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Investigation of Coping Styles and Related Variables in Adolescents with and without ADHD

DEHB Tanısı Olan ve Olmayan Ergenlerde Başa Çıkma Tarzları ile İlişkili Değişkenlerin İncelenmesi

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Abstract

The study aimed to examine the relationship between coping styles, cognitive errors, and perceived parental behaviors of adolescents diagnosed and nondiagnosed with attention deficit hyperactivity disorder (ADHD) and to examine the predictors of coping style in adolescents with ADHD. Another aim of the study was to compare these variables in adolescents with and without ADHD. Data were collected using the Personal Information Form, Perceived Stress Scale, Ways of Coping Inventory, The Children's Negative Cognitive Errors Questionnaire, Leuven Adolescent Perceived Parenting Scale and Conners Rating Scale. The study analyses included 79 adolescents with ADHD and 70 without ADHD. In ADHD group, there was a negative correlation between active coping styles and negative cognitive errors and a positive correlation with parental responsiveness, whereas there was a positive correlation between passive coping and negative cognitive errors. In ADHD group, 34% of passive coping was predicted by cognitive errors. It was found that coping styles and cognitive errors did not differ in adolescents with and without ADHD, but parents' responsiveness was lower, and psychological control was higher in the ADHD group. Based on the findings, it was concluded that improving family relationships in families with children with ADHD and developing alternative thinking methods in adolescents would enhance active coping. There is a paucity of studies on the diagnosed adolescent ADHD group in the existing literature. Furthermore, this study is the only one to examine the adolescent's characteristics and the behaviors of both parents together. For these reasons, it is believed that this study will make a valuable contribution to the existing literature.

Keywords: ADHD, Parenting, Cognitive Errors, Stress, Coping.

Öz

Araştırmanın amacı, dikkat eksikliği hiperaktivite bozukluğu (DEHB) tanısı almış ve almamış ergenlerin başa çıkma tarzları, bilişsel hataları ve algıladıkları ebeveyn davranışları arasındaki ilişkiyi incelemek ve DEHB tanılı ergenlerde başa çıkma tarzının yordayıcılarını araştırmaktır. Çalışmanın bir diğer amacı ise bu değişkenleri DEHB tanısı olan ve olmayan ergenlerde karşılaştırmaktır. Veriler Kişisel Bilgi Formu, Algılanan Stres Ölçeği, Stresle Başa Çıkma Tarzları Ölçeği, Çocuklar için Olumsuz Bilişsel Hataları Ölçeği, Leuven Algılanan Ebeveynlik Ölçeği ve Conners Derecelendirme Ölçeği kullanılarak toplanmıştır. 79 DEHB ve 70 DEHB olmayan ergen çalışma analizlerine dahil edilmiştir. DEHB grubunda, aktif başa çıkma tarzları ile olumsuz bilişsel hatalar arasında negatif ve ebeveyn duyarlılığı ile pozitif bir korelasyon varken, pasif başa çıkma tarzları ile olumsuz bilişsel hatalar arasında pozitif bir korelasyon saptanmıştır. DEHB grubunda pasif başa çıkmanın %34'ü bilişsel hatalar tarafından yordanmıştır. DEHB olan ve olmayan ergenlerde stresle başa çıkma tarzları ve bilişsel hataların farklılık göstermediği, ancak DEHB grubunda ebeveynlerin duyarlılık davranışının daha düşük, psikolojik kontrol davranışının ise daha yüksek olduğu bulunmuştur. Bulgulara dayanarak, DEHB tanısı almış çocukları olan ailelerde aile ilişkilerinin iyileştirilmesinin ve ergenlerde alternatif düşünme yöntemlerinin geliştirilmesinin stresle aktif başa çıkmayı geliştireceği sonucuna varılmıştır. Literatürde tanı almış ergen DEHB grubuna ilişkin çalışmalar az sayıdadır. Ayrıca, bu çalışma, ergenin belirtilen özellikleri ile hem anne hem de babanın davranışlarının birlikte incelendiği görülen tek çalışmadır. Bu nedenlerle çalışmanın literatüre katkı sunacağı düşünülmektedir.

Anahtar Kelimeler: DEHB, Ebeveynlik, Bilişsel Hatalar, Stres, Başa Çıkma.

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Investigation of Coping Styles and Related Variables in Adolescents with and without ADHD

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by difficulty in directing and maintaining attention, hyperactivity and impulsivity, which is frequently observed in children and adolescents (APA, 2013). The prevalence of ADHD in school-age children varies between 5-12% worldwide and it is known that 80% of those diagnosed with ADHD in childhood continue to experience symptoms in adolescence (Morrison, 2022; Sadek, 2014). In addition to genetic and neurological factors, which are believed to play a significant role in the etiology of ADHD, psychosocial processes such as emotional deprivation and parental attitudes are also thought to contribute to the development of ADHD symptoms. Previous studies have also indicated that individuals with ADHD have difficulties in social domains such as interpersonal relationships and coping with stress (Sadek, 2014).

It is established that individuals with ADHD experience elevated levels of physiological and perceived stress compared to those without ADHD. Additionally, they tend to utilize passive coping styles, such as denial and avoidance, to cope with stress (Al-Yagon et al., 2020; Hirsch et al., 2018; Palma et al., 2015; Vogel et al., 2017). The ability to cope with stress requires the use of executive functions such as planning and self-regulation (Hirsch et al., 2018; Taş Torun et al., 2021) and individuals with ADHD exhibit difficulties in these functions, which consequently influence their coping strategies. In addition to cognitive effects, parental attitudes are among the factors that are related to coping with stress (Hardy et al., 1993; McIntyre & Dusek, 1995).

The parent-child relationship has a significant impact on the child's social, emotional and behavioral outcomes. Perceived parental control and emotional warmth are among the factors that determine the child's internalizing/externalizing problems (Muris et al., 2003). Parents' rejecting and punitive control behaviors are associated with behavioral problems (Muris et al., 2003; Roelofs et al., 2006). In addition, parents' supportive behavior was found to be associated with children's interpersonal problem-solving skills (Anderson & Keim, 2016). Research indicates that families with children diagnosed with ADHD tend to experience more parent-child conflict and dysfunctional parenting styles, as well as less communication and emotional involvement (Climie & Mitchell, 2017; Ghanizadeh & Shams, 2007; Johnston & Mash, 2001). Children with ADHD perceive their parents as more controlling and less warm, caring and supportive (Brown & Pacini, 1989; Gau & Chang, 2013; Johnston, 1996). It should be noted, however, that there may be differences in parenting behaviors between mothers and fathers. On the contrary to the fact that there was no difference between the parenting styles of parents of children without ADHD, it was found that mothers of children with ADHD exhibited more democratic approach than fathers (Alizadeh & Andries, 2002).

Parental behaviors are examined in four basic dimensions: responsiveness, behavioral control, psychological control and autonomy support (Sevim, 2014). Responsiveness refers to the ability of the parent to identify and address the needs of the child. Psychological control refers to the parent's intervention and manipulation on the child. Behavioral control is setting of appropriate limits without limiting the autonomy of the child. Finally, the autonomy support refers encouraging child to express and make his/her own decisions (Sayıl & Kındap Tepe, 2016; Sevim, 2014).

Many studies have shown that authoritarian parenting and psychological control are associated with lower self-esteem, more anxiety and approval seeking by interfering with the child's emotions and thought processes (Sayıl & Kındaptepe, 2016; Sevim, 2014). In contrast, permissive parenting is associated with challenges such as coping with stress, self-regulation and sense of responsibility (Sümer et al., 2010).

Different types of cognitive errors are used in internalising/externalising problems (Leung & Wong, 1998). Studies show that there is a positive relationship between ADHD symptoms and cognitive errors (Abramovitch & Schweiger, 2009; Miklósi et al., 2016; Mitchell et al., 2013; Strohmeier et al., 2016) and individuals with ADHD are more likely to use distortions such as emotional reasoning and decision-making, comparison and perfectionism (Strohmeier et al., 2016).

Adolescence is a period between childhood and adulthood and is usually included in one of these periods and its unique developmental characteristics are ignored. From a developmental perspective, this period contains stressful elements. At the same time, adolescents are learning to navigate these difficulties through the development of new coping strategies. On the one hand, while parental behaviors remain a significant factor, on the other hand, the cognitive processes of the adolescent begin to exert a strong influence during this period (Frydenberg, 1997).

In this study, it is aimed to add a broad perspective to the literature on the above variables by conducting three different analyses.

Firstly, many studies have shown that children and adults with ADHD experience more stress (Salla, 2017; Combs, 2015) and that parents of these children have more authoritarian behaviors (Climie & Mitchell, 2017; Alizadeh et al., 2007). However, these variables have not been sufficiently examined in adolescents diagnosed with ADHD. Studies conducted with non-clinical samples show that there is a relationship between coping with stress and parental behaviors in adolescents (Wolfradt et al., 2003). Cognitive error, which we examined in our study, is a variable whose relationship to stress coping styles has been studied only to a limited extent (Hamarta et al., 2009). However, coping with stress refers to engaging in a particular behavior as a result of various thought processes and it is predicted that coping is highly related to cognitive errors (Frydenberg, 1997).

Furthermore, given that adolescence is a period of transition from childhood, it is anticipated that adolescents will demonstrate more effective cognitive processes. Consequently, the relationship between coping and parental behaviors is expected to weaken, while the relationship with their own cognitive errors is expected to strengthen. In light of the above, the relationship between these variables, which had not been previously examined, was investigated in the group with ADHD in this study. However, considering the characteristics of children with ADHD and their families (such as being more authoritarian parenting, weaker relationships, and more immature behaviors), it is reasonable to expect that these relationships will differ in the group without ADHD. Consequently, the same correlation analyses were also conducted on the group without an ADHD diagnosis.

Secondly, research has shown that individuals with and without ADHD have different cognitive processes, coping mechanisms and parental behaviors (Al-Yagon et al., 2020; Climie & Mitchell, 2017; Overbey et al., 2011). However, the majority of these studies were conducted with adult or child populations and undiagnosed samples. In this study, it was aimed to contribute to the existing literature by comparing adolescents with and without an ADHD diagnosis.

The final stage of the study was to analyse the predictors of stress coping styles in the group diagnosed with ADHD. As a disadvantaged group, maladaptive coping with stress is an important problem in adolescents with ADHD. Identifying the most effective factor will provide valuable insight into the key areas to address at the initial stages of treatment and inform intervention strategies.

Method

Participants

The ADHD group included in the study consisted of 79 adolescents between the ages of 13 and 18 who were admitted to the Child and Adolescent Psychiatry outpatient clinic of Health Sciences University Erenköy Mental and Neurological Diseases Training and Research Hospital between October 2020 and April 2021, met the DSM-5 Attention Deficit Hyperactivity Disorder diagnostic criteria. Participants were diagnosed with ADHD by a child psychiatrist and his assistants. Those who met the criteria then referred to the researchers.

The non-ADHD group consisted of 70 adolescents between the ages of 13 and 18 who were matched with the patient group in terms of age and gender between May 2021 and April 2022, after the completion of the patient group, and who did not indicate that they had any psychiatric diagnosis in the past or currently. For the control group, research permission was obtained from the Ministry of National Education. In order to select a similar socio-economic level with the patient group, the schools of the students in the district where the hospital is located were visited and the students were invited to the study.

The sample size was calculated in the G*Power analysis program. The minimum sample size was determined as 128 children (64 children in the patient group and 64 children in the control group) with an effect size of 0.5, power of 80% and alpha error value of 0.05.

Measurement Tools

Personal Information Form

The demographic information form is created by the researcher to obtain information concerning the participants' age, class, parental status (alive/deceased), number of siblings, parents' education levels and occupations, socioeconomic level of the family and previous/ongoing psychiatric diagnoses.

Perceived Stress Scale (PSS)

The original form was developed by Cohen, Kamarck and Mermelstein (1983). It was adapted into Turkish by Eskin et al. (2013). Consisting of a total of 14 items, the PSS is designed to measure the degree to which certain situations in a person's life are perceived as stressful. Participants evaluate each item on a 5-point Likert-type scale ranging from "Never (0)" to "Very often (4)". It was reported that the Cronbach's alpha coefficient of the scale was .84 (Eskin et al. 2013). In this study, Cronbach’s alpha value of the scale was found to be .61.

Ways of Coping Inventory (WCI)

The "Ways of Coping Inventory" developed by Folkman and Lazarus (1984) was adapted into Turkish by Şahin and Durak (1995) under the name of "Stress Coping Styles Scale". The scale consists of 30 items and 5 sub-dimensions. The sub-dimensions are self-confident approach (7 items); optimistic approach (5 items); helpless approach (8 items); submissive approach (6 items) and resorting to social support (4 items). The scale is answered on a 4-point scale (0- Not at All Appropriate, 3 - Very Appropriate). Cronbach's alpha value of the scale is calculated .68. As a result of the factor analysis, two main dimensions were obtained: problem-oriented/active and emotion-oriented/passive styles (Şahin & Durak, 1995). In this study, Cronbach’s alpha value of the scale was found to be .65.

The Children's Negative Cognitive Errors Questionnaire-CNCEQ

The scale, originally named "The Children's Negative Cognitive Errors Questionnaire-CNCEQ", was developed by Leitenberg, Yost and Caroll-Wilson (1986). The Turkish adaptation of the scale was conducted by Aydın (2006). It consists of 24 items and 4 sub-dimensions. The sub-dimensions are catastrophising, overgeneralisation, personalisation and selective abstraction. The scale is a 5-point Likert scale (5="Almost exactly like my thinking"; 1="I never think like that"). The items cover three content areas: social, academic and athletic. The total scale score ranges from 24 to 120. In each subtest include items from social, two from academic and two from athletic domains. It was reported that the Cronbach's alpha coefficient of the scale was .91 and two-half test reliability was .87 (Aydın, 2006). In another validity-reliability study conducted by Karakaya et al. (2007), three factors were obtained: catastrophizing, personalization and selective perception. In the current study, Cronbach's alpha score of the CNCEQ was found to be .92.

Leuven Adolescent Perceived Parenting Scale-Adolescent Version (LAPPS/a)

Originally developed by Soenens et al. (2004) LAPPS/a was adapted to Turkish by Sevim (2014). The scale is a 5-point Likert-type scale and consists of four dimensions, namely LAPPS, responsiveness, behavioral control, psychological control and autonomy support. The LAPPS/a has 28 items with 7 items in each dimension. The 28 items in the original scale were arranged as 21 items in the adolescent mother version and 19 items in the adolescent father version. The internal consistency coefficients of the scale were found .88 for responsiveness, .58 for behavioral control, .81 for psychological control and .72 for autonomy support in the adolescent mother version; .91, .78, .77 and .67 for autonomy support in the adolescent father version, respectively (Sevim, 2014). In this study, Cronbach's alpha score of the scale was found to be .92, .73, .84 and .83 for mother version; .92, .77, .78 and .75 for father version, respectively.

Leuven Adolescent Perceived Parenting Scale-Parent Version (LAPPS/p)

The scale has four dimensions and consists of 24 items, including 7 items in the responsiveness dimension, 4 items in behavioral control, 7 items in psychological control, and 6 items in autonomy support. The internal consistency coefficients of the original scale were calculated .75 for responsiveness, .66 for behavioral control, .82 for psychological control and .63 for autonomy support (Sevim, 2014). In this study, Cronbach's alpha value of the scale was found to be .78, .64, .63 and .69, respectively.

Conners Rating Scales (CRS)-Short Form

Conners Rating Scale developed by Conners (1969, 1970, 1973) measures attention deficit, hyperactivity and behavioral problems in children. The short form of the scale was developed by Goyette et al. in 1978. This short form was adapted into Turkish by Dereboy et al. (2007). Conners Parent Rating Form consists of 48 items and five subscales. In the 4-point Likert-type scale, ~~a~~ higher scores indicate that the symptoms are more severe. Conners Teacher Evaluation form evaluates children's attitudes and behaviors in the classroom. The teacher form consists of 3 subscales and 28 items. A high score on the 4-point Likert-type scale indicates that the symptoms are more severe (Dereboy et al., 2007).

Procedure

Ethics Committee of İstanbul Erenköy Mental and Neurological Diseases Training and Research Hospital approved the study on 02.03.2020 with decision number 7.

After preliminary information was given to both adolescents and their parents, written informed consent form was obtained from the parents of ADHD and non-ADHD group. Volunteers were informed that they could interrupt the study when they felt uncomfortable.

Self-report scales were used to obtain the research data. Among these scales, Personal Information Form, Ways of Coping Inventory, Perceived Stress Scale (PSS), The Children's Negative Cognitive Errors Questionnaire (CNCEQ) and Leuven Perceived Parenting Scale-Adolescent Version were completed by adolescents; Conners Rating Scale-Parent Form and Leuven Parenting Scale-Parent Version were completed by parents; Conners Rating Scale-Teacher Form was completed by teachers. Since the data collection process of the adolescents in the ADHD group occurred during the period when schools were closed due to the COVID pandemic and their diagnoses were determined by the psychiatry outpatient clinic, the teacher form was not taken from this group.

A total of 205 adolescents from the ADHD and non-ADHD groups were reached for the study. Of these participants, 79 were in the patient group, and 126 were in the non-ADHD group. However, 56 people who did not meet the inclusion criteria in the non-ADHD group (describing a psychiatric disorder as self-report in Personal Information Form, having a score above the cut-off score on the Conners scale, and whose parental forms could not be reached) were not included in the analyses. The analysis included 79 adolescents diagnosed with ADHD and 70 adolescents in the non-ADHD group.

Statistical Analysis

The data were analysed using Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL) version 26.0. Sociodemographic characteristics of the participants were determined by frequency analysis. Quantitative variables were expressed as mean scale scores and standard deviation values, and qualitative variables were expressed as frequency. The normality distribution of the data was analyzed by Shapiro-Wilk test. In the analyses, Independent Sample t-test was used when parametric test assumptions were met in the comparison of continuous variables and Mann Whitney U test was used when parametric test assumptions were not met. These analyses were used to compare the variables in the ADHD and non-ADHD groups. Correlations between variables were analysed using Pearson Correlation Coefficient when parametric test assumptions were met and Spearman Correlation Coefficient when assumptions were not met. The predictor variables of coping styles were tested with simple regression analysis. All analyses were conducted using appropriate analyses, as long as the analyses met the necessary assumptions.

Results

Table 1 shows demographic characteristics of participants.

Table 1

Demographic Characteristics of Participants

Baseline characteristics	ADHD		Non-ADHD		Full Sample	
	n	%	n	%	n	%
Sample group	79	53	70	47	149	100
Gender						
Girls	26	32.9	43	61.4	69	46.3
Boys	53	67.1	27	38.6	80	53.7
Class						
Grade 8	4	5.1	5	7.1	9	6.0
Grade 9	22	27.8	14	20.0	36	24.2
Grade 10	14	17.7	18	25.7	32	21.5
Grade 11	10	12.7	22	31.4	32	21.5
Grade 12	25	31.6	11	15.7	36	24.2

Table 1 ***(continue)***

Demographic Characteristics of Participants

Baseline characteristics	ADHD		Non-ADHD		Full Sample	
	n	%	n	%	n	%
Age*	15.92±1.10		15.32±1.38		15.64±1.27	
Living together with						
Parents	71	89.9	63	90.0	134	89.9
Mother	7	8.9	4	5.7	11	7.4
Father	1	1.3	2	2.9	3	2.0
Relatives	0	0	1	1.4	1	0.7
Parental partnership						
Married	71	8.9	63	90.0	134	89.9
Divorced	7	8.9	7	10.0	14	9.4
Separate life	1	1.3	0	0	1	0.7
Number of siblings						
1	19	24.1	12	17.1	31	20.8
2	36	45.6	41	58.6	77	51.7
3	12	15.2	13	18.6	25	16.8
4	10	12.7	2	2.9	12	8.1
5	0	0	1	1.4	1	0.7
Sibling order						
1	49	62	35	50.0	84	56.4
2	20	25.3	27	38.6	47	31.5
3	5	6.3	5	7.1	10	6.7
4	2	2.5	0	0	2	1.3
5	0	0	1	1.4	1	0.7
Education level of mother						
Illiterate	1	1.3	0	0	1	0.7
Literate	2	2.5	0	0	2	1.3
Primary school	15	19.0	10	14.3	25	16.8
Middle school	9	11.4	4	5.7	13	8.7
High school	28	35.4	23	32.9	51	34.2
Bachelor's degree	24	30.4	33	47.1	57	38.3
Education level of father						
Illiterate	0	0	0	0	0	0
Literate	0	0	0	0	0	0
Primary school	14	17.7	4	5.7	18	12.1
Middle school	11	13.9	5	7.1	16	10.7
High school	33	41.8	25	35.7	58	38.9
Bachelor's degree	21	26.6	35	50.0	56	37.6
Mother's working status						
Yes	24	30.4	24	34.3	48	32.2
No	55	69.6	46	65.7	101	67.8
Father's working status						
Yes	69	87.3	62	88.6	131	87.9
No	8	10.1	6	8.6	14	9.4
Income level						
High	4	5.1	3	4.3	7	4.7
Above average	13	16.5	20	28.6	33	22.1
Average	54	68.4	41	58.6	95	63.8
Low	5	6.3	2	2.9	7	4.7
Very low	0	0	0	0	0	0

Chi-Square Test of Independence analysis was conducted to examine whether the genders of adolescents in ADHD and non-ADHD groups whether independent of each other. The results of the analysis showed that there was a significant association between the variables (p=.00) (Table 2).

Table 2

Association between Gender and ADHD/non-ADHD Group

	Gender				
	Girl	**Boy**	**χ2**	**df**	**p**
ADHD	26	53			
Non-ADHD	43	27	12.14	1	.00
Total	79	70			

Correlation Analysis between Variables in ADHD Group

Pearson Correlation analysis was performed to examine the relationship between perceived stress, coping styles and parental behaviors and the results are shown in Table 3. Perceived stress in adolescents diagnosed with ADHD was found to have a positive correlation with passive coping style (r=.378; p=.001), cognitive errors total score (r=.388; p=.000) and cognitive errors sub-dimensions of catastrophising (r=0,380; p=.001), personalisation (r=0,291; p=.009) and selective abstraction (r=0,436; p=.000). Active coping style had a negative correlation with the total score of cognitive errors (r=-.256; p=.023) and a positive correlation with father responsiveness (r=.228; p=.046) and mother responsiveness (r=.249; p=.027). Passive coping style has a positive correlation with cognitive errors (r=.583; p=.000).

Table 3

The Correlation between PSS, Ways of Coping, CNCEQ and Leuven Parental Behaviors In Adolescents With and Without ADHD

	ADHD			Non-ADHD		
	1	**2**	**3**	**1**	**2**	**3**
1. PSS	1			1		
2. Active Coping	-.208	1		-.399**	1	
3. Passive Coping	.378**	-.179	1	.533**	-.411**	1
4. CNCEQ	.388**	-.256*	.583**	.350**	-.279*	.592**
5.CNCEQ Catastrophizing	.380**	-.203	.596**	.348**	-.256*	.573**
6.CNCEQ Personalizing	.291**	-.269*	.492**	.289*	-.202	.524**
7.CNCEQ Selective Abstraction	.436**	-.239*	.547**	.336**	-.274*	.461**
8.Father Responsiveness	.058	.228*	-.096	.004	.248*	-.223
9.Father Behavior Control	.097	-.127	.003	-.086	-.163	.138
10.Father Psychological Control	.089	-.099	.148	-.052	-.201	.189
11.Father Autonomy Support	-.141	.204	-.178	.050	.190	-.008
12.Mother Responsiveness	-.115	.249*	-.003	-.100	.280*	-.216
13.Mother Behavior Control	-.050	-.106	-.102	.192	-.114	.362**
14.Mother Psychological Control	.161	-.128	.144	-.012	-.207	.317**
15.Mother Autonomy Support	-.190	.162	-.010	-.142	.196	-.303*

Note. *p<.05; **p<.01. CNCEQ: The Children's Negative Cognitive Errors Questionnaire; PSS: Perceived Stress Scale

Correlation Analysis between Variables the Non-ADHD Group

Spearman Correlation Analysis was performed to obtain correlation results in the non-ADHD group. Accordingly, there was a negative correlation between perceived stress and active coping styles (r=-.411; p=.000) and while there was a positive correlation with passive coping styles (r=.516; p=.000). There was a negative correlation between active coping and cognitive errors total scores (r=-.306; p=.010), while there was a positive correlation with maternal responsiveness (r=.268; p=.025) and paternal responsiveness (r=.332; p=.006). Passive coping styles show a positive correlation (r=.584; p=.000) with cognitive errors total scores. In addition, passive coping has a positive correlation with maternal behavioral control (r=.338; p=.004) and psychological control (r=.338; p=.004) and a negative correlation with autonomy support (r=-.315; p=.008) (Table 3).

Comparison of ADHD and Non-ADHD Group in terms of Variables

As a result of the Independent Sample t-test analysis performed to compare the perceived stress scale, total scores of passive style in coping with stress and total scores of active style in coping with stress of ADHD and non-ADHD adolescents, no statistically significant difference was found (p>0.05) (Table 4).

Table 4

Comparison of PSS and Ways of Coping Scores of ADHD and Non-ADHD Groups

Scale	Group	n	Mean	Standard Deviation	t	p
PSS	ADHD	79	25,76	6,59	1,545	0,124
	Non-ADHD	70	24,00	7,30		
Active Coping	ADHD	79	21,39	7,12	-0,783	0,435
	Non-ADHD	70	22,28	6,75		
Passive Coping	ADHD	79	16,43	7,18	1,531	0,128
	Non-ADHD	70	14,61	7,28		

Note. PSS: *Perceived Stress Scale.*

As a result of Mann-Whitney U analysis, total scores and sub-dimension scores of cognitive errors did not show a significant difference between ADHD and non-ADHD groups (p>0,05) (Table 5).

Table 5

Comparison of CNCEQ Scores of ADHD and Non-ADHD Groups

Scale	Group	n	Mean Rank	Sum of Ranks	U	p
CNCEQ	ADHD	79	78,65	6213,50	2476,500	0,272
	Non-ADHD	70	70,88	4961,50		
CNCEQ Catastrophizing	ADHD	79	77,54	6125,50	2564,500	0,445
	Non-ADHD	70	72,14	5049,50		
CNCEQ Personalizing	ADHD	79	80,77	6380,50	2309,500	0,082
	Non-ADHD	70	68,49	4794,50		
CNCEQ Selective Abstraction	ADHD	79	77,28	6105,50	2584,500	0,491
	Non-ADHD	70	72,42	5069,50		

Note: CNCEQ: The Children's Negative Cognitive Errors Questionnaire

It was examined whether perceived maternal and paternal behaviors differed in adolescents with and without ADHD adolescents. Perceived maternal responsiveness (p=.001) and perceived paternal responsiveness (p=.000) were found to be higher in non-ADHD adolescents while perceived paternal psychological control (p=.018) was found to be higher in adolescents diagnosed with ADHD. Similarly, the self-report results of the parents showed that parental responsiveness scores were higher in the non-ADHD group (p=.000) and psychological control scores were lower in the non-ADHD group (p=.000) (Table 6).

Table 6

Comparison of parenting behaviors scores of ADHD and non-ADHD groups

Scale (Adolescent self-reporting)	Group	n	Mean Rank	Sum of Ranks	U	p
Mother Responsiveness	ADHD	79	64,31	5080,50	1920,500	0,001
	Non-ADHD	70	87,06	6094,50		
Mother Behavior Control	ADHD	79	76,15	6016,00	2674,000	0,728
	Non-ADHD	70	73,70	5159,00		
Mother Psychological Control	ADHD	79	81,12	6408,50	2281,500	0,065
	Non-ADHD	70	68,09	4766,50		
Mother Autonomy Support	ADHD	79	73,17	5780,50	2620,500	0,581
	Non-ADHD	70	77,06	5394,50		
Scale (Adolescent self-reporting)	**Group**	**n**	**Mean**	**Standard Deviation**	**t**	**p**
Father Responsiveness	ADHD	77	24,70	7,86	-3,690	0,000
	Non-ADHD	68	28,98	6,09		
Father Behavior Control	ADHD	77	11,52	3,64	-0,867	0,387
	Non-ADHD	68	12,07	4,05		
Father Psychological Control	ADHD	77	9,75	3,75	2,396	0,018
	Non-ADHD	68	8,28	3,63		
Father Autonomy Support	ADHD	77	14,51	4,19	-0,572	0,568
	Non-ADHD	68	14,88	3,65		
Scale (Parent self-reporting)	**Group**	**n**	**Mean**	**Standard Deviation**	**t**	**p**
Parent Responsiveness	ADHD	79	28,34	4,41	-3,895	0,000
	Non-ADHD	70	30,91	3,64		
Parent Behavior Control	ADHD	79	10,63	3,16	-0,240	0,810
	Non-ADHD	70	10,76	3,14		
Parent Psychological Control	ADHD	79	14,68	5,03	4,679	0,000
	Non-ADHD	70	11,31	3,72		
Parent Autonomy Support	ADHD	79	22,40	3,74	-1,343	0,181
	Non-ADHD	70	23,27	4,13		

Predictors of Coping Styles

The predictors of coping styles were analysed separately for ADHD and non-ADHD groups by simple regression analysis. Accordingly, cognitive errors explained 6% of variance in active coping and 34% of variance in passive coping in adolescents with ADHD. Maternal responsiveness explained 6% and paternal responsiveness explained 5% of variance in active coping (Table 7 and Table 8).

Table 7

Predictors of Active Coping Style

	ADHD			Non-ADHD		
	B	**sd**	**β**	**B**	**sd**	**β**
Model 1						
Constant	26.05	2.15		28.07	2.31	
CNCEQ	-0.91	0.40	-.26*	-.12	.05	-.31*
Model 2						
Constant	16.30	2.64		12.09	3.74	
Father responsiveness	.20	.10	.23*	.36	.13	.33**
Model 3						
Constant	16.38	2.91		16.09	3.31	
Father autonomy support	.35	.19	.20	.43	.21	.24*
Model 4						
Constant	13.91	3.40		11.61	4.71	
Mother responsiveness	.27	.12	.25*	.35	.15	.27*

Note 1. In the ADHD group, R^2 = .06; *p<.05 for Model 1; R^2 = .05 *p<.05 for Model 2; R^2 =.04 p>.05 for Model 3; R^2 =.06; *p<.05 for Model 4.
Note 2. In the non-ADHD group, R^2 =.09; *p=.01 for Model 1; R^2 =.11; **p<.01 for Model 2; R^2 =.06; *p<.05 for Model 3; R^2 = .07; *p<.05 for Model 4.
Note 3: CNCEQ: The Children's Negative Cognitive Errors Questionnaire

Table 8

Predictors of Passive Coping Style

	ADHD			Non-ADHD		
	B	**sd**	**β**	**B**	**sd**	**β**
Model 1						
Constant	5.72	1.82		2.69	2.13	
CNCEQ	.21	.03	.58**	.25	.04	.58**
Model 2						
Constant	18.91	2.86		6.70	2.80	
Mother behavioral control	-.20	.22	-.10	.65	.22	.34**
Model 3						
Constant	13.97	2.08		9.11	2.03	
Mother psychological control	.19	.15	.14	.50	.17	.34**
Model 4						
Constant	16.76	3.87		24.53	3.72	
Mother autonomy support	-.02	.20	-.01	-.52	.19	-.31**

Note 1. In the ADHD group, R^2 =.34; **p<.01 for Model 1; R^2 =.01; p>.05 for Model 2; R^2 =.02; p>.05 for Model 3; R^2 =.00; p>.05 for Model 4.
Note 2. In the non-ADHD group, R^2 =.34; **p<.01 for Model 1; R^2 =.11; **p<.01 for Model 2; R^2 =.11; **p<.01 for Model 3; R^2 = .10; **p<.01 for Model 4.
Note 3: CNCEQ: The Children's Negative Cognitive Errors Questionnaire

In the non-ADHD group, cognitive errors explained 9% of variance in active coping and 34% of variance in passive coping. Maternal responsiveness explained 7%, paternal responsiveness explained 11% and paternal autonomy support explained 6% of variance in active coping. None of the paternal behaviors explained variance in passive coping, whereas maternal behavioral control explained 11%, maternal psychological explained 11% and maternal autonomy explained 10% of variance in passive coping (Table 7 and Table 8).

Discussion

The objective of the present study was to examines the factors and predictors associated with coping strategies in adolescents with and without ADHD. As anticipated, findings demonstrated that coping styles were associated with parenting behaviors and cognitive errors in both groups. It is notable that the passive coping style was found to be strongly predicted by cognitive errors.

Previous studies have argued that positive parenting skills improve adolescents' problem solving skills by providing social support and psychological resources (Baumrind, 1991; Cohen & Wills, 1985; Wolfradt et al., 2003). Many studies show that there is a negative correlation between active coping and authoritarian parenting styles, and a positive correlation between democratic and permissive parenting styles (Dusek & Danko, 1994; Wolfradt et al., 2003). Additionally, research indicates that warm behavior of mother and father is positively related to active coping, and that the supportive behavior of mother decreases passive coping strategies in children. Conversely, behavioral control behavior increases the passive coping (Wolfradt et al., 2003).

In the analysis results of this study, a weak positive correlation was found between active coping styles and parental responsiveness both in adolescents diagnosed with and without ADHD group. In adolescents with ADHD, passive coping styles were not correlated with parents' behaviors. In the non-ADHD group, a positive correlation was observed between passive coping styles and maternal behavioral control and psychological control, with moderate strength. Conversely, a negative correlation was noted between passive coping styles and maternal autonomy support. It is seen that the findings are consistent with previous studies. Considering that families with children diagnosed with ADHD are less supportive, more stressful and controlling, and have a weaker parent-child relationship (Brown & Pacini, 1989; Gau & Chang 2013; Ghanizadeh & Shams, 2007), this finding can be explained within the context of parent-child relationship. Since the parent-child relationship is comparatively weak in the ADHD group and strong in the healthy group, there is an assumption that parenting behaviors may not have an effect on adolescents with ADHD but may affect healthy adolescents.

Similarly, while the results indicate that parental responsiveness was associated with active coping in both groups show the importance of parental responsive behavior for adolescents, the higher predictive value of parental responsiveness in the non-ADHD group appears to reduce the positive effect of parental responsiveness due to lower family functioning in the ADHD group (Gau & Chang, 2013).

The analyses show that parental behaviors did not predict passive coping in the ADHD group. However, maternal behaviors did predict passive coping in the non-ADHD group. Family attachment is weaker in families with children diagnosed with ADHD (Ghanizadeh & Shams, 2007). In addition, it has been reported that mothers interact more with their adolescent children (regardless of the gender of the children), and mothers establish more secure attachment with their children than fathers in healthy adolescents (Williams & Kelly, 2005). In light of these considerations, the findings that maternal behaviors were more predictive of passive coping in the non-ADHD group and that parental behaviors were not predictive of passive coping in the ADHD group can be explained.

The results of correlation analyses showed that cognitive errors were negatively related to active coping and positively related to passive coping in both ADHD and non-ADHD adolescents. In addition,

regression analyses showed that cognitive errors predicted active coping by 6% in ADHD group and 9% in non-ADHD group. In both ADHD and non-ADHD adolescent groups, cognitive errors predicted passive coping by 34%.

A review of the literature revealed a paucity of studies that examined the relationship between coping styles and cognitive errors. The results of studies conducted with adults indicate that the greater the use of cognitive errors, the more likely it is that a passive coping style will be employed. Additionally, dysfunctional beliefs have been identified as predictors of coping styles (Hamarta et al., 2009; Türküm, 2001). In addition, many studies have examined the relationship between cognitive flexibility and coping styles. These studies have shown that cognitive flexibility has a positive relationship with active coping and a negative relationship with passive coping (Bedel & Ulubey, 2015; Demirtaş, 2019; Tutuş, 2019). Considering the effect of cognitive flexibility in creating functional thoughts in response to challenges (Basut, 2020) the positive correlation between passive coping styles and cognitive errors in both ADHD and non-ADHD groups in our study aligns with the findings of previous research.

In both with and without ADHD groups, cognitive errors were found to be the highest predictor of passive coping style. This finding suggests that in addition to the fact that the parent-child relationship is still effective, adolescents' separation from their parents in this period and individualization processes may have reduced the direct effect of parenting behaviors. At this point, the fact that the responsiveness of both parents had a significant effect on active coping for both groups suggests that parental responsiveness can be seen as the most effective parental behavior. On the other hand, the fact that maternal behaviors had an effect on coping in the non-ADHD group, but not in the ADHD group, suggests that it may be due to the weak intra-family relationships and commitment in the ADHD group.

In our study, the lack of a significant difference in the coping styles between adolescents diagnosed with ADHD and those without ADHD is inconsistent with previous findings, which suggest that individuals with ADHD tend to use less active and more passive coping styles compared to healthy individuals (Al-Yagon et al., 2020; Hampel et al., 2008; Overbey et al., 2011; Taş Torun et al., 2021; Young, 2005). Previous studies show that parents of adolescents diagnosed with ADHD use more passive coping style compared to the healthy group (Craig et al., 2020; Durukan et al., 2008; Taş Torun et al., 2021). This suggests that there is an aspect of coping style that can be learned from parents. Parental coping styles, which were not examined in our study, could have been a reason for the lack of difference between the groups. In addition, it is seen that the medications used by adolescents diagnosed with ADHD improve family functioning and problem-solving skills by alleviating ADHD symptoms (Borg, 2009; Tancred & Greeff, 2015). In the present study, the patient group was not queried regarding their medication use, but it is known that most adolescents who applied to the outpatient clinic used medication. In this respect, the positive effects of medication use may explain the lack of intergroup differences in the current study. Furthermore, research indicates that adolescents with ADHD who have a better understanding of their illness and a sense of personal control over it tend to employ active coping strategies (Wong et al., 2019). This highlights the importance of how adolescents perceive ADHD in determining their coping styles. Finally, previous studies demonstrated a correlation between perceived stress and coping styles. Specifically, as perceived stress levels increase, individuals tend to use more passive coping and less active coping styles (Alkan, 2004; Ball & Lee, 2002; Çetin Özden, 2010; Lewis & Frydenberg, 2004; Manti et al., 2022; Savci & Aysan, 2014; Tekin et al., 2019). The fact that there was no difference between the perceived stress levels between the two groups in our study can be interpreted as a reason for the lack of difference between coping styles.

In this study, it was aimed to investigate the predictors of coping styles with stress in adolescents diagnosed with ADHD. The study also examined whether adolescents with and without ADHD differed in terms of coping styles. The study's findings revealed that cognitive errors were a significant predictor

of passive coping strategies in both groups. It also shows that the importance of responsive parental behavior continues in adolescence. It is believed that the declining influence of parental conduct in adolescents is linked to autonomy and, consequently, personal processes such as cognitive errors are more influential in behaviors such as coping. In addition, the findings that parental behaviors may be more effective in the non-ADHD group may be due to the fact that family relationships are inconsistent and less connected in parents with children diagnosed with ADHD; for this reason, it is thought that interventions aimed at strengthening family relationships and increasing interaction in families with children diagnosed with ADHD may be beneficial. Additionally, including cognitive methods in treatment will enable the development of active coping methods along with the development of alternative thinking, thus helping in social and academic areas.

In literature, coping styles have been mostly studied with adults diagnosed with ADHD or parents of children diagnosed with ADHD. The fact that these studies with adolescents are very limited is a contribution of our study to literature. The fact that coping styles have rarely been examined together with cognitive errors, and the fact that cognitive errors and parental behaviors are examined together in adolescence, which is a transition period, makes an important contribution to literature by enabling us to see how these two different processes affect adolescents together. In addition, while parental behaviors in previous studies were mostly based on parental (usually maternal) self-reports, in our study, parental behaviors were examined with the self-reports of both parents and adolescents. Adolescents were asked to evaluate both mother and father and the contribution of both parents was analyzed.

One of the limitations of the study is that the data were collected during the Covid pandemic. Collecting data during Covid pandemic that is an intense stressor for all populations might explain our finding that there is no difference in perceived stress and coping styles between ADHD and non-ADHD adolescent groups. Conducting a similar study in a more neutral period would eliminate the effects that may have occurred due to the pandemic. In addition, although the gender ratios in the ADHD group are consistent with epidemiology of ADHD, the difference in gender ratios between the two groups is another limitation of the study. Because of that, equal distribution of the proportions of girls and boys in both groups in future studies will help to exclude the effects that may arise from gender differences. Another limitation is at the point of diagnosis. The fact that the diagnosis of anxiety disorders was not excluded and comorbid diagnoses were not monitored while forming the ADHD group makes it difficult to compare the results between adolescents with pure ADHD and without ADHD. Furthermore, another limitation is that only self-report scales were used to assess the non-ADHD group. Since the presence of expert evaluation in this group will increase the reliability of the study findings. This is a limitation that should be considered in future studies. Lastly, it should be noted that the data were obtained through cross-sectional sampling, which means that the findings of the research cannot be generalized to the research population.

This study is the first study to investigate the coping styles of adolescents diagnosed with ADHD and to examine the related variables. In this study examining coping styles were not investigated the other variables related to coping styles such as coping styles of parents, medication use of adolescents diagnosed with ADHD, subtypes of ADHD and personality traits of teenagers. Therefore, investigating these variables in future studies will contribute to a better understanding of the coping processes of individuals diagnosed with ADHD.

Conclusion

It is widely known that ADHD is one of the most common psychiatric disorders in childhood. However, there are limited studies in which adolescents with ADHD are examined and self-report scales are used. In this study, an important contribution was made by evaluating both parents from the adolescent's perspective, as well as the parent's evaluation of their own parenting behaviors and comparing the groups with and without ADHD on these characteristics. The study results showed that maternal and paternal responsiveness behavior and cognitive errors are strong predictors of coping styles. For future studies, it is recommended that parents' coping styles and the treatment methods and duration of the ADHD-diagnosed group should also be taken into consideration. In addition, implementing interventions to cognitive errors and family interaction, may also help to clarify the effect of these factors.

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Compliance with Ethical Standards

Ethical Approval

All study procedures involving human participants followed institutional and/or national research committee ethical standards and the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Ethical approval was also received from the Ethics Committee of İstanbul Erenköy Mental and Neurological Diseases Training and Research Hospital (02.03.2020 number: 7).

Author Contributions

The investigation, conceptualization, methodology, formal analysis, and writing-review & editing tasks were carried out by S.Ç. In addition, Ö. E. contributed to conceptualization, data collecting and writing-review.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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