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Shadows of Birth Order: Affective Temperament, Perceived Parental Attitudes, and Substance Use Disorders

Doğum Sırasının Gölgesinde: Afektif Mizaç, Algılanan Ebeveyn Tutumları ve Madde Kullanım Bozuklukları

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ABSTRACT

AIM: In personality development temperamental traits, along with parental attitudes and birth order play a crucial role. These factors—temperamental traits, birth order, perceived parental attitudes—can influence substance use and its continuation. This study aims to explore the relationship between Adler's birth order theory, temperamental traits and perceived parental attitudes in the context of substance use disorders (SUDs).

MATERIAL AND METHOD: The study included 37 SUD patients from Ankara Training and Research Hospital's Alcohol and Substance Treatment and Training Centre (AMATEM) and 37 siblings without substance use. Participants temperamental traits and parental attitudes were assessed using the Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionnaire (TEMPS-A) and the Short Form of the Perceived Parental Attitudes Scale-Child Form (s-EMBU). Independent samples t-test, one-way analysis of variance, Spearman correlation coefficient, and binary logistic regression analysis were used in data analysis.

RESULTS: Individuals with SUD had significantly higher depressive, cyclothymic, irritable, and anxious temperaments than their siblings ($p < 0.05$), and these traits were linked to perceived rejecting parental attitudes. Birth order analysis showed higher cyclothymic temperament in the first and last children. However, contrary to our hypotheses, no relationship was observed between birth order and perceived parental attitudes in any groups. According to regression analysis, individuals who were last-born had a 5.34 times higher likelihood of developing SUD compared to others.

CONCLUSION: Assessing challenges based on birth order can aid in providing effective addiction treatment services. Our study found a link between perceived parental attitudes and temperamental traits, but not with birth order. This suggests temperamental traits may moderate the effect of birth order on perceived parental attitudes. Given the strong link between affective temperamental traits and rejecting parental attitudes, we recommend implementing behavioral parent training programs to reduce parental anger and hostility.

Keywords: Affective temperament, birth order, perceived parental attitudes, substance use disorder

ÖZET

AMAÇ: Kişilik gelişiminde, bireylerin mizaç özelliklerinin yanı sıra anne baba tutumları ve doğum sıraları önemli bir rol oynamaktadır. Mizaç özellikleri, doğum sıraları ve algıladıkları anne-baba tutumları, bireylerin madde kullanımlarını ve bu davranışı sürdürmelerini etkileyebilir. Bu çalışmada, Adler'in doğum sırası teorisinin, bireylerin mizaç özellikleri ve algılanan anne baba tutumları ekseninde madde kullanım bozukluklarıyla (MKB) ilişkisinin araştırılması planlanmıştır.

GEREÇ VE YÖNTEM: Çalışmaya, Ankara Eğitim ve Araştırma Hastanesi Alkol ve Madde Bağımlılığı Tedavi Merkezi' ne (AMATEM) başvuran 37 MKB tanılı hasta ve 37 madde kullanımı olmayan kardeşi dahil edilmiştir. Katılımcıların mizaç özellikleri ve ebeveyn tutumları Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionaire (TEMPS-A Mizaç Ölçeği) ve Kısaltılmış Algılanan Ebeveyn Tutumları Ölçeği-Çocuk Formu (KAET-Ç) kullanılarak değerlendirilmiştir. Veri analizinde, bağımsız örneklemler t-testi, tek yönlü varyans analizi, Spearman korelasyon katsayısı ve ikili lojistik regresyon analizi uygulanmıştır.

BULGULAR: MKB tanılı bireylerin depresif, siklotimik, irritabl ve anksiyöz mizaç düzeylerinin kardeşlerine göre anlamlı derecede yüksek ($p < 0.05$) olduğu ve algılanan reddedici ebeveyn tutumlarıyla da ilişkili olduğu bulunmuştur. Doğum sırasına göre yapılan analizlerde, tüm gruplarda siklotimik mizaç düzeylerinin ilk ve son çocuklarda daha yüksek olduğu; öte yandan, hipotezlerimizin aksine, hiçbir grupta doğum sırasıyla algılanan anne baba tutumları arasında bir ilişki olmadığı gözlemlenmiştir. Regresyon analizi sonuçlarında, en son doğan bireylerin diğerlerine göre MKB geliştirme olasılığının 5,34 kat daha fazla olduğu bulunmuştur.

SONUÇ: Bireylerin aile içindeki doğum sırası perspektifinden yaşadıkları zorlukların değerlendirilmesi, bağımlılık tedavisinde etkili hizmetlerin sunulmasına yardımcı olabilir. Çalışmamızda algılanan ebeveyn tutumları ile mizaç özellikleri arasında bir ilişki varken, doğum sıralarıyla böyle bir ilişkinin olmayışı, mizaç özelliklerinin doğum sırasının algılanan anne-baba tutumlarına etkisini modere edebileceğini düşündürtmektedir. Bağımlı bireylerin MKB olmayan kardeşlerine göre baskın affektif mizaç özelliklerinin, reddedici ebeveyn tutumlarıyla anlamlı ilişkili olduğu göz önünde bulundurulduğunda, ebeveyn öfke ve düşmanlığını azaltabilecek davranışsal ebeveyn eğitim programlarının yaygınlaştırılmasını öneriyoruz.

Anahtar Kelimeler: Afektif mizaç, algılanan ebeveyn tutumları, doğum sırası, madde kullanım bozuklukları

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INTRODUCTION

Substance use disorders are a chronic health problem in which multiple factors play a role in the etiology, which is increasing day by day all over the world and creates problems for the individual, his/her environment and the whole society.[1]

One of the important factors in the etiology of substance use disorders is communication and interaction within the family.[2] Decreased interaction and conflict within the family, as well as contradictory and inconsistent messages given by parents to their children, may cause individuals to turn to addictive substances.[2] The family, which is the first social interaction area in which the child lives, is one of the fundamental institutions of society.[3] The way parents approach their children is one of the most important factors shaping their personality and other individual characteristics.[3] In addition, the child-rearing methods that parents apply to their children according to the order in which they were born may differ from each other.[4,5] These differences also reveal the importance of birth order, which Adler emphasized.[6]

Adler studied the relationship between birth order and personality and drew attention to the effects of these relationships on the child's development.[7] Adler conceptualized the birth order theory by stating that each child born in the same family is born into a different psychological environment than the previous child.[5,8] Adler mentions different positions of siblings, including their actual birth order as well as the roles and personality traits they adopt when interacting with others (single, eldest, second, middle, youngest, etc.).[8]

According to Adler, firstborn children are the focus of family attention and feel special.[6] When the second child is born, the first child has to share the parents' love, care and attention with another individual. The last child in the family shares parental attention with all other siblings.[7] First children may feel that they lose their power when other siblings are born.[6] On the other hand, younger siblings see their older siblings as role models and struggle to be as successful as them.[9,10]

Studies have shown that alcohol and substance abuse as well as some psychiatric disorders are more prevalent especially in the last-born children raised in nuclear families compared to other birth orders.[11] Similarly, some studies have suggested that being the eldest child is a protective factor in terms of substance abuse and last-born children use alcohol more than first-born children.[12,13] Again, in some studies, it has been stated that individuals who have an older sibling are more likely to exhibit criminal behaviours or to use alcohol and substances compared to older children.[14]

The attitudes and behaviors of parents, who are the first people with whom the child communicates, have a significant impact on the formation of the child's personality.[15] When parents raise their first child, they are generally inexperienced in child rearing; however, their attitudes and expectations towards their children may change as a result of their experiences and they become more knowledgeable about how to raise a child from the second child onwards.[16] In studies, it was found that families attribute more responsibility to firstborn children and tend to control and discipline first-born children more.[16]

In addition to parental attitudes and birth order of individuals in personality development, temperament, which determines the attitude and approach of the individual in communication with the outside world and other people and is thought to be innate and stable throughout life, also plays an important role.[17] Besides the undeniable effect of environmental factors on the initiation and maintenance of substance use, hereditary factors such as temperament are also known to have significant effects on substance use disorder (SUD).[18] The relationships between depressive, irritable and anxious temperament characteristics, especially cyclothymic temperament, and SUD have been shown in many studies.[19-24] Individuals' temperament characteristics, birth order and parental attitudes may affect their substance use and maintenance of this behaviour through mutual interactions.

Our aim in conducting this study is to investigate the effects of Adler's birth order theory on substance use disorders (SUDs) in terms of individuals' temperament characteristics and perceived parental attitudes, and to contribute to the literature and to make suggestions especially in areas such as child development and child rearing in case of finding significant relationships that we anticipate to be possible.

MATERIAL AND METHOD

Power Analysis

Before starting the research, a priori power analysis was conducted to determine the necessary minimum sample size. The conditions for the power analysis were set as follows: confidence level of 95% ($\alpha = 0.05$), power level of 80% ($1-\beta = 0.20$), two-tailed hypothesis, and large effect size ($d = 0.80$ and below). It was determined that the minimum number of participants required for each group is 26.

Sample group

The study included 37 patients diagnosed with SUD and 37 siblings without substance abuse who were admitted to Ankara Training and Research Hospital's Alcohol and Substance Treatment and Training Centre (AMATEM). The inclusion criteria for the patient group were as follows: receiving inpatient treatment at AMATEM since the beginning of the study and being diagnosed with SUD according to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) diagnostic criteria, not having diagnoses of mental retardation, schizophrenia, bipolar disorder, dementia, depression with psychotic features, being between 18-65 years of age and accepting to participate in the study. The control group was formed by selecting a sibling of the individuals diagnosed with SUD who had no history of substance abuse and who agreed to participate in the study. The exclusion criteria for the control group were mental retardation, schizophrenia, bipolar disorder, dementia, and depression with psychotic features. The subject and purpose of the study were explained to the individuals diagnosed with SUD and their siblings and an informed consent form was obtained from the participants who agreed to participate in the study. The necessary approval for the study was obtained from the ethics committee of our hospital (date: 24/08/2022 no: E-22/1010).

Scales used

Sociodemographic data form: Sociodemographic parameters such as age, gender, marital status, number of siblings and number of children of their parents, educational status, occupation, employment status, and criteria such as how long they had been using substances (years), the age at which they first started using substances, whether they had committed a crime before, how long they had received addiction treatment, whether they had been hospitalized for addiction treatment before, history of multiple substance use, and whether their families were aware of their substance use of the participants diagnosed with SUD were evaluated.

Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionaire (TEMPS-A Temperament Scale): This scale, developed by Akiskal in 2005 and consisting of 99 yes-no questions, assesses whether individuals have a dominant affective temperament.[25] A yes answer means 1 point and a no answer means 0 points. It has 5 sub-dimensions including dysthymic (18 items), cyclothymic (19 items), irritable (18 items), anxious (24 items) and hyperthymic (20 items) temperaments. Turkish validity and reliability study was conducted by Vahip et al.[26]

Abbreviated Perceived Parental Attitudes Scale-Child Form (PAASC-Ch): This scale assesses adults' attitudes towards their parents during childhood. Developed by Arrindell et al. (1999), the PAASC-Ch is essentially a shortened version of the Parenting Styles Scale with 23 items and 4-point Likert type (1=no, never, 4=yes, most of the time).[27] The same questions are scored separately for both mother and father. It has three sub-dimensions: rejection, overprotective attitudes and emotional warmth. The minimum score that can be obtained from the scale is 23 and the maximum score is 92. The psychometric properties of the PAASC-Ch in Turkish language were analysed by Dirik et al. (2004).[28]

Statistical Analysis

Data Analysis

In data analysis, descriptive statistical measures (frequency and percentage for categorical variables; mean and standard deviation for continuous variables) were used respectively. Skewness and kurtosis coefficients were used to examine the distribution of variables. Independent samples t-test and one-way analysis of variance (ANOVA) were used to determine the differences between the groups. Spearman correlation coefficient was used to examine the relationship between variables. Binary logistic regression analysis was used to determine the factors affecting substance use. SPSS (version 25) package program was used for data analysis. Alpha level of .05 was used for statistical significance.

Normality analysis and Descriptive Statistics

When the skewness and kurtosis values of the measurements obtained for both groups, it has been observed that most of the values are within the range of ±2.00. This result indicates that the majority of the measurements obtained from both groups have a normal distribution. In addition, since sample size in each group is 30 or more, the normality assumption is not a concern for difference analyses. In this context, parametric tests were used in the difference analyses since the distributions were normal and there was sufficient sample size. In correlation analyses, Spearman correlation coefficient, which does not have a normal distribution assumption, was used.

RESULTS

The study group of the research consisted of 74 people, 37 substance addicts and 37 siblings. Descriptive statistics regarding the socio-demographic information of both groups participating in the study are given in Table 1.

Table 1. Frequencies and percentages of socio-demographic information of the substance abuser and sibling group

		Dependent		Brother		χ^2 (*p*)
Variables	Variable levels	f	%	f	%	
Gender	Male	32	86.49	16	43.24	15.17 (p = .000)
	Woman	5	13.51	21	56.76	
Marital Status	Married	12	32.44	17	45.95	5.73 [1] (p = .060)
	Single	20	54.05	20	54.05	
	Divorced	5	13.51	--	--	
Number of siblings	2 siblings	8	21.62	8	21.62	0.00 (p = 1.000)
	3 siblings	17	45.95	17	45.95	
	4 siblings	6	16.22	6	16.22	
	5 siblings and above	6	16.21	6	16.21	
Sibling ranking	1.	9	24.32	13	35.14	12.63 [1] (p = .046)
	2.	7	18.92	14	37.84	
	3.	13	35.14	7	18.92	
	4th and onwards	8	21.62	3	8.10	
Adler sequence	First sibling	9	24.32	13	35.14	10.08 (p = .006)
	Last sibling	21	56.76	8	21.62	
	Other	7	18.92	16	43.24	
Mother Education level	Illiterate	5	13.51	5	13.51	0.53 [1] (p = 1.000)
	Literate	2	5.41	2	5.41	
	Primary School	19	51.35	19	51.35	
	Middle School	6	16.22	6	16.22	
	High School	4	10.81	4	10.81	
	University	1	2.70	1	2.70	
Father's education level	Literate	1	2.70	1	2.70	0.54 [1] (p = 1.000)
	Primary School	14	37.84	14	37.84	
	Middle School	10	27.03	10	27.03	
	High School	11	29.73	11	29.73	
	University	1	2.70	1	2.70	
Employment status	Not working	22	59.46	14	37.84	3.46 (p = .063)
	Working	15	40.54	23	62.16	
Education level	Primary education	20	54.05	13	35.14	9.82 [1] (p = .013)
	High School	16	43.25	13	35.14	
	License	1	2.70	8	21.62	
	Undergraduate	--	--	3	8.10	
The substance currently used	Heroin	19	51.35	--	--	--
	Methamphetamine	11	29.73	--	--	
	Pregabalin	7	18.92	--	--	
First substance used	Cannabis	29	78.38	--	--	--
	Volatile	4	10.81	--	--	
	Heroin	2	5.41	--	--	
	Cocaine	1	2.70	--	--	
	Pregabalin	1	2.70	--	--	
Crime story	Yes	14	37.84	--	--	17.27 (p = .000)
	No.	23	62.16	37	100.00	
Receiving treatment before	Yes	28	75.68	--	--	--
	No.	9	24.32	--	--	
MKB type	Monodrug	17	45.95	--	--	--
	Polydrug	20	54.05	--	--	
Total		37	100.00	37	100.00	
		Mean	SD	Mean	SD	
Age (years)		28.11	5.08	30.59	6.79	1.78 (p = .079)
Income level (TL)		10650	7378	12405	5786	1.14 (p = .259)
Age at first substance use (years)		16.59	3.44	--	--	--

[1] Fisher Exact test

After analyzing the socio-demographic information of the participants, the comparisons of the temperament and parental attitude levels of both groups are given in Table 2.

Table 2. Comparisons of the temperament and parental attitude levels of groups

Variables	Group	N	Average	SD	*p*	t
Depressive temperament	Dependent	37	7.30	3.35	**.003**	3.07
	Brother	37	5.03	3.00		
Cyclothymic temperament	Dependent	37	11.54	4.51	**.000**	4.20
	Brother	37	6.92	4.94		
Hyperthymic temperament	Dependent	37	11.65	4.58	.752	0.32
	Brother	37	11.32	4.20		
Irritable temperament	Dependent	37	7.92	5.09	**.000**	3.85
	Brother	37	3.81	4.03		
Anxiosis temperament	Dependent	37	9.65	6.31	**.004**	2.97
	Brother	37	5.54	5.56		
Father emotional warmth	Dependent	37	17.92	5.64	.166	1.40
	Brother	37	19.65	4.96		
Father overprotectiveness	Dependent	37	22.32	5.33	.054	1.96
	Brother	37	20.00	4.86		
Father rejectionism	Dependent	37	13.65	6.04	**.005**	2.89
	Brother	37	10.16	4.16		
Emotional warmth of the mother	Dependent	37	19.68	5.29	.117	1.57
	Brother	37	21.41	4.00		
Maternal overprotectiveness	Dependent	37	23.32	5.33	**.019**	2.40
	Brother	37	20.49	4.83		
Mother rejectionism	Dependent	37	12.95	5.74	**.001**	3.33
	Brother	37	9.46	2.77		

When Table 2 is examined, it demonstrates that depressive, cyclothymic, irritable and anxious temperament levels of substance abusers are higher than their siblings and this difference is statistically significant (p .05).

When the differentiation of perceived maternal and paternal attitudes according to the groups was examined, it was found that substance dependent individuals had higher perceptions of paternal and maternal rejectionism than their siblings and this difference was statistically significant. Furthermore, it was found that substance dependent individuals' perceptions of maternal overprotectiveness were higher than their siblings and this difference was statistically significant.

The relationships between the participants' birth order, temperament characteristics, and perceived parental attitudes are presented in Table 3.

Table 3. Associations between Birth Order, Temperament Traits, and Perceived Parenting Attitudes

Variables		Patient	Sibling	Whole group
Depressive temperament	r	-.31	-.08	-.19
	p	.059	.641	.106
Cyclothymic temperament	r	-.44	-.34	-.35
	p	**.007**	**.037**	**.002**
Hyperthymic temperament	r	.33	-.09	.07
	p	**.047**	.561	.552
Irritable temperament	r	-.28	-.16	-.20
	p	.098	.335	.088
Anxiosis temperament	r	-.39	.23	-.10
	p	**.016**	.171	.399
Father emotional warmth	r	.09	.09	.11
	p	.579	.614	.374
Father overprotectiveness	r	-.12	.07	-.02
	p	.465	.678	.837
Father rejectionism	r	-.12	.19	.01
	p	.480	.257	.910
Emotional warmth of the mother	r	.19	-.18	-.02
	p	.274	.278	.898
Maternal overprotectiveness	r	-.11	-.01	-.11
	p	.532	.961	.375
Mother rejectionism	r	-.24	.22	-.04
	p	.151	.183	.740

When Table 3 is examined, it has been found that there is a negative and medium level significant relationship between birth order and cyclothymic temperament, a positive and low level significant relationship with hyperthymic temperament and a negative and low level significant relationship with anxiotic temperament in the dependent group. In the sibling group, it was found that there was a negative and low level significant relationship between birth order and cyclothymic temperament. It was determined that the correlation values related to birth order and maternal and paternal attitudes were not statistically significant (p.05).

To determine the effects of birth order, temperament characteristics, and perceived parental attitudes on substance use, a binary logistic regression analysis was conducted, and the findings are presented in Table 4.

Table 4. Variables affecting substance use

						95% CI	
Variables	B	SH	Wald	p	Exp(B)	Lower	Upper
Fixed	-3.96	1.57	6.35	.012	0.02	--	--
Birth order	--	--	6.35	.042	--	--	--
Birth_order(1)	**1.67**	**0.71**	**5.52**	**.019**	**5.34**	**1.32**	**21.58**
Birth order(2)	0.41	0.77	0.28	.597	1.51	0.33	6.87
Depressive temperament	0.12	0.14	0.73	.392	1.12	0.86	1.47
Cyclothymic temperament	0.11	0.08	2.11	.147	1.12	0.96	1.31
Hyperthymic_temperament	0.08	0.08	1.18	.278	1.09	0.94	1.26
Irritable temperament	0.06	0.11	0.31	.576	1.06	0.86	1.31
Anxiosis temperament	0.02	0.08	0.05	.828	1.02	0.88	1.18

When Table 4 is analyzed, it is found that the variable that has a statistically significant effect on substance use is the birth order. It is determined that compared to the last child, there is a significance in birth order number 1. According to this, if an individual is the last child, then he/she is 5.34 times more prone to be a substance addict than other child ranks.

Relationships between perceived parental attitudes and temperament types in the patient group presented in Table 5.

Table 5. Relationships between mother and father attitudes and temperament types (patient group)

Variables		Depressive temperament	Cyclothymic temperament	Hyperthymic temperament	Irritable temperament	Anxiosis temperament
Father emotional warmth	r	-.36	-.13	.19	-.09	-.27
	p	**.029**	.431	.257	.592	.113
Father overprotectiveness	r	.39	.02	.26	.30	.28
	p	**.018**	.889	.126	.068	.088
Father rejectionism	r	.519	.253	.084	.330	.451
	p	**.001**	.131	.622	**.046**	**.005**
Emotional warmth of the mother	r	-.35	-.26	.01	-.21	-.28
	p	**.036**	.118	.953	.209	.093
Maternal overprotectiveness	r	.29	.03	.13	.21	.27
	p	.080	.857	.447	.206	.107
Mother rejectionism	r	.46	.40	.11	.41	.50
	p	**.004**	**.013**	.500	**.012**	**.002**

Table 5 shows the relationships between the temperament characteristics of the addicted group and parental attitudes. Accordingly, it was found that depressive temperament had a low level and statistically significant relationship with mother's and father's emotional warmth in a negative direction. In addition, depressive temperament was found to have a moderate and positively significant relationship with the father's rejectionism attitude and a low level positive significant relationship with overprotectiveness. Moreover, both irritable and anxiotic temperament were found to have a low and statistically significant positive relationship with father's rejectionism attitude. Unlike all other perceived parental attitudes, perceived rejecting mother attitude was found to have statistically significant relationships with all temperament levels (depressive, cyclothymic, irritable and anxiotic temperaments) except for hyperthymic temperament (p .05).

There was no statistically significant relationship observed between the temperament characteristics of the sibling group and parental attitudes.

DISCUSSION

In present study, we aimed to investigate the relationship between birth order and affective temperament characteristics and perceived parental attitudes in individuals with SUD and their non-substance using siblings. In this study, it was found that those who were the last child according to birth order were diagnosed with SUD at a rate 5 times higher than other birth orders. In addition to this, it was observed that the depressive, cyclothymic, irritable and anxious temperament levels of individuals diagnosed with SUD were significantly higher than their siblings without SUD. Finally, the perceived maternal and paternal rejection and maternal overprotectiveness levels of individuals with SUD were also found to be significantly higher compared to their siblings without SUD. In all groups, no relationship was observed between perceived parental attitudes and birth order.

In one of the studies conducted regardless of whether they were associated with psychiatric disorders (axis-1 diagnoses in DSM-4), patients with alcohol use disorder scored significantly higher on cyclothymic and depressive scales compared to the control group.[22] In another study, individuals with heroin use disorder showed significantly higher cyclothymic and irritability scores than controls.[21] In a study conducted by Iliceto et al., it was reported that patients with heroin use disorder had higher scores of anxious, depressive, cyclothymic and irritable temperament compared to age- and gender-matched randomly selected control group; on the other hand, there was no difference between the groups in hyperthymic temperament scores.[24] In a study comparing 31 patients with psychiatric disorders who had substance use comorbidity with psychiatric patients who did not have substance use comorbidity, it was shown that substance users had higher dysthymic, cyclothymic, anxious and irritable temperament scores and lower hyperthymic scale scores.[29] The fact that the depressive, cyclothymic, irritable and anxious temperament levels of individuals with SUD in our study were significantly higher than their siblings without SUD is compatible with the data in the literature.

In present study, the unique variable that had a statistically significant effect on substance use was the birth order. In our study, it was observed that those who were the last children in birth order were approximately 5 times more likely to have an SUD diagnosis than those in other birth orders. Most of the studies on birth order and substance use, have found that being the last child is associated with alcohol and substance use.[11,13,14] A study has shown that, in addition to some psychiatric disorders, alcohol and substance abuse are more common in the youngest children growing up in nuclear families compared to other birth orders.[11] Similarly, in the study conducted by Valkov, individuals with a history of SUD were evaluated according to birth order and it was found that the majority were last born children.[30] Another study conducted in Latin America yielded results supporting the importance of birth order in substance use disorder; being the first child was found to be a protective factor against substance use.[12] Analyzing data from the National Longitudinal Survey of Youth, Argys et al. found that last born individuals were significantly more likely to use substances and be sexually active than first-borns.[14] A study of 770,000 people in Sweden found that later-born siblings were more likely to be hospitalized for alcohol use than the first-borns, and that later birth order was associated with an increased risk of hospitalization.[31] The finding in our study that those who were the last child were more likely to be diagnosed with SUD compared to other birth orders is consistent with the data in the literature.

There may be several reasons for the increased risk of substance use in the last-born children. Last-born children can be outgoing and affectionate, but also rebellious, critical, short-tempered, spoiled and impatient.[6,32] According to Adler, while some of the latter may strive to be noticed and succeed, others may tend to avoid responsibilities because they have grown up pampered and cannot surpass the academic and social achievement levels of their siblings.[6] Some of the last children who have been spoiled and raised without limits by their parents may use substances to cope with difficult life situations outside the home environment when they grow up, since they have not gained independence.[6,30,33] In addition to their comfortable upbringing, last-born children may also be introduced to alcohol and drugs at a younger age through older siblings.[31] Finally, the fact that last-born children are slightly more likely to be raised by a single parent or by other people may be another risk factor for substance use.[34]

In present study, the perceived maternal and paternal rejection and maternal overprotectiveness levels of individuals diagnosed with SUD were found to be significantly higher compared to their siblings without SUD. It is noteworthy that perceived maternal rejection levels, one of these variables, were positively correlated with depressive, cyclothymic, irritable and anxious temperament levels, which were significantly higher in individuals with SUD compared to their siblings. In our study, a significant negative correlation was also found between perceptions of parental emotional warmth and patients' depressive temperament levels.

Studies have shown that parents' lack of emotional warmth is associated with children's various depressive temperament traits such as low self-esteem, depressive feelings and a negative worldview.[35-38] Studies have also found that perceived lack of parental warmth is associated with less prosocial behaviors and concurrent symptoms of depression in children with high irritability.[39,40] In our study, the high

level of depressive temperament in patients who perceived their parents as less emotionally warm is consistent with the results in the literature.

Studies have shown that there is a relationship between perceived rejecting parental attitudes and childhood depression as well as parental emotional warmth.[35,41] In a study examining the relationship between various sub-dimensions of parenting and childhood depression, it was found that rejecting parental attitudes towards the child was the most strongly sub-dimension associated with childhood depression.[35] It has also been shown that children with high irritability lead to rejectionist parental attitudes such as anger and hostility, and that such parental attitudes further increase children's anger and irritability in a vicious cycle.[42-44] Research has shown that for children with high irritability, maternal rejection is associated with greater externalizing behaviors (stealing, lying, antisocial behaviors, etc.).[45-48] In our study, the relationships between perceived rejecting parental attitudes and depressive and irritable temperament levels of individuals with SUD are consistent with this information in the literatüre. In children with high irritability, a negative parent-child relationship may cause anger or restlessness that prevents internalization of rules and manifests itself in negative behaviors such as substance use.

In the literatüre, there are several studies on the relationship between birth order and character and personality.[11,32,49-53] However, to the best of our knowledge, there is no study in the literature demonstrating the relationship between affective temperament traits and birth order. In our study, it was found that the cyclothymic temperament levels of the first and last children of the families were higher than the other birth order children. However, no relationship was found between birth order and perceived parental attitudes.

Parents may treat children in the same family in different ways depending on their age, gender, personal characteristics and life experiences.[54-56] Besides, environmental factors such as parental attitudes during the developmental process may affect individuals in different ways; some individuals may be highly permeable or sensitive to environmental conditions, while others may be largely unaffected by environmental conditions.[57]

The high cyclothymic temperament levels of children who are the first and last children of families in our study may be related to the nature of the sample, as well as the many-sided relationship between parental attitudes and emotional sensitivity and experience differences between siblings.[58,59] Because the presence of a sibling can change the course of both the older and younger sibling's temperament, children with siblings have different family experiences than single children and this can affect the stability of their temperament.

One reason for the lack of a relationship between birth order and perceived parental attitudes in our study may be that these individuals have different temperament characteristics according to their birth order. This may cause individuals with different birth order to perceive parental attitudes differently and thus make it difficult to establish a direct relationship. In our study, while there was a relationship between perceived parental attitudes and temperament traits, there was no such relationship with birth order, suggesting that temperament traits may moderate the effect of birth order on perceived parental attitudes.

It should be noted that possible confounding effects of anxiety disorders or personality disorders cannot be excluded in our study without a more thorough structured assessment. Secondly, it should be noted that the sample size and statistical power of this study were limited due to the difficulties we had in reaching the siblings of most individuals with SUD because of the problematic family relationships. Another limitation of our study is related to the cross-sectional study design of our study, which does not allow us to evaluate the temporal course of the relationship between substance use and affective temperaments. Eventually, when the number of participants was analyzed, the number of males in the group diagnosed with SUD was 2 times that of the control group and the number of females was one fourth of the control group. This difference in gender distribution may have affected the results of the study.

CONCLUSION

The correlation between being the youngest child and substance use disorder in our study does not mean that birth order causes substance use disorders. However, given that many studies in the literature have reached similar findings, it may be particularly important for families to be aware of the substance use risks of their youngest children. In this context, we recommend that parents and teachers closely monitor possible substance use-related behavioral problems and academic performance issues that may arise in these children.

Another noteworthy result in our study is that cyclothymic temperament levels are higher in addicts than in healthy controls and are associated with birth order. Considering the relationship between cyclothymia and addictive disorders, we would like to make a strong caution about the need to identify a psychopathological threshold regarding cyclothymic temperament levels, which has also been emphasized in previous studies.[23] So as to better understand the relationship between cyclothymic temperament and birth order, controlled studies examining the relationship between affective temperament and birth order should be performed and the findings obtained should be tested in different sample groups.

Many studies have shown that the perception of emotional warmth towards parents has no correlational effect on the prediction of various externalizing problems such as substance abuse, lying, stealing, etc., on the other hand, perceived rejecting maternal attitudes are associated with externalizing problems, especially for children with high irritability.[40,45-47] Considering the findings in this study that are similar to the results of the literature, the affective temperament characteristics of dependent individuals are mostly associated with rejecting parental attitudes (especially the mother). Therefore, we suggest that behavioral parent training programs that can reduce parental hostility/aggression should be continued and made widespread, especially in our country.[60-61]

The results of this study suggest that the relationships between birth order, perceived parenting attitudes and affective temperament and their possible effects on substance use may be multifaceted. In order to understand the relationships between parental attitudes and temperament towards substance use behavior, it may be appropriate to conceptualize these variables within a developmental framework that considers how they mutually affect each other over time, as well as the direct effects of parental attitudes or temperament in a given time period. In this context, in terms of substance use behavior, individuals may adapt to parental attitudes at a specific time point to certain extents depending on their temperamental characteristics, while the continuity of parental attitudes may negatively operate the effect of this adaptation. Moreover, different parental attitudes triggered by individuals' temperament traits over time may also shape individuals' temperament traits through mutual interactions.

Assessing the difficulties experienced by individuals and the privileges they have gained through the birth order window for their families may be useful in providing appropriate treatment services in the field of addiction.[12] Studies with larger samples investigating the associations of birth order, temperament characteristics and parental attitudes with each other and with substance use may provide a more comprehensive understanding of these associations.

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Conflict of Interest Statement

The authors declare no conflict of interest

Author Contributions

MD: Concept, drafting the article, writing, critical review

GZI: Data collection, literature research

KSK: Data analysis and interpretationHC: Data collection

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