

Relationship Among Peer Relations, Parental Attachment Styles, and Level of Tendency to Violence in Adolescents Diagnosed with Attention Deficit and Hyperactivity Disorder

Dikkat Eksikliği ve Hiperaktivite Bozukluğu Tanısı olan Ergenlerde Akran İlişkileri, Ebeveyne Bağlanma Stilleri ve Şiddet Eğilimi Düzeyleri Arasındaki İlişki

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Abstract

In recent years, parental factors have been emphasized among the factors that predict violent behavior, which is observed more frequently in adolescents with Attention Deficit and Hyperactivity Disorder (ADHD) compared to healthy controls. However, the relationship between parental attachment styles and violent behaviors of ADHD patients remains unclear. In the present study, it was aimed to investigate the effects of parental attachment styles and other related factors such as peer relations or psychosocial factors on the tendency to violence in adolescents followed up with the diagnosis of ADHD. Adolescents aged 12-18 years (n=115) who were newly diagnosed or being followed up with the diagnosis of attention deficit hyperactivity disorder (ADHD) between August 2021 and April 2022 in a Child and Adolescent Psychiatry Outpatient Clinic were included in the study. The parents of the participants were asked to fill out a detailed researcher form and the "Strengths and Difficulties Questionnaire-parent form" (SDQ). "Peer Relationship Scale", the "Violence Tendency Scale" and the Parent and Peer Attachment Inventory- brief form (IPPA-R) were given to the adolescents to fill out. Hierarchical linear regression analyses indicated that peer relationship problems (PRS-loyalty subscale) (B= .926, p= .001), psychiatric difficulties (the SDQ-total) (B= .547, p=.001) and the parental alienation (mother) (B=.430, p=.015) variables were statistically significantly associated with violence tendency. Identifying environmental factors that predict violence in youth with ADHD without co-morbid conduct disorder is crucial for the development of preventive interventions.

Keywords: ADHD, Violence, Attachment, Peer groups, Alienation, Adolescent psychiatry.

Özet

Dikkat Eksikliği ve Hiperaktivite Bozukluğu (DEHB) olan ergenlerde sağlıklı kontrollere göre daha sık görülen şiddet davranışını yordayan faktörler arasında son yıllarda ebeveyn faktörlerinin üzerinde durulmaktadır. Ancak DEHB hastalarının ebeveyn bağlanma stilleri ile şiddet davranışları arasındaki ilişki belirsizliğini korumaktadır. Bu çalışmada, DEHB tanısı ile izlenen ergenlerde, ebeveyn bağlanma biçimleri ile akran ilişkileri ya da psikososyal faktörler gibi ilişkili diğer faktörlerin şiddet eğilimine etkisinin araştırılması amaçlanmıştır. Bir Çocuk ve Ergen psikiyatrisi polikliniğinde Ağustos 2021-Nisan 2022 tarihleri arasında Dikkat Eksikliği ve Hiperaktivite Bozukluğu (DEHB) tanısı ile takip edilmekte olan veya yeni tanı alan 12-18 yaş arası ergenler (n=115) çalışmaya alınmıştır. Katılımcıların ailelerinden detaylı bir araştırmacı formu ve "Güçler ve Güçlükler Anketi-ebeveyn formu" (SDQ) doldurmaları istenmiştir. Ergenlere doldurmaları üzere "Akran İlişkileri Ölçeği", "Şiddete Eğilim Ölçeği" ve Ebeveyn ve Akranına Bağlanma Envanteri kısa formu verilmiştir. Hiyerarşik doğrusal regresyon analizleri, akran ilişkileri sorunları (PRS-sadakat alt ölçeği) (B= .926, p= .001), psikiyatrik güçlük düzeyleri (SDQ-toplam) (B= .547, p=.001) ve ebeveyn yabancılaşmanın (B=.430, p=.015) şiddet eğilimi ile istatistiksel olarak anlamlı düzeyde ilişkili değişkenler olduğunu göstermektedir. Davranım bozukluğu eş tanısı olmayan DEHB'li gençlerde şiddeti ön gördüren çevresel etmenlerin belirlenmesi önleyici müdahalelerin geliştirilmesi açısından önem arz etmektedir.

Anahtar Kelimeler: DEHB, Şiddet eğilimi, Bağlanma, Akran grupları, Ebeveyn yabancılaşma, Ergen, Psikiyatri.

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Received 11.09.2022 Accepted 27.10.2022 Online published 03.11.2022

1. Introduction

Attention Deficit and Hyperactivity Disorder (ADHD) is a chronic, neurodevelopmental disorder with hyperactivity/impulsivity and/or attention deficit symptoms that onset in early childhood and persist in most individuals at varied degrees throughout the life. Its worldwide prevalence has been reported as 5.29% and girl/boy rate as 1:4 (1). Although, genetic factors play an important role in the emergence of ADHD, parental environmental factors (such as mother's smoke or emotional stress during pregnancy, presence of ADHD in parents) are also held responsible (2).

Violence is defined as the use of physical force or threats against oneself, another person, a particular community or group, which may result in injury, death, physical harm, certain developmental disorders or deprivation by World Health Organization (2002). The association between ADHD and aggressive behaviors has well been established. Regardless of the presence of Oppositional Defiant Disorder (ODD) and Conduct disorder (CD) diagnoses that frequently co-morbid with ADHD, aggressive behaviors are more common in patients with ADHD. In longitudinal studies, a significant increase was found in children diagnosed with ADHD compared to healthy controls in terms of the presence of aggressive behaviors, committing crimes and other antisocial behaviors (3,4). Individual and environmental factors contribute to the onset and maintenance of aggressive behaviors in children and youths with ADHD. Behavioral such as hyperactivity/impulsivity, or neurocognitive (low IQ/EQ) features are among the individual factors associated with violence (5-7). It has previously been suggested that low ADHD symptom and emotional stress levels were protective factors for violent behaviors (8). It has also been known that children and adolescents with ADHD experience problems with peers (9,10) and their difficulties in social area have been pointed out as one of the factors predicting aggressive behaviors in children and adolescents with ADHD (11).

Environmental factors that have an important role on aggressive behaviors includes strict child rearing techniques, impaired family

functions, lack of social support or low socio-economic status (12-17). In previous studies, it has been suggested that ADHD symptoms (18,19) and aggressive behaviors (12) observed in children with ADHD were closely related to parental attitudes. It has been found that social deficits associated with violent behavior in children with ADHD can also be reduced with positive parenting skills (20).

In recent years, the relationship between insecure attachment styles and coping behaviors (21) and ADHD symptoms (22) has increasingly been investigated. Although it is not yet clear whether attachment problems in early childhood cause ADHD symptoms or whether ADHD symptoms negatively affect parent-child attachment (23); Previous research has found that children with ADHD have less secure (24), more unstable (25) and disorganized attachment representations than controls (26).

The aim of this study was to investigate the relationships among peer relations, adolescent's perceived attachment styles, disease-related factors (ADHD subtype, disease duration) and violence tendency in cases followed up with ADHD diagnosis in a Child and Adolescent Psychiatry outpatient clinic.

2. Material and Methods

Participants and procedure

Adolescents aged 12 to 18 years who were newly diagnosed or followed up with ADHD diagnosis in the Child and adolescent psychiatry outpatient clinic in August 2021-April 2022 were recruited to the study (115). Adolescents who have chronic medical illnesses or the impression of mental retardation in the mental examination were excluded. In addition, patients who have received or are currently receiving individualized education program were not included to our study sample. Since ODD and CD are disorders frequently associated with ADHD, patients who were diagnosed by clinical interview based on DSM-5 and with the neurodevelopmental co-morbidities such as ODD, CD, Specific Learning Disorder (SLD) were included in the study. The

diagnostic interviews of the patients were performed by a specialist child and adolescent psychiatrist. The parents were asked to fill out a detailed form prepared by the researcher, which includes parent's age, educational level, occupation, average monthly income of the family, and psychiatric and medical history of first- and second-degree relatives as well as child's age, gender, academic success, and medical history. Only parents of ADHD patients receiving treatment were asked to answer questions about how long their children had been treated. "Strengths, and Difficulties Questionnaire-parent form" (SDQ) were filled by one of the parents, while adolescents were asked to fill out "Peer Relation Scale (PRS)", "The Scale of Tendency to Violence" and Inventory of Parent and Peer Attachment-revised (IPPA-R). Permissions for the study was obtained from University, Faculty of Medicine Clinical Research Ethics Committee (date 26.05.2021 and number 2021-6/63).

Measures

The Scale of Tendency to Violence has been developed by Gökay et al. in 1995 to determine the violence tendency of the secondary school students. The 4-point likert-type scale is made up of 20 items and none of them reverse. High scores from the scale indicate a high tendency to violence. Cronbach alpha value (0.76) calculated for the scale shows that the scale has internal consistency ($\alpha > 0.60$).

Peer Relationship Scale (PRS) is a measurement tool that was developed by Kaner (27) to assess peer relations. PRS is a 5-point Likert-type questionnaire including 18 questions consists of four sub-dimensions: Commitment, Trust and Identification, Self-Disclosure and Loyalty. The total score can also be obtained. Higher score indicates positive relationships with friends. It's been suggested that the psychometric properties of the scale were sufficient.

Inventory of Parent and Peer Attachment (IPPA)-brief form adopted from the scale IPPA originally consisted of 28 items is used to evaluate attachment of children,

adolescents, and young adults. In our study, the 12-item brief form of the scale was filled by the adolescent separately for each parent. It is rated as 1 to 7 (1-never, 7-always) and consists of 3 sub-scales: "Trust", "Communication" and "Alienation". The Turkish validity and reliability study of the brief form of the scale was carried out by Günaydın et al. (2005) and it was stated that the scale had high internal consistency and test-retest reliability (28).

Strengths and Difficulties Questionnaire (SDQ)-parent form

The questionnaire, which is completed by parents for ages 4-16 and by adolescents for ages 11-16, is used to determine emotional and behavioral difficulties. The scale is composed of 5 subscales: Conduct Problems, Emotional Problems, Attention Deficit and Hyperactivity, Peer Relationships and Pro-social Behaviors. A mean score can be obtained for each subscale, as well as the "Total Difficulty Score" can be calculated with the sum of the first four. "Pro-social behavior" subscale scores indicate positive functionality. Turkish validity and reliability study of the scale was carried out by Güvenir et al. (2008) and it was found to be consistent and reliable in the Turkish sample (29).

Statistical Analysis

The data were evaluated by using the Statistical Package for the Social Sciences (version 20) program. Descriptive statistics were shown as mean-standard deviation or percentages (%). A 95% confidence interval was used to assess the data. Independent samples t-test was used for comparisons between groups formed based on violence tendency scores. Although the educational level and working status of the parents were ordinal variables, they were accepted as dummy variables and calculated as continuous variables in our study. The sum of the scores was expressed as socio economic status (SES). The correlations were tested by Spearman correlation analysis. Finally, the variables that could affect the violence tendency scores were evaluated using hierarchical linear regression analysis in the

group formed by excluding cases with comorbid conduct disorder. The independent variables were gender and SES in the first step; SDQ-total variable in the second step; PRS-loyalty in the third step and IPPA-alienation (mother) in the final step. For all analyses statistical significance was set at $P < .05$.

3. Results

The sample was composed of 115 adolescents with a mean age of ($M=14.02$, $SD=1.97$). Thirty-four of 115 participants (29.6%) were girls; 81 (70.4%) were boys. 46.5% (47 of 101) were ADHD-combined, 44.6% (45 of 101) were ADHD-attention deficit, 8.9% (9 of 101) were ADHD-hyperactivity sub-groups. 10.4% (12) of all participants (115) had a diagnosis of conduct disorder in addition to ADHD. Cases with a diagnosis of SLD (15) accounted for 13% of all participants while cases with ODD (8) 7% of them. According to the information received from the parents, it was learned that about a quarter of the participants (29) (25.2%) received disciplinary punishment or suspension from school, and only 3 of them (2.6%) were in court for any crime.

The average score from the Scale of Tendency to Violence was ($M=42.17$, $SD=10.37$). When the tendency to violence scores of the participants (115) were evaluated according to varied ranges; the rates were as follows: 21-40

(55, 47.8%), 41-60 (53, 46.1%), 61-80 (7, 6.1%). ADHD-combined subtype (47) and ADHD-attention deficit subtype (45) groups were similar in terms of violence tendency score ($p=.235$)

Statistical analyses were made by dividing all subjects into 2 groups as those who scored below 40 points (50) and those who scored 40 points or more (64) from the scale of tendency to violence. The high-scored violence tendency group was significantly differed from low-scored group with regard to PRS-loyalty subscale score ($t= 2.667$, $p=.009$, 95% Confidence Interval (CI): .40-2.73). The mean values of IPPA-alienation subscale scores for both mothers ($t= 2.782$, $p=.006$, 95 % Confidence Interval (CI): .80-4.80) and fathers ($t= 3.101$, $p= .002$, 95 % Confidence Interval (CI): 1.21-5.52) were also found to be significantly higher in the high-scored group. SDQ subscale scores were also compared between the groups assigned based on the violence tendency scores. SDQ-conduct ($t= 3.569$, $p= .001$, 95 % Confidence Interval (CI): 0.66-2.31), SDQ-emotional ($t= 2.181$, $p=.031$, 95 % Confidence Interval (CI): .08-1.71), SDQ-hyperactivity ($t= 2.528$, $p= .013$, 95 % Confidence Interval (CI): 0.21-1.76), SDQ-pro-social ($t= -2.081$, $p= .040$, 95 % Confidence Interval (CI): -1.74--.04) subscale values were significantly differed in the high-scored violence tendency group. (Comparisons regarding sub-scale scores were given in the table 1).

Table 1. Comparison of the Peer Relationship Scale, Inventory of Parent and Peer Attachment-brief form, and Strengths and Difficulties Questionnaire-parent form sub-scale scores between high-scored and low-scored groups based on the Tendency to Violence Scale

		Tendency to violence (≥40) (n=65)	Tendency to violence (<40) (n=50)	t	p
Strengths and Difficulties Questionnaire-parent form (SDQ)	SDQ-conduct	4.18±2.4	2.70±1.7	3.569	.001
	SDQ-emotional	4.43±2.1	3.54±2.2	2.181	.031
	SDQ-hyperactivity	7.18±2.0	6.20±2.1	2.528	.013
	SDQ-peer relations	4.00±1.9	3.92±1.6	.230	.819
	SDQ-prosocial	6.82±2.4	7.72±2.0	-2.081	.040
	SDQ-total	19.81±5.6	16.36±4.9	3.436	.001
Peer Relationship Scale (PRS)	PRS-commitment	28.10±8.5	30.34±8.2	-1.414	.160
	PRS-trust and identification	12.78±3.6	13.94±3.7	-1.644	.103
	PRS-self-disclosure	8.29±3.5	7.42±3.5	1.297	.197
	PRS-loyalty	7.43±3.2	5.86±2.9	2.667	.009
Inventory of Parent and Peer Attachment-brief form for mothers(PPA)	IPPA-trust	15.95±5.3	17.76±4.5	-1.905	.059
	IPPA-communication	19.36±6.0	19.90±6.2	-4.459	.647
Inventory of Parent and Peer Attachment-brief form for fathers(PPA)	IPPA-alienation	12.18±6.1	9.38±4.1	2.782	.006
	IPPA-trust	16.29±5.0	16.96±4.8	-.712	.478
	IPPA-communication	16.79±6.5	18.82±6.7	-1.607	.111
	IPPA-alienation	12.46±6.3	9.10±4.8	3.101	.002

The correlation analyses indicated that both the SDQ- total score $r(114) = .389, p < .001$ and PRS- loyalty subscale score $r(114) = .418, p < .001$ were positively correlated with the Scale of Tendency to Violence. There was no correlation between age and violence tendency ($r(115) = .043, p = .651$). Age was also not correlated with PRS sub-scores, except self-disclosure ($r(115) = .268, p = .004$). No significant correlation was found between disease duration and violence tendency score ($r(107) = -.061, p = .533$). And no correlation was found between the level of academic achievement and the tendency to violence. However, negative correlations were found between SDQ-conduct ($r(113) = -.201, p = .033$) and SDQ-hyperactivity ($r(113) = -.196, p = .038$) subscales and academic achievement level.

The variables that could affect the violence tendency scores were evaluated using

hierarchical linear regression analysis in the group formed by excluding cases with comorbid conduct disorder ($n=103$). Gender and SES variables were entered as the first block and the results indicated that the model wasn't significant. After entry of the SDQ-total variable at the second block, the model was significant ($F = 6.693, p < .001, 17.8\%$, R squared change = .154). When the PRS-loyalty variable was entered in the third block, the model was still statistically significant ($F = 8.986, p < .001$) (28.1%, R squared change = .103). In the final model, IPPA- alienation (mother) variable was entered, and total variance explained by the model as a whole was 32.6% (R squared change = .045) ($F = 8.814, p < .001$). The PRS-loyalty ($B = .926, p = .001$), the SDQ-total ($B = .547, p = .001$) and the IPPA- alienation (mother) ($B = .430, p = .015$) variables were the factors significantly influence violence tendency scores according to the final model (table 2).

Table 2. Hierarchical linear regression analysis findings for variables predicting Tendency to Violence Scale Score

	Unstandardized Coefficients		Standardized Coefficients Beta	Sig.
	B	Std. Error		
Model 1				
SES	.536	.377	.145	.159
gender	1.402	2.230	.064	.531
Model 2				
SES	.692	.350	.187	.051
gender	.381	2.073	.017	.855
SDQ-total	.719	.172	.398	<.001
Model 3				
SES	.629	.330	.170	.060
gender	.757	1.951	.035	.699
SDQ-total	.639	.164	.353	<.001
PRS-loyalty	1.032	.284	.325	<.001
Model 4				
SES	.548	.323	.148	.093
gender	.631	1.900	.029	.740
SDQ-total	.547	.163	.303	.001
PRS-loyalty	.926	.279	.292	.001
IPPA-alienation (mother)	.430	.174	.223	.015

Note: SES: Socio-economic status, SDQ: Strengths and Difficulties

Questionnaire, PRS: Peer Relationship Scale, IPPA: Inventory of Parent and Peer Attachment

4. Discussion and Conclusion

Our findings demonstrated that almost half of the participants scored above average on the violence tendency scale and when the factors affecting the violence tendency score were evaluated with hierarchical regression analysis; In the last step, total psychiatric difficulty (SDQ-total), peer relations (PRS-loyalty) and IPPA-alienation (for mothers) sub-scale scores were found to be statistically significant variables associated with violence tendency in adolescents with ADHD.

Previous adult studies showed that childhood ADHD was a very important predictor (even above substance use) of violent offence, especially impulse control problems and emotional instability symptoms increased the risk of incidents in the institutional settings (30). Violent behavior and ADHD are similarly multi-factorial conditions in which genetic and environmental factors play a role (31,32). Factors that predict violent behavior accompanying ADHD have been extensively researched. Low connectedness to school, poor academic achievement, high peer delinquency have been suggested among individual factors, while negative parenting attitudes, impaired parental mental health and parent's high emotional expression as familial factors (17). In a 10-year follow-up study has found a linkage between domestic violence (as witness, perpetrator, or victim) and more severe offending behavior (33). In another longitudinal study, protective factors were investigated as well as risk factors that predicted violent behavior in youths, and it has been found that lower ADHD symptom severity, lower emotional distress and less peer delinquency were protective factors (8). In our study, the group formed by excluding cases with co-morbid conduct disorder was subjected to analysis, and the total psychiatric difficulty score variable was adjusted by hierarchical regression analysis. According to our results, the peer relations-loyalty continued to be significant even after the psychiatric difficulty score variable was controlled. It has been suggested that impairments in social area in children with ADHD persists in adolescence, these children are more rejected by their peers, and the risk

of being bullied is heightened (34). In a study conducted in the USA by following up 622 African-American youth between the ages of 12 and 22, factors such as male gender, more rejection by peers, and more ADHD symptom severity in late adolescence were increased in the group in which aggressive -offense persisted from adolescence into adulthood (35). In addition to being ostracized by friends, it has been seen as making delinquent friends increases the risk of violence behavior. According to the results of an epidemiological study in Iceland with a large sample (age of 16-24), it was determined that ADHD symptoms explained 8.2%-8.8% of the variance in nonviolent and violent delinquency, respectively, but these effects were largely mediated by co-morbid conditions such as substance use, conduct disorder and delinquent peers (36). Children and adolescents, excluded by their friends, can form groups with peers who exhibit similar characteristics at school or in the neighborhood. It should be considered that these groupings may play a role in joining criminal gangs in the future (37). It was a significant finding in this respect that only the loyalty subscale of the peer relations scale (PRS) was revealed as predictor of violence tendency in the present study.

Another variable that remained significant at the last step in the hierarchical regression analysis was the IPPA-alienation subscale. Higher rate of parental alienation has been shown in previous studies in children and adolescents with psychiatric disorders such as eating disorders (38), depression (39) or psychological conditions such as low self-esteem (40), anxiety sensitivity (41) or pathological internet use (42). In a recent study from Poland, attachment styles of 13–16-year-old adolescents with ADHD were evaluated with a scale similar to our study. Insecure styles were found in both groups, ADHD+ODD and ADHD only, compared to healthy controls, and those with co-morbid ODD differed significantly from those with only ADHD (43). Considering the relationship between attachment and violent behavior; there has been a study conducted in

community sample showed that youths who involved in bullying experiences (either bully or victim) have worse communication and trust with their parents and are more alienated by parents (44). There has been also a clinical study in 2006 with 91 boys (8-12-year-old) with disruptive behavior disorder and various antisocial behaviors. Higher quality of parent-child attachment was associated with lower parent-rated aggression, lower social stress, and higher levels of self-esteem, according to the results of this study (45). In that study, a subscale in which parents evaluated their own attachment levels was used. In the current study, IPPA was a good tool in terms of allowing the assessment of adolescents' self-perceived attachment levels. We believe that our research will serve as a base for future studies on this subject. Our research revealed that 81.7% of adolescents, which constituted the sample of our study, attended school regularly, and none of them stated that they used substances. The rate of participants who committed crimes and went to court was also very low. However, it was observed that more than half of the cases scored moderate-severe on the violence tendency scale. Taken together, our findings would seem to suggest that the sub-dimensions of peer relations-loyalty and IPPA-alienation remained significant as determining factors in the

tendency to violence even after controlling for the psychiatric difficulty total score variable. It is plausible that a number of limitations could have influenced the results obtained. To begin with, sample size was small and psychiatric co-morbidities were not determined by structured interviews. In addition, the fact that ADHD symptom severity was not evaluated with standardized scales in our study was a limitation. It is known that there is a positive relationship between the severity of ADHD symptoms and the violent behaviors in patients with ADHD. In our study, the psychiatric difficulties of the youths were evaluated with the SDQ scale, and total score from this scale was controlled in the hierarchical regression analysis. Evaluation of newly diagnosed and follow-up patients together was another limitation. Finally, the mental health of the parents could also have been examined by structured interviews and statistically controlled. Increasing knowledge about environmental factors that may contribute to the violence tendency may enable the development of preventive interventions in youths with ADHD who do not have co-morbid conduct disorder. Further work needs to be performed to enlighten the relationship between parental attachment and violence tendency in youths with ADHD.

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Ethics

Ethics Committee Approval: The study was approved by Uludag University Clinical Research Ethical Committee (Number: 2021-13/9, Date: 22.09.2021).

Informed Consent: The authors declared that it was not considered necessary to get consent from the patients because the study was a retrospective data analysis.

Authorship Contributions: Surgical and Medical Practices: NONE Concept: BG, FY. Design: BG. Data Collection or Processing: BG, FY. Analysis or Interpretation: BG, DA. Literature Search: BG, DA Writing: BG, DA, FY

Copyright Transfer Form: Copyright Transfer Form was signed by all authors.

Peer-review: Internally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.