Psychiatry Research 275 (2019) 332–337

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Negative symptoms and recollections of parental rejection: The moderating roles of psychological maladjustment and gender

Ebru Akün[1,*], Ayşegül Durak Batıgün

Department of Psychology, Ankara University, Turkey

ARTICLE INFO

Keywords:
Schizophrenia
Negative symptoms
Parental acceptance–rejection
Gender
Psychological adjustment

ABSTRACT

The aim of the study was to investigate the moderating roles of the current self-reported psychological maladjustment and gender in the relationship between perceived parental rejection in childhood and negative symptoms of schizophrenia patients. The study sample consisted of 52 outpatients (20 females and 32 males between the ages of 19 and 61), diagnosed with schizophrenia at Ankara University and Ege University Faculty of Medicine Department of Psychiatry in Turkey. Participants' negative symptoms, recollections of parental rejection, and psychological maladjustment were assessed by Scale for the Assessment of Negative Symptoms, Adult Parental Acceptance–Rejection Questionnaire, and Personality Assessment Questionnaire, respectively. The findings revealed that negative symptoms were not directly linked to maternal and paternal rejection. However, negative symptoms significantly associated with psychological maladjustment. Three-way interaction (moderated moderation) analyses showed that the effects of perceived maternal and paternal rejection in childhood on negative symptoms were significantly moderated by the current self-reported psychological maladjustment for female patients with schizophrenia, but not for males. The study highlighted the importance of applying trauma or attachment-focused interventions and a gender-specific psychiatric treatment in schizophrenia.

1. Introduction

Schizophrenia is a clinically heterogeneous mental disorder including positive symptoms, negative symptoms, cognitive impairment and emotional dysregulation. Although it has been acknowledged that schizophrenia is highly heritable (approximately ranging from 70% to 80%) (Tandon et al., 2008; Uher, 2009), findings from literature review and meta-analysis studies have indicated that there is a high prevalence of reported child abuse and neglect among schizophrenia patients (Mørkved et al., 2017; Schäfer and Fisher, 2011). Similarly, adverse parenting practices, such as lack of care and overprotection, and poor/insecure attachment to parents, were found to be clinically relevant constructs in the occurrence and course of the schizophrenia (Berry et al., 2009; Carvalho et al., 2016).

The research examining the relationship between clinical symptoms of schizophrenia and relationship with parents in childhood have mostly shown that childhood physical, sexual, emotional abuse, and neglect tend to be associated with positive symptoms (especially with hallucinations and paranoid ideations) as compared to negative symptoms (Chae et al., 2015; Dvir et al., 2013). In other words, findings did not show direct significant correlations between childhood abuse or neglect and negative symptoms, including five symptom domains of blunted affect, avolition, anhedonia, asociality, and alogia. Nevertheless, the contradictory findings have been reported in other studies. For example, Gumley et al. (2013) reported small to moderate correlations between insecure attachment and positive and negative symptoms among psychosis patients. Some studies (e.g., Bailey et al., 2018; Gallagher and Jones, 2013, 2016) revealed that childhood abuse is associated with positive symptoms, while childhood neglect is related to negative symptoms of schizophrenia.

Research in recent years has begun to provide evidence for the mechanisms which can play a mediating or moderating role in the link between relationship with parents in childhood and schizophrenia symptoms. These studies were especially conducted for positive symptoms because of its strong and consistent associations with childhood abuse and neglect (e.g., Gibson et al., 2014; Østefjells et al., 2017). For negative symptoms, a biological mechanism (*COMT* Val^{158}Met genotype) was found to modulate the relationship between childhood emotional neglect and the severity of negative symptoms (Green et al., 2014).

Considering these inconsistent and limited findings about negative symptoms, the aim of the current study was to investigate the relationship between recollections of parent-child relations and negative

* Correspondence to: Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Psikoloji Bölümü Sıhhiye, Ankara, Turkey.
E-mail addresses: eakun@ankara.edu.tr (E. Akün), batigun@ankara.edu.tr (A.D. Batıgün).
[1] The data reported here were collected as part of the first author's doctoral dissertation.

https://doi.org/10.1016/j.psychres.2019.03.042
Received 18 July 2018; Received in revised form 24 March 2019; Accepted 24 March 2019
Available online 25 March 2019
0165-1781/

symptoms of schizophrenia patients. However, unlike the other research focusing on childhood abuse, neglect, and trauma, participants' perceptions of their relations with their parents in childhood were examined in terms of their remembrances of parental acceptance–rejection. According to Interpersonal Acceptance–Rejection Theory (formerly known as Parental Acceptance–Rejection Theory) proposed by Rohner (1986, 2016), perceived parental acceptance–rejection in childhood implies the quality of the emotional bond between the parent and child and assesses the physical, verbal, and symbolic behaviors used by parents to express child's feelings. The concept of parental acceptance indicates the warmth, affection, care, and support shown to child. On the other hand, the concept of parental rejection states the presence of physically and psychologically destructive behaviors and emotions such as coldness, hostility, aggression, indifference, and neglect. Rohner highlights that children may feel rejected by parents even if there are no visible, concrete behavioral signs (undifferentiated rejection). Rohner also proposes that parental rejection has serious and adverse effects on personality functioning of children and adults. He claims that rejected children and adults panculturally are likely to develop psychological maladjustment including hostility and aggression; dependence or defensive independence; negative self-esteem; negative self-adequacy; emotional unresponsiveness; emotional instability; and negative worldview (Rohner, 1986, 2016).

The reason for selecting the concept of parental acceptance–rejection in this study was that all humans experience more or less acceptance and care in the relationships with their parents in childhood (Rohner, 1986, 2016), even if they are not all exposed to physical, sexual or emotional abuse or trauma. In the current study, we first hypothesized that the level of perceived rejection from parents in childhood would be directly correlated to the negative symptoms of schizophrenia patients. Additionally, in our previous study (Akün, 2017), we found that both maternal and paternal rejection made unique and independent contributions to patients' self-reported psychological maladjustment in schizophrenia. Based on this finding, we second hypothesized that the patients' current level of self-reported psychological maladjustment would have a moderating role in the relationship between recollections of maternal and paternal rejection and negative symptoms. The reason why we consider psychological maladjustment as a moderating effect, but not a mediating effect, was that the strength of the relationships between childhood experiences with parents and negative symptoms was not consistently documented by previous studies. In other words, we considered that the effects of perceived parental rejection on negative symptoms may become significant or may enhance, depending on the level of psychological maladjustment. Additionally, as the previous findings have indicated significant differences between males and females in terms of both psychological maladjustment (Ali et al., 2015; Sultana and Khaleque, 2016) and negative symptoms (Ring et al., 1991; Thorup et al., 2007), we also included gender as a second moderator to the model. The final model assessed in the current study was shown in Fig. 1. We hypothesized in this model that the current psychological maladjustment moderates the relationship between perceived maternal and paternal rejection and negative symptoms for female patients with schizophrenia.

2. Method

2.1. Participants

The sample consisted of 20 females (38.5%) and 32 males (61.5%), in total, 52 outpatients with schizophrenia who were recruited from the Medical Faculty Psychiatric Departments at Ankara University and Ege University in Turkey. The mean age was 38.31 (S = 10.65, range = 19–61) for the entire sample. Most of the participants (71.2%) had an education level of high school or below. Approximately 73% of the participants were single, 78.8% were unemployed or retired, 69.2% were living with their parents and 53.8% were from middle-SES families. All participants lived in Ankara or İzmir, which are two of three most developed cities in Turkey. More detailed information about the characteristics of the participants was given in Table 1.

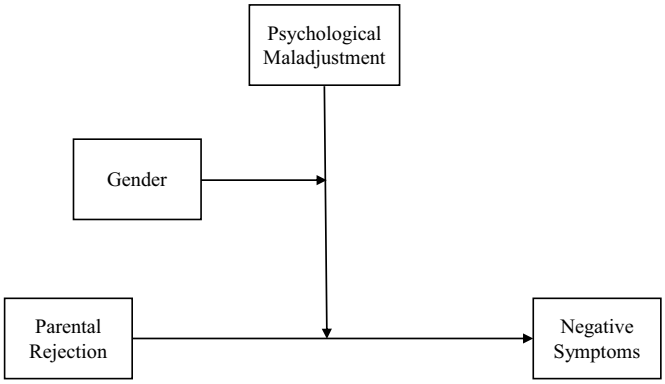

Fig. 1. The proposed moderation model of the effects of parental rejection on negative symptoms by psychological maladjustment depending on gender.

The inclusion criteria were as follows: (1) having at least 1-year history of schizophrenia according to DSM-5; (2) absence of acute psychotic symptoms requiring hospitalization at the time of this research; (3) schizophrenia should have been the primary diagnosis in case of comorbidities; (4) not having a history of substance/alcohol abuse, organic brain disorder, or serious physical disease. In addition to schizophrenia, the concurrent disorders were major depressive disorder (n = 10), generalized anxiety disorder (n = 4), and obsessive-compulsive disorder (n = 2). The mean age of onset of the disorder was 24.49 years (SD = 8.31, range = 14–53) and the mean duration of the disorder was 13.80 years (SD = 8.09, range = 1–33). The mean of hospitalization frequency was 1.82 (SD = 1.54, range = 0–6). All patients were under regular antipsychotic medication, particularly clozapine (33.6%) and risperidone (24%), and usually participated in group therapy.

2.2. Measures

2.2.1. Demographic information form (DIF)

It was developed by authors to collect basic information about the disorder (i.e., age of onset, the frequency of relapses) and participants'

Table 1
The characteristics of the participants.

	Females (n = 20)	Males (n = 32)	Total Sample (N = 52)	χ^2 / t
Age: mean (SD)	39.90 (9.45)	37.31 (11.36)	38.31 (10.65)	0.85
Education: n (%)				
Primary school	2 (3.8)	6 (11.5)	8 (15.4)	1.04
High school	11 (21.1)	18 (34.6)	29 (55.8)	
University	7 (13.5)	8 (15.4)	15 (28.8)	
Marital status: n (%)				
Single	11 (21.2)	27 (51.9)	38 (73.1)	5.40*
Married or in a relationship	9 (17.3)	5 (9.6)	14 (26.9)	
Employment				
Employed	2 (3.8)	9 (17.3)	11 (21.2)	2.66
Unemployed	13 (25.0)	15 (28.8)	28 (53.8)	
Retired or disability	5 (9.6)	8 (15.4)	13 (25.0)	
Living arrangements				
Lives alone	1 (1.9)	2 (3.8)	3 (5.8)	5.64
Lives with parents	11 (21.2)	25 (48.1)	36 (69.2)	
Lives with partner	8 (15.4)	4 (7.7)	12 (23.1)	
Other arrangements	0 (0)	1 (1.9)	1 (1.9)	
SES				
Low-SES	5 (9.6)	7 (13.5)	12 (23.1)	19.3
Middle-SES	11 (21.2)	17 (32.7)	28 (53.8)	
High-SES	4 (7.7)	8 (15.4)	12 (23.1)	

* $p < 0.05$.

sociodemographic characteristics (i.e., SES, education level).

2.2.2. Scale for the assessment of negative symptoms (SANS; Andreasen, 1990)

SANS aims to measure negative symptoms such as affective flattening or blunting, alogia, avolition, anhedonia, and attention deficit. The scale consists of 25 items rated on a 6-point Likert scale. Higher scores indicate greater severity of negative symptoms. The scale is filled out by the interviewer based on observation and information provided by the patient and his/her relatives during the interview. Turkish adaptation of the scale was carried out by Erkoc et al. (1991). In this study, Cronbach's alpha coefficient was calculated as 0.96.

2.2.3. Parental acceptance–rejection questionnaire: adult (Adult PARQ; Rohner, 2005)

Adult PARQ aims to measure people's remembrances of maternal and paternal acceptance–rejection in childhood. It consists of 60 items with four subscales; warmth/affection, hostility/aggression, indifference/neglect, and undifferentiated rejection. Items are rated on a 4-point Likert scale and total score ranges from 60 (the highest level of acceptance) to 240 (the highest level of rejection). Turkish adaptation of the scale was done by Varan (2003). In this study, Cronbach's alpha coefficients were found as 0.87 for mother form and 0.88 for father form.

2.2.4. Personality assessment questionnaire: adult (Adult PAQ; Rohner and Khaleque, 2005)

Adult PAQ aims to examine individuals' perceptions of themselves with regards to seven personality dispositions: Hostility/aggression, dependence, emotional unresponsiveness, emotional instability, negative self-esteem, negative self-adequacy, and negative worldview. Each subscale contains 9 items and is rated on a 4-point Likert scale. High total scores indicate person's unhealthy psychological adjustment (psychological maladjustment), while low scores indicate person's healthy psychological adjustment. Rohner and Khaleque (2005) also stated that total scores at or above 158 indicate serious psychological maladjustment. Turkish adaptation of the Adult PAQ was conducted by Varan (2003). In this study, Cronbach's alpha coefficient was calculated as 0.84.

2.3. Procedure

Before the data collection, required ethics committee approvals were received from Ankara University and Ege University in Turkey. Suitable patients were identified based on inclusion criteria by liaising with patients' psychiatrists and by consulting admissions records. Volunteering participants signed informed consent forms, after being informed about the purpose of the study and confidentiality issues. The participants themselves filled out the DIF, Adult PARQ, and Adult PAQ, however, SANS was completed by the patient's psychiatrist.

2.4. Statistical analysis

Gender differences in age of onset and duration of schizophrenia, negative symptoms (SANS), recollections of maternal and paternal rejection (Mother PARQ and Father PARQ), and self-reported psychological maladjustment (Adult PAQ) were analyzed by Independent Samples *t*-test. Correlations among SANS, Mother PARQ, Father PARQ, and Adult PAQ total scores were examined by Pearson correlation analysis.

The proposed model for the moderating roles of gender and self-reported psychological maladjustment in the relationship between parental rejection and negative symptoms (see Fig. 1) was examined by moderated moderation analyses (Hayes, 2013). This model is also known as three-way interaction and examined by multiple regression analyses. In this study, these regressions were conducted separately for mothers and fathers via PROCESS macro Model 3 with 5000 bootstrapped samples (Hayes, 2013). Remembrances of maternal or paternal rejection served as the independent variable (X), negative symptoms served as the dependent variable (*Y*), psychological adjustment treated as the primary moderator (M), and gender (W) treated as the secondary moderator. The conditional effect of the primary moderator was categorized by using a cut-off value of 158, which indicates serious psychological maladjustment as mentioned in 2.2.4. Mother PARQ, Father PARQ, and SANS scores were used as continuous variables. Means of all variables were centered and gender was coded as 0 (female) and 1 (male).

3. Results

3.1. Descriptive statistics and intercorrelations among variables

The data was normally distributed (except Father PARQ scores). Skewness and kurtosis values were under the range according to Tabachnick and Fidel (2007). No significant differences were found between females and males in terms of age of onset and duration of the disorder, Mother PARQ, Father PARQ, and Adult PAQ scores. However, SANS scores tended to be higher in males ($M = 47.03$, $SD = 20.62$) than females ($M = 36.92$, $SD = 19.27$), $t(50) = 1.76$, $p = 0.08$).

Negative symptoms were significantly associated with self-reported psychological maladjustment ($r = 0.32$, $p = 0.02$), not with maternal and paternal rejection. As shown in Table 2, recollections of maternal rejection, paternal rejection, and self-reported psychological maladjustment were also significantly and positively correlated with each other.

3.2. Moderated moderation analysis

The proposed model was examined separately for maternal rejection and paternal rejection. For maternal rejection, the findings revealed that the model was significant and accounted for 26% of the variance, $F(7, 44) = 2.23$, $p = 0.04$. The interaction among gender, psychological maladjustment, and maternal rejection contributed to 12% of the explained variance, $F(7, 44) = 7.05$, $p = 0.01$. Gender was an independent predictor of negative symptom scores ($b = -14.17$, $t = -2.35$, $p = 0.02$, 95%CI [−26.34 to −2.00]). As seen in Table 3, none of the dual interactions (maternal rejection × maladjustment, maternal rejection × gender, maladjustment × gender) were significant. However, the three-way interaction among maternal rejection × maladjustment × gender was significant ($b = 0.01$, $t = 2.66$, $p = 0.01$, 95%CI [0.00–0.02]). More specifically, the conditional effect of remembrances of maternal rejection on negative symptoms was only significant for patients with serious psychological maladjustment ($b = 1.23$, $t = 2.23$, $p = 0.03$, 95%CI [0.11–2.34]), but not for those with psychological adjustment ($b = -0.80$, $t = -1.48$, $p = 0.15$, 95%CI [−1.89–0.28]). The findings also revealed that the interaction effect of remembrances of maternal rejection and psychological maladjustment on negative symptoms was only significant for female patients ($b = 0.01$, $t = 2.26$, $p = 0.03$, 95%CI [0.00−0.02]), but not for males ($b = -0.01$, $t = -1.50$, $p = 0.14$, 95%CI [−0.01−0.00]) (see Fig. 2).

For paternal rejection, the findings indicated that the model was significant and accounted for 30% of the variance, $F(7, 44) = 2.62$, $p = 0.02$. The interaction among gender, psychological maladjustment, and paternal rejection contributed to 13% of the explained variance, *F*

Table 2
Descriptive statistics and intercorrelations among study variables ($N = 52$).

	M	*SD*	1	2	3	4
1.Negative symptoms	43.14	20.53	–			
2.Maternal rejection	108.81	30.92	0.14	–		
3.Paternal rejection	115.04	36.36	0.03	0.49**	–	
4.Psychological maladjustment	141.79	29.40	0.32*	0.48**	0.43**	–

* $p < 0.05$.
** $p < 0.001$.

Table 3
Moderated moderation analysis testing the predictive role of maternal and paternal rejection, psychological maladjustment, and gender on negative symptoms.

	β	*SE*	*t*	95%CI
(Constant)	42.68	2.94	14.54***	36.77–48.60
Maladjustment	0.17	0.11	1.58	−0.05–0.39
Maternal rejection	0.02	0.10	0.23	−0.18–0.23
Gender	−14.17	6.04	−2.35*	−26.34 to −2.00
Maternal rejection × maladjustment	−0.00	0.00	−0.11	−0.01–0.01
Maternal rejection × gender	−0.01	0.20	−0.06	−0.42–0.39
Maladjustment × gender	−0.21	0.22	−0.96	−0.64–0.23
Maternal rejection × adjustment × gender	0.01	0.01	2.66*	0.00–0.02
(Constant)	43.83	2.80	15.67***	38.19–49.46
Maladjustment	0.25	0.11	2.43*	0.04–0.46
Paternal Rejection	0.04	0.10	0.41	−0.16–0.24
Gender	−12.59	5.68	−2.22*	−24.04 to −1.13
Paternal rejection × Maladjustment	0.00	0.00	0.39	−0.00–0.01
Paternal rejection × Gender	0.33	0.22	1.51	−0.11–0.76
Maladjustment × Gender	−0.25	0.20	−1.23	−0.66–0.16
Paternal rejection × maladjustment × gender	0.02	0.01	2.82**	0.01–0.03

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

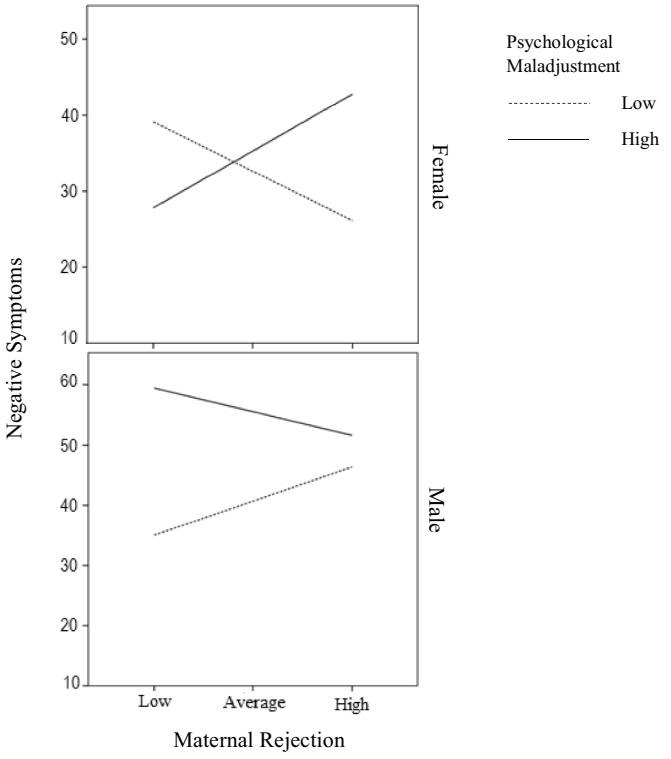

Fig. 2. The moderation effects of gender and psychological maladjustment in the relationship between maternal rejection and negative symptoms.

(7, 44) = 7.96, $p = 0.007$. Gender ($b = -12.59$, $t = -2.22$, $p = 0.03$, 95%CI [−24.04 to −1.13]) and psychological maladjustment ($b = 0.25$, $t = 2.43$, $p = 0.02$, 95%CI [0.04−0.46]) were independent predictors of negative symptom scores. None of the dual interactions (paternal rejection × maladjustment, paternal rejection × gender, maladjustment × gender) were significant. As shown in Table 3, the three-way interaction among paternal rejection × maladjustment × gender was significant ($b = 0.02$, $t = 2.82$, $p = 0.007$, 95%CI [0.01–0.03]). More specifically, the conditional effect of remembrances of paternal rejection on negative symptoms was only significant for patients with serious psychological maladjustment ($b = 1.97$, $t = 2.14$, $p = 0.04$, 95%CI [0.12–3.82]). However, there was a trend for patients with lower psychological maladjustment ($b = -0.90$, $t = 2.01$, $p = 0.05$, 95%CI [−1.81–0.01]). The findings also revealed that the interaction effect between remembrances of paternal rejection and psychological maladjustment on negative symptoms was only significant for female patients ($b = 0.01$, $t = 2.23$, $p = 0.03$, 95%CI [0.00–0.02]). For men, the interaction effect of paternal rejection and psychological maladjustment was marginally significant ($b = -0.01$, $t = -1.77$, $p = 0.08$, 95%CI [−0.01–0.00]) (see Fig. 3).

4. Discussion

In this study, we first examined the relationships between recollections of parental rejection in childhood and negative symptoms and found that negative symptoms were not directly linked to maternal and paternal rejection. Our findings were consistent with the previous studies that did not find significant relationships between childhood abuse, neglect or trauma and negative symptoms (i.e., Catalan et al., 2017; Ucok and Bikmaz, 2007). However, we demonstrated that the current psychological maladjustment was associated with both recollections of parental rejection and negative symptoms, and had an important moderating effect on the link between them. In other words, when the patient has serious psychological maladjustment, perceived parental rejection in childhood also contributes to increases in the severity of the negative symptoms. This effect was significant for both maternal and paternal rejection. However, these associations were only significant for female patients. In sum, the relationships between perceived maternal and paternal rejection in childhood and negative symptoms were stronger for female schizophrenia patients with serious psychological maladjustment.

These findings highlight several important points. Firstly, based on the correlation analysis, the current psychological maladjustment, which Rohner claims that it is developed based on individuals' parental rejection experienced in childhood, seems to be associated with negative symptoms. However, it is necessary to be cautious in interpreting this finding because psychological maladjustment in adulthood may also be related to many other factors. As mentioned in introduction, the concept of psychological maladjustment consists of many personality dispositions such as hostility, dependence, emotional unresponsiveness, emotional instability, negative self-esteem, negative self-adequacy, and negative worldview. According to Rohner (1986, 2005), emotional unresponsiveness can occur as blunt affect or apathy in some extreme events. Emotional instability also refers to the fact that the individual feels bad easily and his/her emotions move rapidly from one to another. These two features may indicate two of the basic characteristics (apathy and labile affect) of schizophrenia that have been acknowledged since

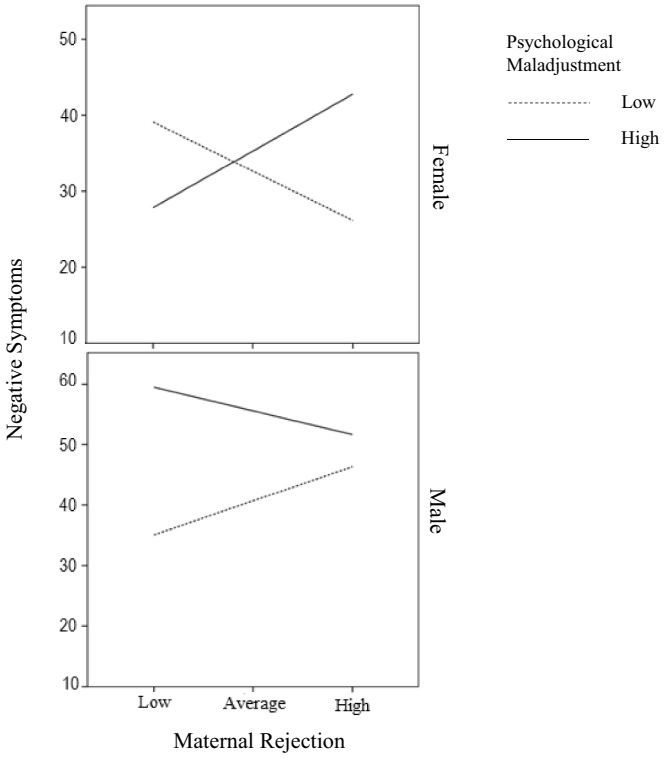

Fig. 3. The moderation effects of gender and psychological maladjustment in the relationship between paternal rejection and negative symptoms.

Bleuler and Kraepelin. In addition to the affective experiences, negative self-esteem and self-adequacy may also be associated with negative effects of the disorder on the individual. The cognitive impairment, the low functionality and internal stigmatization processes can also reduce the self-esteem and the adequacy of the patients (Cella et al., 2014; Vauth et al., 2007). These possible effects may have remarkably contributed to the results in such a small and heterogenous group of patients. Since the current study is not longitudinal, it is difficult to understand how much of these findings are related to perceived parental rejection in childhood or to the effects and characteristics of the disorder.

Secondly, although there were no significant direct links between parental rejection and negative symptoms, the predictive power of parental rejection has become significant when the psychological maladjustment entered into the regression equation. However, this interaction was only significant for females, not for males. The recollections of parental rejection had a greater effect on the negative symptoms of females with serious psychological maladjustment, although there were no significant differences between females and males in terms of perceived parental rejection, psychological maladjustment, and negative symptoms. In other words, the effects of recollections of parental rejection on negative symptoms depends on whether the female patients with schizophrenia have serious psychological maladjustment. This finding is consistent with the previous studies (Gibson et al., 2014; Lardinois et al., 2011), indicating that women with schizophrenia are more sensitive to the negative effect of stress and trauma, because they react to stress both with more physiological and neurochemical responses (Goel et al., 2014; Kelly et al., 2016) and they tend to internalize their emotional pain more than men (Fisher et al., 2009; Sigurdardottir et al., 2014). Additionally, the perceived parental rejection –especially paternal rejection– was found to have a stronger effect on daughters than sons in adulthood (Ali et al., 2015; Sultana and Khaleque, 2016). The fact that women are more vulnerable to adverse effects of both childhood experiences and stress than men may play a role in increasing their negative symptoms.

Third, both maternal and paternal rejection tended to contribute to the negative symptoms of female patients with serious psychological maladjustment. These findings highlighted that negative relationships with both mothers and fathers in childhood besides traumatic events or attachment disturbances may also be associated with negative symptoms under certain conditions. In the previous studies (Akün et al., 2018; Catalan et al., 2017), the positive symptoms found to be related to behaviors of mothers. However, in the current study, paternal rejection also contributed to the severity of negative symptoms when the psychological maladjustment is high. As mentioned above, previous studies indicated that paternal rejection has a stronger impact on the children's psychological adjustment than maternal rejection. Rohner (2014) claimed that this can be related to perceived interpersonal power and prestige of fathers. Besides, Khaleque and Rohner (2013) suggested that perceived rejection by multiple attachment figures is likely to increase the risk of psychological maladjustment. Perceived rejection from both mothers and fathers in childhood may worse the psychological adjustment, which, in turn, may increase the likelihood of negative symptoms of the female patients with schizophrenia.

The current study has some limitations. The sample size is relatively small, and it consisted of stable schizophrenia patients who received regular antipsychotic treatment and usually attended group therapy, therefore the sample may not be fully representative. In addition, the assessments of perceived parental rejection were retrospective in nature and may be biased by selective recall. Otherwise, the parents' reactions with insufficient care to the patient's early symptoms may also affect the patient's perception of them. The psychological maladjustment was also assessed based on self-report, not by clinical interviews. Finally, as the study is cross-sectional, correlational, and retrospective, it is difficult to establish a causal relationship between negative symptoms and parental behaviors.

Despite these limitations, this study has important clinical and research implications. Findings of the current study would emphasize the importance of moderating mechanisms, not only mediating or causal mechanisms, in schizophrenia research. In other words, a relationship previously identified as non-significant may become significant under certain conditions or for specific groups, and these new conditions may alter the treatment plan. In our study, moderation analyses indicated some gender differences that need to be considered in treatment. For female patients with schizophrenia, examining recollections of both maternal and paternal rejection, the current psychological maladjustment, and applying trauma or attachment-focused interventions may help to reduce the severity of their negative symptoms.

References

Akün, E., 2017. Relations among adults' remembrances of parental acceptance-rejection in childhood, self-reported psychological adjustment, and adult psychopathology. Compr. Psychiatry 77, 27–37.
Akün, E., Durak Batıgün, A., Devrimci Özgüven, H., Baskak, B., 2018. Positive symptoms and perceived parental acceptance-rejection in childhood: the moderating roles of socioeconomic status and gender. Turkish J. Psychiatry 29 (2), 109–115.
Ali, S., Khaleque, A., Rohner, R.P., 2015. Pancultural gender differences in the relation between perceived parental acceptance and psychological adjustment of children and adult offspring: a meta-analytic review of worldwide research. J. Cross. Cult. Psychol. 46 (8), 1059–1080.
Andreasen, N.C., 1990. Methods for assessing positive and negative symptoms. Schizophrenia: Positive and Negative Symptoms and Syndromes. Karger Publishers, Basel, pp. 73–88.
Bailey, T., Alvarez-Jimenez, M., Garcia-Sanchez, A.M., Hulbert, C., Barlow, E., Bendall, S., 2018. Childhood trauma is associated with severity of hallucinations and delusions in psychotic disorders: a systematic review and meta-analysis. Schizophr. Bull. 44 (5), 1111–1122.
Berry, K., Barrowclough, C., Wearden, A., 2009. Adult attachment, perceived earlier experiences of care giving and trauma in people with psychosis. J. Ment. Health 18 (4), 280–287.
Carvalho, C.B., da Motta, C., Pinto-Gouveia, J., Peixoto, E., 2016. Influence of family and childhood memories in the development and manifestation of paranoid ideation. Clin. Psychol. Psychother. 23 (5), 397–406.
Catalan, A., Angosto, V., Diaz, A., Valverde, C., de Artaza, M.G., Sesma, E., et al., 2017.

Relation between psychotic symptoms, parental care and childhood trauma in severe mental disorders. Psychiatry Res. 251, 78–84.
Cella, M., Swan, S., Medin, E., Reeder, C., Wykes, T., 2014. Metacognitive awareness of cognitive problems in schizophrenia: exploring the role of symptoms and self-esteem. Psychol. Med. 44 (3), 469–476.
Chae, S., Sim, M., Lim, M., Na, J., Kim, D., 2015. Multivariate analysis of relationship between childhood trauma and psychotic symptoms in patients with schizophrenia. Psychiatry Investig. 12 (3), 397–401.
Dvir, Y., Denietolis, B., Frazier, J.A., 2013. Childhood trauma and psychosis. Child. Adolesc. Psychiatr. Clin. N. Am. 22 (4), 629–641.
Erkoc, S., Arkonaç, O., Atakli, C., Ozmen, E., 1991. The reliability and validity of scale for the assessment of the negative symptoms. J. Psychiatry Neurol. Sci. 4 (1), 16–19.
Fisher, H., Morgan, C., Dazzan, P., Craig, T.K., Morgan, K., Hutchinson, G., et al., 2009. Gender differences in the association between childhood abuse and psychosis. Br. J. Psychiatry 194 (4), 319–325.
Gallagher III, B.J., Jones, B.J., 2013. Childhood stressors and symptoms of schizophrenia. Clin. Schizophr. Relat. Psychoses 7 (3), 124–130.
Gallagher III, B.J., Jones, B.J., 2016. Neglect and hereditary risk: their relative contribution to schizophrenia with negative symptomatology. Int. J. Soc. Psychiatry 62 (3), 235–242.
Gibson, L.E., Anglin, D.M., Klugman, J.T., Reeves, L.E., Fineberg, A.M., Maxwell, S.D., et al., 2014. Stress sensitivity mediates the relationship between traumatic life events and attenuated positive psychotic symptoms differentially by gender in a college population sample. J. Psychiatr. Res. 53, 111–118.
Goel, N., Workman, J.L., Lee, T.T., Innala, L., Viau, V., 2014. Sex differences in the HPA axis. Compr. Physiol. 4 (3), 1121–1155.
Green, M.J., Chia, T.Y., Cairns, M.J., Wu, J., Tooney, P.A., Scott, R.J., et al., 2014. Catechol-O-methyltransferase (COMT) genotype moderates the effects of childhood trauma on cognition and symptoms in schizophrenia. J. Psychiatr. Res. 49, 43–50.
Gumley, A.I., Taylor, H.E., Schwannauer, M., MacBeth, A., 2013. A systematic review of attachment and psychosis: measurement, construct validity and outcomes. Acta Psychiatr. Scand. 129 (4), 257–274.
Hayes, A.F., 2013. Introduction to mediation, moderation, and Conditional Process analysis: A regression Based Approach. The Guilford Press, New York, NY.
Kelly, D.L., Rowland, L.M., Patchan, K.M., Sullivan, K., Earl, A., Raley, H., et al., 2016. Schizophrenia clinical symptom differences in women vs. men with and without a history of childhood physical abuse. Child. Adolesc. Psychiatry Ment. Health 10, 5.
Khaleque, A., Rohner, R.P., 2013. Effects of multiple acceptance and rejection on adults' psychological adjustment: a pancultural study. Soc. Indic. Res. 113 (1), 393–399.
Lardinois, M., Lataster, T., Mengelers, R., Van Os, J., Myin-Germeys, I., 2011. Childhood trauma and increased stress sensitivity in psychosis. Acta Psychiatr. Scand. 123 (1), 28–35.
Mørkved, N., Endsjø, M., Winje, D., Johnsen, E., Dovran, A., Arefjord, K., et al., 2017. Childhood trauma in schizophrenia spectrum disorder as compared to other mental health disorders. Psychosis 9 (1), 48–56.
Østefjells, T., Lystad, J., Berg, A., Hagen, R., Loewy, R., Sandvik, L., et al., 2017. Metacognitive beliefs mediate the effect of emotional abuse on depressive and psychotic symptoms in severe mental disorders. Psychol. Med. 47 (13), 2323–2333.
Ring, N., Tantam, D., Montague, L., Newby, D., Black, D., Morris, J., 1991. Gender differences in the incidence of definite schizophrenia and atypical psychosis—focus on negative symptoms of schizophrenia. Acta Psychiatr. Scand. 84 (6), 489–496.
Rohner, R.P., 1986. The Warmth Dimension: Foundations of Parental Acceptance–Rejection Theory. Sage Publications Inc, Newbury Park, CA.
Rohner, R., 2005. Parental Acceptance–Rejection Questionnaire (PARQ): test manual. In: Rohner, R.P., Khaleque, A. (Eds.), Handbook for the Study of Parental Acceptance and Rejection. Rohner Research Publications, Storrs, CT, pp. 43–73.
Rohner, R.P., 2014. Parental power and prestige moderate the relationship between perceived parental acceptance and offspring's psychological adjustment: introduction to the international father acceptance–rejection project. Cross. Cult. Res. 48 (3), 197–213.
Rohner, R.P., 2016. Introduction to interpersonal acceptance–rejection theory (IPARTheory), methods, evidence, and implications. https://csiar.uconn.edu/introduction-to-partheory/.
Rohner, R.P., Khaleque, A., 2005. Personality Assessment Questionnaire (PAQ): test Manual. In: Rohner, R.P., Khaleque, A. (Eds.), Handbook for the Study of Parental Acceptance and Rejection. Rohner Research Publications, Storrs, CT, pp. 187–216.
Schäfer, I., Fisher, H.L., 2011. Childhood trauma and psychosis - what is the evidence? Dialogues Clin. Neurosci. 13 (3), 360–365.
Sigurdardottir, S., Halldorsdottir, S., Bender, S.S., 2014. Consequences of childhood sexual abuse for health and well-being: gender similarities and differences. Scand. J. Public Health 42 (3), 278–286.
Sultana, S., Khaleque, A., 2016. Differential effects of perceived maternal and paternal acceptance on male and female adult offspring's psychological adjustment. Gender Issues 33 (1), 42–52.
Tabachnick, B.G., Fidell, L.S., 2007. Using Multivariate Statistics, 5th. Allyn & Bacon, Needham Height, MA.
Tandon, R., Keshavan, M.S., Nasrallah, H.A., 2008. Schizophrenia,"just the facts" what we know in 2008. 2. Epidemiology and etiology. Schizophr. Res. 102 (1–3), 1–18.
Thorup, A., Petersen, L., Jeppesen, P., Ohlenschlæger, J., Christensen, T., Krarup, G., et al., 2007. Gender differences in young adults with first-episode schizophrenia spectrum disorders at baseline in the Danish OPUS study. J. Nerv. Ment. Dis. 195 (5), 396–405.
Ucok, A., Bikmaz, S., 2007. The effects of childhood trauma in patients with first-episode schizophrenia. Acta Psychiatr. Scand. 116 (5), 371–377.
Uher, R., 2009. The role of genetic variation in the causation of mental illness: an evolution-informed framework. Mol. Psychiatry 14 (12), 1072–1082.
Varan, A., 2003. Factor Analyses of the Adult PARQ/Control and the Adult IPAR/CQ. Ege University, Department of Psychiatry (Unpublished raw data.).
Vauth, R., Kleim, B., Wirtz, M., Corrigan, P.W., 2007. Self-efficacy and empowerment as outcomes of self-stigmatizing and coping in schizophrenia. Psychiatry Res. 150 (1), 71–80.