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The Relationships Among Attachment Quality, Depressive Symptom Levels, and Metacognition Problems in Adolescents

Ergenlerde Bağlanma Kalitesi, Depresif Belirti Düzeyi ve Üstbilişsel Sorunlar Arasındaki İlişkinin İncelenmesi

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ÖZ

Objectives: The aim of this study was to examine the association between metacognition problems in adolescents, their attachment quality, and depressive symptom levels.

Materials and Methods: The sample consisted of 559 adolescents (52.5% males, n=293; 47.5% females, n=266) aged between 11 and 17 years. The participants completed the Children's Depression Inventory (CDI), the short form of the Inventory of Parent and Peer Attachment (s-IPPA), and the metacognitions questionnaire for children. The correlation coefficients of the associations among the scale scores were analyzed by the pearson product-moment correlation test. The process extension of Statistical Package for Social Sciences (SPSS 24) for Windows was performed to evaluate the associations between the s-IPPA and CDI scores, and the mediating effects of metacognition problems between the two.

Results: The CDI scores were negatively associated with maternal and paternal attachment levels. Furthermore, metacognition problems had a partial mediating effect on the relationship between attachment quality and depression.

Conclusion: The results suggest that there is a relationship between insecure attachment and depression scores; further, metacognition problems increase the risk of developing depressive symptoms in adolescents with insecure attachment style. Further research on the success of therapeutic interventions about metacognition problems in the relationship between depressive symptom development and insecure attachment style may contribute to our knowledge about these aspects.

Keywords: Metacognition, depression, attachment, adolescence

ABSTRACT

Amaç: Bu çalışmanın amacı ergenlerde bağlanma kalitesi, depresif belirti düzeyi arasındaki ilişki ve üstbilişsel sorunların aracı rolünü incelemektir.

Gereç ve Yöntem: Bu çalışmanın örneklemi 11-17 yaş arası 559 (%52,5 erkek, n=293; %47,5 kız, n=266) ergenden oluşturmaktadır. Katılımcılar Çocuk Depresyon Ölçeği (ÇDÖ), Ebeveyn ve Arkadaşlara Bağlanma Envanteri-Kısa Formu (EABE) ve Üstbiliş Ölçeği Çocuk ve Ergen Formu'nu (ÜBÖ-ÇE) doldurmuşlardır. Ölçekler puanları arası korelasyon katsayıları Pearson momentler çarpımı korelasyon testi ile hesaplanmıştır. EABE puanları ile ÇDÖ puanları arasındaki ilişkiler ile üstbilişsel sorunların arası rolü SPSS 24 (Statistical Package for Social Sciences) programının Process uzantısı ile değerlendirilmiştir.

Bulgular: ÇDÖ puanları ile anne ve baba bağlanma düzeyleri arasında negatif ilişki saptanmıştır. Aracı değişken analizi, üstbilişsel sorunların bağlanma kalitesi ile depresyon düzeyi arasındaki ilişki üzerinde kısmi aracı etkisi olduğunu ortaya koymuştur.

Sonuç: Bu çalışmanın sonuçları, ergen yaş grubunda bağlanma ile depresyon puanları arasında ilişki olduğunu, üstbilişsel sorunların, güvensiz bağlanma stiline sahip ergenlerde depresif belirti geliştirme olasılığını arttırdığını göstermektedir. İleriki araştırmalar, üstbiliş sorunlarına yönelik terapötik müdahalelerin, ergen yaş grubunda güvensiz bağlanma stili ve depresyon gelişimi ilişkisindeki faydasına dair bilgilerimizi arttırabilir.

Anahtar Kelimeler: Üstbiliş, depresyon, bağlanma, ergenlik

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Introduction

Depression in adolescents is an important mental health problem that may significantly diminish quality of life and lead to serious social and academic impairments.[1] In recent years, although the incidence of depressive symptoms and diagnoses of major depression (MD) have increased in adolescents, they are often unrecognized due to the heterogeneous collection of symptoms.[2] For example, the prevalence of depressive symptoms in adolescents was reported to be between 5% and 20%.[3] In a large epidemiological study in Turkey, Karacetin et al.[4] reported that the prevalence rates of major depressive disorder, dysthymia, and depressive disorder-NOS were 1.06%, 0.2%, and 0.14%, respectively. MD is associated with increased rates of suicidality, substance misuse, and physical health problems, such as obesity.[5-7] Thus, it is important to better understand the development of depressive symptoms that have a complex, multifactorial etiology.[8]

Multiple causal risks and protective factors involving genetic, epigenetic, and environmental factors contribute to the causal pathways of depression.[9] One of the theories regarding the development of depressive symptoms and quality of caregiver-infant relationship is attachment theory. "Attachment" is defined as an emotional bond that is evident in the relationship between a child and his/her caregiver and manifests itself in the child's search for closeness with the primary caregiver, especially in stressful situations.[10] The quality of attachment is an important factor influencing the emotional and social development of individuals and the stability of their relationships with other people.[11] Previous studies have suggested that a secure attachment style decreases the risk of internalizing and externalizing problems, such as depression; anxiety, eating, and conduct disorders; and several psychopathologies.[12-14] The relationship between insecure attachment style and the development of depressive symptoms has been linked to low self-esteem levels, feelings of unworthiness, decreased social functionality, and difficulties in forming interpersonal relationships.[15-17]

Another important factor explaining the etiology of depression is a person's metacognition abilites.[18] "Metacognition" is defined as a higher cognitive capacity enabling individuals to monitor their own cognitions and regulate cognitive errors.[19] While high metacognition abilities may aid in the downregulation of psychological distress,[20-22] low metacognition capacity may amplify and prolong distress,[22] increase anxiety levels, and cause ruminative thinking.[23] "Rumination" refers to a cognitive process of repetitive thoughts about problems (e.g., causes, situational factors, and consequences of one's negative emotional experience); it is often experienced as an uncontrollable event by an individual[24,25] Excessive rumination has been found to be associated with increased depressogenic thoughts, decreased interpersonal problem-solving behavior, and impaired social interactions due to other individuals' unwillingness to listen to ruminations. Thus, rumination may increase the risk of onset and persistence of depressive symptoms.[26-28] Furthermore, low metacognition capacity may cause depressive symptoms via its role in the emergence of excessive rumination.[26]

According to past studies, the insecure attachment style is related to the development of depressive symptoms by increasing feelings of worthlessness and low self-esteem level and decreasing functionality in peer relations and social interactions.[29,30] Additionally, individuals with low metacognition abilities may experience problems in regulating cognitive distortions (e.g., "I will always be alone," "I am unsuccessful," "These stressful days will never end," "I am vulnerable," etc.), and all the aforementioned thoughts may cause a rise in depressive symptoms. Some research have also suggested that abusive parenting and early traumatic relationships may lead to the emergence of positive beliefs about the use of worry in childhood, thus supporting the notion that insecure attachment style is associated with higher levels of metacognition problems.[31-34]

However, to the best of our knowledge, no study has investigated the mediating role of metacognition problems in the relationship between attachment quality and depressive symptoms in adolescents. Considering this deficiency in the literature, the aim of the current study was to investigate whether insecure attachment style linked to depressive symptoms and whether metacognition problems have a mediating effect on the adolescent population. The relationships among metacognition problems and attachment quality and depressive symptom levels were also investigated.

Materials and Methods

Participants and Procedure

This study used a cross-sectional design. In accordance with permission obtained from the Istanbul Provincial Directorate of National Education and School boards, 559 adolescents (52.5% males, n=293; 47.5% females, n=266) from three secondary schools (two public schools and one private school) in Istanbul were included in the study. Secondary schools were chosen according to the guidelines of the Istanbul Provincial Directorate of National Education. In the process of study planning, the required number of participants according to the number of subtests of the measurements was calculated by the statistician. We aimed to include at least the minimum required number of participants in this study. After determining the minimum number of participants required, the instruments were administered to all adolescents in their classrooms by the respective psychological counseling services of the relevant schools.

All the participants completed the instruments under the supervision of the researchers. The adolescents who were diagnosed with intellectual disabilities, specific learning disorders, autism spectrum disorders, schizophrenia spectrum disorders, and visual and hearing disabilities along with those with poor reading and writing skills were not included in the study. First, the researchers included 569 participants, 10 of whom (2.65% of boys n=4; 1.36% of girls n=6) failed to fully or accurately complete the form and were thus excluded. As a result, statistical analysis was carried out on 559 participants. The mean ages of the female and male participants were 13.92±2.06 and

14.18±2.35 years, respectively. All procedures were approved by the research Clinical Ethics Committee of Istanbul Aydin University (96/2019;B.30.2.AYD.0.00.00.050.06.04/139).

Instruments

Sociodemographic Data Form: This form included information about participants' age, gender, class, school, family income status, and medical and psychotherapeutic history. This form was completed by the participants and their parents.

Children's Depression Inventory (CDI): The CDI is a self-report assessment of depressive symptoms in children and adolescents between the ages of 7 and 17 years. It consists of 27 items, which are evaluated using a three-point Likert-type scale. The total score varies from 0 to 54 points. The cut to off score is 19, and a higher score indicates high depressive symptom levels. CDI was developed by Saylor et al.[35] and adopted to the Turkish child and adolescent population by Oy[36]. The Cronbach's α coefficient of the Turkish scale was 0.77.

The Inventory of Parent and Peer Attachment (Short Version, s-IPPA): The s-IPPA measures attachment quality to parents and peers of adolescents between the ages of 12 and 19 years. It consists of 24 items each rated on seven-point Likert-type scale (1=never, 7=always) in which a higher score indicates good attachment quality. The original scale contains three subscales to measure trust, communication, and alienation. The trust and communication items point out the secure attachment style, whereas levels of alienation items point out the insecure attachment style. The inventory was developed by Raja et al.[37] and was adopted to the Turkish adolescent population by Günaydin et al.[38] The Turkish s to IPPA has maternal attachment (MA) and paternal attachment (PA) parts, and both of them have a one to factor solution. The Cronbach's α coefficient for the maternal and paternal parts were 0.88 and 0.90, respectively.

Metacognitions Questionnaire for Children (MCQ-C): The MCQ-C assesses the metacognitive beliefs and processes of adolescents between the ages of 7 and 11 years. It consists of 24 items rated on a four-point Likert-type scale. It has four subscales as follows:

MCQ-C Factor 1: Positive meta-worry (Beliefs about the positive benefits of worry),

MCQ-C Factor 2: Negative meta-worry (Beliefs about the uncontrollability and danger of worry),

MCQ-C Factor 3: Cognitive monitoring (The need to control thoughts), and

MCQ-C Factor 4: Superstition, punishment, and responsibility beliefs (Superstitions imply).

The total score ranges from 24-96 points, and higher scores indicate greater metacognition problems. The MCQ-C was developed by Bacow et al.[39] and adapted to the Turkish adolescent population by Irak.[40] The Cronbach's α value of Turkish MCQ-C was found to be 0.73.

Statistical Analysis

Analyses were conducted using the Statistical Package for Social Sciences (SPSS 24) program for Windows. The Skewness-Kurtosis test revealed that the data were normally distributed (between the values of ±1). The mean scale scores of the participants were calculated. The Pearson product-moment correlation test was used to analyze the correlation coefficients between the scale scores.

SPSS process 24 was performed in order to evaluate the direct and indirect associations between PA and MA quality, depressive symptoms levels, and metacognition problems. The PA and MA scores were included as independent variables in two separate models. The CDI scores were the outcome variables, and the MCQ-C scores served as the mediator in the model. Gender was included as a control variable, as it has an effect on attachment taking into account studies that the parental binding in the literature differs by gender.[41] In the first, second, and third steps, we examined the effect of attachment quality on depression scores, the effect of attachment quality on metacognition problems, and the mediating effect of metacognition problems between attachment quality and depression scores, respectively.

Results

The results of the power analysis revealed that the minimum required number of participants for both male and female groups were 160. Thus, the sample size was sufficient in the study.

The mean scale scores of the participants are presented in Table 1. The independent sample test results revealed that negative meta-worry scores of females were higher than males (p=0.008), but there was no significant gender difference in other scale scores (p>0.05). The mean ages of the female and male participants were 13.92±2.06 and 14.18±2.35 years, respectively. There was no significant difference between the mean ages of the female and male participants (p>0.05).

Table 1. Scale scores of female and male participants

	Females (n=293)	Males (n=266)	t	p
	Mean (SD)	Mean (SD)		
CDI	14.8 (8.57)	14.17 (8.07)	0.887	0.376
MA	65.47 (13.11)	65.63 (11.15)	-0.187	0.852
PA	61.78 (15.53)	63.17 (18.08)	-0.963	0.336
MCQ-C F1	11.4 (4.1)	11.7 (4.26)	-0.636	0.525
MCQ-C F2	16.29 (6.23)	15.26 (4.43)	2.644	0.008*
MCQ-C F3	16.61 (4.25)	14.96 (4.24)	0.336	0.737
MCQ-C F4	17.65 (3.69)	17.49 (4.04)	1.836	0.067
MCQ-C	60.96 (10.33)	59.44 (10.67)	1.713	0.087

Independent sample t-test, SD: Standard deviation, F: Factor, CDI: Child Depression Inventory, MA: Maternal attachment, PA: Paternal attachment, MCQ-C: Metacognitions Questionnaire for Children (F1: Positive Meta-worry; F2: Negative Meta-worry, F3: Cognitive Monitoring, and F4: Superstition, Punishment, and Responsibility Beliefs) *p<0.05

Correlation analysis indicated that CDI scores were correlated with MA (r=-0.516) and PA (r=-0.461) scores (p<0.001). CDI scores were correlated with MCQ-C factor 2 (r=0.288) and factor 3 (r=0.213) scores (p<0.001). MA scores were correlated with MCQ-C factor 3 (r=-0.127), (r=-0.104), and MCQ-C total scores (r=-0.097, p<0.05). PA scores were correlated with MCQ-C factor 2 (r=-0.153, p<0.001), factor 3 (r=-0.116, p<0.05), factor 4 (r=-0.92, p<0.05), and MCQ-C total scores (r=-0.103, p<0.05). The results of the correlation analysis are presented in Table 2.

In the first step of the first mediation analysis model, MA scores predicted CDI scores significantly [F (2,556)=101.6247, p<0.001, R^2=0.266, b=-0.3549, SH=0250]. In the second step, MA scores predicted MCQ-C scores significantly [F (2,556)=4.0076, p<0.05, R^2=0.0145, b=-0.0837, SH=0367]. In the third step, MA and MCQ-C scores predicted CDI scores significantly [F (3,555)=76.5795, p<0.001, R^2=0.2928], as shown in Table 3. Bootstrap and Sobel test results indicated that MCQ-C scores had a partial mediating effect on the relationship between MA and CDI scores (BootULCI-0.0018, BootLLCI-0.0249; Z-1.9901, p<0.05), as shown in Table 3.

In the first step of the second mediation analysis model, PA scores predicted CDI scores significantly [F (2,556)=75.1013, p<0.001, R^2=0.2127, b=-0.2675, SH=0219]. In the second step, PA scores predicted MCQ-C scores, significantly (F (2,556)=4.2032, p<0.05, R^2=0.0149, b=-0.0725, SH=0310). In the third step, PA and MCQ-C scores predicted CDI scores significantly [F (3,555)=58.1585, p<0.001, R^2=0.2928]. Bootstrap and Sobel test results indicated that MCQ-C scores had a partial mediating effect on the relationship between PA and CDI scores (BootULCI-0.0019, BootLLCI-0.0216; Z-2.0230, p<0.05). The results of the two-mediation model are presented in Table 4. When gender was included as a controlled variable, the relationship between MCQ and CDI was found to be 0.183 (p<0.01), whereas when PA and MCQ were included together in the model, the relationship between MCQ and CDI decreased to 0.1294 (p>0.01).

Discussion

The results of the correlation and mediation analyses suggest that attachment quality and depressive symptom levels in adolescents are negatively associated. This result is consistent with studies reporting that insecure attachment to parents play a significant role in the development of depression during the adolescence period.[42,43] Insecure attachment relations induce the emergence of depressive disorders in children by affecting their emotional, behavioral, and social development as well as their adaptation capacity under stressful life situations.[10,14] In such life events, such as academic or occupational failure, social isolation, traumatic experiences, and so on, individuals with a secure attachment style may still believe that they are valuable person and can still remain successful.[44] They also tend to perceive their relatives and friends as trustworthy and supportive.[45] However, insecure attachment decreases an individual's ability to cope with feelings of worthlessness, loneliness, abandonment, and being unsuccessful, among others.[12] These psycho-emotional

Table 3. The mediating role of metacognition problems in the relationship between maternal attachment levels and depression scores

	B	SH	T
First stage			
MA --> CDI	-0.3549	0.0250	-14.22**
R2=0.2677; F (2.556)=101.62**			
Second stage			
MA --> MCQ-C	-0.0837	0.0367	-2.28*
R2=.0145, F(2.556)=4.08*			
Third stage			
MCQ-C --> CDI	0.1259	0.0284	4.43**
MA --> CDI	-0.3443	0.0247	-13.96**
R2=0.2928, F (3.555)=76.58**			

Control variable: sex, Sobel Z=-1.9901, CDI: Child Depression Inventory, MA: Maternal attachment, MCQ-C: Metacognitions Questionnaire for Children, *p<0.05; **p<0.001

Table 2. Correlation coefficients of CDI, MCQ-C, MA, and PA scale scores

	CDI	MA	PA	MCQ-CF1	MCQ-CF2	MCQ-CF3	MCQ-CF4 MCQ-C
CDI	-	-0.516**	-0.461**	0.067	0.288**	0.213**	-0.060, 0.211**
MA	-0.516**	-	0.633**	-0.070	-0.127*	-0.104*	0.071, -0.097*
PA	-0.461**	0.633**	-	-0.67	-0.153**	-0.116*	0.92*, -0.103*
MCQ-C F1	0.067	-0.070	-0.067	-	0.004	0.051	0.67, 0.446**
MCQ-C F2	0.288**	-0.127*	-153**	0.004	-	0.534**	0.225** 0.716**
MCQ-C F3	0.213**	-0.104*	-116*	0.051	0.534**	-	0.280** 0.750**
MCQ-C F4	-0.060	0.071	0.092*	0.067	0.225**	0.280**	-0.601**
MCQ-C	0.211**	-0.097*	-0.103*	0.446**	0.716**	0.750**	601**

Pearson product-moment correlation coefficient test, CDI: Child Depression Inventory, MA: Maternal attachment, PA: Paternal attachment, MCQ-C: Metacognitions Questionnaire for Children (F1: Positive Meta-worry, F2: Negative Meta-worry, F3: Cognitive Monitoring, and F4: Superstition, Punishment, and Responsibility Beliefs. *p<0.05, **p<0.001

Table 4. The mediating role of metacognition problems in the relationship between paternal attachment levels and depression scores

	B	SH	T
First Stage			
PA --> CDI	-0.2675	0.0219	-12.21**
R^2=0.2127; F (2.556)=75.10**			
Second Stage			
PA --> MCQ-C	-0.0725	0.0310	-2.34*
R2=0.0149, F (2.556)=4.20*			
Third Stage			
MCQ-C --> CDI	0.1294	0.0294	4.40**
PA --> CDI	-0.2581	0.0217	-11,92**
R^2=0.2392, F (3.555)=58.16**			

Control Variable: sex, Sobel Z=-2.0230, CDI: Child Depression Inventory, PA: Paternal attachment, MCQ-C: Metacognitions Questionnaire for Children, *p<0.05; **p<0.001

and social vulnerabilities of adolescents, which are associated with an insecure attachment style, may explain our results regarding the relationship between low attachment quality and depressive symptoms.

Supporting the study of Myers and Wells[31], the correlation analysis results of the current work also indicated that metacognition problems were negatively associated with MA and PA quality and may be positively associated with depressive symptom levels. The capacity to reflect upon one's mental state and that of others as well as the capacity for metacognition can be undermined by experiences of childhood trauma in the context of attachment relationships. Insecure attachment hinders metacognitive development as it yields multiple, dramatic, and non-integrated representations of the self and the attachment figure. Thus, metacognitive problems may be outcomes of the different types of internal working models of early insecure attachment relationships.[46,47]

The results of the mediation analyses revealed that metacognition problems have a partial mediating effect on the relationship between attachment quality and the depressive symptom levels.[46] This mediation result indicates that low MA and PA quality can not only directly increase the depressive symptom levels but also do so by increasing metacognition problems. To the best of our knowledge, this is the first research investigating this topic. Poor metacognition abilities cause difficulties in analyzing correctly the nature of one's own and others' cognitive processes, and this may heighten children's vulnerability to their caregivers' maladaptive behaviors.[46] Individuals with poor metacognitive abilities may have increased levels of automatic negative, guilt, and self-criticism due to deficiencies in their monitoring capacity. As they are unable to realize whether the parent's rejection and maladaptive behavior may be due to their own false beliefs or the actual behaviors of parents, they cannot moderate their cognitions about guilt and self-criticism related to these negative experiences. Thus, such failure may lead to the emergence of a negative self-image and the development of depressive symptoms.[46,47]

Furthermore, poor metacognitive abilities may also cause difficulties in analyzing and moderating negative thoughts. Positive meta-worries may lead to a good view about worrying and rumination associated with depressive symptoms[28] (i.e., "I think I am an ugly and worthless person, and I am not able to cope with these types of thoughts; I will go crazy"). In comparison, negative meta-worries, such as feelings of worthlessness, inadequacy, despair, and guilt may lead to one's acceptance of these ideas as indicative of a certain reality or that he/she is not capable of regulating these negative thoughts[48-50] (i.e., "I think I am an ugly and worthless person, and I am not able to cope with these types of thoughts; I will go crazy"). Superstitious beliefs may hinder the discovery of real contingencies, because of the belief that "you know the answer" thereby not considering alternative possibilities.[51] Thus, it may decrease the capacity of adolescents to cope with depressogenic thinking. Further studies that would investigate therapeutic interventions focusing on metacognition problems could contribute to our knowledge about clinical approaches in adolescents with an insecure attachment style and depressive symptoms.

Study Limitations

This study has some notable limitations. First of all, this was a cross-sectional study. Longitudinal studies are required to gain more insights into the causality of the relationship. Second, the lack of clinical evaluation inhibits the evaluation of psychiatric diagnosis and comorbidity. Despite these limitations, this study has novel contributions regarding the mediating role of metacognition in the relationship between attachment problems and depressive symptoms. The results of this study may provide significant data for further studies.

Conclusion

In the context of the results of this study, it may be suggested that attachment quality increases the risk of the emergence of depressive symptoms in adolescents and that metacognition problems play a mediating role in this association.

Ethics

Ethics Committee Approval: The study protocol was approved by Istanbul Aydin University Ethics Committee (96/2019;B.30.2.AYD.0.00.00.050.06.04/139)

Informed Consent: Informed consent was obtained from all participants.

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