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RESEARCH ARTICLE

The relationship between attachment style, empathy level and social functioning in depressive patients

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ABSTRACT

Objective: This study was designed to investigate the relationship between attachment style, empathy level, and social functioning in depressive patients.

Method: A total of 100 patients (63 women, 37 men) between the ages of 18 and 65 who were diagnosed with major depressive disorder (n=76) or a bipolar disorder depressive episode (n=24) and 54 (39 women, 15 men) healthy controls were enrolled. The Hamilton Depression Rating Scale (HDRS), the Hamilton Anxiety Rating Scale (HAM-A), the Basic Empathy Scale (BES), the Adult Attachment Style Questionnaire (AAQ), and the Functioning Assessment Short Test (FAST) were administered to all of the participants and the results were analyzed.

Results: The patients had lower BES total and cognitive empathy subdimension scores than the controls. The cognitive empathy score was negatively correlated with the duration of the most recent depressive episode and the HDRS and FAST interpersonal relationship scores, and positively correlated with the number of depressive episodes. Cognitive empathy was more impaired in patients with chronic depression than those diagnosed with recurrent depression. The attachment style scores were not correlated with the empathy scores. The depressive patients had lower secure attachment scores and higher insecure (avoidant and anxious/ambivalent) attachment scores than the controls.

Conclusion: The results of this study indicated that an insecure attachment style and reduced cognitive empathy may be associated with depression. Impaired empathy and attachment leading to impaired social functioning may play a role in the etiopathogenesis of depression. These may be risk factors for the chronicity and recurrence of depression and should be taken into consideration in the treatment process.

Keywords: Attachment, depression, empathy, social functioning

INTRODUCTION

Depression is a serious and prevalent health problem for individuals and society that has a high rate of chronicity and recurrence, suicide risk, and loss of workforce productivity. In order to prevent and treat the disorder, it is important to understand the etiological factors of depression and to determine the risk factors for chronicity and recurrence. Neurobiological factors as well as psychosocial factors play a role in the etiology of depression and add to susceptibility. Attachment and empathy are among the psychosocial factors that may be associated with depression (1,2).

Attachment style is determined in the early stages of life and has a significant influence on the way an individual relates to other people. Once established as

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secure or insecure, attachment style changes very few. An insecure attachment style has been reported to be a determinant of psychopathology in later life stages, and a secure attachment style has been associated with healthy processes (3). An insecure attachment style, such as anxious or avoidant attachment has been reported to be associated with both current and previous depression. It has been associated with a susceptibility to major depression, and may be a predictor of both depression and anxiety disorders (4). A connection has also been noted between insecure maternal attachment and postpartum depression (5-7). In addition, an insecure attachment style has been observed in most patients with bipolar 1 disorder (8). The lower self-worth and self-esteem seen in individuals with an insecure attachment style is likely related to depressive symptoms (9). Less trust, satisfaction, and commitment in close relationships is seen in insecure individuals (10). The ability to enjoy relationships without worrying about being abandoned may reduce the severity of depressive symptoms in those with a secure attachment style (11). Insecure attachment in depression may contribute to impairment of social functioning by negatively affecting social relationships.

Major depressive disorder (MDD) may lead to clinically significant impairment of social functioning. In addition to insecure attachment styles, poor empathy may also be a potential cause of reduced social functioning in depressed individuals (2). Impaired empathy may play a role in the development, continuation, and recurrence of depression. It has been reported that empathic stress is often high in depression, and emotional empathy is abnormal, which may be at least in part due to the high degree of self-focus in depression (2). A high level of empathic stress in depressed individuals can contribute to social withdrawal and avoidance. Although some studies have found no relationship between depression and empathy (12-14), most of the studies have reported evidence of an association between impaired empathy and depression (2). It has also been suggested that excessive empathy, or the combination of high levels of empathy and certain traits, may contribute to depression risk (15).

A positive correlation between empathy and depression has been observed in many studies (16-19), and particularly a decrease in cognitive and emotional empathy (20-23). A recent study found that individuals with average levels of emotional empathy had the fewest depression symptoms. Both extremely high and extremely low levels of cognitive empathy have been associated with depression. A moderate level of empathy may provide the best protection against depression (23). In a meta-analysis, Schreiter et al. (2) observed that depression was associated with impaired cognitive empathy, but not with emotional empathic concern. They suggested that the link between impaired cognitive empathy and depression may mediate the emergence of a more general cognitive deficit (2).

It has also been reported that the level of cognitive empathy was reduced in patients with bipolar disorder (24) and Montag et al. (25) noted a decrease in theory of mind cognitive scores with no significant difference in emotional scores in patients with euthymic bipolar. A comparison of the empathy performance of patients with schizophrenia, bipolar disorder, and depression determined a relationship between the empathy level and clinical characteristics only in those with depression. They also noted that the bipolar patients in particular described themselves as less empathic (21). Bipolar disorder and MDD differ in both biological and psychosocial characteristics. Additional analysis of psychosocial factors, such as attachment and empathy, and their association with social functioning and depressive mood and whether there are differences among depression subtypes is warranted.

Currently, there are very few studies in the literature that have evaluated both attachment and empathy in depression; however, some findings are noteworthy. Koelkebeck et al. (26) found that healthy females performed better than female MDD patients on a theory of mind task and that the results were associated with attachment style. Khodabakhsh (27) observed a positive association between empathy and secure attachment, as well as a negative relationship between insecure attachment in healthy individuals. Additionally, it has been reported that secure or insecure attachment plays a central role in empathic accuracy in relationships (28,29). It would appear that attachment style affects empathy, which in turn, shapes interpersonal relationships.

Insecure attachment and impaired empathy can negatively affect interpersonal relationships and may contribute to the deterioration of the social functioning of depressed patients. In addition, these factors may impact the severity, chronicity, and recurrence of depression. The primary objective of this study was to determine the attachment style and empathy level of depressive patients and to investigate the relationship between these psychosocial factors and social functioning. Differences between depression subtypes and the relationship to clinical features were also investigated. Clarification of the role of these psychosocial factors in depression could contribute to prevention, treatment, and deterrence of relapse.

METHOD

The research protocol was approved by the Erciyes University Ethics Committee on September 26, 2014 (no: 96681246/234). Written, informed consent was provided by all of the qualified participants following an explanation of the study objectives and methods to be used.

A total of 100 patients (63 females, 37 males) who were between the ages of 18 and 65 and who were diagnosed with MDD or an active bipolar disorder depressive episode and treated at the outpatient clinic or the inpatient psychiatry clinic of Erciyes University were included in this study.

The patients were diagnosed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (30). In all, 76 of the patients had MDD (chronic: n=16, recurrent: n=47, single episode: n=13) and 24 were diagnosed with a depressive bipolar disorder episode.

The exclusion criteria were electroconvulsive treatment in the previous 6 months, illiteracy, age <18 or >65 years, any severe physical disorder that might affect functionality, mental retardation, or alcohol or other substance abuse, other than smoking. All of the patients were using medication.

Fifty-four healthy volunteers (39 females, 15 males) in the same age range and without any known psychiatric disease were enrolled in the control group after applying the same exclusion criteria.

Sociodemographic data of age, gender, educational status, occupation, and family characteristics, as well as clinical data of total illness duration, number of attacks, duration of the most recent attack, suicide attempt, current or previous physical illness, and family history of mental illness were recorded for all of the patients and controls. The Hamilton Depression Rating Scale (HDRS), the Hamilton Anxiety Rating Scale (HAM-A), the Basic Empathy Scale (BES), the Adult Attachment Style Questionnaire (AAQ), and the Functioning Assessment Short Test (FAST) were administered to all of the study participants and the results were analyzed.

Measures

Hamilton Depression Rating Scale (HDRS): The original HDRS measures the level of depression and the change in severity based on 17 questions. A high score indicates a greater severity of depression (31). A validity and reliability of a Turkish version was performed by Akdemir et al. (32).

Hamilton Anxiety Rating Scale (HAM-A): The HAM-A consists of 14 items that examine both mental and physical symptoms to determine an individual's level of anxiety and symptom distribution and to measure the change in severity (33). A Turkish version validity and reliability study was conducted by Yazici et al. (34).

Adult Attachment Style Questionnaire (AAQ): The AAQ was consist of two section. First section was based on the original work developed by Hazan and Shaver (35) consisting of 3 prototypical descriptions that are used to classify the attachment style of adults as secure, ambivalent, or avoidant. First section include statements describing parental relationship characteristics and general behavioral characteristics experienced in childhood. The second section developed by Mikulincer et al. (36) consists of 15 items that are self-scored between 1 and 7. The 3 attachment styles are each represented by 5 items and the style that receives the highest score determines the attachment pattern. A validity and reliability study of a Turkish version was conducted by Sabuncuoglu and Berkem (5). In this study, the scores of the second section were used.

Basic Empathy Scale (BES): The BES is a 20-item, scale developed by Jolliffe and Farrington (37) that uses a 5-point, Likert-type evaluation. Cognitive empathy is measured with 9 items (items 3, 6, 9 10, 12, 14, 16, 19 and 20) and 11 items are used to evaluate emotional empathy (items 1, 2, 4, 5, 7, 8, 11, 13, 15, 17, 18). The cognitive empathy subdimension has a minimum score of 9 and a maximum score of 45, and the emotional empathy subdimension has a score of 11 to 55. A validity and reliability study of a Turkish version of the scale was conducted by Topcu et al. (38).

Functioning Assessment Short Test (Fast): The 24-item FAST was developed by Rosa et al. (39). This tool consists of 6 dimensions: autonomy, professional functionality, cognitive functionality, financial issues, interpersonal relations, and leisure activities scored by an interviewer using a 4-point, Likert-type scale. A high score indicates poor functionality. A validity and reliability study of a Turkish version was performed by Aydemir et al. (40). In this study, the interpersonal relations subdimension was used to assess social functionality.

Statistical Analysis

The distribution of the data was evaluated using the Shapiro-Wilk test. An independent samples t-test was used to compare the sociodemographic and clinical data, as well as the psychometric test scores of patients and controls when the data was normally distributed, and the Mann-Whitney U test was used for data with an

abnormal distribution. Categorical data, such as the female/male ratio, presence of physical illness, and family history of mental illness, were compared using a chi-squared test.

The Mann-Whitney U test was used to compare the data of the patients diagnosed with MDD and the bipolar disorder patients experiencing a depressive episode. One-way analysis of variance (ANOVA) and a post-hoc Tukey test were employed to compare chronic, recurrent, and single-episode subgroups.

The Spearman correlation test was performed to investigate the association between demographic and clinical data, and simple and multiple linear regression analysis was used to test the correlation analysis. The mean±SD of data with a normal distribution, the median (interquartile range) of those with abnormal distribution, and the number (percentage) of categorical data are presented in tables.

RESULTS

There was no significant difference between the patient and control groups in terms of age or female/male ratio. The number of siblings, the number of children, the presence of comorbid physical illness, and the presence of mental illness in the family were higher, and the duration of formal education were lower in the patient group compared with the control group (Table 1).

The psychometric test scores of the patients and controls were compared using the Mann-Whitney U test. The HDRS and HAM-A scores of the patients were significantly higher than those of the control group. The FAST interpersonal relationships subscores of the patient group were significantly higher than those of the control group, indicating impairment in interpersonal relationships in the patients (Table 2).

While the BES cognitive empathy subscore and the total score of the patients were significantly lower than those of the control group, it was observed that there was no significant difference in the emotional empathy scores (Table 2).

The secure attachment scores of the patient group were significantly lower than those of the control group, revealing significantly more avoidant and anxious, insecure attachment among those with depression (Table 2).

The clinical characteristics and psychometric test scores of the patients with MDD or a depressive episode of bipolar disorder were compared using the Mann-Whitney U test. The duration of the last depressive episode was longer in MDD patients than that of bipolar patients (z=-2.752, p=0.006), while the number of previous depressive episodes was greater in patients with bipolar disorder (z=-2.900, p=0.004). No significant difference between the psychometric test scores of patients with MDD and patients with bipolar depression was seen (Table 3).

Table 1: Sociodemographic characteristics of the patients and controls

	Patients (n=100)	Controls (n=54)	Comparison
Age (years)	40.49±11.74	36.81±10.31	t=1.933, df=152, p=0.055
Female/male	63/37	39/15	χ^2=1.333, df=1, p=0.248
Marital status			
Married	72 (72%)	34 (63%)	
Single	28 (28%)	20 (37%)	χ^2=0.94,7 df=1, p=0.331
Number of siblings	5 (3)	3.5 (2.25)	z=-2.411, p=0.016
Duration of education (years)	5 (7)	15 (6.25)	z=-5.272, p<0.001
Residency			
Rural	25 (25%)	6 (11.1%)	
Urban	75 (75%)	48 (88.9%)	χ^2=3.388, df=1, p=0.066
Number of children	5 (3.75)	1 (2.25)	z=-4.621, p<0.001
Physical disorder history			
Yes	55 (55%)	9 (16.7%)	
No	45 (45%)	45 (83.3%)	χ^2=21.215, df=1, p<0.001
History of mental disorder in the family			
Yes	54 (54%)	8 (14.8%)	
No	46 (46%)	46 (85.2%)	χ^2=22.386, df=1, p<0.001

df: Degrees of freedom

Table 2: Clinical characteristics of the patients and controls and comparison of psychometric test scores

	Patients n=100 Median (IR) Mean±SD	Controls n=54 Median (IR)	z	p
Duration of the last active depression period (months)	3 (11) 13.87±32.43	-	-	
Lifetime depressive episodes	3(5) 6.67±12.91	-	-	
Total duration of disorder (years)	7.5 (12.13) 9.58±8.52	-	-	
Number of suicide attempt	2 (2) 2.48±2.24	-	-	
HDRS	27 (13.75)	2 (5)	-9.766	<0.001
HAM-A	24 (20.5)	6 (8)	-8.385	<0.001
FAST-Interpersonal relations	11 (8.75)	0 (2)	-8.801	<0.001
BES scores				
Cognitive empathy	32 (7)	36 (5.25)	-4.621	<0.001
Emotional empathy	40 (8)	39 (8)	-0.192	0.848
BES total	72 (11.75)	73.5 (13)	-2.376	0.017
AAQ scores				
Secure attachment	22 (8)	26.5 (6)	-4.527	<0.001
Avoidant attachment	22 (8.75)	16 (6.25)	-5.404	<0.001
Anxious/ambivalent attachment	20.5 (10)	12.5 (7)	-6.444	<0.001

AAQ: Adult Attachment Style Questionnaire, BES: Basic Empathy Scale, FAST: Functioning Assessment Short Test, HAM-A: Hamilton Anxiety Rating Scale, HDRS: Hamilton Depression Rating Scale, IR: Interquartile range

Table 3: Comparison of psychometric test scores of patients with major depressive disorder and bipolar disorder depressive episode

	MDD n=76	Bipolar depressive episode n=24	z	p
Duration of the last active of depressive episode (months)	4 (21)	2 (2)	-2.752	0.006
Lifetime depressive episodes	2 (5)	4.5 (3.5)	-2.900	0.004
Total duration of disorder (years)	6 (11.75)	9.5 (11.5)	-1.536	0.125
HDRS	27 (15.75)	26.5 (12.75)	-0.044	0.965
HAM-A	26.5 (21)	20.5 (16)	-1.724	0.085
FAST-Interpersonal relations	10.5 (8.75)	12 (9.25)	-0.073	0.942
BES				
Cognitive empathy	32 (6.75)	33.5 (5)	-1.499	0.134
Emotional empathy	40 (7.75)	39 (7.75)	-0.372	0.710
BES total	71.5 (12)	73 (9.5)	-0.400	0.689
AAQ				
Secure attachment	22 (8)	22 (6.75)	-0.853	0.393
Avoidant attachment	22 (8.75)	22 (8.75)	-0.154	0.877
Anxious/ambivalent attachment	19 (11.25)	22 (10.75)	-1.045	0.296

AAQ: Adult Attachment Style Questionnaire, BES: Basic Empathy Scale, FAST: Functioning Assessment Short Test, HAM-A: Hamilton Anxiety Rating Scale, HDRS: Hamilton Depression Rating Scale, MDD: Major depressive disorder

Table 4: Comparison of psychometric test scores of the patients with major depressive disorder according to depression subgroup

Psychometric tests	Patients with major depressive disorder				Comparisons		
	Single episode n=13	Recurrent n=47	Chronic n=16	All groups	Single episode - Recurrent	Single episode - Chronic	Recurrent - Chronic
HDRS	22.85±13.46	26.08±9.10	23.25±9.62	F (2, 73)=0.813 p=0.447	p=0.561	p=0.994	p=0.595
HAM-A	20.38±14.17	28.74±11.13	24.44±14.63	F (2, 73)=2.549 p=0.085	p=0.088	p=0.660	p=0.460
FAST-Interpersonal relations	8.30±6.22	9.77±5.26	11.69±4.83	F (2, 73)=1.485 p=0.233	p=0.661	p=0.215	p=0.433
BES							
Cognitive empathy	30.23±6.73	32.45±4.09	28.62±4.35	F (2, 73)=4.365 p=0.016	p=0.291	p=0.630	p=0.017
Emotional empathy	37.31±6.22	38.60±5.88	39.56±6.85	F (2, 73)=0.482 p=0.619	p=0.783	p=0.591	p=0.850
BES total	67.54±10.46	71.04±7.76	68.19±8.95	F (2, 73)=1.247 p=0.293	p=0.392	p=0.977	p=0.481
AAQ							
Secure attachment	20.92±6.24	22.09±5.22	19.44±4.40	F (2, 73)=1.566 p=0.216	p=0.760	p=0.730	p=0.196
Avoidant attachment	22.92±4.91	19.98±6.03	24.50±4.35	F (2, 73)=4.531 p=0.014	p=0.214	p=0.728	p=0.017
Anxious/ambivalent attachment	19.00±6.11	19.32±6.24	23.19±5.88	F (2, 73)=2.607 p=0.081	p=0.985	p=0.169	p=0.082

AAQ: Adult Attachment Style Questionnaire, BES: Basic Empathy Scale, FAST: Functioning Assessment Short Test, HAM-A: Hamilton Anxiety Rating Scale, HDRS: Hamilton Depression Rating Scale

ANOVA comparison of the MDD subtypes revealed a significant difference in cognitive empathy (p=0.016) and avoidant attachment (p=0.014) between the chronic, recurrent, and single-episode subtypes. Cognitive empathy was more impaired in patients with chronic depression than in patients with recurrent depression (p=0.017). It was also noted that patients with chronic depression had higher avoidant attachment scores than the patients with recurrent depression (p=0.017) (Table 4).

The association between sociodemographic and clinical data and the psychometric test scores of the patients was examined using the Spearman correlation test. A negative correlation was observed between the duration of the last depressive episode and the duration of education (r=-0.225, p=0.024), the number of depressive episodes (r=-0.616, p<0.001), the cognitive empathy score (r=-0.240, p=0.016), and the secure attachment score (r=-0.203, p=0.043); whereas a positive correlation was seen between the duration of the last depressive episode and the avoidant attachment score (r=0.287, p=0.004). It was found that as the number of depressive episodes increased, the cognitive empathy score increased (r=0.293, p=0.003) and the avoidant attachment score decreased (r=-0.276, p=0.006) (Table 5). Regression analysis was performed to confirm the correlation results. The duration of the most recent depressive episode and the number of depressive episodes could not be used as dependent variables due to the range of distribution; however, when the cognitive empathy score was used as the dependent variable in simple linear regression analysis, the cognitive empathy score was associated with the duration of the last depressive episode (constant=32.564, R=0.290, B=-0.079, p=0.004) and the number of depressive episodes (constant=31.089, R=0.207, B=0.110, p=0.040). The results of the regression analysis was similar to the correlation results.

There was a positive correlation between the HDRS score and patient avoidant attachment (r=0.291, p=0.003) and anxious ambivalent attachment (r=0.242, p=0.015) scores. A negative correlation between the HAM-A score and the secure attachment score (r=-0.215, p=0.032) was recorded, while a positive correlation was seen between the HAM-A score and the avoidant attachment score (r=0.267, p=0.007) and the anxious ambivalent attachment score (r=0.327,

Table 5: Relationship between psychometric test scores and clinical characteristics of the depressive patients

	Duration of the last depressive episode	Number of depressive episodes	HAM-A	HDRS	FAST-Interpersonal relations
BES cognitive empathy	r=-0.240, p=0.016	r=0.293, p=0.003	r=-0.141, p=0.161	r=-0.253, p=0.011	r=-0.306, p=0.002
BES emotional empathy	r=0.139, p=0.166	r=-0.071, p=0.483	r=0.186, p=0.064	r=-0.044, p=0.663	r=0.085, p=0.401
AAQ secure attachment	r=-0.203, p=0.043	r=0.154, p=0.126	r=-0.215, p=0.032	r=-0.117, p=0.245	r=-0.279, p=0.005
AAQ avoidant attachment	r=0.287, p=0.004	r=-0.276, p=0.006	r=0.267, p=0.007	r=0.291, p=0.003	r=0.295, p=0.003
AAQ anxious/ambivalent attachment	r=0.185, p=0.065	r=-0.088, p=0.383	r=0.327, p=0.001	r=0.242, p=0.015	r=0.251, p=0.012

AAQ: Adult Attachment Style Questionnaire, BES: Basic Empathy Scale, FAST: Functioning Assessment Short Test, HAM-A: Hamilton Anxiety Rating Scale, HDRS: Hamilton Depression Rating Scale

p=0.001). In other words, insecure attachment styles appeared to be associated with an increase in both depression and anxiety scores. A negative correlation between the cognitive empathy score and the HDRS score (r=-0.253, p=0.011) was also observed, indicating that as the severity of depression increased, the cognitive empathy score decreased (Table 5). Similar correlations were seen in the results of simple linear regression analysis. Multiple linear regression analysis and retrospective screening yielded the strongest correlation between the HAM-A score and an anxious ambivalent attachment score (B=0.668, p=0.001), and between the HDRS score and the cognitive empathy score (B=-0.592, p=0.002) and the anxious ambivalent attachment score (B=0.363, p=0.013) (Table 6).

A positive correlation was seen between the FAST interpersonal relationship score of the depressive patients and a secure attachment score (r=-0.279, p=0.005), avoidant attachment (r=0.295, p=0.003), and anxious ambivalent attachment (r=0.251, p=0.012) scores. A negative correlation was found between the cognitive empathy score and the FAST interpersonal relationship score (r=-0.306, p=0.002); that is, insecure attachment styles and decreased cognitive empathy appeared to be associated with impairment in interpersonal relationships (Table 5). The same correlations were seen in the results of simple linear regression analysis. Multiple linear regression analysis revealed that the strongest relationship was between the FAST interpersonal relationship score and cognitive empathy (B=-0.369, p=0.001) and an anxious ambivalent attachment score (B=0.200, p=0.013) (Table 6).

Separate evaluation of the patients with MDD and those with a bipolar depressive episode resulted in similar correlations in the MDD patients (between the FAST interpersonal relationship score and secure attachment score: r=-0.275, p=0.016; avoidant attachment: r=0.318, p=0.005; anxious ambivalent attachment: r=0.328, p=0.004; and cognitive empathy: r=-0.363, p=0.001), whereas a correlation was not found in bipolar patients (r=-0.365, p=0.080; r=0.240, p=0.258; r=0.017, p=0.939; r=-0.115, p=0.593, respectively). Although no correlation was found between empathy and attachment scores in the combined group of depressive patients and bipolar patients, there was a negative correlation between cognitive empathy and avoidant attachment (r=-0.245, p=0.033), and a positive correlation between emotional empathy and anxious/ambivalent attachment (r=-0.279, p=0.005) in the MDD patients.

Table 6: Correlation analysis of the psychometric test scores of depressive patients (linear regression analysis)

Dependent variable	Independent variables	Simple linear regression				Multiple linear regression (backward elimination)			
		Constant	R	B	p	Invariant	B	R^2	p
HAM-A									
	BES cognitive empathy	38.574	0.160	-0.423	0.112				
	AAS secure attachment	37.625	0.239	-0.578	0.017				
	AAS avoidant attachment	13.154	0.270	0.562	0.007				
	AAS anxious/ambivalent attachment	11.511	0.335	0.668	0.001	11.511	0.668	0.112	0.001
HDRS									
	BES cognitive empathy	44.421	0.304	-0.615	0.002	36.259	-0.592	0.149	0.002
	AAQ secure attachment	30.504	0.139	-0.258	0.166				
	AAQ avoidant attachment	15.344	0.282	0.449	0.004				
	AAQ anxious/ ambivalent attachment	17.076	0.252	0.384	0.011	36.259	0.363	0.149	0.013
FAST-Interpersonal relations									
	BES cognitive empathy	21.968	0.339	-0.382	0.001	17.472	-0.369	0.170	0.001
	AAQ secure attachment	16.199	0.284	-0.293	0.004				
	AAQ avoidant attachment	4.766	0.270	0.239	0.007				
	AAQ anxious/ ambivalent attachment	5.517	0.251	0.213	0.012	17.472	0.200	0.170	0.013

AAQ: Adult Attachment Style Questionnaire, BES: Basic Empathy Scale, FAST: Functioning Assessment Short Test, HAM-A: Hamilton Anxiety Rating Scale, HDRS: Hamilton Depression Rating Scale

DISCUSSION

The low total and cognitive empathy BES scores of the patients are the primary finding of this study. We also noted that as the cognitive empathy score decreased, the severity of depression and impairment of interpersonal relationships increased. Similarly, other studies have found a correlation between empathy impairment and deterioration in patients with clinical depression (20), that poor empathy in depressive individuals is a potential cause of impaired social relationships (2), and that depression was associated with impaired cognitive empathy, though not with empathic concern, one of the components of emotional empathy. According to the findings of our study, while there was no significant difference in the emotional empathy score, it was apparent that cognitive empathy was affected, based on the low scores of the patient group. However, it remains unclear whether cognitive empathy impairment is a result or a cause of depression. An association between impaired cognitive empathy and impaired executive functions in depressive individuals has been reported (12) and a general cognitive impairment in depression can lead to diminished cognitive empathy (41).

Impaired empathy may also be a psychosocial factor that predisposes an individual to depression. Impaired empathy, a factor that influences social relationships, can contribute to depression and prompt further withdrawal in the event of deteriorating relationships with others. We observed that interpersonal relationships were weaker in cases of a low cognitive empathy score.

A third mechanism of the relationship between depression and empathy is that impaired empathy can be a persistent factor in depression as well as a risk factor for chronicity and recurrence. Our findings indicated that cognitive empathy was more impaired in patients with chronic depression than in patients with recurrent depression, and that there was a negative correlation between the duration of the last depressive

episode and the cognitive empathy score, which suggests that the decrease in empathy may be associated with chronicity. Extremely low cognitive empathy may be associated with chronicity of depression, and the recurrence of depressive episodes may be related to excessively high cognitive empathy. The positive correlation between the number of depressive episodes and the cognitive empathy score seen in our study supports an association between increased empathy and recurrence. A moderate level of empathy seems to provide the best protection against depression (23).

No direct association was found between empathy and attachment style among our patients with depression; however, as the cognitive empathy score decreases, interpersonal relationships are likely to deteriorate, which has been associated with insecure attachment scores. In other words, insecure attachment styles may lead to impairment in interpersonal relationships and indirectly reduce empathy. Other researchers have observed a significant positive relationship between a secure attachment style and emotional intelligence subdimensions of personal skills, interpersonal skills, adaptability, coping with stress, and general mood (42). A secure attachment style may indirectly foster an empathic attitude. Individuals with a secure attachment style tend to have the ability to approach stressful life events more positively and cope with these events more effectively and maintain adequate psychological well-being (43), relying on coping strategies that include seeking support in stressful situations (44). Individuals with a secure attachment style have been found to have more successful skills (45), more positive emotions in romantic relationships (46), and positive emotion regulation skills (47). Our evaluation of MDD patients revealed a negative association between cognitive empathy and avoidant attachment, and a positive relationship between emotional empathy and anxious/ambivalent attachment. This finding partially supports a relationship between insecure attachment styles and empathy.

Another important finding of the present research is that depressive patients had low secure attachment scores and high insecure attachment scores. Impairment in interpersonal relationships was negatively associated with secure attachment and positively with insecure attachment. In addition, as the insecure attachment score increased, the severity of depression increased. An insecure attachment style can negatively affect the ability to maintain social relationships, which may lead to more social withdrawal, more limited friendships, and more intense introversive problems, leading to a predisposition to depression and increasing its severity. Interpersonal problems are usually caused by a conflict between the individual showing a certain behavior and fear of the consequences of this behavior. Such contradictions arise in part from the history of one's attachment and learning in interpersonal relationships. For example, people whose past experiences with other people have been disappointing may begin to distrust other people and avoid establishing close relationships (48). In both MDD and bipolar disorder depressive episodes, the internal patterns and interpersonal relationships of individuals are affected by their attachment style (49,50). In our study, a positive relationship was observed between insecure attachment and anxiety, which can contribute to the development of depression.

The avoidant attachment scores were higher in our patients with chronic depression than those of the patients with recurrent depression. Also, a positive correlation was found between the prolongation of the depressive episode and the avoidant attachment score, and a negative correlation was seen between the number of depressive episodes and the avoidant attachment score. In addition to the fact that an avoidant attachment style is one of the factors that determines chronicity in depression, long periods of depression can reinforce an insecure attachment style. An insecure attachment style and depressive disorder can negatively affect each other, both mutually and bilaterally. Previous research has indicated that the prognosis of depression was poorer in fearful attachment patients compared with patients with secure attachment, and fearful attachment patients had longer depressive episodes and residual symptoms, a longer period of antidepressant use, and poorer social functioning (51).

The relatively small number of male participants in our study sample is a limitation; however, the female/male ratio in the patient and control groups was similar. Another limitation is that the assessment was conducted during an active period of depression and no remission group was included. Finally, we note that the fact that the patients were taking medication may have affected our findings.

In conclusion, our results indicated that insecure attachment style and low cognitive empathy may be associated with depression, and that impaired empathy and insecure attachment in depression may also be associated with impaired social functioning. Weak and insecure empathy and attachment, which may lead to impairment in social functioning, may play a role in the

emergence, continuation, chronicity, and recurrence of depression, and therefore, as factors that may affect prognosis, should be taken into consideration in the treatment process.

Contribution Categories		Author Initials
Category 1	Concept/Design	S.O.
	Data acquisition	D.O.
	Data analysis/Interpretation	S.O.
Category 2	Drafting manuscript	D.O., S.O.
	Critical revision of manuscript	S.O.
Category 3	Final approval and accountability	S.O., D.O.
Other	Technical or material support	N/A
	Supervision	N/A

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