

RESEARCH ARTICLE

Comparison of Cognitive Flexibility and Resilience Levels in Mothers of Children with Specific Learning Disability, Autism Spectrum Disorder, and Normal Development

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Abstract

This cross-sectional study compared the cognitive flexibility and resilience of mothers with children having specific learning disabilities (SLD), autism spectrum disorder (ASD), and normal development (ND). The sample comprised 87 mothers (29 in each group). Data were collected using the "Sociodemographic Information Form", "Cognitive Flexibility Inventory", and "Resilience Scale for Adults". Significant differences were found in cognitive flexibility and resilience among the three groups. Mothers of children with ASD had significantly lower cognitive flexibility scores than those with SLD and ND. In terms of resilience, mothers of children with ASD scored lower than mothers of ND children but did not differ significantly from mothers of SLD children. No significant difference was observed in cognitive flexibility and resilience between mothers of children with SLD and those with ND. The study results indicate that mothers of children with ASD are at risk in terms of cognitive flexibility and resilience, highlighting the need for psychosocial intervention programs for these mothers. Although mothers of children with SLD appear to be psychologically stronger compared to mothers of children with ASD, more detailed research on the subject is necessary.

Keywords: Cognitive flexibility, resilience, autism, spesific learning disability, mother.

Öz

Bu kesitsel çalışmada, özgül öğrenme güçlüğü (ÖÖG), otizm spektrum bozukluğu (OSB) ve normal gelişim gösteren (NG) çocukların annelerinin bilişsel esneklik ve psikolojik sağlamlık düzeyleri karşılaştırılmıştır. Örneklem, her grupta 29 anne olmak üzere toplam 87 aneden oluşmuştur. Veriler "Sosyodemografik Bilgi Formu", "Bilişsel Esneklik Envanteri" ve "Yetişkinler için Psikolojik Sağlamlık Ölçeği" kullanılarak toplanmıştır. Üç grup arasında bilişsel esneklik ve psikolojik sağlamlık açısından anlamlı farklılıklar bulunmuştur. OSB'li çocukların annelerinin, ÖÖG'li ve TG çocukların annelerine göre anlamlı derecede daha düşük bilişsel esneklik puanlarına sahip olduğu görülmüştür. Psikolojik sağlamlık açısından, OSB'li çocukların anneleri, TG çocukların annelerine göre daha düşük puan almış, ancak ÖÖG'li çocukların anneleriyle anlamlı bir fark göstermemiştir. ÖÖG'li çocukların anneleri ile TG çocukların anneleri arasında bilişsel esneklik ve psikolojik sağlamlık açısından anlamlı bir fark gözlenmemiştir. Çalışma sonucu, bilişsel esneklik ve psikolojik sağlamlık açısından OSB'li çocukların annelerinin risk altında olduğunu ve anneler için psikososyal müdahale programlarının gerekliliğini göstermiştir. ÖÖG'ye sahip çocukların anneleri OSB'li çocukların annelerine kıyasla psikolojik anlamda daha güçlü görünmesine rağmen konu ile ilgili daha detaylı araştırmalar gerekmektedir.

Anahtar Kelimeler: Bilişsel esneklik, psikolojik sağlamlık, otizm, özgül öğrenme güçlüğü, anne.

Introduction

Specific Learning Disability (SLD) is a term that manifests delays or impairments in the acquisition and use of speech, reading, writing, comprehension, or arithmetic skills (American Psychiatric Association, 2013). SLD is classified into four types: dyslexia, dysgraphia, dyscalculia, and dyspraxia, according to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5). It is characterized by symptoms such as slow reading, difficulty in reading comprehension, numerical perception difficulties, and difficulty in executive functions persisting for at least 6 months (Aksoy, 2019; McDowell, 2018). Children with SLD also face challenges in written expression, such as dysgraphia, which includes poor handwriting, difficulty organizing thoughts on paper, and trouble with spelling and grammar (McDowell, 2018). These difficulties extend beyond academics, often impacting children's social interactions, self-esteem, and daily functioning, leading to significant distress within families (Khan & Humtsoe, 2016). The broad range of issues associated with SLD underscores the need for comprehensive support that addresses both educational and emotional needs of children and their families.

Autism Spectrum Disorder (ASD), on the other hand, is a lifelong neurodevelopmental disorder characterized by deficits in social skills, language impairments, and the presence of restricted interests and behaviors in the early childhood (American Psychiatric Association, 2013). According to DSM-5, ASD symptoms are categorized into two main groups: Group A includes social-emotional limitations, nonverbal communication challenges, and difficulties in initiating and sustaining peer relationships; Group B compasses repetitive motor movements, insistence on sameness, restricted interests, and atypical sensory responses (Yılmaz, 2019). These symptoms have destructive effects on both the child and the family, requiring comprehensive support for both (Khan & Humtsoe, 2016).

The birth of a child with conditions such as SLD and ASD, or the realization of a disability, frequently gives rise to a complex psychological

state within families, resulting in elevated levels of stress among parents (Demiray, 2019; Hassamancıoğlu et al., 2020). Additionally, various changes occur in the family structure, including financial needs, the need for information, self-confidence needs, the need for love and socialization, increased needs in daily life, and childcare (Demiray, 2019). Studies indicate that parents of children with SLD and ASD experience high levels of anxiety and depression, with negative impacts on executive functions, well-being, and quality of life (Abbeduto et al., 2004; Al-Oran & Khuan, 2021; Alsa et al., 2021; Atılgan & Kolburan, 2019; Khan & Humtsoe, 2016; Musa, 2022).

Usually, mothers are the primary caregivers of children (Benderix et al., 2006). Therefore, having a child with special needs particularly leads to more stress and pressure on mothers, significantly affecting their physical, mental, and psychological health (Kiani et al., 2022; Narimani et al., 2007; Tajeri & Bahiraei, 2008). Furthermore, mothers of children with ASD and SLD frequently encounter numerous challenges in their daily lives, such as managing behavioral issues, coping with social stigma, balancing therapy appointments, and handling educational needs, which can result in a decline in cognitive flexibility and resilience skills (Abbeduto et al., 2004; Acar, 2018; Fırat, 2022; Albaş, 2023).

Cognitive flexibility is defined as the ability to generate alternative solutions in different situations (Burke et al., 2006; Silver et al., 2004). Studies indicate that mothers' cognitive flexibility directly influences the development of children's social skills and the reduction of problem behaviors. Additionally, it is noted that in cognitively flexible mothers, children exhibit less hostility, establish better relationships, and have higher communication skills (Anderson, 1998; Chesebro & Martin, 2003; Curran & Andersen, 2017; Curran, 2018). Studies examining the levels of cognitive flexibility in mothers of children with special needs in the literature suggest that their mental and psychological well-being is negatively affected, and their levels of cognitive flexibility are lower than those of parents of children with normal development (ND) (Riskind & Alloy, 2006;

Hisoğlu, 2018; Musa, 2022; Shahabi et al., 2020). Research indicates that with increased anxiety and stress levels in mothers of children diagnosed with SLD and ASD, cognitive flexibility decreases, and resilience is also negatively affected (Dennis & Vander Wal, 2010; Firat, 2022; Ruiz-Robledillo et al., 2014; Albaş, 2023; Atılgan & Kolburan, 2019). Therefore, enhancing resilience is crucial for these mothers to cope effectively with the challenges they face.

Resilience is defined as the ability to adapt to challenging situations and thus to maintain or regain mental health (Wagnild & Young, 1993; Zautra, 2009). Individuals with high resilience can more easily maintain their daily lives in situations of intense stress or illness, which is crucial for the daily lives of children diagnosed with SLD and ASD and their mothers (Tekinarıslan & Tok, 2023).

Upon examining the relevant studies in the literature, it is observed that there are limited studies regarding families of children with special needs. In a previous study comparing the levels of resilience and cognitive flexibility in mothers of children diagnosed with intellectual disabilities (ID) and SLD, it was found that these skills were lower in families with children with special needs (Firat, 2022). Additionally, a study conducted with mothers of children with ASD suggested that these mothers need to have high levels of resilience to avoid emotional exhaustion (Acar, 2018). Studies comparing the quality of life, stress, and social relationships in parents of children diagnosed with SLD and ASD to those of children with ND parents have shown that these mothers have lower quality of life, higher levels of stress and depression, and impaired social relationships (Khan & Humtsoe, 2016; Mohammadchenari et al., 2023). Upon reviewing the literature, no study comparing cognitive flexibility and resilience levels in mothers of children diagnosed with SLD and ASD was found. This study was conducted to compare the levels of cognitive flexibility and resilience in mothers of children diagnosed with SLD and ASD.

When examining the relevant studies in the literature, it is observed that while there may not be many studies directly comparing cognitive flexibility and resilience in mothers of children with special needs, there are numerous studies on

the psychological well-being, resilience, stress, and anxiety levels of these families. For instance, studies have shown that mothers of children with special needs often experience higher levels of stress and anxiety, which negatively impact their psychological well-being and resilience (Albaş, 2023; Atılgan & Kolburan, 2019; Tekinarıslan & Tok, 2023). Additionally, research indicates that these mothers frequently report lower levels of life satisfaction and higher rates of depression compared to mothers of children with ND (Demiray, 2019; Hassamancıođlu et al., 2020). A previous study comparing the levels of resilience and cognitive flexibility in mothers of children diagnosed with ID and SLD found that these skills were indeed lower in families with children with special needs (Firat, 2022). A study conducted with mothers of children with ASD suggested that these mothers need to have high levels of resilience to avoid emotional exhaustion (Acar, 2018). Studies comparing the quality of life, stress, and social relationships in parents of children diagnosed with SLD and ASD to those of children with ND have shown that these mothers have lower quality of life, higher levels of stress and depression, and impaired social relationships (Khan & Humtsoe, 2016; Mohammadchenari et al., 2023).

However, there is a notable gap in the literature regarding the direct comparison of cognitive flexibility and resilience levels in mothers of children diagnosed with SLD and ASD. This comparison is crucial as it can provide deeper insights into the specific challenges faced by these mothers, and identify targeted interventions to support their mental health. Children with SLD and ASD present different types of challenges that can uniquely impact their mothers' psychological well-being. Understanding these differences can help in developing specialized support systems and policies.

Therefore, this study was conducted to compare the levels of cognitive flexibility and resilience in mothers of children diagnosed with SLD and ASD. By doing so, we aim to highlight the unique needs of these families and emphasize the importance of tailored psychosocial interventions.

Method

This study was conducted between December 2023 and May 2024 at a special education center in the Yenimahalle district of Ankara province. The research was approved in accordance with Non-Interventional Clinical Research Ethics Committee of Ankara Medipol University on December 26, 2023, with approval number 174 (E-81477236-604.01.01-9445), and conducted in accordance with the Helsinki Declaration.

Population and Sample of the Research

The number of participants in the study was determined to be 87 based on a power analysis conducted using GPower software. The power analysis was informed by the effect sizes and statistical findings reported in a study by Fırat (2022). Specifically, we used the effect size (Cohen's d) reported in the study, along with a confidence level of 95% and a margin of error of 0.05. These parameters were input into the GPower software to calculate the required sample size. Using the effect size reported in Fırat (2022), an alpha level of 0.05, and a desired power of 0.80, the power analysis indicated that a sample size of 87 participants would be sufficient to detect statistically significant differences. This sample size ensures that the study has adequate power to identify meaningful effects and differences between the groups of mothers with children diagnosed with SLD, ASD, and ND children. This is supported by Kiani et al. (2022), who used a sample size of 90 participants (30 per group) to compare life satisfaction and hope in mothers of children with SLD, ASD, and TD, and obtained significant results. Therefore, our sample size of 87 participants is consistent with these findings and considered sufficient for the current study.

The study included 29 mothers of children diagnosed with SLD, 29 mothers of children diagnosed with ASD, and 29 mothers of children with ND. Participants were selected using convenience sampling, a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher (Etikan et al., 2016). This method was

chosen due to practical considerations such as time constraints and ease of access to the specific population at the special education center.

Before the commencement of the study, written consent was obtained from the participants, and they were informed of the confidentiality of their participation. The participants were interviewed in person and asked to complete the scales after receiving detailed explanations.

The study included children aged between 8 and 15 years who were receiving regular education at a special education and rehabilitation center, as well as mothers who were able to read and write Turkish. The age range of 8-15 years was selected because the cognitive and psychological assessment tools used in this study are validated for this age group. Additionally, this age range is critical for observing the development and educational challenges associated with SLD and ASD. This period is essential for identifying and addressing educational and developmental needs, making it a suitable focus for our study (Gresham, 2002; Bishop, 2010; Volkmar, 2014). The inclusion criteria for the group of children with SLD and ASD were similar: the child must be diagnosed with SLD or ASD, aged between 8 and 15 years, and receiving regular education. Additionally, the mother must be able to read and write Turkish. The inclusion criteria for the group of children with ND were as follows: the child must be healthy, aged between 8 and 15 years, and have no diagnosis. Additionally, the mother must be able to read and write Turkish.

Children with any physical, neurological, or psychological disorders in addition to SLD or ASD diagnoses, and mothers with any psychological disorders, were excluded from the study. For the group of children with ND, the exclusion criterion was that the mother had any physical or psychological disorders.

Data Collection Tools

Sociodemographic Information Form: This form, prepared by the researchers, includes information on the mother's age, occupation, employment status, income level, and health status, as well as

information on the child's age, gender and diagnosis.

Cognitive Flexibility Inventory (CFI): Developed by Dennis and Vander Wal in 2010, this scale consists of 20 items rated on a 7-point Likert scale and comprises two subdimensions: "Alternatives" and "Control" (Dennis & Vander Wal, 2010). During its adaptation into Turkish, the scale was converted into a 5-point Likert scale, with scoring ranging from 1 (Not at all suitable) to 5 (Completely suitable). Items 2, 4, 7, 9, 11, and 17 are reverse-scored. The total score ranges from 5 to 100, where higher scores indicate greater cognitive flexibility. The Cronbach's alpha internal consistency coefficient for the entire scale was found to be 0.90 (Gülüm & Dağ, 2012).

Resilience Scale for Adults (RSA): First developed by Friberg et al. in 2003, this scale includes six subdimensions, namely "Structured Style," "Future Perception," "Family Adjustment," "Self Perception," "Social Competence," and "Social Resources," and consists of 33 items in total (Friberg et al., 2003). Responses are recorded using a schematic format with 5 separate boxes. There are no norm values for scoring. Items 1, 3, 4, 8, 11, 12, 13, 14, 15, 16, 23, 24, 25, 27, 31, and 33 are reverse-scored, yielding a total score between 33

and 165, where higher scores indicate increased resilience. The Turkish validity and reliability study for this scale was conducted by Basım and Çetin in 2011, with a Cronbach's alpha coefficient of 0.74 (Basım & Çetin, 2011).

Statistical Analysis

The statistical analysis of the data collected in this study was conducted using IBM SPSS Statistics version 26.0. The variables were investigated using visual (histograms and probability plots) and analytical methods (Kolmogorov–Smirnov/Shapiro–Wilk's test) to determine whether they were normally distributed. Descriptive analyses were presented using medians and interquartile range (IQR) for the non-normally distributed and ordinal variables. Since the data, such as ages, CFI points, and RSA points, were not normally distributed, nonparametric tests were conducted to compare these parameters. Since the data were not normally distributed, Kruskal-Wallis H Test was used to test the differences between CFI and RSA scores of mothers of children with SLD, ASD and ND. The new p value (p^a) corrected by the Bonferroni method was used for pairwise comparisons of significant results and the groups were compared using the Mann-Whitney U Test. A significance

Table 1. Sociodemographic characteristics of the participants (n=87).

	SLD		ASD		ND	
	<i>M ± SD</i>	<i>Med.</i>	<i>M ± SD</i>	<i>Med.</i>	<i>M ± SD</i>	<i>Med.</i>
Age of mothers (years)	35.8 9± 6,57	34	40.03 ± 6.7	40	37.62 ± 4.93	38
Age of children (years)	9.86 ± 2.08	9	10.65 ± 2.28	10	10.44 ± 2.18	10
	Mothers of children with					
	SLD (n=29)		ASD (n=29)		ND (n=29)	
Working status	n	%	n	%	n	%
Yes	9	31	8	27.6	6	20.7
No	20	69	21	72.4	23	79.3
Educational status						
Primary school	3	10.3	11	37.9	3	10.3
Middle school	6	20.6	9	31	6	20.6
High school	12	41.3	5	17.2	12	41.3
University	6	20.6	2	6.89	5	17.2
Master/Doctorate	2	6.8	2	6.89	3	10.3
Income level						
Low	8	27.5	11	37.9	6	20.6
Middle	14	48.2	14	48.2	9	31
High	7	24.1	4	13.7	14	48.2
Gender of child						
Male	17	58.6	9	31	16	55.2
Female	12	41.4	20	69	13	44.8

SLD= specific learning disability; ASD= autism spectrum disorder; ND= normal development; M= mean; SD= standard deviation; Med.= Median.

level of $p < 0.05$ was considered statistically significant.

Findings

A total of 87 mothers participated in the study, with 29 mothers in each group (SLD, ASD, and ND). Detailed sociodemographic information, including the ages of the mothers and children, is provided in Table 1.

Cognitive flexibility and resilience scores of mothers of children with SLD, ASD and NG are shown in Table 2.

Table 2. Cognitive Flexibility and Resilience Scores of Mothers According to Children's Diagnostic Status (n=87).

		M ± SD		Median
CFI	Alternatives	SLD	51.51± 1.10	52
		ASD	45.75 ± 1.35	48
		ND	54.96 ± 1.17	51
	Control	SLD	24.51 ± 1.87	24
		ASD	21.03 ± 0.98	23
		ND	25.55 ± 1.02	24
	Total	SLD	74.44 ± 1.93	76
		ASD	66.79 ± 2.05	71
		ND	80.41 ± 1.41	78
RSA	Structured style	SLD	14.34 ± 0.64	15
		ASD	11.93 ± 0.60	12
		ND	14.24 ± 0.56	14
	Perception of future	SLD	13.48 ± 0.82	14
		ASD	11.89 ± 0.54	13
		ND	14.96 ± 0.58	14
	Family cohesion	SLD	22.58 ± 0.79	23
		ASD	23.00 ± 0.75	23
		ND	21.86 ± 0.85	21
	Perception of self	SLD	21.58 ± 0.97	22
		ASD	21.03 ± 0.93	22
		ND	22.10 ± 0.69	22
	Social competence	SLD	20.58 ± 0.96	20
		ASD	19.72 ± 0.92	20
		ND	22.06 ± 0.88	21
	Social resources	SLD	26.48 ± 1.14	26
		ASD	26.13 ± 0.83	26
		ND	26.31 ± 0.97	27
	Total	SLD	119.06 ± 4.04	113
		ASD	113.72 ± 2.76	113
		ND	121.55 ± 3.59	123

CFI = Cognitive Flexibility Inventory; RSA = Resilience Scale for Adults; SLD = specific learning disability; ASD = autism spectrum disorder; ND = normal development; M = mean; SD = standard deviation; Med. = Median; * $p < 0.05$; ** $p < 0.01$.

A Kruskal-Wallis test indicated that there was a significant difference in cognitive flexibility scores across mothers of children with SLD, ASD, and ND ($\chi^2=20.872$; $p=0.001$). Comparisons between the 3 groups for the subdimensions of the CFI are seen in detail in Table 3.

Table 3. Kruskal Wallis-H Test Results Regarding the Difference Between Mothers' Cognitive Flexibility Scores According to Children's Diagnostic Status (n=87).

		X ²	p	
CFI	Alternatives	SLD	22.8	0.001**
		ASD		
		ND		
	Control	SLD	6.502	0.039*
		ASD		
		ND		
Total	SLD	20.872	0.001**	
	ASD			
	ND			

CFI = Cognitive Flexibility Inventory; SLD = specific learning disability; ASD = autism spectrum disorder; ND = normal development; * $p < 0.05$; ** $p < 0.01$.

A Kruskal-Wallis test indicated that there was not a significant difference in resilience scores across mothers of children with SLD, ASD, and ND ($\chi^2=1.842$; $p=0.398$). Comparisons between the 3 groups for the subdimensions of the RSA are seen in detail in Table 4.

Table 4. Kruskal Wallis-H Test Results Regarding the Difference Between Mothers' Resilience Scores According to Children's Diagnostic Status (n=87).

		X ²	p	
RSA	Structured style	SLD	7.841	0.020*
		ASD		
		ND		
	Perception of future	SLD	8.925	0.012*
		ASD		
		ND		
	Family cohesion	SLD	1.417	0.492
		ASD		
		ND		
	Perception of self	SLD	0.438	0.803
		ASD		
		ND		
	Social competence	SLD	2.226	0.329
		ASD		
		ND		
	Social resources	SLD	0.087	0.957
		ASD		
		ND		
	Total	SLD	1.842	0.398
		ASD		
		ND		

RSA = Resilience Scale for Adults; SLD = specific learning disability; ASD = autism spectrum disorder; ND = normal development; * $p < 0.05$.

Post-hoc comparisons using Bonferroni correction for multiple tests indicated that the median scores of mothers of children with ASD were significantly lower than those of mothers of children with ND in the 'Alternatives' sub-dimension and total score

of the CFI, as well as in the 'Structured style' sub-dimension of the RSA ($p^a < 0.016$). Additionally, significant differences were found between mothers of children with ASD and mothers of children with ND in all sub-dimensions and the total score of the CFI, as well as in the 'Structured style' and 'Perception of future' sub-dimensions and the total score of the RSA ($p^a < 0.016$). Mann-Whitney U Test results for pairwise comparisons related to cognitive flexibility and resilience are shown in Table 5.

5. Mann-Whitney-U Test Results for Pairwise Comparisons Between Mothers' Scale Scores According to Children's Diagnostic Status (n=87).

		p ^a		
		ND	ASD	ASD
		SLD	ASD	SLD
CFI	Alternatives	0.047	0.001**	0.002*
	Control	0.252	0.013*	0.132
	Total	0.077	0.001**	0.008*
	Structured style	0.925	0.015*	0.016
	Perception of future	0.247	0.002*	0.091
	Family cohesion	0.387	0.261	0.749
RSA	Perception of self	0.702	0.516	0.767
	Social competence	0.357	0.134	0.628
	Social resources	0.852	0.913	0.773
	Total	0.624	0.001**	0.489

CFI= Cognitive Flexibility Inventory; RSA= Resilience Scale For Adults; SLD= 214pecific learning disability; ASD= autism spectrum disorder; ND= normal development; * $p^a < 0.016$.

Discussion and Conclusion

The study indicates that mothers of children with SLD and ASD exhibit lower levels of cognitive flexibility and resilience compared to mothers of children with ND. Moreover, comparisons between mothers of children with SLD, ASD, and ND revealed significant differences in cognitive flexibility and resilience outcomes.

Cognitive flexibility is defined as the ability of individuals to adapt cognitive processing strategies to cope with new and unexpected situations (Canas et al., 2003). The study results indicate that mothers of children with ASD exhibited the lowest level of cognitive flexibility, followed by mothers of children with ID, while mothers of children with ND demonstrated a higher level of cognitive flexibility compared to both groups.

Previous research on cognitive flexibility suggests that mothers of children with special

needs, such as ASD, experience significant challenges that can hinder their ability to adapt and think flexibly. For instance, Shahabi et al. (2020) found that high levels of stress and constant caregiving demands negatively impact cognitive flexibility in parents of children with ASD. Similarly, Hisoğlu (2018) reported that mothers of children with ASD show reduced cognitive flexibility due to the constant need for structured routines and coping with unpredictable behaviors.

The birth of a child with ASD initiates a challenging process for parents, often compounded by the lack of available resources and support. Empirical evidence indicates that parents, particularly mothers of children with ASD, experience elevated levels of stress and depression (Merkaj et al., 2013; Phetrasuwan & Shandor Miles, 2009). Mothers of children with ASD may be required to exert considerable effort to meet their children's needs, which can increase their stress levels and negatively affect their cognitive flexibility. Constant exposure to elevated levels of stress can impair cognitive functions and diminish mothers' abilities for flexible thinking (Sadeghi et al., 2023; Shahabi et al., 2020). Research in Turkey supports these findings as well. A study by Kara et al. (2024) found that mothers of children with ASD in Turkey face significant stress and anxiety, which negatively impacts their cognitive flexibility. Güleç-Aslan (2017) highlighted that Turkish mother of children with ASD experience higher levels of psychological distress compared to mothers of children with ND, which further impairs their cognitive flexibility.

Among the general symptoms experienced throughout their lives by children with ASD, there is often a tendency to adhere tightly to specific routines and discomfort with unexpected changes. This situation may necessitate that mothers organize their lives by a specific order (Khan & Humtsoe, 2016). This constant need for predictability may diminish mothers' cognitive flexibility levels and limit their ability to adapt to changing circumstances (Sadeghi et al., 2023).

The study results have indicated a significant weakness in both the control and alternative subdimensions of cognitive flexibility in mothers of children with ASD compared to mothers of

children with SLD and mothers of children with ND. The control dimension reflects the tendency to perceive challenging situations as controllable, while the alternative dimension indicates the ability to perceive possible alternatives in life situations and human behaviours and to generate numerous solutions to resolve challenging situations (Kiani et al., 2022). Mothers of children with ASD frequently encounter difficulties in communicating with their children and engaging in social interactions. This difficulty can negatively affect their problem-solving abilities by impacting their ability to cope with social and emotional challenges (Papadopoulos, 2021). Furthermore, mothers of children with ASD may require additional resources and support to meet their children's needs. The difficulties encountered in accessing these resources and support can result in elevated levels of anxiety among mothers, which in turn has a detrimental impact on their cognitive flexibility (Miranda et al., 2019; Rfat et al., 2023).

When comparing mothers of children with SLD and ASD, it was observed that mothers of children with ASD had lower cognitive flexibility. ASD is often associated with uncertainty in terms of symptoms, which can cause parents to worry about the future, while SLD may be associated with more specific and identifiable challenges, allowing mothers to be more confident in providing appropriate support for their children's needs (Kiani et al., 2022). On the other hand, mothers of children with ASD may often experience greater difficulties in communicating with and engaging in social interactions with their children. Mothers of children with SLD may encounter less pronounced difficulties in communication and social interaction (Benjak et al., 2009; Kiani et al., 2022). All these factors may contribute to higher levels of cognitive flexibility in mothers of children with SLD compared to mothers of children with ASD.

When comparing the levels of resilience among the three groups, it was found that participants with the lowest scores were mothers of children with ASD. In pairwise comparisons, it was observed that the resilience levels of mothers of children with ASD were weaker compared to mothers of children with ND, while no significant

difference was observed in resilience between mothers of children with SLD and mothers of children with ASD, or between mothers of children with SLD and mothers of children with ND.

In terms of resilience, research indicates that mothers of children with ASD often face substantial emotional and psychological burdens that diminish their resilience. Acar (2018) highlighted that the high caregiving demands and social stigma associated with raising a child with ASD contribute to lower resilience levels in these mothers. Furthermore, studies by Tekinarslan and Tok (2023) found that social support and self-compassion are critical factors that influence resilience in mothers of children with special needs, suggesting that mothers with higher levels of social support exhibit greater resilience.

In contrast, mothers of children with SLD may face different but equally challenging circumstances. Research by Al-Oran and Khuan (2021) indicates that these mothers experience high levels of anxiety and stress related to their children's academic struggles and social integration issues, which can negatively impact both cognitive flexibility and resilience. However, as highlighted by Matteucci et al. (2019), the visibility and social understanding of SLD symptoms may lead to less stigma and slightly better support systems compared to ASD, which might explain why resilience levels in mothers of children with SLD, while still lower than in mothers of TD children, are not as severely impacted as those in mothers of children with ASD.

Khan and Humtsoe (2016) observed that mothers of children with learning difficulties exhibited superior psychological well-being compared to other groups, whereas mothers of children with ASD exhibited the lowest levels of subjective well-being in the psychological domain. We hypothesize that parents of children with ASD who experience difficulties in coping with stressful situations tend to exhibit physical and psychological fatigue, which negatively affects the parents' level of resilience (Hartley et al., 2010). Furthermore, in numerous studies that have compared the resilience levels of mothers of children with different diagnostic groups,

including Down Syndrome, learning difficulties, and developmental coordination disorder, mothers of children with ASD have consistently scored the lowest (Janha, Punyapas, & Ratta-Apha, 2021; Ogston, Mackintosh, & Myers, 2011; Pastor-Cerezuela, Fernández-Andrés, Pérez-Molina, & Tijeras-Iborra, 2021; Schoemaker & Houwen, 2021). Local research in Turkey also supports these findings. Acar (2018) highlighted that mother of children with ASD in Turkey face significant emotional and psychological challenges, resulting in lower resilience levels compared to mothers of children with other developmental disorders. Tekinarslan and Tok (2023) found that social support and self-compassion significantly influence resilience among mothers of children with special needs in Turkey. Moreover, Albaş (2023) emphasized that the lack of societal understanding and adequate support systems in Turkey exacerbates the psychological burden on these mothers, further reducing their resilience.

A comparison of the subdimensions that constitute resilience revealed that mothers of children with ASD exhibited significantly lower scores than mothers of children with ND in the structural style and future perception dimensions. Future perception reflects an individual's outlook on the future, while structural style defines a person's self-confidence and self-discipline (Polatçı & Tınaz, 2021). The difficulties encountered by children with ASD in performing everyday activities frequently result in long-term care requirements that far exceed ordinary needs or parental expectations. The provision of high-level care for a child with lifelong functional limitations can be a significant source of stress for mothers of children with ASD, with potential implications for both their physical and psychological health (Benjak et al., 2009; Papadopoulos, 2021). Previous studies have indicated that families of children with OSB experience a significant burden in childcare responsibilities, which results in reduced participation in social activities and community services (Mugno et al., 2007). A significant number of parents report either quitting their jobs or changing employment to better care for their disabled children, which has an economic impact (Al-Jadiri et al., 2021).

Children with SLD frequently encounter challenges in specific academic or skill areas, yet they may generally demonstrate superior social interaction and communication skills compared to children with ASD (Prino et al., 2016; Şahin et al., 2018). This circumstance may influence mothers' expectations for their children's futures and, consequently, their resilience. Furthermore, ASD is frequently met with significant societal stigma, which can result in elevated stress levels for mothers, diminished family engagement in social activities, and a particularly detrimental impact on maternal self-confidence. Conversely, SLD symptoms are often less visible or comprehensible, resulting in lower susceptibility to stress induced by societal perceptions (Heiman & Berger, 2008; Kiani et al., 2022).

The study findings indicated that mothers of children with SDL exhibited lower cognitive flexibility and resilience compared to mothers of children with ND. Although this difference was not statistically significant, existing literature indicates that mothers of children with SLD experience higher levels of stress and anxiety and have weaker resilience compared to mothers of children with ND (Bonifacci et al., 2016; Karande et al., 2009; Matteucci et al., 2019). Parents of children with disabilities frequently encounter difficulties in terms of life satisfaction, emotional state, and perceptions of the enjoyment of life (Bonifacci et al., 2016; Karande et al., 2009; Hayes & Watson, 2013; Mugno et al., 2007). Consequently, it has been demonstrated that parents of children with disabilities who perceive these challenges negatively tend to exhibit lower levels of resilience compared to parents of children without disabilities (Khan & Humtsoe, 2016). In a study by Bonifacci et al. (2016), it was found that parents of children with SLD experience greater parenting stress and a lower quality of life compared to parents of children with ND. Karande et al. (2009) found that mothers of children with SLD experience poorer psychological health and social relationships, and mild anxiety emerges in mothers, particularly concerning their children's school performance, behaviour, and future expectations upon receiving an SLD diagnosis.

Overall, our findings are consistent with previous research, emphasizing the need for targeted interventions to support the psychological well-being of mothers of children with SLD and ASD. Interventions aimed at enhancing cognitive flexibility and resilience through stress management, social support, and adaptive coping strategies could be particularly beneficial (Dennis & Vander Wal, 2010; Ruiz-Robledillo et al., 2014)."

The findings of this study are valuable for various professionals working with disadvantaged children and their parents, including occupational therapists, child development specialists, psychologists, and educators. By understanding the unique challenges faced by mothers of children with SLD and ASD, these professionals can develop targeted interventions to enhance cognitive flexibility and resilience. Schools and classroom teachers can also benefit from these insights by creating supportive environments that address the specific needs of these families. Implementing strategies that reduce parental stress and promote resilience can significantly improve the overall well-being of both parents and children.

The sample size may have influenced the results of the current study. A larger sample size could have potentially provided a normal distribution, thereby strengthening the findings and allowing for more robust statistical analyses, such as regression analyses. Furthermore, the statistical analyses may have been affected by uncontrolled variables, which could explain the observed differences in cognitive flexibility and resilience levels. For example, factors such as mothers' educational levels, socioeconomic status, and social support networks may influence cognitive flexibility and resilience levels and should be considered in future studies. Increasing the sample size in future research would not only enhance the generalizability of the findings but also provide a better understanding of the factors affecting cognitive flexibility and resilience in this population. Consequently, it would be beneficial to investigate these factors in larger and more homogeneous groups in future studies.

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