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Is alexithymia a separate dimension in schizophrenia?

Mehmet Fatih ÜSTÜNDAĞ,[1] Hüseyin GÜLEÇ,[2]
Leman İNANÇ,[3] Ergün SEVİNÇ,[4] Ümit Başar SEMİZ[5]

ABSTRACT

Objective: *The aim of this research is to study the structural features of alexithymia dimension in patients diagnosed with schizophrenia, the relation between alexithymia, depression and negative symptoms, which overlap in terms of schizophrenia clinical presentation, and to find out whether they differ from one another.* ***Methods:*** *The study has been conducted with 208 outpatients treated at the Outpatient Clinic of schizophrenia of the Erenköy Mental Health and Neurological Diseases Training and Research Hospital. Patients with schizophrenia were evaluated via the Positive and Negative Syndrome Scale, the Calgary Schizophrenia Depression Scale, the Global Assessment of Functioning (GAF) and 20-item Toronto Alexithymia Scale (TAS-20).* ***Findings:*** *Alexithymia rate was found to be 36.7% in patients with schizophrenia. Alexithymia was found to be associated with negative symptoms and clinical variables. In the control group with A+ (alexithymic schizophrenia), the age of onset was earlier than in the A- (non-alexithymic schizophrenia) group and the average scores of the GAF were lower.* ***Conclusion:*** *In this study, Alexithymia in schizophrenia was found different from negative symptoms and depression in terms of dimension. TAS, which has three subscales, is factored into two subscales (difficulty identifying feelings (TAS-A) and difficulty describing feelings (TAS-B)) in patients with schizophrenia. Clinicians may use TAS-11, 14 versions or existing 20-item version for the assessment of alexithymia among schizophrenic patients. Assessment of alexithymia as a separate dimension has the potential to offer a new approach to understand the neurobiology and treatment of schizophrenia.* ***(Anatolian Journal of Psychiatry 2020; 21(6):565-571)***

Keywords: *schizophrenia, alexithymia, depression, negative symptoms, factor structure*

Aleksitimi şizofrenide ayrı bir boyut mu?

ÖZ

Amaç: *Bu araştırmanın amacı şizofreni hastalarında aleksitimi boyutunun yapısal özelliklerini, şizofreni klinik görünümünde örtüşen aleksitimi, depresyon ve negatif belirtilerin nasıl bir ilişki içerisinde olduklarını ve birbirlerinden ayrışıp ayrışmadıklarını araştırmaktır.* ***Yöntem:*** *Çalışma Erenköy Ruh ve Sinir Hastalıkları Eğitim ve Araştırma Hastanesi Şizofreni Polikliniği'nde ayaktan tedavi gören 208 hastayla yapıldı. Şizofreni hastaları Pozitif ve Negatif Sendrom Ölçeği, Calgary Şizofrenide Depresyon Ölçeği, İşlevselliğin Genel Değerlendirmesi (İGD) ve 20 maddelik Toronto Aleksitimi Ölçeği (TAÖ) ile değerlendirildi.* ***Bulgular:*** *Şizofreni hastalarında aleksitimi %36.7 oranında bulundu. Aleksitimi negatif belirtiler ve klinik değişkenlerle ilişkili bulundu. A+ (aleksitimik şizofreni) kontrol grubunda, A- (aleksitimik olmayan şizofreni) grubuna göre hastalık başlangıç yaşı daha erkendi ve ortalama İGD puanları daha düşüktü.* ***Sonuç:*** *Şizofrenide aleksitimi boyut olarak negatif belirti ve depresyondan farklıdır. Üç alt ölçeğe sahip olan TAÖ, şizofreni hastalarında iki alt ölçek (duygularını tanımada güçlük (TAÖ-A) ve duyguları söze dökmede*

[1] MD, Psychiatrist, [2] Assoc. Prof. of Psychiatry, SBÜ Erenköy Mental Health and Neurological Diseases Training and Research Hospital, Department of Psychiatry, İstanbul, Turkey
[3] Assist. Prof. of Psychiatry, Muğla Sıtkı Koçman University, Medical Faculty, Department of Psychiatry, Muğla, Turkey
[4] MD, Psychiatrist, Manisa Hospital for Mental and Neurological Diseases, Department of Psychiatry, Manisa, Turkey
[5] Prof. of Psychiatry, Uşak University, Medical Faculty, Department of Psychiatry, Uşak, Turkey
Correspondence address / *Yazışma adresi:*
Dr. Mehmet Fatih ÜSTÜNDAĞ, SBÜ Erenköy Ruh ve Sinir Hastalıkları Hastanesi, PK.34736 Kadıköy/İstanbul, Türkiye
E-mail: mfustundag@gmail.com
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güçlük (TAÖ-B)) olarak boyutlanmaktadır. Klinisyenler, şizofreni hastalarında aleksitimiyi değerlendirmek için TAS-11, 14 veya mevcut 20 maddelik sürümleri kullanabilirler. Aleksitiminin ayrı bir boyut olarak değerlendirilmesi, şizofreninin nörobiyolojisini ve tedavisini anlamak için yeni bir yaklaşım sunma potansiyeline sahiptir. ***(Anadolu Psikiyatri Derg 2020; 21(6):565-571)***

Anahtar sözcükler: *Şizofreni, aleksitimi, depresyon, negatif belirtiler, faktör yapısı*

INTRODUCTION

Alexithymia means a decrease in emotional functionality, inability to find appropriate words to describe their emotions, and poverty of fantasies.[1] A consensus has yet to be reached whether alexithymia in schizophrenia is one of the core factors of the disorder, moreover whether patients diagnosed with schizophrenia have alexithymia.[2-5] Although it is not known to what extent alexithymia has effect on the approach to schizophrenic patients or the treatment of the disorder, it can be confused or overlap with the prevailing clinical presentations such as anhedonia, emotional blunting and negative symptoms.[6] It is indicated that limited capacity of alexithymic individuals of giving positive emotional reaction and processing of emotional stimuli gives rise to this overlapping or confusion.[7] Alexithymia in schizophrenia is defined as a complex construct related to dysfunctions in both cognitive and affective processes.[8] While in one study, alexithymia in schizophrenia is defined as emotional deficiency and it is stressed that its importance has yet to be sufficiently appreciated,[9] in some studies it is argued that alexithymia is a delicate factor for the vulnerability to schizophrenia.[10,11] Many studies concluded that alexithymia is highly prevalent among schizophrenic patients.[2,3,6,10-13] In some cross-sectional studies, alexithymic traits are rather associated with negative symptoms,[14] hallucination frequency, lifetime history of psychotic symptoms[9] and gender[10] (more prevalent in males). On the other hand, there are studies rejecting the link between alexithymia and age, intelligence level, the period of the disease or medication using,[14] severity of positive and negative symptoms.[9] There are researchers who think that alexithymia observed in schizophrenia may also be caused by depression,[16] and there are also others who claim that alexithymia is a completely separate construct from depression.[17]

The aim of this study is to investigate the prevalence of alexithymia among patients diagnosed with schizophrenia and the relationship between negative symptoms of alexithymia and depression symptoms, which may overlap in clinical presentation. Our hypothesis is that alexithymia is a different dimension from overlapping negative symptoms and depression symptoms in schizophrenia and has an impact on the disorder. In this study, it was planned to analyze the construct validity and factor structure of the alexithymia dimension in individuals with schizophrenia. The study will provide clinicians with new options in the approach to schizophrenia and the treatment of patients with schizophrenia.

METHODS

Participants and procedure

These data were acquired from researches projects aiming to investigate the negative traits (depression, negative symptoms, deficiency syndrome, alexithymia etc.)[18] in schizophrenia. This study was conducted with outpatients treated at the Outpatient Clinic of Schizophrenia. The majority of the patients treated with antipsychotics (typical/atypical/combinated) at the clinic on a regular basis are in clinical remission and/or in partial clinical remission. Exclusion criteria for participants were psychotic disorders related to clinical medical conditions or substance use; mental retardation, substance addiction and history of substance use in the last six months. SCID-I was applied to affirm the DSM-IV-TR diagnosis of schizophrenia. After the consecutive applicants and patients diagnosed with schizophrenia who met the inclusion criteria were asked to participate in the study, non-alexithymic group “A-” (n=128) and alexithymic group “A+” (n=80) were divided into case and control groups. After each participant was informed about the study, they provided written and verbal informed consent. They each filled a data collection form, PANSS, CDSS, GAF and TAS-20.

Instruments

Data Collection Form: It is a semi-structured form designed by research staff to ask participants about their age, gender, onset age, marital status and employment status.

The Positive and Negative Syndrome Scale (PANSS): The scale was developed by Kay et al.[19] It is a semi-structured interview containing 30 psychiatric parameters evaluated by interviewers. The Turkish version of the scale was

tested for validity and reliability.[20] We used negative syndrome subscale.

The Calgary Depression Scale for Schizophrenia (CDSS): It was developed by Addington et al.[21] the Turkish version of the scale was tested for validity and reliability.[22] It is a nine-item structured interview scale. Items were constructed to measure depression, hopelessness, self-depreciation, guilty ideas, pathological guilt, morning depression, early wakening, suicide and observed depression a score of 11/12 was determined as a cut-off point for major depressive disorder in schizophrenia for the Turkish version of the scale.

The Toronto Alexithymia Scale-20 (TAS-20): It is a 20-item self-report measure of alexithymia which is defined as difficulty identifying feelings. Items are rated using a five-point Likert scale. The TAS-20 is comprised of three subscales TAS-A, TAS-B and externally oriented thinking (TAS-C). Higher scores indicate greater degree of alexithymia. It was developed by Bagby et al.[23,24] and adapted into Turkish.[25] In addition, a follow-up study determined the cut-off score as 59.[26]

Statistical analysis

Statistical analysis was conducted with SPSS v.16.0. Normality of distribution of variables was checked using Kolmogorov-Smirnov test. Chi-square test was used for comparison of categorical variables and Student's t-test was used for comparison of numerical variables. Item-total correlation and internal consistency were checked for the psychometric properties of the scale. Construct validity was checked using Exploratory Factor Analysis (EFA). Pearson's correlation test was used for the analysis of the relations of the data. Significant level was set at $p<0.05$.

RESULTS

It was found that 39.4% of 208 participants were female and the mean age of the patients was 37.89±9.84. On average, 47.5% of the patients were lower educated and 33.7% were unemployed. In regard to marital status, the results showed that 58.7% of the patients were never married**.** Education level, employment status and economic status was lower in the alexithymic group (χ^2=6.81, p=0.01; χ^2=18.67, p=0.01; χ^2=21.39, p<0.001 respectively). With regards to clinical variables, age of onset was earlier and, family history of psychiatric disorders was higher, PANSS Negative subscale and the GAF scores were poorer in the alexithymic group. (t=3.34, p=0.001; χ^2=10.12, p=0.04; t=-6.11, p<0.001; t=3.97, p<0.001 respectively) than non-alexithymic group. All key variables are presented in Table1.

Internal consistency and item-total correlation were checked to test the reliability of TAS-20, because the adaptation of the scale was not conducted with a schizophrenic group (Table 2). Considering the fact that in the item-total correlation, item load was 0.30 and in some studies this value was lower than 0.20 and even than 0.15, items with item loads lower than 0.15 were extracted. Remaining 14 items had Cronbach's

Table 1. Comparison of demographic and clinical data of groups

	Alexithymia- (n=128)	Alexithymia+ (n=80)	Total (n=208)	t/χ^2	p
Age (mean±SD, years*)	38.51±9.41	36.89±10.57	37.89±9.84	1.15	0.25
Onset age (mean±SD, year*)	23.43±4.62	21.28±4.38	22.94±6.42	3.34	**0.001**
İllness duration,mean±SD /year*	14.91±7.53	15.14±8.18	15.01±7.73	-0.21	0.84
Gender (female %)	37.50	42.50	39.40	0.52	0.47
Education level (low, %)	41.40	60.00	47.50	6.81	**0.01**
Marital status (single, %)	53.90	66.20	58.70	5.34	0.15
Employment (unemployed, %)	26.60	65.00	33.70	18.67	**0.01**
Economic status (low, %)	33.10	66.50	44.40	21.39	**<0.001**
Family history (positive, %)	53.30	62.50	57.00	10.12	0.04
PANSS NT*, (mean±SD)	17.05±5.17	21.46±4.82	18.72±5.45	-6.11	**<0.001**
CDSS*, (mean±SD)	5.65±5.45	5.16±6.21	5.48±5.78	0.59	0.56
GAF*, (mean±SD)	45.22±13.35	37.50±14.10	42.20±14.10	3.97	**<0.001**

CDSS: Calgary Depression Scale for Schizophrenia; PANSSNt: Positive and Negative Syndrome Scale total negative subscale score; GAF: Global Assessment of Functioning

Table 2. Reliability findings of Toronto Alexithymia Scale (TAS)

	Corrected item-total correlation	Alpha value after exclusion of items
TAS1	0.50	0.71
TAS2	0.47	0.72
TAS3	0.33	0.73
rTAS4	0.15	0.75
TAS6	0.44	0.72
TAS7	0.45	0.71
TAS8	0.36	0.73
TAS9	0.34	0.73
TAS11	0.37	0.72
TAS12	0.18	0.74
TAS13	0.50	0.71
TAS14	0.44	0.72
TAS17	0.35	0.73
TAS20	0.18	0.74

Total TAÖ-14 Cronbach's alpha: 0.74

alpha of 0.74.

Factor structure of 14 items obtained from reliability test was analyzed. Three items with loadings less than 0.30 were extracted, the remaining items were factorized (Table3).

When the 11 items and the other two scales were analyzed together with EFA (presented in Table 3 for comparison), it was observed that they were separately factorized along with the other dimensions.

Correlations between clinical variables were checked using Pearson correlation test (Table 4).

Table 3. Factor structure of Toronto Alexithymia Scale (TAS)

	Factor load 1	2	3
TAS1		0.59	
TAS2		0.62	
TAS3		0.43	
rTAS4			
TAS6		0.61	
TAS7		0.59	
TAS8		0.47	
TAS9		0.44	
TAS11		0.44	
TAS12			
TAS13		0.64	
TAS14		0.61	
TAS17		0.45	
TAS20			
PANSS N1*			
PANSS N2*			0.71
PANSS N3*			0.40
PANSS N4*			0.70
PANSS N5*			0.82
PANSS N6*			0.75
PANSS N7*			0.67
Depression**	0.87		
Hopelessness**	0.80		
Self-depreciation**	0.88		
Guilty ideas**	0.82		
Pathological guilt**			
Morning depression**	0.83		
Early wakening**	0.71		
Suicide**	0.83		
Observed depression**	0.92		

**: PANSS N: Positive and Negative Syndrome Scale negative subscale*
***: CDSS: Calgary Depression Scale for Schizophrenia*

Table 4. Correlations between variables

	Alexithymia- (n=128)					Total (n=208)				
	TAS-14A	TAS-14B	TAS_14	TAS_11	TAS_20	TAS-14A	TAS-14B	TAS_14	TAS_11	TAS_20
AAO	-0.15	-0.01	-0.11	-0.13	-0.06	-0.23**	-0.15**	-0.23**	-0.24**	-0.18**
ID	0.05	0.10	0.09	0.09	0.09	0.02	0.07	0.04	0.06	0.05
DUP	-0.01	-0.09	-0.04	-0.03	-0.04	0.02	-0.01	0.01	0.03	0.02
N	0.28**	0.10	0.25**	0.26**	0.22**	0.41**	0.32**	0.42**	0.42**	0.39**
CDS	0.06	0.07	0.08	0.06	0.05	0.08	0.01	0.06	0.04	0.04
GAF	-0.26**	-0.19**	-0.28**	-0.28**	-0.24**	-0.29**	-0.32**	-0.34**	-0.28**	-0.32**

**: p<0.05; **: p<0.001; AAO: age at onset (r); ID: illness duration (r); DUP: duration of untreated psychosis/ month (r); N: negative symptoms; CDS: Calgary Depression Scale; GAF: Global Assessment of Functioning Scale;*

DISCUSSION

This study was conducted to distinguish the confusion in some schizophrenia symptoms in a detail manner, to understand the place of alexithymia in the symptoms and to analyze the rela-

tions among the symptoms and other clinical dimensions with outpatients who applied to the branch. Our study observed that alexithymia is a separate construct that is distinct from other dimensions and it has associations with clinical presentation. The 20-item TAS demonstrated validity and reliability with some limitations. When the cut-off score (≥59) was taken into consideration, incidence rate of alexithymia was as high as 36.7% in individuals diagnosed with schizophrenia.

In order to investigate the separation of alexithymia in schizophrenia from other confounding factors, which is one of the hypotheses of the study, "A-" (n=128) group and "A+" (n=80) group were divided into study and control groups. The groups (A-, A+) were compared in terms of demographic data such as age, gender, educational background and clinical data. There were no significant group differences in terms of age, duration of disease, run-in period, and marital status. Although there are studies indicating that the frequency and severity of alexithymia is higher in men,[27] no significant links were found between alexithymia and gender. A remarkable finding was that schizophrenia started approximately two years earlier in the A+ group and the incidence rate of psychiatric diseases is higher in their families. Education, economic and employment status of the A+ patients were found to be lower compared to the group A-. Although the mean The PANSS negative score (18.72±5.45) was significantly higher in the group A+ than the group A-, no significant differences in The CDSS score were found between the two groups. The GAF score was lower in the group A+. When sociodemographic and clinical data are evaluated, it was observed that alexithymia is associated with early onset of schizophrenia and may adversely affect the economic status and education level, and higher levels of alexithymia have been associated with poorer functionality of the patients. On the other hand, it was observed that alexithymia is related to higher levels of negative symptoms that are difficult to deal with, negatively affecting treatment response and compliance to treatment.

Some clinical presentations of schizophrenia overlap with that of alexithymia.[6] Therefore, it is of great importance to detect alexithymia in schizophrenia. In our study, we did not prefer to use the scale form, which is used in different disorders groups of alexithymic and healthy controls, in patients diagnosed with schizophrenia. It is indicated that given the multi-dimensional structure of alexithymia and its associations to many variables, it is difficult to measure it,[28] and new measurement instruments are needed because the existing instruments contain error sources.[29] In order to test the psychometric properties of the TAS-20 in the schizophrenia group, the patient group A+ was removed and as a result of the evaluation of the group A-(n=128) patients (item-total correlation coefficient was determined as 0.15) #5, #10, #15, #16, #18 and #19 items were excluded from the scale because their exploratory factor analysis was below 0.15. Cronbach's alpha value of 14-item TAS was 0.74, and the construct validity of the remaining 14 items was assessed by EFA. According to EFA principal component analysis, it was observed that TAS was loaded on two dimensions (TAS-A, TAS-B).

Although the prevalence rate of alexithymia is high in schizophrenia, not all schizophrenia patients are alexithymic. Since the characteristics of alexithymia are also observed in non-psychosomatic clinical populations and in different clinical situations such as neurodegenerative diseases, some researchers have argued that alexithymia is a single diagnostic category.[30,31]

Although impaired recognition of expressions of emotions are seen in schizophrenia patients just as in alexithymia, schizophrenia patients, unlike alexithymia, do not necessarily have poor subjective emotional experience but rather they might experience even more intense negative emotions.[32,33] In Aghevli's study, emotional experience in schizophrenia patients seems similar to controls.[33] Todarello et al. conducted a study with patients with schizophrenia found that negative symptoms abated during the course of one year while alexithymia remained stable. This study also observed no significant links between alexithymia and global psychopathology, positive symptoms, or depression. In a follow-up study, Toderello and Porcelli concluded that alexithymic features were not associated with negative symptoms. They also suggested that alexithymic dimension should be considered as an independent and separate construct within the frame of schizophrenia.[6]

Although alexithymia is regarded as a stable personality trait, the relationship between depression and alexithymia suggests that presence of alexithymia may also be caused by depression.[16] It was also reported that although alexithymia is related to anxiety and depressive disorders in both general and clinical sample, they do not overlap as separate constructs.[34-36]

One of the hypotheses of our study was that

alexithymia is dimensionally distinct from the construct of depression and negative symptoms in schizophrenia. When all variables were analyzed by factor analysis in order to find out whether these dimensions were confounding in the manifestation of the disease, it was found that the TAS was reduced to one dimension and separated from negative symptoms and depression. When the factor structure of all dimensions is analyzed, the items TAS-14 #4. #12 and #20 with factor coefficient below 0.35, the item of 'blunted affect' of PANSS negative scale and the item of 'pathological guilt' of CDS scale were found not to be discriminant.

Finally, the 20-item TAS reduced to 11 items (TAS-11) in the schizophrenia patient group, and it was found that the alexithymia construct consisting of two dimensions in schizophrenia. It was discovered that 8 items out of 9 extracted items measured TAS-C (externally oriented thinking) dimension. It was predicted that the TAS-C dimension was not factorized and that the way of thinking or attitudes of schizophrenia patients could be confused with the relevant dimension of alexithymia.

Our study has several limitations. The study sample of patients recruited from the special branch of outpatient clinic poses the risk of lack of diversity. The results of the study will not be attributed to all patients since they are patients from a follow-up outpatient clinic. The confounding effect of many variables, including cognitive symptomatology and treatment were not taken into account it would be considered a limitation of this study. The lack of cut-off scores on The TAS for schizophrenia in Turkey is another limitation. Given that our study is cross-sectional, it prevents us from commenting on the cause and effect relationship.

Alexithymia is a potential source to explain why many clinical features are manifested differently in schizophrenia.[2,3,6] It has been suggested that identifying emotions is a factor that affects the treatment process and therefore alexithymia scores can be used as an important guiding tool for specialists in the clinical treatment of patients.[14,37] Considering alexithymia in schizophrenia as a separate dimension has the potential to offer new opportunities in the treatment of schizophrenia, which is known to be a difficult process for clinicians. Those who will conduct research in this field may use the TAS-11, 14 and the existing 20-item versions depending on the situation. However, since alexithymia is considered to be consisting of 2 dimensions in schizophrenia, the existing scales should be evaluated over 2 dimensions in schizophrenic patients. Given that cognitive behavioral,[38] multimodal psychodynamic,[39] attachment[40] etc. are the options for the treatment of alexithymia, one can suggest that evaluating alexithymia as a construct separate and its treatability can benefit the patient and the treatment team.

The findings obtained in this study should be supported by further studies to be conducted with diverse samples of schizophrenia patients with different psychotic and comorbid diseases. In future studies, alexithymia scales that will enable more efficient assessment of alexithymia in schizophrenia are needed.

***Author's contributions**: M.F.Ü: data collection, statistics, writing manuscript; H.G.: finding subject statistics, reviewing the manuscript; L.İ.: data collection; E.S.: data collection; Ü.B.S.: reviewing the manuscript.*

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