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The Relationship Between Expressed Emotion and Temperament Traits in Caregivers of Schizophrenic Patients

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Öz

Giriş: Bu çalışmada, öncelikle bakım verenlerin bazı mizaç özelliklerinin duygu dışavurum düzeyleri ile ilişkili olup olmayacağını ve duygu dışavurum düzeylerinin hastaların bazı bakım ve hastalık özellikleri ile olan ilişkili olup olmadığını belirlemeyi hedefledik.

Materyal ve Metod: DSM-IV Eksen I Bozuklukları Hasta Sürümü (SCID-I)'ne yaşları 18 ile 65 arasında, ardışık 76 şizofrenik hasta ve şizofreni, bipolar bozukluk, majör depresyon ve anksiyete bozuklukları tanısı olmayan bakımverenleri çalışmaya dahil edildi. Değerlendirme araçları olarak Duygu Dışavurum Ölçeği, TEMPS-A Mizaç Ölçeği, Pozitif ve Negatif Belirti Ölçeği ve Calgary Şizofrenide Depresyon Ölçeği kullanıldı.

Bulgular ve Tartışma: Duygu dışavurum toplam ve eleştirelilik/düşmançılık alt ölçek puanları depresif, siklotimik, hipertimik ve anksiyöz mizaç özellikleri ile anlamlı şekilde ilişkiliydi. İrritabl mizaç puanları toplam duygudışavurum puanları ile anlamlı şekilde ilişkiliydi.

Sonuç: Bakım verenlerin depresif ve hipertimik mizaç özelliklerinin, duygu dışavurum düzeyleri için kuvvetli birer öngörücüdür. Bu bulgular, bakım verenlerin özellikle depresif ve hipertimik mizaç özelliklerinin yüksek duygu dışavurum düzeyleri ile anlamlı şekilde ilişkili olduğunu gösterebilir.

Anahtar Kelimeler: Bakımveren, duygu dışavurum, mizaç, şizofreni

Abstract

Intoduction: In the present study, we were primarily interested in determining whether some temperamenttraits of the caregivers would be associated withtheir expressed emotion levels. We also examined the relationship of EE levels of the caregivers with some care and illness characteristics of the patients.

Material and Method: Seventy-six consecutive schizophrenic patients (aged between 18 and 65) according to the Psychotic Symptoms module of the Structured Clinical Interview for DSM-IV Axis I Disorders Patient Edition (SCID-I/P, Version 2.0) and their primary caregivers who had no current DSM-IV diagnoses of schizophrenia, bipolar disorder, major depression, and any anxiety disorders were included in the study. Expressed Emotion Scale, Temperament Evaluation of Memphis, Pisa, Paris and San Diego auto-questionnaire (TEMPS-A), Positive and Negative Syndrome Scale, The Calgary Depression Scale for Schizophrenia tools were used for evaluation during study.

Results: The total and criticism/hostility subscale scores of EES were significantly correlated with depressive ($r=0.35$, $p=0.002$; $r=0.36$, $p=0.001$, respectively), cyclothymic ($r=0.26$, $p=0.019$; $r=0.26$, $p=0.022$, respectively), hyperthymic ($r=0.28$, $p=0.014$; $r=0.26$, $p=0.022$, respectively), and anxious temperament traits ($r=0.31$, $p=0.006$; $r=0.30$, $p=0.007$, respectively). Irritable temperament scores had a significant association with total EES scores ($r=0.23$, $p=0.037$). We have found that duration of the illness and patient care had significant inverse associations with total ($r= -0.24$,

$p=0.03$; $r=-0.29$, $p=0.009$, respectively) and warmth subscale scores of EES ($r=-0.34$, $p=0.002$; $r=-0.31$, $p=0.006$, respectively).

Conclusion: Depressive ($\beta=0.287$, $t=2.737$, $p=0.008$) and hyperthymic temperaments ($\beta=0.223$, $t=2.138$, $p=0.036$), and duration of patient care ($\beta=-0.268$, $t=-2.609$, $p=0.011$) were significantly associated with improved expressed emotion scores.

Keywords: Expressed emotion, caregiver, schizophrenia, temperament

1. Introduction

Expressed Emotion (EE) is known as critical, hostile or emotionally over involved attitudes and interactions of family members towards a relative with a psychiatric disorder. High EE is a predictor of relapse primarily in schizophrenia [1-4], and a range of psychiatric conditions [2]. High EE is based on five types of emotions expressed by families, namely, Critical Comments, Hostility, Emotional Over Involvement, Warmth and Positive Remarks. Taking care of schizophrenia is very stressful for caregivers due to its chronic and disabling nature, poor outcome, and severity of symptoms. High EE families are generally characterized by more intense negative verbal interactions [5-9], or more rigid communication patterns compared with low EE families [9-11]. Low EE families have fewer negative interactions with their patients [2,12-14].

A poor support system, inadequate information on the schizophrenia, and negative attitudes from environment cause a considerable stress on the family members. Family members can sometimes negatively influence clinical course of the illness by showing negative emotions toward patients. Studies revealed that negative behaviors in schizophrenia negatively influence families leading to adverse consequences such as distress, frustration, loneliness and anger among caregivers [15,16]. Therefore, caregivers may become disappointed, frustrated, discouraged, and a reduced sense of personal accomplishment together with feelings of insufficiency and self-doubt emerge [17,18].

Some of the previous studies indicated that EE levels of caregivers of schizophrenic patients were related to some of their personality traits. High EE relatives were reported to have significantly lower tolerance, flexibility, empathy and self-realization scores than their counterparts [19,20]. Sanger [21] found that high-EE caregivers were more extrovert, tense, vigilant and independent in comparison to low EE group. Scazufca & Kuipers [22] reported that low EE caregivers used more effective coping strategies like problem-solving and social support than high EE ones. In another study, high EE mothers were found to have significantly higher levels of conscientiousness and significantly lower levels of neuroticism than the low EE mothers [23]. The characteristic response manner of low EE relatives is described as tolerant, nonintrusive, and sensitive to patient needs, while their high EE counterparts are prone to intolerance of the patient's problems, intrusiveness, and to the use of inappropriate and inflexible strategies in dealing with difficulties.

Temperamental traits are considered to reflect the combination of an underlying biological vulnerability towards responding to environmental stimuli and the behavioral characteristics that are associated with those responses [24]. Goldsmith et al. defined temperament as individual differences in the likelihood of experiencing and expressing primary emotions and arousal [25]. Temperament must be emotional in nature, must reflect individual differences, and represent an emotional expression. Rothbart et al. considered temperament as "constitutionally based individual differences in the domains of affect, activity, and attention" [26]. Previous studies revealed that affective temperaments and personality profiles have a fundamental role in the predisposition towards affective disorders, and affective psychosis, and temperamental dysregulation is associated with the development of affective disorders [27-32]. Individuals with certain temperament characteristics, such as high negative emotionality tended to be more reactive against negative experiences [33,34]. Greene proposed that these characteristics might be related to difficulty in controlling emotions, a limited capacity for flexibility and adaptability, a low frustration tolerance, and rigid thinking throughout development [34].

Caregivers might react negatively against the schizophrenic patients because of their own some temperamental traits leading to higher levels of EE. To best of our knowledge, the relationship of caregivers' temperament traits with their EE levels has not been sufficiently investigated to date. Therefore, in the present study, we were primarily interested in determining whether some temperament traits of the caregivers would be associated with their EE levels. We also examined the relationship of EE levels of the caregivers with some care and illness characteristics of the patients. We hypothesized that EE levels in caregivers of schizophrenic patients have stronger relationship with their temperament traits than the other variables.

2. Materials and Methods

2.1 Participants

The sample consisted of seventy-six patients (aged between 18 and 65) admitted to psychiatry department at a university hospital with a primary diagnosis of schizophrenia according to the Structured Clinical Interview for DSM-IV Axis I Disorders Patient Edition (SCID-I/P, Version 2.0) [35,36] and their primary caregivers without schizophrenia, and mental retardation were included in the study. The patients had no lifetime diagnosis of bipolar disorder, substance use disorder, and mental retardation. The all participants had to provide

informed consent to agree to participate in the study. This study was approved by local ethics committee (2017/1139). All the patients were under the antipsychotic drug treatment during the assessment. For identifying the primary caregiver, patients were asked who were most frequently in face-to-face contact with them, and who took most responsibility for care of the patient, and who lived with the patient for 3 months preceding assessment. Sociodemographic and clinical characteristics of both patients and caregivers were obtained through a semi-structured form which was prepared by authors.

2.2 Assessment

2.2.1 Expressed Emotion Scale (EES): There is no Turkish version of original Expressed Emotion Scale including 60 items [37]. The items developed by Ferguson & Takane (1989) [38] in order to assess the EE were adapted into Turkish and its validity and reliability was published as a doctoral thesis by Berksun (1992) [39].

The 41-items scale, which is completed by a relative of the patient, is used to qualify and measure the emotional tone accompanying the interaction in the relationship. The scale includes questions related about how the family members perceive the patient and themselves and the level of EE is determined according to the answers given. EE levels increase as the points in the increase which are replied in the form of 'true' or 'false' and which are graded between 0 and 1. The scale has two subscales, the first of which is Criticism and Hostility, comprising 29 items, and the second of which is Excessive Emotional Over-Involvement, comprising 12 items. When the items 3, 8, 14, 28, 30, 36, 39 and 41 are marked as "false", one point is given. When the other items are answered as "true", one point is given and on the contrary no point is given.

2.2.2 Temperament Evaluation of Memphis, Pisa, Paris and San Diego auto-questionnaire (TEMPS-A): Affective temperamental traits were assessed by Turkish version of TEMPS-A which was developed by Akiskal and coworkers [40-41]. This questionnaire contains subscales of items for the depressive, hyperthymic, cyclothymic, irritable and anxious temperaments to identify dominant affective temperament and to assess the mean scores of affective temperament subtypes. The original scale consists of 109 items for males and 110 items for females. The Turkish version inquires about lifelong behavior patterns and consists of 99 items to define 5 temperament subtypes: depressive, hyperthymic, irritable, cyclothymic and anxious.

2.2.3 Positive and Negative Syndrome Scale (PANSS): Patients' current clinical status was rated with Turkish version of the PANSS, widely used for the assessment of positive and negative symptoms, and general psychopathology [42-43]. The PANSS is a 30-item rating scale designed to assess the severity of psychotic symptoms. Outcomes on the PANSS were analyzed

using the 3-factor solution, which included positive, negative, and general psychopathology. All items were rated 1 (absent) to 7 (extreme), with higher scores indicating more severe symptoms.

2.2.4 The Calgary Depression Scale for Schizophrenia (CDSS): CDSS is a nine item structured interview scale developed by Addington et al. to assess depression in schizophrenics. Turkish version of CDSS was shown to be valid and reliable for use in evaluating Turkish schizophrenic patients [44-45]. It is the only depression scale designed for the assessment of depression in schizophrenia and it differentiates between depression and the negative and positive symptoms of schizophrenia. It has been extensively evaluated in both relapsed and remitted patients and is sensitive to change. The CDSS was specifically designed to identify specific depressive symptomatology that cannot be related to negative symptoms of schizophrenia.

2.3 Statistical analyses

Data were analysed using the SPSS (Windows Release 22.0; SPSS Inc. Chicago. Illinois. USA). The Kolmogorov-Smirnov test was used to measure the normal distribution of data. The Pearson product moment correlation analysis was used to assess the relationship between continuous variables. To identify the temperament traits and some clinical variables which might predict the severity of total EE scores we performed a linear regression analyses using 'stepwise' method. Before conducting these analyses, we tested the possible multicollinearity between the variables that would be inserted in the adjustment of models. Multicollinearity was assessed by examining tolerance and the variance inflation factor (VIF). Factors were only entered in the regression models if they showed significant correlation in the univariate correlation analysis. All tests were two tailed with significance level $p=0.05$.

3. Results and Discussion

Table 1 and 2 give some sociodemographic and clinical features of the patients and their caregivers. The caregivers in this study included 34 parents (44.7%), 19 spouses (25%), 13 siblings (17.1%), 7 children (9.2%) and 3 any other relatives (3.9%). The total and criticism/hostility subscale scores of EES were significantly correlated with depressive ($r=0.35$, $p=0.002$; $r=0.36$, $p=0.001$, respectively), cyclothymic ($r=0.26$, $p=0.019$; $r=0.26$, $p=0.022$, respectively), hyperthymic ($r=0.28$, $p=0.014$; $r=0.26$, $p=0.022$, respectively), and anxious temperament traits ($r=0.31$, $p=0.006$; $r=0.30$, $p=0.007$, respectively). Irritable temperament scores had a significant association with total EES scores ($r=0.23$, $p=0.037$). We have found that duration of the illness and patient care had significant inverse associations with total ($r=-0.24$, $p=0.03$; $r=-0.29$, $p=0.009$, respectively) and warmth subscale scores of EES ($r=-0.34$, $p=0.002$; $r=-0.31$, $p=0.006$, respectively) (Table 3).

Table 1. General description of the patients (n=76).

	n	%
Gender		
Female	28	36.8
Male	48	63.2
Marital status		
Married	28	36.8
Single	40	52.6
Divorced	8	10.5
Family history of psychiatric disorder	31	40.8
	Mean	SD
Age	40.40	0.67
Education level (year)	4.35	1.29
Number of previous hospitalizations	2.63	3.12
Duration of the illness	13.00	9.87
CDSS	7.59	5.42
PANSS Total	70.26	9.03
PANSS Positive	16.75	6.45
PANSS Negative	19.59	7.17
PANSS General Psychopathology	35.61	11.63

CDSS: The Calgary Depression Scale for Schizophrenia, PANSS: Positive and Negative Syndrome Scale

Table 2. General description of caregivers (n=76).

	n	%
Gender		
Female	46	60.5
Male	30	39.5
Marital status		
Married	50	
Single	14	65.8
Divorced	12	18.4
	Mean	SD
Duration of care (years)	14.02	11.15
Daily care time (hours)	7.96	5.56
TEMPS-A Total	32.36	16.18
Depressive	7.63	4.33
Cyclothymic	6.35	4.66
Hyperthymic	9.28	4.53
Irritable	3.52	3.69
EES Total	19.75	5.68
Emotional involvement	11.39	3.89
Warmth	8.35	2.67

Table 3. The correlations of the scores of EES with TEMPS-A and some sociodemographic and clinical variables

	EESTotal	Criticism/hostility	Warmth
TEMPS-A			
Depressive	0.35**	0.36***	0.22
Cyclothymic	0.26*	0.26*	0.18
Hyperthymic	0.28*	0.26*	0.21
Irritable	0.23*	0.19	0.22
Anxious	0.31**	0.30**	0.21
Number of previous hospitalizations	0.06	0.06	0.05
Duration of the illness	-0.24*	-0.12	-0.34***
Duration of patient care (month)	-0.29**	-0.22	-0.31**
Daily care time	-0.01	-0.07	0.06
Age	-0.10	0.01	-0.16
Educational level	-0.24	-0.18	-0.23
CDSS	0.18	0.18	0.12
PANSS			
Total	0.23	0.33	0.09
Positive	0.02	0.08	0.01
Negative	0.05	0.08	0.01
General Psychopathology	0.01	0.06	0.09

*p<0.05, **p<0.001, *** p<0.0001

CDSS: The Calgary Depression Scale for Schizophrenia, PANSS: Positive and Negative Syndrome Scale

Table 4. Linear regression analysis to predict EE levels of caregivers.

	B	S.E.	Beta	t	p
Depressive temperament	0.376	0.137	0.287	2.737	0.008
Hypethymic temperament	0.279	0.131	0.223	2.138	0.036
Duration of patient care (month)	-0.137	0.052	-0.268	-2.609	0.011

R=0.494, R²=0.244, F(4,572) = 0.036, Durbin-Watson=1.822

In linear regression analysis (total EES scores as dependent variable), seven predictors (all temperament traits, duration of the illness, and duration of the patient care) were loaded into the model using the stepwise method (Table 4). Results were evaluated using a confidence interval of 95 % and significance level of $p < 0.05$. Depressive ($\beta = 0.287$, $t = 2.737$, $p = 0.008$) and hyperthymic temperaments ($\beta = 0.223$, $t = 2.138$, $p = 0.036$), and duration of patient care ($\beta = -0.268$, $t = -2.609$, $p = 0.011$) were significantly associated with improved EE scores. Therefore, these studies indicated that higher EE scores were predicted by high levels of depressive and hyperthymic temperament traits even after controlling for the effects of care and illness related factors such as duration of the illness and patient care.

Temperament is related to constitutional differences in emotional, social, motor, and attentional reactivity, self-regulation and activity levels of the subjects [54,55]. The vulnerability model supposes that underlying temperamental traits might be important predictors in the development of several lifetime psychiatric diagnoses including conduct disorders, ADHD, substance abuse, anxiety, and depressive disorders [56-62]. Depressive, cyclothymic, hyperthymic, anxious and irritable temperament have been considered as subthreshold manifestations of mood disorders [63-65]. The results of our study revealed that all temperamental traits were significantly correlated with total, and criticism/hostility scores of caregivers' EES. In linear regression analysis, we have found that that caregivers' depressive and hyperthymic temperament traits strongly predicted their EE levels even after controlling the effects of the duration of the illness, and patient care. These findings might demonstrate that particularly depressive and hyperthymic temperament traits of caregivers were significantly associated with higher EE levels. Caregivers' depressive and hyperthymic temperament traits may predispose the manifestation of somenegative emotions towards their patients. Caregivers who have depressive or hyperthymic temperaments may not tolerate some psychotic symptoms, may criticise the behaviours and feelings of the patients, particularly during the earlier phases of the schizophrenic illness. Gray &McNaughton [66] concluded that the individuals with anxious temperament would be particularly sensitive to environmental threats, behaviorally and emotionally. Therefore, depressive and hyperthymic temperament in our sample may lead some negative parenting styles such as overprotective and controlling behavior and criticism and lack of warmth, as previously suggested [67]. Such parental temperament traits may be associated with the onset or maintenance of

behavioral inhibition [68]. Moreover, previous findings indicated that clinically anxious [69], and high anxious temperament individuals [70] showed a larger attentional bias toward the stimuli, compared to the low anxious counterparts. Therefore, we might conclude that that high depressive and hyperthymic caregivers are more prone to display higher levels of EE particularly in earlier phases of the patient care. If high EE is conceptualized as representing a relative's attempt to cope with a patient's illness [48], then we may suggest that the caregivers with high depressive and hyperthymic temperamental traits might have different adopting strategies from those of without these kinds of traits.

4. Conclusions

The present study has several limitations. The major limitation is that we did not exclude the patients who had also a co-diagnosis of depression which might have biased the results. One might argue that schizophrenic patients may be more sensitive towards criticism, and depressed patients may be more sensitive towards emotional overinvolvement, or respectively, that key relatives of schizophrenic patients behave in a more critical manner, while those of depressed patients are more emotionally overinvolved. Any psychotropic medications and dosages were not controlled for the caregivers. Also, we did not measure the severity of depression in caregivers, since we excluded the relatives with a current diagnosis of major depression and any anxiety disorder.

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