the BNSS subscales, which confirms the validity of the scale.

**Conclusions.** A statistically significant level of consistency of the whole scale and its individual domains with the results of the clinical assessment with the BNSS, speaks for the adequacy of the self–assessment of negative symptoms by a patient with schizophrenia. Good psychometric properties of the Polish version of the SNS obtained in the study can indicate its usefulness in the research on negative symptoms conducted in Poland.

**Key words:** schizophrenia, negative symptoms, Self-evaluation of Negative Symptoms

## Introduction

Negative symptoms of schizophrenia make a very important diagnostic and therapeutic problem in psychiatry. In our previous paper, we presented contemporary data on the clinical picture, pathogenesis and psychometric evaluation of the negative symptoms of schizophrenia [1]. In another study, we introduced the Polish version of the *Brief Negative Symptom Scale* (BNSS), which has currently been the most popular clinical scale for the assessment of these symptoms [2].

Among the psychometric tools used nowadays, the scales based on the evaluation carried out by an independent observer are the great majority. In them, the final result can be significantly affected by the researcher's experience and subjective assessment. Therefore, the self-assessment scales could be a valuable supplement to the diagnostic process. However, their clinical usefulness in patients with schizophrenia has raised some doubts. Several authors expressed an opinion that the majority of patients with schizophrenia are unable to adequately describe their deficit symptoms [3, 4]. Nevertheless, the results of recent studies can indicate a possible compatibility between self-assessment and that of the external researcher. *The Self-evaluation of Negative Symptoms* scale can allow for the initial identification of these symptoms, especially in the early stage of the illness, can improve the insight of patients and their involvement in the therapeutic process [5, 6].

The attempts to use the subjective assessment made by patients with schizophrenia to describe the negative symptoms had been made as early as at the turn of 1980/1990. For this purpose, in 1988 Liddle and Barnes [7] created the SEDS scale (*Subjective Experience of Deficit in Schizophrenia*) consisting of 21 symptoms, assessing the deficits of thinking, emotions, energy, perception, and intolerance to external factors. In 1990, Jaeger et al. [8] proposed the SDSS (*Subjective Deficit Syndrome Scale*), demonstrating a correlation of its results with the overall severity of psychopathology in the acute phase of schizophrenia, and, at the same time, a lack of such correlation with negative symptoms. The next step was the SENS (*Subjective Experience of Negative Symptoms*) scale, created in 1993 by Selten et al. [9], based on the items of the Andreasen's SANS (*Scale for the Assessment of Negative Symptoms*) [10]. They showed the stability of the scale for several time points of evaluation. Nevertheless, it can be argued that the aforementioned scales are not the real scales of self-assessment, since they are based largely on an interview, and the symptoms classified as "deficit" ones do not meet the contemporary criteria of the negative symptoms (the SENS scale seems to be the closest to these criteria).

*The Motivation and Pleasure Scale – Self Report* (MAP-SR), proposed by Llerena et al. in 2013 [11], may be considered the first scale fully meeting the criteria for the self-assessment. This tool is based on the *Clinical Assessment Interview for Negative Symptoms* (CAINS) questionnaire [12] and is used for quick, initial identification of people with severe negative symptoms. It consists of 18 questions concerning motivation and experiencing pleasure in terms of social relations, work, school and recreational activities, individually assessed by the patient in a range from 0 to 4, during the last week, or, for expected activity – in the coming week. Six items assess experienced and

anticipatory pleasure related to social relation, recreation and work, six items assess feelings and motivations about family, partners and friends, and the next six items assess motivation and engagement in various activities. The limitation of the MAP-SR scale is the assessment of negative symptoms in only two dimensions – motivation and pleasure.

Recently, French researchers (Dollfus et al.) [13] have developed *the Self-evaluation of Negative Symptoms* (SNS) (French: *Auto-évaluation des Symptômes Négatifs*) scale, assessing all five groups of the negative symptoms, i.e., social withdrawal, blunted affect, avolition, anhedonia and alogia. Social withdrawal (asociality) assesses social relationships as well as the patient's propensity to establish new relationships; diminished emotional range (blunted affect) reflects a presence of happiness or sadness in situations in which they are usually felt; avolition relates to motivation, energy level and the ability to achieve goals; anhedonia describes the experienced and expected pleasure; alogia (poverty of speech) is evaluated by the subjective assessment of the examined person. The scale contains 20 items, 4 items for each negative symptom, and the evaluation pertains to the previous week. For maximal simplification, the number of responses was limited to 3: "strongly agree" scoring 2, "somewhat agree" scoring 1, and "strongly disagree" scoring 0. The total score is the sum of the 20 items, ranging from 0 (no negative symptoms) to 40 (severe negative symptoms). The questionnaire should be completed in about 5 minutes [2].

The scale is available in English, French, German, and Hebrew [13]. So far, the assessment of its psychometric properties has been made for the French-language version. In 49 patients with schizophrenia and schizoaffective disorder hospitalized in the university psychiatric hospital in Caen, Dollfus et al. [13] found high internal consistency of the scale and significant positive correlation with the overall SANS score as well as with negative symptoms of *the Clinical Global Impression* (CGI-S) and *the Brief Psychiatric Rating Scale* (BPRS). Hervochoch et al. [14] confirmed these attributes, both in terms of internal consistency and correlation with the results obtained with the use of other instruments measuring negative symptoms (SANS, BPRS, CGI) in 60 schizophrenic outpatients staying in the day-hospital. The development of the Polish version of the SNS scale and the evaluation of its psychometric properties is the second elaboration of this type, following the French-language report.

In this study, we undertook a task of developing a Polish version of the SNS scale, and of assessing the reliability (internal consistency) and the validity of this scale by analyzing correlations between the SNS and *the Brief Negative Symptom Scale* (BNSS) scores, in the group of patients with schizophrenia evaluated during symptomatic stabilization. This assessment concerns both the total scores of these scales as well as their domains, such as asociality, blunted affect, alogia, avolition, and anhedonia.

## Methods

The procedure for the development of the Polish version of the SNS scale

The Polish version of *the Self-assessment of Negative Symptoms* (SNS) scale has been developed at the Department of Adult Psychiatry, Poznan University of Medical

Sciences. After obtaining a consent from the author of the of the scale (Prof. Sonia Dollfus, University of Caen, France), the original French version of *the Auto-évaluation des Symptômes Négatifs* was translated into Polish (Marta Ziembowska-Olejniczak). Subsequently, the Polish translation was given to an independent expert (Małgorzata Ptak-Adamczewska) for the back-translation into French. The resulting back-translation was sent to the author of the scale. The final reconciliation of the Polish version of the scale and its clinical review was made by the correspondence between Prof. Sonia Dollfus and Prof. Janusz Rybakowski. On February 15, 2016, the Polish version of the SNS scale obtained the official certificate of Prof. Sonia Dollfus.

## Psychometric assessments

### Participants

The study involved 40 patients (20 men and 20 women) with a diagnosis of paranoid schizophrenia according to the ICD-10. The patients were under the care of the outpatient clinic at the Department of Adult Psychiatry, Poznan University of Medical Sciences (20 patients) or were participants of the Self-help Centers in Poznan “The Green Center” (10 patients) and “The Fountain House” (10 patients). Patients’ age was  $44\pm 13$  years, education years were  $13\pm 3$  years, and illness duration was  $17\pm 10$  years. All patients remained in the phase of symptomatic stabilization of the illness, defined as achieving a total PANSS score of maximum 80 points and received unchanged pharmacological treatment in the last three months.

### The methodology of psychometric examinations

1. Preliminary evaluation of the severity of illness symptoms was made using the PANSS [15]. The values of the PANSS (mean  $\pm$  SD) in the studied group of patients were as follows: total score  $56\pm 16$  points, positive symptoms  $11\pm 4$  points, negative symptoms  $14\pm 6$  points, general psychopathology  $25\pm 6$  points.
2. The assessment of negative symptoms was made using the Polish version of the SNS. The reliability of the scale was assessed as well as of the discriminant power of individual points of the scale and its subscales (asociality, blunted affect, alogia, avolition, and anhedonia).
3. The validity of the scale was assessed by analyzing the correlation with the results of *the Brief Negative Symptom Scale* (BNSS), both for the total score and the respective subscales (asociality, blunted affect, alogia, avolition, and anhedonia).

### Statistical methods

Statistical calculations were made using the Statistica (Stat-Soft Poland), version 12. The level of statistical significance was set at  $p < 0.05$ . The reliability of the SNS scale was calculated using the Cronbach’s alpha coefficient. The reliability assessment was carried out for the entire scale, as well as for the subscales. Also, using Pearson’s

correlation coefficient, the correlation of each item (given question) with the overall result was calculated to determine the discriminant power. The validity of the SNS was assessed by the correlation coefficient between the SNS and BNSS scales both for the total score and the respective subscales (asociality, blunted affect, alogia, avolition, and anhedonia).

The study received a positive opinion of the Bioethical Commission of the Poznan University of Medical Sciences. All patients were informed about the purpose and the methodology of the examinations and gave their written consent to participate in the study.

## Results

The Polish version of the SNS scale and the certificate are available on the website of the Department of Psychiatry, Poznan University of Medical Sciences, at [www.psychiatria.ump.edu.pl](http://www.psychiatria.ump.edu.pl) in the 'Skala SNS' tab.

In Table 1, the mean values of the individual items and subscales of the SNS are given, as well as their reliability (Cronbach's alpha) and discriminant power in the group of studied patients.

**Table 1. The severity of symptoms, reliability, and discriminant power of the Polish version of the SNS**

Specification	Mean	SD	$\alpha$ C1	MD1	$\alpha$ C2	MD2
1. Wolę pozostać sam/sama w własnym kącie.	0.78	0.73	0.91	0.70	0.77	0.71
2. Czuję się lepiej kiedy jestem sam/sama ponieważ nie czuję się dobrze z osobą, która jest blisko mnie.	0.80	0.82	0.91	0.54	0.78	0.68
3. Nie mam ochoty na wychodzenie z kolegami lub rodziną.	0.53	0.64	0.91	0.52	0.82	0.58
4. Nie szukam specjalnie kontaktu lub spotkań z przyjaciółmi (mail, telefon SMS itd.)	0.78	0.73	0.91	0.52	0.78	0.68
Asociality – total	2.88	2.49	-	-	0.83	-
5. Mówią mi, że nie jestem ani wesoły/a ani smutny/a i że nie złoścę się zbyt często.	0.83	0.81	0.92	0.25	0.60	0.31
6. Jest dużo rzeczy w życiu smutnych albo wesołych ale ja nie czuję żeby mnie dotyczyły.	0.95	0.81	0.91	0.50	0.44	0.51
7. Oglądanie filmu wesołego albo smutnego, przeczytanie smutnej lub wesołej historii nie jest dla mnie specjalnym powodem ani do łez, ani do śmiechu.	0.68	0.69	0.91	0.49	0.47	0.49
8. Innej osobie trudno jest rozpoznać moje emocje.	1.00	0.75	0.91	0.49	0.62	0.27
Blunted affect – total	3.45	2.09	-	-	0.61	-
9. Nie mam tyle do powiedzenia co inni.	1.00	0.88	0.91	0.51	0.74	0.54

*table continued on the next page*

10. Mówienie jest dla mnie 10 razy trudniejsze niż dla większości ludzi.	0.70	0.85	0.90	0.72	0.62	0.73
11. Często zwraca mi się uwagę, że mało mówię.	0.75	0.70	0.91	0.55	0.69	0.63
12. Przyjaciółom lub moim bliskim mam ochotę dużo powiedzieć ale mi nie wychodzi.	0.95	0.71	0.91	0.61	0.79	0.42
Alogia – total	3.40	2.44	-	-	0.77	-
13. Trudno mi osiągnąć cele, które sobie wyznaczyłem/lam.	1.05	0.75	0.91	0.52	0.86	0.57
14. Ciężko mi wykonywać regularnie codzienne czynności.	0.67	0.76	0.91	0.63	0.78	0.79
15. Jest wiele rzeczy których nie robię ponieważ brak mi motywacji lub ochoty.	0.95	0.78	0.91	0.69	0.81	0.81
16. Wiem, że muszę wykonać różne czynności (np. wstać lub umyć się ) ale brakuje mi energii.	0.78	0.83	0.91	0.48	0.63	0.63
Avolition – total	3.45	2.61	-	-	0.85	-
17. Nie odczuwam specjalnie przyjemności dyskutując z innymi.	0.83	0.81	0.90	0.74	0.68	0.75
18. Trudno mi odczuwać przyjemność nawet podczas tych czynności, które sam wybrałem/lam.	0.60	0.78	0.91	0.63	0.69	0.73
19. Kiedy wyobrażam sobie, że wykonuję tę lub inną czynność, to również nie sprawia mi to przyjemności.	0.70	0.79	0.91	0.69	0.69	0.72
20. Seks, nie widzę w tym żadnej korzyści.	0.65	0.74	0.91	0.44	0.89	0.29
Anhedonia – total	3.45	2.47	-	-	0.80	-
SNS – total	16.4	9.7	0.91	-	-	-

$\alpha C1$  – Cronbach's alpha for the entire scale;  $\alpha C2$  – for subscales, MD1 – discriminant power for the entire scale; MD2 – for subscales

In the study group, the mean severity of negative symptoms of schizophrenia, measured with the SNS, was  $16.4 \pm 9.7$  points. The Cronbach's alpha coefficient for the entire scale was 0.91 and this coefficient did not significantly change after removing any of the 20 individual items of the scale, remaining within the range 0.90–0.92. The discriminant power of the items within the entire scale was 0.24–0.74, with the lowest discriminant power (0.24) related to item 5 describing the reduction of the emotional amplitude (“Mówią mi, że nie jestem ani wesoły/a ani smutny/a i że nie złoścę się zbyt często”).

The Cronbach's alpha coefficient for individual subscales was 0.61–0.85. For the subscales of asociality, alogia, avolition, and anhedonia, it fell into the range of 0.77–0.85, which means very good reliability, whereas was slightly lower for the subscale of blunted affect (0.61). The discriminant power of the items within the subscales was 0.27–0.81, with the lowest discriminant power related to items 5 (0.31) and 8 (0.27)

of the blunted affect subscale, and to item 20 (0.29), describing the attitude to sexual activity, of the anhedonia subscale,.

Table 2 shows the correlation between the SNS and its subscales with the BNSS and its respective subscales (asociality, blunted affect, alogia, avolition, and anhedonia).

Table 2. Correlation coefficients between the SNS scale and its subscales and the BNSS and its corresponding subscales

	BNSS Total	BNSS Asociality	BNSS Blunted affect	BNSS Alogia	BNSS Avolition	BNSS Anhedonia
SNS Total	$r = 0.495$ $p = 0.001$					
SNS Asociality		$r = 0.608$ $p < 0.001$				
SNS Blunted affect			$r = 0.419$ $p = 0.007$			
SNS Alogia				$r = 0.346$ $p = 0.029$		
SNS Avolition					$r = 0.490$ $p = 0.001$	
SNS Anhedonia						$r = 0.409$ $p = 0.009$

Total score of the SNS, as well as the values of individual subscales, showed a high, significant correlation with the total BNSS score and its corresponding subscales (asociality, blunted affect, alogia, avolition and anhedonia). The highest correlation pertained to asociality, and the lowest, although still significant – to alogia.

## Discussion

The SNS scale is the first scale of self-evaluation of negative symptoms that assesses all five domains of negative symptoms, i.e., social withdrawal, blunted affect, avolition, anhedonia, and alogia. The creators of the scale performed two validation studies: the first, involving 49 hospitalized patients with schizophrenia and schizoaffective disorder, and the second, performed in 60 patients with schizophrenia staying in the day-hospital. The mean severity of the symptoms measured with the scale was  $13.8 \pm 8.7$  points in the first study, and  $16.6 \pm 7.4$  points in the second one. Both studies confirmed the high reliability (internal consistency) of the scale, obtaining the Cronbach's alpha coefficient of 0.87 and 0.81, respectively. There was also a high correlation between the results of the SNS and the SANS: in the first study, the correlation coefficient with the total SANS score was  $r = 0.63$ ,  $p < 0.001$ ; in the second study the correlation coefficient for the alogia subscale was  $r = 0.55$ ,  $p < 0.001$ ; for avolition  $r = 0.40$ ,  $p = 0.001$ ; for

asociality  $r = 0.43$ ,  $p < 0.001$ ; for anhedonia  $r = 0.30$ ,  $p = 0.017$ ; and for blunted affect  $r = 0.23$ ,  $p = 0.067$  (insignificant) [13, 14].

This study makes the first validation of this scale after the French-language version. In the studied group of patients with schizophrenia treated in the outpatient clinic and receiving constant pharmacotherapy for the last 3 months, the mean severity of negative symptoms measured by the SNS was  $16.4 \pm 9.7$  points, which is the same as in French patients staying in the day-hospital. Similarly, as in French studies, a high Cronbach's alpha coefficient (0.91) was obtained. Somewhat worse results were obtained in the subscale of blunted affect, both for the Cronbach's alpha coefficient (0.61) and for the discriminant power of two items of this scale. It can be mentioned here that in the study of French authors this SNS subscale did not obtain a significant correlation with the blunted affect domain of the SANS.

The development of the Polish version of the BNSS and its verification [2] enabled to make a correlation analysis between the Polish version of the SNS and this second-generation clinical scale most frequently used for the assessment of negative symptoms. This made it possible to assess the content validity of the SNS. It turned out that the SNS and its subscales (asociality, blunted affect, alogia, avolition, and anhedonia) showed significant correlations with both the total BNSS score and the values of its respective subscales, including that of blunted affect.

A limitation of the study can be relatively small number of assessed patients. However, this number is comparable to that used by the creators of the scale for validation (49 and 60 patients).

The results obtained in this study allow to formulate the following conclusions. Firstly, statistically significant level of correlations between the SNS scale and its individual domains (asociality, blunted affect, alogia, avolition, and anhedonia) and the results of the BNSS clinical scale speaks for adequacy of the self-assessment of negative symptoms by a patient with schizophrenia. Secondly, good psychometric properties obtained in this study for the Polish version of the SNS scale may indicate its usefulness in the research on negative symptoms of schizophrenia conducted in Poland. To confirm the obtained conclusions, the validation analyzes should be continued taking into account also other aspects of psychometric properties involving the larger groups of respondents.

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