

## Attention Deficit and Hyperactivity Disorder Traits of Siblings of Children with Autism Spectrum Disorder

Hatice ŞENGÜL ERDEM, Assist. Prof. Dr.

Istanbul Medeniyet University

hatice.erdem@medeniyet.edu.tr

ORCID: 0000-0003-2933-8198

### Abstract

Despite the presence of many studies on the conduct and adjustment traits of typically developing siblings of children with autism spectrum disorder (sibs-ASD) in the literature, studies examining the risk of siblings developing a psychiatric and psychological disorder or neurodevelopmental disability are limited. This study aims to comparatively investigate the attention deficit and hyperactivity disorder (ADHD) traits of sibs-ASD. In the study, which was designed in the form of causal-comparative research among the survey models, the study group consisted of a total of 92 children with siblings with ASD (research group: N=47) and with siblings without any developmental disability (comparison group: N=46). The data were collected through mothers and analyzed. According to the study findings, the siblings in the research group exhibited significantly higher ADHD traits in all subscales of the Conners Parent Rating Scale-48 items (CPRS-48), through which the data were obtained, except for impulsivity-hyperactivity, and in the total score of the scale compared to the comparison group. Moreover, it was revealed that the ADHD traits of the siblings in the research group did not differ according to gender. According to the study results, having a sibling with ASD increases the risk of ADHD in sibs-ASD, whereas this risk does not differ significantly according to gender. Specialists and educators providing services to children with ASD and their parents should consider the family as a whole and keep in mind that ASD can be a neurodevelopmental disorder that may affect all family systems, including siblings. It is recommended to examine ADHD traits of siblings with studies using different measurement tools and different data sources such as teachers and siblings themselves for future research and conduct studies with more comprehensive and large participant groups examining the effects of demographic variables such as birth order and the gender of a sibling with ASD, different environmental variables such as the severity of ASD, and genetic factors such as the broad autism phenotype on the risk of developing neurodevelopmental disorders such as ADHD in siblings.

**Keywords:** *Causal comparative research, Conduct problem, Gender, Impulsivity/hyperactivity, Typically developing sibling.*

### Introduction

Autism spectrum disorder (ASD) is one of the developmental disorders whose prevalence has increased rapidly in recent years. According to the DSM-5 published in 2013, ASD is defined as a neurodevelopmental disability that is manifested as repetitive, obsessive behaviors, limited interests and activities with inadequacy in social communication and social interaction (American Psychiatric Association [APA], 2013). Changes occur in the family system with the participation of a child with ASD in the family. Stress (Dunn et al., 2001), social isolation (Lutz et al., 2012), and difficulties maintaining daily life (Reddy et al., 2019) are the most common situations experienced by families of children with ASD. In the family system, in addition to

caregiving parents, other people in the family are also affected by the presence of a sibling with ASD. There are different results in the literature on these effects. While many studies reveal that typically developing siblings of children with ASD (sibs-ASD) are adversely affected by siblings with ASD (Hasting, 2003), other studies state that having a sibling with ASD is a positive experience for sibs-ASD (Kaminsky & Dewey, 2002; Verte et al., 2003). There are various justifications for inconsistent results of studies on siblings in the literature. Some of these can be summarized as examining different variables, differences in using comparison groups, and using different people (e.g., parents, siblings themselves, and teachers) as sources of information.

Studies conducted on siblings in the literature are mostly related to siblings' adjustment traits, psychosocial and behavioral traits. Studies on the adjustment traits of siblings state that they experience adjustment difficulties and have more external and internal conduct problems (Meyer et al., 2011; Şengül Erdem & Fazlıoğlu, 2020). Whereas studies on the adjustment and conduct traits of sibs-ASD are frequently encountered in the literature, there are few studies on the risk of siblings having a psychiatric and psychological disorder or neurodevelopmental disability.

The results of studies on neurodevelopmental disorders in sibs-ASD show that a wide range of disorders can be observed. Childhood disorders such as ASD, attention deficit and hyperactive disorder (ADHD), intellectual disability, learning disorders, conduct and oppositional defiant disorders are disorders that can be frequently observed among sibs-ASD (Jokiranta-Olkonieni et al., 2016). It is indicated that ADHD and ASD are neurodevelopmental disorders that often accompany each other (Ghirardi et al., 2018; Septier et al., 2019). Furthermore, findings showing that ADHD is a disorder with a high incidence among first-degree relatives of individuals with ASD are remarkable (Mulligan et al., 2009; Nijmeijer et al., 2009). Especially ADHD is one of the clinical diagnoses frequently established in sibs-ASD (Pilowsky et al., 2007). A study conducted with dizygotic twins states that if one of the twins is diagnosed with ASD, the probability of the other twin being diagnosed with ADHD is 15% (Lichtenstein et al., 2010). The findings support the idea that ASD and ADHD can be frequently observed in siblings.

In the literature, it is observed that comparison groups are used in studies that investigate the ADHD traits of sibs-ASD. For example, the study by Septier et al. (2018) examined the possible prevalence of ADHD in parents and sibs-ASD. In the study carried out with three

different groups, the first group comprised of parents and siblings of individuals diagnosed only with ASD (N=287), the second group consisted of parents and siblings of individuals diagnosed with ASD+ADHD (N=212), and the third group consisted of parents and sibs-ASD or any accompanying developmental delay (N=140). According to the study results, ADHD traits were found to be significantly high in parents and siblings of individuals with ASD and ASD+ADHD. The possible prevalence of ADHD in siblings of the same group was even 3-4 times higher than in siblings in the control group (Septier et al., 2018). This study performed with a relatively large sample group strengthens the idea that ASD and ADHD will be observed together in siblings.

Similar results are obtained in studies conducted with different study groups or in more longitudinal studies. Among these studies, the study in which Chien et al. (2017) examined the ADHD traits of sibs-ASD (N=122) and Asperger's syndrome (N=77) evaluated the performance of the study group using the control group (N=196). According to the study results, typically developing siblings in the study group had significantly higher ADHD traits in the domains of hyperactivity/impulsivity and oppositional behaviors compared to siblings in the control group. A similar study was conducted by Miller et al. (2018), and sibs-ASD and siblings of typically developing children who were younger were examined longitudinally for ADHD for about 10 years, starting from infancy. In the study, sibs-ASD were categorized as a high-risk group, siblings of typically developing children were categorized as a low-risk group, and their diagnosis status at the age of 8-10 was examined. According to the results, 17 siblings were diagnosed with ADHD according to the DSM-5 at school age. While 14 of the 17 siblings were sibs-ASD in the high-risk group, 3 of them were siblings in the low-risk group. Based on these results, it can be said that sibs-ASD are at risk or are prone to exhibit ADHD traits due to genetic or environmental factors (Jokiranta-Olkonemi et al., 2016). Obtaining similar results in studies with different designs and the fact that siblings are diagnosed with ADHD or are at risk reveal the need for more studies on this issue.

In Turkey, the developmental and adjustment traits of sibs-ASD are quite a new research topic in comparison with the foreign literature. No study was encountered on the risk of siblings exhibiting neurodevelopmental disorders. Based on this need, this study aims to examine the ADHD traits of sibs-ASD. In the study designed as a research and comparison group study, answers to two research questions will be sought:

1. Do the ADHD traits sibs-ASD differ significantly from those in the comparison group?
2. Do the ADHD traits of sisters and brothers of children with ASD differ significantly?

## **Method**

### ***Research Design***

The research is a causal comparative study since it aimed to determine the condition of two different groups affected by the same situation in two different ways on a single variable. Causal comparative research aims to examine the causes of an existing/naturally occurring situation or event and the variables affecting these causes or the results of an effect (Büyüköztürk et al., 2014).

### ***Research Sample***

There are two groups in the study, the research group and the comparison group. The siblings in the research group (N=47) are typically developing and have a sibling with ASD. While 20 of the siblings are female, 27 are male. The siblings' mean age is 9.85 (SD: 4.09; range: 3.5-20), and the most common age is 12 (N=7; 14.9%). Whereas the mean age of the mothers of the siblings in the research group is 38.9 (sd: 4.74; range: 21-49), the most common age is 39 (N=7; 14.9%). Concerning the maternal education level, university graduate mothers (N=17; 36.2%) and high school and primary school graduate mothers (N=12; 25.5%) constitute the largest groups.

Both the siblings in the comparison group (N=46) and their siblings are typically developing. While 20 of the siblings are female, 26 are male. The siblings' mean age is 10 (SD: 2.91; range: 3-16), and the most common age is 8 (N=8; 17.4%). Whereas the mean age of the mothers of the siblings in the comparison group is 39.56 (sd: 4.52; range: 30-52), the most common age is 39 (N=7; 15.2%). Considering the maternal education level, university graduate mothers (N=17; 37%) and secondary school graduate mothers (N=9; 19.6%) constitute the largest groups.

### ***Research Instruments and Procedure***

The data in the study were obtained using the demographic form and the Conners Parent Rating Scale-48 (CPRS-48).

### ***Demographic Form***

The demographic form was used to obtain demographic information about mothers, children with ASD, and typically developing siblings included in the study.

### ***Conners Parent Rating Scale-48 (CPRS-48)***

The scale developed by Goyette et al. in 1978 was developed to evaluate attention deficit, hyperactivity, and conduct problems in children. Dereboy et al. (2007) performed the Turkish adaptation of the scale. The scale's norms were obtained from the data of 954 typically developing children and 270 children treated in the child psychiatry outpatient clinic with the diagnoses of ADHD, oppositional defiant disorder, and/or conduct disorder. The scale consists of 5 subscales: conduct problem, impulsive/hyperactive, learning problem, anxiety, and psychosomatic. Cronbach's alpha internal consistency coefficient of the scale varies between 0.67-0.92, and the item-total correlations are 0.35 and above. The scale's construct validity was examined by principal components analysis (PCA). According to the analysis, the variances explained by the factors and factor loading values were 0.46-0.76 for the first factor-conduct problem, 0.59-0.71 for the second factor-impulsive/hyperactive, 0.42-0.57 for the third factor-learning problem, 0.40-0.58 for the fourth factor-anxiety, and 0.54-0.75 for the fifth factor-psychosomatic (Dereboy et al., 2007; Kaner et al., 2012).

### ***Data Collection Process***

The data were collected through mothers. The mothers in the research group were reached through special education centers in Istanbul province. The researcher visited 8 special education centers in Ümraniye, Üsküdar, Kadıköy, and Maltepe districts of Istanbul province. After the approval was received from the institutions' owners, the data collection tools were given to the volunteer mothers by hand, and the data collection tools filled out by the researcher mothers were collected. The researcher made a total of 16 visits to 8 centers. The comparison group data were collected through the researcher's visit to primary, secondary, and pre-school institutions in the same districts, again through mothers.

### ***Data Analysis***

The data were analyzed using the SPSS 22 program. In the data analysis, the Shapiro-Wilk values and skewness and kurtosis values were calculated to decide whether the research and comparison group data were normally distributed. Table 1 presents these values.

**Table 1**

*Normality Findings of the Research and Comparison Groups*

Group	Shapiro-Wilk	Skewness	Kurtosis
Research	.029	.620	-.064
Comparison	.000	2.292	7.955

( $p < .05$ )

The skewness and kurtosis values between  $-2$  and  $+2$  are accepted as the normal distribution of the data (George & Mallery, 2019). As seen in Table 1, the research group value fit the specified range, but the comparison group value did not fit the range. Moreover, since the Shapiro-Wilk values were  $< .05$  for both groups, it was observed that the data were not normally distributed. Therefore, the Mann-Whitney U test, one of the non-parametric tests, was utilized in the data analysis.

## Results

The analysis regarding the significance of the difference between the ADHD traits of sibs-ASD, which is the first question of the study, compared to siblings in the comparison group is shown in Table 2.

**Table 2**

*Conners Parent Rating Scale-48 (CPRS-48) Research Group and Comparison Group Mann-Whitney U Test Results*

CPRS-48	Group	n	Mean Rank	Sum of Ranks	Z	p
Conduct problem	Research	47	56.76	2667.50	-3.797	0.000*
	Comparison	45	35.79	1610.50		
Impulsive/hyperactive	Research	47	50.00	2350.00	-1.093	0.275
	Comparison	46	43.93	2021.00		
Learning problem	Research	46	52.26	2404.00	-2.089	0.037*
	Comparison	46	40.74	1874.00		
Anxiety	Research	47	56.53	2657.00	-3.456	0.001*
	Comparison	46	37.26	1714.00		
Psychosomatic	Research	47	54.82	2576.50	-3.054	0.002*
	Comparison	46	39.01	1794.50		

Total	Research	46	55.76	2565.00	-3.566	0.000*
	Comparison	45	36.02	1621.00		

\*p<0.05

According to the analysis, significantly different results emerged between the two groups in the other subscales, except for impulsive/hyperactive. Upon examining the rank sums concerning which group these differences were in favor of, it was emerged that the scores of the research group were higher in the conduct problem, learning problem, anxiety, and psychosomatic subscales and total score (p<0.05). Based on these results, it was revealed that sibs-ASD were at a higher risk of exhibiting ADHD traits.

The analysis of the differences in the ADHD traits of sibs-ASD according to gender, which is the second question of the research, is seen in Table 3.

**Table 3**

*Conners Parent Rating Scale-48 (CPRS-48) Research Group Mann-Whitney U Test Results by Gender*

CPRS-48	Gender	n	Mean rank	Sum of ranks	Z	p
Conduct problem	Female	20	25.58	511.50	-.680	.496
	Male	27	22.83	616.50		
Impulsive/ hyperactive	Female	20	22.65	453.00	-.586	.558
	Male	27	25.00	675.00		
Learning problem	Female	20	24.73	494.50	-.547	.585
	Male	26	22.56	586.50		
Anxiety	Female	20	28.25	565.00	-1.835	.067
	Male	27	20.85	563.00		
Psychosomatic	Female	20	25.85	517.00	-.825	.409
	Male	27	22.63	611.00		
Total	Female	20	26.95	539.00	-1.531	.126
	Male	26	20.85	542.00		

\*p<0.05

Considering the results, no significant difference was found in the five subscales and total scores of the scale according to gender (p<0.05).

## **Discussion, Conclusion and Recommendations**

### ***Discussion***

In the study, while siblings showed significantly higher traits in the conduct problem, learning problem, anxiety, and psychosomatic sub-domains and the total score compared to siblings in the comparison group, there was no significant difference in the impulsive/hyperactive sub-domain. The current study findings are supported by conducted studies. In parallel with this result of the study, the study by Miller et al. (2019) revealed that sibs-ASD were at a higher risk in terms of ADHD traits than siblings of typically developing children. In another study, the finding indicating that ADHD-related traits can be detected in sibs-ASD from an early period and that typically developing children are at a higher risk than their siblings supports the study's results (Miller et al., 2018). Septier et al. (2018) also stated in their study that the risk of ADHD was 3-4 times higher in sibs-ASD than siblings in the control group, and this finding supports the results of the current study in this direction. In current research, significant difference was not seen between the research and comparison groups in the impulsive/hyperactive subscale. Contrary to the current research finding, the study by Chien et al. (2017) stated that siblings of children with autism and Asperger's syndrome exhibited significantly higher traits in the hyperactive/impulsive sub-domains compared to siblings in the comparison group.

According to the research findings, ADHD traits of sibs-ASD do not differ significantly according to gender. Supporting this result of the study, the study by Jokiranta-Olkonieni et al. (2016) revealed that the risk of psychiatric or neurodevelopmental disorders, including ADHD, was higher in sibs-ASD but did not differ according to gender.

ADHD was measured using the Conners Parent Rating Scale-48 in the present study. The scale used is a measurement tool that is frequently used in practice and research, and information was obtained only from mothers. The studies revealed that mothers of children with ASD did not objectively evaluate their typically developing children by comparing them with their children with ASD and they found their children more pathological by evaluating some traits differently than they were (Barak-Levy et al., 2010; Macks & Reeve, 2007). Accordingly, evaluating ADHD traits by adhering to only one data source can be stated as a limitation.

### ***Conclusion***

In conclusion, this study examining the ADHD traits of sibs-ASD revealed that siblings of children with ASD had higher ADHD traits than typically developing siblings of children without any developmental disorder or retardation and these traits did not differ according to

gender. Based on the study results, it can be said that siblings who grow up in the same family as children with ASD and who do not have any diagnosed developmental disorder may actually be at risk. Furthermore, the fact that this risk is independent of gender reveals the need for preventive screening studies for all children in families.

### ***Recommendations***

According to the study results, some recommendations can be made for further research, specialists providing services to children with autism spectrum disorders and their parents, educators, and families of children with ASD. Due to its nature, ASD is a time-consuming and challenging developmental disorder for families, and there are insufficient time, energy, and financial resources for other children in the family. Parents may not notice that their typically developing children show signs of ADHD or another diagnosable disorder, or families may delay consulting a specialist in this case. Hence, families should also ensure that their typically developing children undergo development follow-ups from an early age, or they should consult a specialist when they notice a developmental delay. Educators and specialists providing services to children with autism spectrum disorders and their parents should consider the family as a whole and pay attention to the fact that ASD is a neurodevelopmental disorder that can affect all family systems. It should be remembered that siblings should be supported together with the whole family, and siblings are also at risk for neurodevelopmental disorders such as ADHD.

Sibling involvement in ASD is gradually increasing, and there are studies in which siblings are used in interventions especially to improve play skills, social skills, and daily living skills of children with ASD (for a comprehensive literature review, see Shivers & Plavnick, 2015). Whether siblings have a developmental disorder such as ADHD before their involvement in the education of their siblings with ASD is important for the effectiveness of the intervention presented to their siblings with ASD. The failure of siblings to be effective mediators/educators/models in the intervention offered to children with ASD may lead to negative/unexpected results in acquiring the targeted skill. Such a situation will lead to a loss of time for both the family and the child with ASD.

In further research, it is recommended to conduct studies using different measurement tools and different data sources, such as teachers and siblings themselves, while evaluating the ADHD traits of siblings. Furthermore, it is recommended to conduct studies with more comprehensive and larger participant groups examining the effects of different demographic

variables, other than gender (e.g., birth order, gender of a sibling with ASD) and different environmental (e.g., traits of a sibling with ASD and the severity of autism, parental stress, family support systems, financial resources) and genetic (e.g., broad autism phenotype) factors on siblings' risk of developing ADHD traits.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5<sup>th</sup>ed.). American Psychiatric Association.
- Barak-Levy, Y., Goldstein, E., & Weinstock, M. (2010). Adjustment characteristics of healthy siblings of children with autism. *Journal of Family Studies*, 16(2), 155–164.
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2014). *Bilimsel araştırma yöntemleri*. Pegem.
- Chien, Y. L., Chou, M. C., Chiu, Y. N., Chou, W. J., Wu, Y. Y., Tsai, W. C., & Gau, S. S. (2017). ADHD-related symptoms and attention profiles in the unaffected siblings of probands with autism spectrum disorder: Focus on the subtypes of autism and Asperger's disorder. *Molecular Autism*, 8, 37. <https://doi.org/10.1186/s13229-017-0153-9>
- Dereboy, Ç., Şenol, S., Şener, Ş., & Dereboy F. (2007). Conners Kısa Form Öğretmen ve Ana Baba Derecelendirme Ölçeklerinin geçerliği. *Türk Psikiyatri Dergisi*, 18(1), 48-58.
- Dunn, M. E., Burbine, T., Bowers, C. A., & Tantleff-Dunn, S. (2001). Moderators of stress in parents of children with autism. *Community Mental Health Journal*, 37(1), 39–52. <https://doi.org/10.1023/a:1026592305436>
- George, D., & Mallery, M. (2019). *IBM SPSS statistics 25 step by step: A simple guide and reference*. Routledge.
- Ghirardi, L., Brikell, I., Kuja-Halkola, R., Freitag, C. M., Franke, B., Asherson, P., Lichtenstein, P., & Larsson, H. (2018). The familial co-aggregation of ASD and ADHD: A register-based cohort study. *Molecular Psychiatry*, 23(2), 257–262. <https://doi.org/10.1038/mp.2017.17>
- Goyette, C. H., Conners, C. K., & Ulrich, R. F. (1978). Normative data on revised Conners Parent and Teacher Rating Scales. *Journal of Abnormal Child Psychology*, 6(2), 221–236. <https://doi.org/10.1007/BF00919127>
- Jokiranta-Olkonemi, E., Cheslack-Postava, K., Sucksdorff, D., Suominen, A., Gyllenberg, D., Chudal, R., Leivonen, S., Gissler, M., Brown, A. S., & Sourander, A. (2016). Risk of psychiatric and neurodevelopmental disorders among siblings of probands with autism spectrum disorders. *JAMA Psychiatry*, 73(6), 622–629. <https://doi.org/10.1001/jamapsychiatry.2016.0495>
- Hastings, R. P. (2003). Behavioral adjustment of siblings of children with autism. *Journal of Autism and Developmental Disorders*, 33(1), 99–104. <https://doi.org/10.1023/A:1022290723442>
- Kaminsky, L., & Dewey, D. (2002). Psychosocial adjustment in siblings of children with autism. *Journal of Child Psychology and Psychiatry*, 43(2), 225–232. <https://doi.org/10.1111/1469-7610.00015>
- Kaner, S., Bayraklı, H., Diken, İ. H., & Çelik, S. (2014). *Türkiye'de özel eğitim alanında geliştirilen ve uyarlanan ölçme araçları*. Maya Akademi.
- Lichtenstein, P., Carlström, E., Råstam, M., Gillberg, C., & Anckarsäter, H. (2010). The genetics of autism spectrum disorders and related neuropsychiatric disorders in childhood. *The American Journal of Psychiatry*, 167(11), 1357–1363. <https://doi.org/10.1176/appi.ajp.2010.10020223>

- Lutz, H. R., Patterson, B. J., & Klein, J. (2012). Coping with autism: A journey toward adaptation. *Journal of Pediatric Nursing, 27*(3), 206–213. doi.org/10.1016/j.pedn.2011.03.013
- Macks, R. J. & Reeve, R. E. (2007). The adjustment of non-disabled siblings of children with autism. *Journal of Autism and Developmental Disorder, 37*(6), 1060-1067. https://doi.org/10.1007/s10803-006-0249-0
- Meyer, K., Ingersoll, B., & Hambrick, D.Z. (2011). Factors influencing adjustment in siblings of children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*, 1413-1420. https://doi.org/10.1016/j.rasd.2011.01.027
- Miller, M., Musser, E. D., Young, G. S., Olson, B., Steiner, R. D., & Nigg, J. T. (2019). Sibling recurrence risk and cross-aggregation of attention-deficit/hyperactivity disorder and autism spectrum Disorder. *JAMA Pediatrics, 173*(2), 147–152. https://doi.org/10.1001/jamapediatrics.2018.4076
- Miller, M., Iosif, A. M., Young, G. S., Hill, M. M., & Ozonoff, S. (2018). Early detection of ADHD: Insights from infant siblings of children with autism. *Journal of clinical child and adolescent psychology: The official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 47*(5), 737–744. https://doi.org/10.1080/15374416.2016.1220314
- Mulligan, A., Anney, R. J., O'Regan, M., Chen, W., Butler, L., Fitzgerald, M., Buitelaar, J., Steinhausen, H. C., Rothenberger, A., Minderaa, R., Nijmeijer, J., Hoekstra, P. J., Oades, R. D., Roeyers, H., Buschgens, C., Christiansen, H., Franke, B., Gabriels, I., Hartman, C., Kuntsi, J., ... Gill, M. (2009). Autism symptoms in Attention-Deficit/Hyperactivity Disorder: A familial trait which correlates with conduct, oppositional defiant, language and motor disorders. *Journal of Autism and Developmental Disorders, 39*(2), 197–209. https://doi.org/10.1007/s10803-008-0621-3
- Nijmeijer, J. S., Hoekstra, P. J., Minderaa, R. B., Buitelaar, J. K., Altink, M. E., Buschgens, C. J., Fliers, E. A., Rommelse, N. N., Sergeant, J. A., & Hartman, C. A. (2009). PDD symptoms in ADHD, an independent familial trait? *Journal of Abnormal Child Psychology, 37*(3), 443–453. https://doi.org/10.1007/s10802-008-9282-0
- Pilowsky, T., Yirmiya, N., Gross-Tsur, V., & Shalev, R. S. (2007). Neuropsychological functioning of siblings of children with autism, siblings of children with developmental language delay, and siblings of children with mental retardation of unknown genetic etiology. *Journal of Autism and Developmental Disorders, 37*(3), 537–552. https://doi.org/10.1007/s10803-006-0185-z
- Reddy, G., Fewster, D. L., & Gurayah, T. (2019). Parents' voices: Experiences and coping as a parent of a child with autism spectrum disorder. *South African Journal of Occupational Therapy, 49*, 43-50. dx.doi.org/10.17159/2310-3833/2019/vol49n1a7
- Septier, M., Peyre, H., Amsellem, F., Beggiano, A., Maruani, A., Poumeyreau, M., Amestoy, A., Scheid, I., Gaman, A., Bolognani, F., Honey, G., Bouquet, C., Ly-Le Moal, M., Bouvard, M., Leboyer, M., Bourgeron, T., & Delorme, R. (2019). Increased risk of ADHD in families with ASD. *European Child & Adolescent Psychiatry, 28*(2), 281–288. https://doi.org/10.1007/s00787-018-1206-0
- Shivers, C. M., & Plavnick, J. B. (2015). Sibling involvement in interventions for individuals with autism spectrum disorders: A systematic review. *Journal of Autism and Developmental Disorders, 45*(3), 685–696. https://doi.org/10.1007/s10803-014-2222-7
- Şengül Erdem, H., & Fazlıoğlu, Y. (2020). Otizm spektrum bozukluğu olan çocukların kardeşlerinin psiko-sosyal özelliklerinin projektif testlerle değerlendirilmesi [Evaluation of psychosocial characteristics of typically developed siblings of children with autism spectrum disorders through projective tests]. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, 21*(3), 537-559. https://doi.org/10.21565/ozelegitimdergisi.601445
- Verte', S., Roeyers, H., & Buysse, A. (2003). Behavioural problems, social competence, and self-concept in siblings of children with autism. *Child: Care, Health, and Development, 29*(3), 193–205. https://doi.org/10.1046/j.1365-2214.2003.00331.x