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The Relationship Between Executive Functioning and Burnout, Depressive, Anxiety and Broad Autism Phenotype Symptoms in Parents of Children with Autism Spectrum Disorder

Otizm Spektrum Bozukluğu Olan Çocukların Ebeveynlerinde Yürütücü İşlevlerle Tükenmişlik, Depresif, Anksiyete ve Geniş Otizm Fenotip Belirtilerinin İlişkisi

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ABSTRACT

Objective: The aim of this study was to compare burnout, depression, anxiety and broad autism phenotype scores in parents of children diagnosed with autism spectrum disorder (ASD) with parents of typically developing (TD) healthy children and to investigate the relationship between these scores and executive functions.

Materials and Methods: This study included 43 parents of children diagnosed with ASD and 53 healthy controls aged 29-40 years. Participants were evaluated with Beck anxiety-depression inventory, Maslach burnout inventory and Autism-Spectrum Quotient (AQ) scores. Parents were assessed with the Structured Clinical Interview for Mental Disorders using the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders and the Stroop test was administered to assess executive functions in parents.

Results: Significantly higher anxiety, depression, burnout and AQ scores were observed in the ASD group compared to controls ($p< 0.001$). Compared to controls, the ASD group performed significantly worse on the Stroop test ($p< 0.05$). In addition, poor performance in the Stroop test was not significantly associated with anxiety, depression, burnout and AQ scores in the ASD group.

Conclusions: This study suggests that parents of children with ASD may have more anxiety, depression and burnout symptoms.

Keywords: Autism spectrum disorder, broad autism phenotype, burnout, executive functions, parents

ÖZ

Amaç: Bu çalışmanın amacı otizm spektrum bozukluğu (OSB) tanılı çocukların ebeveynlerinde tükenmişlik, depresyon, anksiyete ve geniş otizm fenotipi skorlarını tipik gelişen (TG) sağlıklı çocukların ebeveynleri ile karşılaştırmak ve bu skorların yürütücü işlevler ile ilişkilerini araştırmaktır.

Materyal ve Metot: Bu çalışmaya 29-40 yaşları arasında 43 OSB tanılı çocukların ebeveynleri ve 53 TG sağlıklı kontrol dahil edilmiştir. Katılımcılar Beck anksiyete-depresyon ölçeği, maslach burnout inventory ve Autism-Spectrum Quotient (AQ) skorları ile değerlendirilmiştir. Ebeveynler, Ruhsal Bozuklukların Tanısal ve İstatistiksel El Kitabının Beşinci Baskısı kullanılarak Ruhsal Bozukluklar için Yapılandırılmış Klinik Görüşme ile değerlendirilmiş ve ebeveynlerde yürütücü işlevleri değerlendirmek için Stroop testi uygulanmıştır.

Bulgular: ASD grubunda kontrollere göre anlamlı olarak daha yüksek anksiyete, depresyon, tükenmişlik ve AQ skorları gözlendi ($p< 0,001$). Kontrollerle karşılaştırıldığında, ASD grubunun Stroop testinde anlamlı olarak daha kötü performans sergilediği gözlenmiştir ($p<0,05$). Ayrıca ASD grubunda Stroop testindeki kötü performansın anksiyete, depresyon, tükenmişlik ve AQ skorları ile anlamlı düzeyde ilişkili olmadığı belirlenmiştir.

Sonuç: Bu çalışma ASD'li çocukların ebeveynlerinde daha fazla anksiyete, depresyon ve tükenmişlik belirtileri olabileceğini göstermektedir.

Anahtar Kelimeler: Ebeveynler, geniş otizm fenotipi, otizm spektrum bozukluğu, tükenmişlik, yürütücü işlevler

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INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that occurs in early childhood and is characterized by persistent deficits in social communication and interaction as well as restricted and repetitive behaviors.[1] Children with ASD need additional support throughout life, which creates extra challenges and difficulties for parents. Parents need to learn how to manage behavior, sleep and eating problems in children with ASD.[2] In this respect, parenting skill is an important factor in child development, and the effects of parenting stress on children's mental, emotional and behavioral health have received increasing attention.[3] Parents of children with ASD often experience emotional and informational gaps and face more social challenges, such as depression, anxiety and marital problems, than parents of typically developing (TD) children.[4] However, it has been reported that parents of children with ASD are more likely to experience parental burnout and show higher levels of parental burnout than parents of TD children.[5] In addition, a recent meta-analysis reported that anxiety and depressive disorders are the most common psychiatric disorders in parents of children with ASD.[6-7]

Executive functioning (EF) is vital for successful parenting because it enables parents to be understanding, sensitive and flexible with their children. Parents draw on these capacities when planning and modifying behavior, responding to cues, regulating emotions in the face of stress and challenging child behavior, solving problems and making decisions.[8] In a recent study, it was observed that there were significant differences between parents of children with ASD and parents of TD children in alert and executive control networks, and it was reported that parents of children with ASD had decreased EF functioning.[9] EF impairment is also common in ASD, and given the broad autism phenotype, family members may also have impaired EF, and such parental research may be important.[10]

The aim of this study was to understand the cognitive and emotional differences between parents of children diagnosed with ASD and parents of TD healthy children and to investigate whether the Stroop test is associated with emotional symptoms in parents of children with ASD using the Stroop test, Maslach burnout inventory, Beck anxiety and depression inventory and Autism-Spectrum Quotient. The hypothesis of the study is that parents of children with ASD may have more emotional symptoms and perform worse on tests of executive function than parents of TD children.

MATERIALS AND METHODS

Ethics Committee Approval: The study was conducted in accordance with the Declaration of Helsinki and approved by the ethics committee of the Selçuk University Faculty of Medicine (Date: 25.02.2025, decision no: 2025/04).

Study Design and Participants: Participants were recruited from the Child and Adolescent Psychiatry Outpatient Clinic of Selçuk University Faculty of Medicine. Exclusion criteria included children with organic brain injury and head trauma, history of hypoxia-ischemia, known genetic disorders, visual or hearing impairments, and chronic physical illnesses. Considering these criteria, participants diagnosed with ASD were included in the study. The TD control group consisted of healthy children who came to our clinic for consultation and were randomly selected according to the exclusion criteria. The parents of the children included in the study constitute the main sample of the study. Parents of children with ASD and TD healthy controls did not have chronic physical, neurological or psychiatric diseases. The clinical evaluation of the children was performed by an expert child psychiatrist, and the parental evaluation of both groups included in the study was performed by an expert psychiatrist. The sample size of the study consisted of the parents of children diagnosed with ASD who presented to the child psychiatry clinic, and the parents of TD children who were referred for consultation but were not diagnosed with any neurological or psychiatric disorder. Forty -three parents (of children with ASD) and 53 parents (of TD controls) were included. Written informed consent was obtained from the parents of children in both groups. The ages of the children ranged between 6 and 9 years, and the ages of the parents ranged between 29 and 40 years. After the examination, sociodemographic data forms for both groups were completed by the clinician and the EF test was measured by the clinician.

Clinical Assessment: The children in both groups were evaluated by a certificated interview using the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present and Lifetime Version (KSADS-PL) and diagnosed on the basis of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria.[11] The validity and reliability of the K-SADS-PL for Turks were confirmed by Ünal et al.[12]

The Structured Clinical Interview for DSM-5 mental disorders (SCID-5) was used to systematically assess whether parent participants currently or previously met the criteria for psychiatric diagnoses specified in the DSM-5. It has been shown by Elbir et al. that the Turkish form of the SCID-5 can be used reliably both in clinical practice and research.[13]

The Beck Anxiety Inventory (BAI) is a self-assessment scale developed by Beck and colleagues and used to measure the severity of anxiety symptoms experienced by the individual. Scores obtained from the scale range from 0 to 63, and an increase in the score obtained from the test indicates an increase in the level of anxiety. The Turkish validity and reliability of the scale ($\alpha = 0.93$) was conducted by Ulusoy et al.[14-15]

Beck Depression Inventory (BDI), developed by Beck and colleagues, defines depressive symptomatology. An increase in scale score is interpreted as an increase in clinical severity. Turkish validity and reliability ($\alpha= 0.78$) study was conducted.[16-17]

The Maslach Burnout Inventory (MBI) is a 22-item Likert-type scale developed by Maslach and Jackson to assess self-reported burnout symptoms. The scale consists of three subscales (emotional exhaustion, depersonalization and personal accomplishment). Turkish validity and

reliability were conducted by Ergin et al. (α= 0.83 for Emotional Exhaustion, 0.72 for Personal Accomplishment, and 0.65 for Depersonalization).[18,19-20]

The Autism Spectrum Quotient (AQ) was developed by Baron-Cohen et al. The AQ aims to determine the degree to which any adult with normal intellectual capacity exhibits autistic traits or has a 'broad phenotype'. The ASQ originally consisted of five domains (social skills, attention switching, attention to detail, communication, and imagination). The validity and reliability (α= 0.63) study of the Turkish version of the scale was conducted by Köse et al.[21-22]

The Stroop Test was administered to participants by a clinician and assesses primarily complex attention and is available in several versions. Stroop Test TBAG was used in our study.[23] The Stroop test serves as a measure of inhibitory control and complex attention by requiring individuals to override an automatic and dominant response (e.g., reading the written word) in favor of a conflicting task (e.g., naming the color of the ink). It is also employed to examine the interference effect, reflecting the individual's capacity to manage competing cognitive demands simultaneously. Validity and reliability studies of the Stroop Test for the Turkish population were performed by Karakaş et al.[24]

Statistical Analyses: SPSS 29.0 statistical software (SPSS Inc., Chicago, IL) was used for statistical analysis. Age, Stroop test and clinical assessment scales were compared between the two groups using Student's t-test or Mann-Whitney U test according to their distributional characteristics, and sex was compared between both groups using the Chi-square test. Skewness and kurtosis values between -2 and +2 were used to determine the normal distribution. The significance value was accepted as $p < 0.05$ at the 95% confidence interval. Correlations between the Stroop test and clinical scales were also evaluated with Pearson (parametric values) and Spearman (non-parametric values). Since multiple comparisons were made, Bonferroni correction was applied to control for type I error. In this adjustment, the significance test for each comparison was set as p= 0.00045 and correlations with a p-value below this threshold were considered statistically significant. Effect sizes were estimated using Cohen's d for parametric and non-parametric comparisons and Cramér's V for categorical variables. Cohen's d effect sizes were considered large at ≥0.8, intermediate at 0.5–0.7, small at 0.2–0.4 and as having no effect at <0.2. Post-hoc power was calculated for each clinical scale and Stroop test by taking into account Cohen's d effect size, sample sizes, alpha level (α=0.05) and between-group sample ratio.

RESULTS

Forty-three parents of participants with ASD and 53 parents of TD healthy control participants, totaling 96 parents, were included in the study. The mean CARS scores of children with ASD were 31.60±5.79. There was no statistically significant difference between both groups in terms of age and sex. Regarding EF, Stroop whole episode durations were significantly longer in the ASD group than in TDs. Stroop second, third, fourth and fifth segment corrections were significantly higher in the ASD group compared to TDs. The number of errors in the fourth and fifth Stroop sections was significantly higher in the ASD group compared to TDs. Regarding clinical scales, Beck anxiety and depression inventory, Maslach Burnout Inventory and all subscores of autism-spectrum quotient were significantly higher in ASD group compared to TDs (Table 1). The post-hoc power results of the

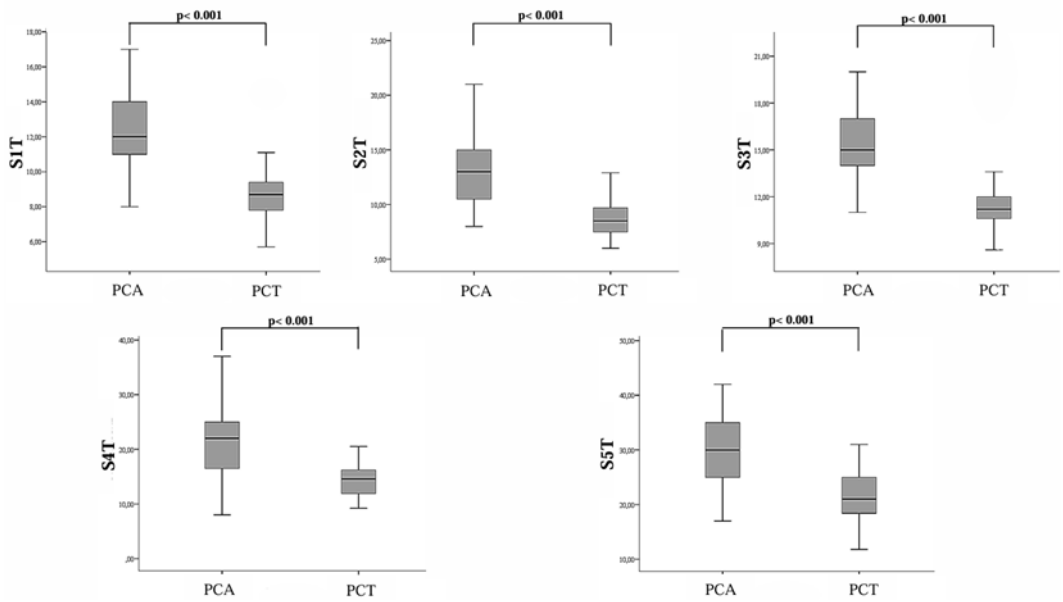

Figure 1. Box plots of Stroop test times (ST) in both groups. PCA: Parents of children with ASD; PCT: Parents of children with typically developing healthy controls.

questionnaires of clinical evaluations and Stroop test in both groups are given in Table 1. Demographic characteristics, Stroop test scores and scale data of the two groups are shown in Table 1.

Table 1. Data on the comparison of demographic characteristics, Stroop tests and scale scores of both groups.

		Parents of children with ASD (43)	Parents of children with TD (53)	p	$t/x^2/z$	d
Age[b]		35.53±3.42	35.19±4.57	0.319	-0.996	0.008
Sex, n	Male	15	25	0.225	1.474	0.124[a]
	Female	28	28			
S1T		12.18±2.35	8.91±1.71	**0.001**	7.861	3.740 0.99[c]
S1E		-	-	-	-	-
S1C		-	-	-	-	-
S2T[b]		13.24±3.45	8.84±1.78	**0.001**	-6.729	2.738 0.99[c]
S2E[b]		0.02±0.15	-	-	-	-
S2C[b]		0.30±0.46	0.05±0.30	**0.001**	-3.453	0.625 0.85[c]
S3T[b]		15.52±2.49	11.48±2.19	**0.001**	-6.982	0.171 0.99[c]
S3E[b]		-	0.01±0.13	-	-	-
S3C[b]		0.83±0.99	0.20±0.45	**0.001**	-3.620	0.811 0.97[c]
S4T[b]		20.71±6.95	14.72±3.85	**0.001**	-4.962	0.106 0.85[c]
S4E[b]		0.27±0.70	0.01±0.13	**0.022**	-2.298	0.514 0.69[c]
S4C		0.88±1.05	0.30±0.50	**0.001**	3.561	0.705 0.92[c]
S5T		29.53±6.29	22.07±5.07	**0.001**	6.430	0.130 0.96[c]
S5E[b]		0.65±1.04	0.20±0.59	**0.006**	-2.733	0.521 0.70[c]
S5C		1.76±1.49	0.77±0.89	**0.001**	4.041	0.808 0.97[c]
Beck-D		13.62±9.34	6.45±3.07	**0.001**	5.253	0.731 0.99[c]
Beck-A[b]		10.93±10.26	3.22±3.96	**0.001**	-4.123	0.736 0.99[c]
MBI emotional exhaustion[b]		11.27±8.50	4.35±3.31	**0.001**	-4.233	0.500 0.99[c]
MBI depersonalization		3.55±3.26	1.71±1.43	**0.001**	3.697	0.731 0.94[c]
MBI personal accomplishment[b]		24.67±5.31	14.09±3.02	**0.001**	-7.642	0.244 1.0[c]
AQ Social Skills[b]		3.20±1.79	1.41±0.92	**0.001**	-5.631	1.256 1.0[c]
AQ ability to shift attention[b]		4.41±1.63	2.58±0.71	**0.001**	-6.054	1.450 1.0[c]
AQ paying attention to details[b]		4.93±2.04	1.62±1.34	**0.001**	-7.237	1.913
AQ communication[b]		3.02±1.48	0.98±0.86	**0.001**	-6.425	1.677 1.0[c]
AQ imagination[b]		3.46±1.48	1.07±1.14	**0.001**	-7.034	1.804 1.0[c]

ASD: Autism spectrum disorder; TD: Typically developing healthy controls; Beck-D: Beck depression inventory; Beck-A: Beck anxiety inventory; AQ: Autism-spectrum quotient; MBI: Maslach burnout inventory; S1T: Stroop 1. Part Time; S1E: Stroop 1. Part Error; S1C: Stroop 1. Part Correction: S2T: Stroop 2. Part Time; S2E: Stroop 2. Part Error; S2C: Stroop 2. Part Correction: S3T: Stroop 3. Part Time; S3E: Stroop 3. Part Error; S3C: Stroop 3. Part Correction: S4T: Stroop 4. Part Time; S4E: Stroop 4. Part Error; S4C: Stroop 4. Part Correction: S5T: Stroop 5. Part Time; S5C: Stroop 5. Part Correction: S5E: Stroop 5. Part Error; d: Cohen's d effect size. [a]Cramer's V effect size; [b]Mann-Whitney U; [c]Post-hoc power analysis.

ox plots of Stroop test times in both groups are shown in Figure 1.

No significant correlation was observed between Bonferroni correction and the Stroop test and all other clinical variables (Table 2).

Table 2. Correlation coefficients between clinical scale scores and Stroop test subscores.

		Beck-D	Beck-A	MBI-EE	MBI-DP	MBI-PA	AQ-SS	AQ-ASA	AQ-PAD	AQ-Co	AQ-I
S1^{T}	p	0.235	0.972	0.022	0.054	0.879	0.004	0.626	0.648	0.012	0.008
	r	0.185	0.005	0.348	0.296	0.024	0.431	-0.076	-0.072	0.380	0.397
S2^{T}	p	0.065	0.225	0.022	0.084	0.782	0.005	0.935	0.653	0.072	0.105
	r	0.284	-0.189	0.348	0.267	0.044	0.417	0.013	-0.071	0.277	0.251
S2^{C}	p	0.019	0.323	0.007	0.001	0.149	0.056	0.361	0.431	0.015	0.273
	r	0.355	0.154	0.406	0.483	0.224	0.294	0.143	0.123	0.368	0.171
S3^{T}	p	0.009	0.956	0.293	0.978	0.900	0.006	0.917	0.805	0.038	0.010
	r	0.395	0.009	0.164	0.004	0.020	0.413	-0.016	0.039	0.317	0.390
S3^{C}	p	0.062	0.201	0.063	0.403	0.048	0.064	0.301	0.349	0.093	0.818
	r	0.287	0.199	0.286	0.131	0.304	0.285	-0.161	0.146	0.259	0.036
S4^{T}	p	0.542	0.725	0.125	0.094	0.191	0.123	0.172	0.625	0.167	0.014
	r	0.096	-0.055	0.238	0.258	0.203	0.239	-0.212	-0.077	0.215	0.372
S4^{E}	p	0.314	0.070	0.033	0.080	0.691	0.197	0.986	0.821	0.640	0.082
	r	0.157	0.279	0.325	0.270	0.062	0.201	0.003	0.036	0.073	0.269
S4^{C}	p	0.011	0.981	0.003	0.007	0.473	0.020	0.291	0.588	0.092	0.948
	r	0.386	0.004	0.438	0.408	0.112	0.354	-0.165	0.085	0.261	-0.010
S5^{T}	p	0.025	0.971	0.166	0.138	0.642	0.020	0.569	0.011	0.076	0.007
	r	0.340	0.006	0.215	0.230	-0.073	0.353	-0.089	-0.383	0.273	0.403
S5^{E}	p	0.219	0.121	0.022	0.120	0.741	0.003	0.809	0.351	0.010	0.138
	r	0.191	-0.240	0.349	0.240	0.052	0.447	-0.038	-0.146	0.389	0.230
S5^{C}	p	0.016	0.380	0.731	0.722	0.943	0.423	0.843	0.463	0.107	0.349
	r	0.365	0.137	0.054	-0.056	0.011	0.125	0.031	-0.115	0.249	0.146

Beck-D: Beck depression inventory; Beck-A: Beck anxiety inventory; MBI: Maslach burnout inventory; EE: Emotional exhaustion; DP: Depersonalization; PA: Personal accomplishment; AQ: Autism-spectrum quotient; SS: Social skills; Co: Communication; I: Imagination; ASA: Ability To Shift Attention; PAD: Paying Attention To Details; S1^{T}: Stroop 1. Part Time; S2^{T}: Stroop 2. Part Time; S2^{C}: Stroop 2. Part Correction: S3^{T}: Stroop 3. Part Time; S3^{C}: Stroop 3. Part Correction: S4^{T}: Stroop 4. Part Time; S4^{E}: Stroop 4. Part Error; S4^{C}: Stroop 4. Part Correction: S5^{T}: Stroop 5. Part Time; S5^{C}: Stroop 5. Part Correction: S5^{E}: Stroop 5. Part Error: After multiple comparisons with Bonferroni correction, corrected with a threshold value of p 0.00045.

DISCUSSION AND CONCLUSION

In this study, self-reported depression, anxiety, AQ and burnout levels and Stroop test performance of parents of children with ASD were compared with parents of TD healthy children and the relationship between Stroop test and self-reported depressive, anxiety and burnout symptoms in the ASD group was evaluated. To our knowledge, this is the first study to examine the relationship between the Stroop test and anxiety, depression, burnout symptoms and AQ scores in parents of children with ASD. Parents of children with ASD included in the study did not have any psychiatric disorder according to DSM-5. For this study, post-hoc power analysis showed that the sample size may be adequate for the Stroop test, AQ, burnout, depression and anxiety scales.

Stroop whole segment durations were significantly longer in the ASD group than in TDs. Stroop second, third, fourth and fifth segment corrections were significantly higher in the ASD group compared to TDs. The number of errors in the fourth and fifth Stroop sections was significantly higher in the ASD group compared to TDs. Regarding clinical scales, Beck anxiety and depression scores, Maslach Burnout Inventory and all sub-scores of autism-spectrum quotient were significantly higher in the ASD group compared to TDs.

As shown in a recent meta-analysis, burnout, anxiety and depression levels were significantly higher among parents of children with ASD compared to the control group.[5-25] It has been reported that parents with a child with ASD experience high levels of stress, stigmatization and hopelessness, which can lead to burnout.[26] Caring for children with ASD can be extremely challenging, as treatment and interventions for children with ASD are lengthy processes and children with ASD face more challenges in school and employment. Because of this, parents experience great stress and difficulties, and as a result, parenting stress turns into parental burnout.[27] The fact that parents of children with ASD experience more anxiety, depres-

sion and burnout symptoms than TDs may suggest that caring for children with ASD may be more difficult. It may also indicate that these parents should be supported with closer monitoring to enable more favorable living conditions when caring for children with ASD. Further follow-up studies are needed to understand this issue more clearly and to understand which psychiatric disorders may develop in these parents during clinical follow-up.

In various studies, it has been reported that parents of children with ASD have higher scores on AQ subscores than parents of TD children.[28] Sensory processing difficulties (labelled as a broad autism phenotype), like many autism-related traits and atypicalities, have been reported among unaffected relatives of individuals with ASD, including parents. A significantly higher proportion of parents of children with ASD compared to parents of TD children (21.1% vs. 7.5%) were members of the broad autism phenotype (BAP) group, suggesting that higher AQ scores in first-degree relatives of children with ASD compared to the TD group may be a reflection of the BAP.[29] Although the high AQ scores observed in parents of children with ASD suggest that these family members may be affected by the BAP, this was not clearly demonstrated in our study. Beyond subjective measurements to understand the BAP, supporting this phenotype with genetic studies may allow this to be more clearly demonstrated. In this respect, the fact that parents of children with ASD are affected by this phenotype may also affect their ability to care for these children. Therefore, there is a need for further studies, including genetic analyses with a larger sample size, when evaluating parents of children with ASD.

EFs are vital for successful parenting because they enable parents to be understanding, responsive and flexible. Parents draw on these capacities when planning and modifying behavior, responding to cues, regulating emotions in the face of stress and challenging child behavior, solving problems and making decisions. Mothers with low attentional control have been reported to exhibit harsher and more negative parenting.[30] In our study, parents of children with ASD had worse executive functioning skills compared to TD, which may refer to the BAP. Whether this finding is associated with a BAP has not been clearly demonstrated. Therefore, there is a need for more advanced EF tests and repeated EF measurements when evaluating executive functions in parents of children with ASD.

In our study, no significant correlation was observed between the Stroop test and other clinical variables. This finding may be related to the complexity of parental burnout and mental health. It may also suggest that the results are influenced by multiple factors beyond performance on a single executive function test. Additionally, the relatively small sample size may have affected the relationship between executive functions and clinical variables. Further research with a larger sample and the inclusion of more advanced executive function tests is needed to better understand the potential implications of these findings, particularly in terms of developing targeted support or interventions that consider both the psychological burden and possible executive function difficulties in these parents.

The strengths of our study include the inclusion of parents and children in both groups. To our knowledge, this is the first study to examine the relationship between the Stroop test and anxiety, depression, burnout, and broad autism phenotype symptoms in parents of children with ASD. However, this study also has limitations. In our study, ASD was DSM-5 and special assessment tools such as the autism diagnostic observation schedule and the autism diagnostic interview were not used. However, parental assessment was cross-sectional and psychiatric disorders that may occur in follow-up studies were not examined. In parental assessment, subjective questionnaires were used to determine clinical symptomatology, and blood and tissue examination and genetic analysis were not performed. In the parent assessment, only one parent of the child was assessed. Due to the limited number of participants, no sex-specific assessment was made for parents. In the evaluation of executive function, only the Stroop test was performed because it is performed in a shorter time in clinical practice, and other EF tests were not performed. We could not perform multiple correction in our study. We did not control for potential confounders such as age, sex, socioeconomic status and BMI, which could have influenced the results of the study. In our study, we could not evaluate child-parent interaction in further analysis. Future research could address this limitation by linking child-parent interaction in ASD etiopathogenesis with genetic analyses. In the assessment of family members in the context of the BAP, only parents were assessed; siblings and other relatives were not assessed.

In conclusion, parents of children with ASD performed significantly worse on the Stroop test than parents of TD children. Parents of children with ASD had higher anxiety, depression, burnout and AQ scores. In addition, the Stroop test was not significantly associated with anxiety, depression, burnout and AQ scores. These findings suggest that parents of children with ASD may show more internalizing symptoms and experience more burnout due to this. However, further studies are needed to understand the ability of EF deficits to predict clinical symptomatology in parents of children with ASD and their potential role in this regard.

Ethics Committee Approval: The study was conducted in accordance with the Declaration of Helsinki and approved by the ethics committee of the Selçuk University Faculty of Medicine (Date: 25.02.2025, decision no: 2025/04).

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