



## Research Paper

# The Relationship Between Sensory Processing Pattern and Social Participation in 6-12-year-old Children With Autism: A Cross-sectional Study



Mohammad Shahsavay<sup>1</sup> , Mehdi Alizadeh Zarei<sup>1</sup>

1. Department of Occupational Therapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran.



\*This work has been published under CC BY-NC-SA 4.0 license.

### Article info:

Received: 05 Aug 2022

Accepted: 23 Oct 2022

Available Online: 20 Dec 2022

### Funding

This article was extracted from the master's thesis of Mohammad Shahsavay, approved by Department of Occupational Therapy, Iran University of Medical Sciences.

### Conflict of interest

The authors declared no conflict of interest.

## ABSTRACT

**Background and Objectives:** Autism spectrum disorder (ASD) is one of the most common neurodevelopmental disorders in children and causes defects in social functions, behaviors, and limited and repetitive interests. One of the symptoms of ASD is a disturbance in sensory function, which can disturb the social participation of affected people. Therefore, the present study was done to determine the relationship between the sensory processing pattern and social participation in children with autism aged 6 to 12 years.

**Methods:** This applied research was carried out in 2022 using a cross-sectional descriptive and analytical method. The research population included 6-12-year-old children with ASD in Tehran. A total of 54 children participated in this study, of whom 49 cases were included in the study after meeting the inclusion criteria. Data collection tools included the Gilliam autism rating scale-3, the children participation assessment scale-parent version (CPAS-P), and sensory profile-2. Finally, the data were analyzed by descriptive and analytical statistics using SPSS software, version 26.

**Results:** The overall score of autism in the studied children was  $76.22 \pm 33.82$ . Among the variables of sensory processing, the highest mean score was related to low registration ( $51.17 \pm 18.55$ ) and the lowest was related to sensation seeking ( $40.16 \pm 93.92$ ). No significant relationship was observed between most variables of sensory processing patterns and social participation in CPAS-P. However, there was an inverse and significant statistical relationship between social participation and sensory-seeking pattern.

**Conclusion:** The results showed that sensory seeking is related to social participation in children with autism. There is an inverse and significant statistical relationship between social participation and sensory search pattern and no relation with the others. Therefore, more severe sensory problems in these children are associated with more prominent social problems.

**Keywords:** Autism, Child, Sensory perception, Social participation



**Cite this article as** Shahsavay M, Alizadeh Zarei M. The Relationship Between Sensory Processing Pattern and Social Participation in 6-12-year-old Children With Autism: A Cross-sectional Study. *Function and Disability Journal*. 2022; 5:E68. <http://dx.doi.org/10.32598/fdj.5.68>

**doi** <http://dx.doi.org/10.32598/fdj.5.68>

### \* Corresponding Author:

**Mehdi Alizadeh Zarei, Associate Professor.**

**Address:** Department of Occupational Therapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran.

**Tel:** +98 (912) 3070065

**E-mail:** [mehdi.alizadeh@yahoo.com](mailto:mehdi.alizadeh@yahoo.com)

↑ *What is “already known” in this topic:*

*The importance of sensory processing in daily life of Autism spectrum disorder is one the critical concerns for clinicians. Many behavior problems of children with autism such as social participation and communication disorders are caused by impaired sensory system. Defining components and patterns of these problems needs to be clear.*

→ *What this article adds:*

*Only sensory seeking pattern showed negative relationship with social participation in children with autism. Severe sensory problems are associated with prominent social problems and maladaptive behavior.*

## Introduction

**A**utism spectrum disorder (ASD) is one of the most common neurodevelopmental disorders in children [1]. This disorder is characterized by deficits in the individual’s social functions and limited and repetitive behaviors and interests [1, 2]. In addition to the main symptoms, there are other defects in the cognitive, motor, and sensory functions of children with autism. Disruption in the executive functions of the brain and movement skills are among the problems of children with autism that may manifest even before the diagnostic criteria of the disease [3].

The prevalence of this disorder increased to one per 160 children in 2012, which is due to the progress in its diagnostic fields [4]. Reports about ASD in the US and other countries indicate that 1% of the population of these countries is affected by this disorder [5]. The prevalence of this disorder in five-year-old Iranian children has been reported as 6.26 per 10000 children, and boys are affected 4.5 times more often than girls [6]. Children with ASD have severe and permanent damage in social interactions and communication skills and also limited interests or repetitive behavior patterns [4]. These problems interfere with their ability to participate in daily life activities, such as play, attending school, leisure, and personal care activities [4, 7].

In addition to the above-mentioned cases, recent research using DSM-5 reported symptoms [7] in a classified form [1]. One of these categories refers to symptoms, such as disturbances in sensory function. In other words, children with ASD suffer from sensory disorders [1, 7]. Sensory processing disorder is described as problems in regulating and organizing the type and intensity of responses to sensory data to match environmental

needs [8]. Any defect in response to sensory stimuli causes this disorder [2]. Sensory processing disorder is classified in different models and one of the most famous of them is the Dunn model. In his 1999 model, Dunn considered the potential role of different neural sensory processes in producing over- and under-normal response patterns. This model reports four different patterns in sensory response to stimuli, which include low registration, sensation seeking, sensory sensitivity, and sensation avoiding. The main difference between these four patterns is in the existence of differences among individuals in the processes of neural adaptation and sensitivity to stimuli and stimulation threshold. This sensory change and disorder does not occur in only one sense and can include a range of senses [9].

The importance of this disorder for researchers has led to the presentation of various models in this field. Researchers believe that many behaviors of children with autism spectrum are caused by sensory symptoms and the type of information processing [10]. Also, the existence of a relationship between social plays and sensory processing in children with autism shows that sensory functions determine the level of participation in the plays in this group of children [11]. Previous studies have reported sensory processing as a factor affecting the level of participation of children in daily life and school activities [10, 11]. According to the occupational therapy practice framework (OTPF), participation in work and employment is a required part of human growth and the experience of life, through which a person acquires the necessary skills and competencies and finds his meaning and purpose in life [12]. Participation in the “International classification of functioning, disability, and health (ICF)” can address life activities and situations [13]. Participation occurs in the environments, in which a person lives, works, and plays [12-14]. Previous studies have shown that cultural differences affect the pattern of

participation, the type of activity that the child chooses, and how to use time; social contexts and cultural behavior can affect children's involvement in leisure activities [13, 14]. According to relevant studies, people with ASD face problems simply in making friendships and other close relationships [15-22]. Children with ASD show a lower desire to interact and participate than their peers of the same age and the same growing periods [23]. Describing the social participation of people with ASD is important as it is a major aspect of their quality of life and reflects current theoretical perspectives that emphasize "participation" as a desirable outcome for individuals with health conditions [24-26]. As children with autism have less desire for group activities and in other words, social participation, the lack of social skills on the one hand, and sensory processing problems on the other hand, can considerably limit the child's ability to perform daily tasks and perfect participation in home, school, and the community tasks [2, 27].

One of the characteristics of autism is social problems. Research shows that several activities in these children are less than that of their peers [28]. This restriction is observed in various areas, such as self-care, mobility in society, social communication, play and recreation, education, etc. [2]. People who have problems in sensory processing and integrating sensory information, their performance is often disrupted [1]. Disturbances in this area can affect daily life activities, rest and sleep, work, education, play and recreation, and finally, social participation [29]. The increase in the number of people with ASD increases the necessity and importance of research to describe and understand the outcomes of social participation in this population [24]. Accordingly, the [Interagency Autism Coordinating Committee \(IACC\)](#) has called for research to improve the quality of life and performance of this group of people, with the overall goal of enabling them to lead a more productive life in society [30]. According to the mentioned issues, the aim of the present study was to determine the relationship between the sensory processing pattern and social participation in children with autism aged 6 to 12 years in the form of a cross-sectional study.

## Materials and Methods

This applied study was carried out in a cross-sectional descriptive and analytical form in 2022.

### Research population and sample

The research population consisted of 6-12-year-old children with autism in Tehran, who were included in the study through convenience sampling from rehabili-

tation clinics, normal and exceptional schools, and special schools for autistic children. The inclusion criteria for the study included the diagnosis of ASD according to DSM V criteria by a pediatric psychiatrist, children with autism in the age range of 6-12 years old and passing the pre-school assessment test, not having a specific vision, hearing, and movement problems that limit their participation, having a caregiver or any substitute member who watches over the child for at least eight months, and the caregiver of the child being iterated, and children in educational environments or schools that have an educational coach who is constantly with them during the educational hours. The exclusion criteria included the non-cooperation of the parents during the tests and the centers' non-cooperation during the tests. After collecting the aforementioned questionnaires on eight children with autism disorder as a pilot, the actual sample size was calculated using Cochran's formula, considering the test power of 80% and the confidence level of 95%.

### Data collection tools

The data collection tool in the first part included demographic information. Also, the Gilliam autism rating scale (GARS) was used, which included 56 items, including the behavioral characteristics of a person with autism and has six areas of restricted interests, repetitive behaviors, social communication, emotional responses, cognitive style, and maladaptive speech. In the study by Ahmadi et al. the cut-off point of the GARS was obtained as 52 and the sensitivity and specificity of the scale were 99% and 100%, respectively. The reliability of this scale was also estimated using Cronbach's  $\alpha$  coefficient as 0.89 [31]. Iranian children's participation assessment scale (CPAS-P) including 71 items in the form of eight activity areas was also used: Daily life activities (such as bathing), functional daily life activities (such as using audio and video equipment), plays (such as computer games), leisure time (such as watching TV), social participation (such as attending friends' birthday parties), educational activities (such as attending sports classes), work (such as doing paid work) and sleep/rest (such as recognizing the time to rest). According to the study by Amini, the reliability and validity of this tool including content validity index (CVI) and content validity ratio (CVR) calculated for all the items of the tool were 0.79 and 0.56, respectively. The intraclass correlation coefficient for children's and parents' items was 0.86 and 0.96, respectively, and Cronbach's  $\alpha$  was above 0.70 for all items [32]; we used the social participation subscale of this test for our study. SP-2 was used to assess the sensory processing pattern in children at home, school, and community environments and was completed by the supervisor and teacher.

This questionnaire has five versions of infant, toddler, child, short, and school companion sensory profile-2 in four areas: Sensory system scores, behavior scores, sensory pattern scores, and school factor scores. According to the study by Shahbazi et al. the CVI indices at the level of the items and at the level of the upper scale were 0.78 and 0.90, and the  $\alpha$  values for all questionnaires ranged from 0.67 to 0.91. In addition, test-retest reliability values for all questionnaires ranged from 0.72 to 0.95 [33].

### Data collection method

The place of data collection was rehabilitation centers, schools, and occupational therapy clinics in Tehran. First, the purpose of the study was explained to the parents of children with autism who were referred to these centers. After obtaining consent, initial evaluations were done to select the samples. The mentioned questionnaires, including the personal information registration questionnaire and the screening questionnaire (GARS-3) for pervasive developmental disorders, by the parents or the caregivers with the mentioned conditions, the sensory profile-2 test by the parents or the caregivers with the mentioned conditions, by the teacher or any person qualified to the mentioned conditions, were completed, and finally, CPAS-P parent was completed by parents or caregivers with the mentioned conditions.

### Data analysis

In order to analyze the data, SPSS software, version 26 was used. Descriptive statistics (frequency, percentage, Mean $\pm$ SD and analytical statistics were utilized using Pearson's correlation test at a significance level of 5%.

## Results

The findings of frequency distribution for the level of autism showed that 15.2% of people did not have autism and among the affected people, most of them were at level two (39.4%) and the least of them were at level three (18.2%) [Figure 1](#).

[Table 1](#) shows the level of social participation and sensory processing patterns of children with autism. The results of this study showed that the overall autism score in the studied children was  $76.33\pm 22.82$ , and five people were excluded from the study due to having a score of 54 or less and not meeting the inclusion criteria. Among the variables of sensory processing, the highest mean was related to low registration ( $51.18\pm 17.55$ ), and the lowest was related to sensation seeking ( $40.93\pm 16.92$ ).

[Figure 1](#) shows the relationship between social participation (CPAS-P) and sensory processing variables, including sensation seeking, sensation avoiding, sensory sensitivity, and low registration.

Based on [Table 2](#), the results of the Pearson correlation analysis showed an inverse and significant relationship between social participation and sensory-seeking pattern ( $P<0.001$ ); while there was no significant statistical relationship between social participation and other sensory processing patterns ( $P<0.05$ ). With increasing social participation, the sensory-seeking pattern decreases significantly.

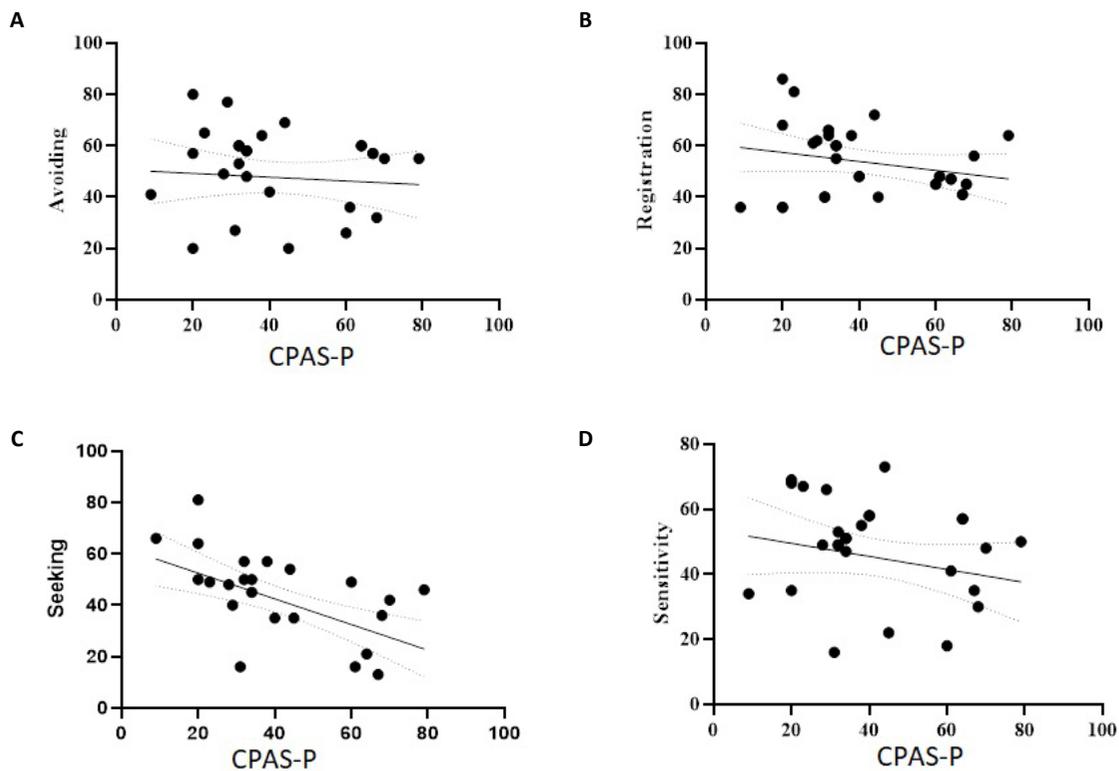
## Discussion

This study was conducted to determine the relationship between sensory processing pattern and social participation of children with autism. The results indicated that most of the studied children had autism at level two. In

**Table 1.** Social participation rate and sensory processing patterns of children with autism

| Variables                     | Numbers              | Minimum | Maximum | Mean $\pm$ SD     |                   |
|-------------------------------|----------------------|---------|---------|-------------------|-------------------|
| Autism                        | 54                   | 26.00   | 119.00  | 76.33 $\pm$ 22.82 |                   |
| CPAS-P (social participation) | 49                   | 9.00    | 79.00   | 42.48 $\pm$ 19.84 |                   |
| Sensory profile               | Sensory seeking      | 49      | 13.00   | 81.00             | 40.93 $\pm$ 16.92 |
|                               | Sensory avoiding     | 49      | 20.00   | 80.00             | 47.54 $\pm$ 16.87 |
|                               | Sensory sensitivity  | 49      | 16.00   | 73.00             | 44.87 $\pm$ 16.23 |
|                               | Sensory registration | 49      | 4.00    | 86.00             | 51.18 $\pm$ 17.55 |

CPAS-P: Children participation assessment scale-parent version.



**Figure 1.** Scatter plots of social participation (CPAPS-P) with sensory patterns in SP2 questionnaire

A) Sensory avoiding pattern, B) Registration pattern, C) Seeking pattern, D) Sensitivity pattern.

a similar study, Nesaeyan et al. investigated the sensory processing pattern of 7-12-year-old children with autism from the perspective of their teachers. They concluded that the sensory processing pattern in autistic students in cases, such as sensory registration, sensory sensitivity, and sensation seeking had a possible difference and a definite difference in terms of sensation avoidance. In general, these children have shown different patterns in sensory processing [34]. These results are different from the findings of the present study. Low sensory registration was found in the study by Nesaeyan et al, while it was higher in the present study.

In a comparative study regarding the relationship between sensory processing and social participation of normal and autistic children, Pastor et al. concluded that in the group of children with autism, sensory pro-

cessing problems, executive and cognitive disorders in certain areas of inhibitory control, sustained auditory attention, and short-term verbal memory are predictable after controlling for the possible effect of ASD severity. In addition, the ASD group showed higher levels of sensory, executive, and cognitive dysfunction than the control group [35].

The results of a review study showed that students with ASD have a lower social participation status in their schools, and high school students face more challenges regarding social participation and interactions with peers [36]. The results of the study by Simmons indicated that the social participation pattern in children with autism was similar in all three environments, including home, school, and community, and in each age group, it was specific to that age group and changed positively with

**Table 2.** Relationship between social participation and sensory processing patterns

| Variables            |                                 | Sensation Seeking | Sensation Avoiding | Sensory Sensitive | Registration |
|----------------------|---------------------------------|-------------------|--------------------|-------------------|--------------|
| Social participation | Pearson correlation coefficient | -0.573            | -0.091             | -0.243            | -0.130       |
|                      | P                               | <0.001            | 0.613              | 0.173             | 0.472        |
|                      | N                               | 49                | 49                 | 49                | 49           |

age [37]. The comparison of the relationship between the sensory processing pattern and social participation of children with autism in different environments was not investigated in the present study, which can be the subject of future research. However, the study by Kojovic et al., like the present study, showed that in the group of children with autism, more severe sensory problems were associated with more prominent social problems and less adaptive functioning. Moreover, the results indicated that children with autism, who have more sensory problems, showed patterns of visual exploration of social scenes that strongly deviated from the pattern observed in the group of normal children [38].

On the other hand, the results showed that the social participation of children with autism has a significant and inverse relationship with their sensation seeking so that as the sensory seeking of these children increases, their social participation decreases. However, the social participation of children with autism does not affect their sensation avoidance, sensory sensitivity, and sensory registration. This relationship was not investigated in the present study, which can be the subject of future studies. The findings by Little et al. also showed that children with autism have more disorders in sensory processing than normal children of the same age. Also, increasing age in this group of children leads to improvement in sensory processing [39]. They also stated that the level of participation of these children also depends on the characteristics of the child and the level of education of the mothers [40].

Bayrami et al. stated that people with autism have a disorder in combining and integrating details in the form of a meaningful and coherent whole, instead, they focus on the details of a stimulus during visual processing, and this detail-based bias leads to the inability of these people in the general processing and integration of information. Children with autism are unable to understand the details of the visual stimuli of their environment due to the weakness in central integration and related processes from extracting abstract and holistic concepts, which can affect the participation of these children in activities [41]. Jasmine et al. stated that the problem in visual processing can also affect the function of the eyes and hands and limit the participation of children with autism in carrying out their activities, such as dressing [42]. In general, children with autism who have more sensory sensitivity problems participate less in activities to face fewer sensory stimuli [43]. One of the main mechanisms that regulate sensory inputs in normal people and provide the person's active participation in activities is the habituation process, which is the ability of a person to recognize

familiar stimuli and then reduce the transmission of stimuli that do not need to be responded to. The sensorimotor gates that modulate the response to repeated stimuli are defective in children with autism, and encountering repeated stimuli leads to a person being placed at a high level of arousal, which can affect the individual's participation in activities [44]. Therefore, the continuous involvement of the nervous system with incoming sensory information, which is caused by the aforementioned defects and sensory sensitivity, can lead to an increase in anxiety in these children and disturb their performance and participation [45]. One of the limitations of the present study is the small size of the sample, which makes it difficult to generalize the findings. Therefore, it is suggested to conduct studies with a larger sample size.

## Conclusion

The results of this study showed that most of the children studied had autism at level two. Most of the components of the sensory processing pattern did not show a relationship with the components of social participation children with autism. Only in relation to sensation seeking, this relationship was inverse. Thus, more severe sensory problems in these children are associated with more prominent social problems and less adaptive functioning. Therefore, it is suggested to consider therapeutic interventions to improve the social participation of children with autism, and educational programs are recommended for parents and teachers regarding the care of children with autism. More studies are also needed in the future to compare the sensory processing pattern in normal and autistic children with social participation problems, investigate the effect of therapeutic interventions in improving the social participation of children with autism, compare the relationship between the sensory processing pattern and the social participation of children with autism at home, school, and community, and investigate the relationship between sensory processing patterns and social participation of children with autism and socio-economic factors.

## Ethical Considerations

### Compliance with ethical guidelines

This article was approved by the Research and Technology Vice-Chancellor of [Iran University of Medical Sciences](#) (Code: IR.IUMS.REC.1401.651).

## Funding

This article was extracted from the master's thesis of Mohammad Shahsavary, approved by Department of Occupational Therapy, [Iran University of Medical Sciences](#).

## Authors' contributions

Conceptualization: Mehdi Alizadeh Zarei; Data collection and data analysis: Mohammad Shahsavary; Writing-original draft and finalization: All authors.

## Conflict of interest

The authors declared no conflict of interest.

## Acknowledgments

The parents and teachers of children with autism who participated in this study are highly appreciated.

## References

- [1] Kulage KM, Smaldone AM, Cohn EG. How will DSM-5 affect autism diagnosis? A systematic literature review and meta-analysis. *J Autism Dev Disord*. 2014; 44(8):1918-32. [DOI:10.1007/s10803-014-2065-2] [PMID]
- [2] Hilton C, Graver K, LaVesser P. Relationship between social competence and sensory processing in children with high functioning autism spectrum disorders. *Res Autism Spectr Disord*. 2007; 1(2):164-73. [DOI:10.1016/j.rasd.2006.10.002]
- [3] Dunn W. The impact of sensory processing abilities on the daily lives of young children and their families: A conceptual model. *Infants Young Child*. 1997; 9(4):23-35. [DOI:10.1097/00001163-199704000-00005]
- [4] Elsabbagh M, Divan G, Koh YJ, Kim YS, Kauchali S, Marcín C, et al. Global prevalence of autism and other pervasive developmental disorders. *Autism Res*. 2012; 5(3):160-79. [DOI:10.1002/aur.239] [PMID] [PMCID]
- [5] Christensen DL, Maenner MJ, Bilder D, Constantino JN, Daniels J, Durkin MS, et al. Prevalence and characteristics of autism spectrum disorder among children aged 4 years - early autism and developmental disabilities monitoring network, seven sites, united states, 2010, 2012, and 2014. *MMWR Surveill Summ*. 2019; 68(2):1-19. [DOI:10.15585/mmwr.ss6802a1] [PMID] [PMCID]
- [6] Samadi SA, Mahmoodizadeh A, McConkey R. A national study of the prevalence of autism among five-year-old children in Iran. *Autism*. 2012; 16(1):5-14. [DOI:10.1177/1362361311407091] [PMID]
- [7] Sadock BJ. Kaplan & Sadock's synopsis of psychiatry: Behavioral sciences/clinical psychiatry. Philadelphia: Wolter Kluwer/Lippincott Williams & Wilkins; 2007. [Link]
- [8] Dunn W. The sensations of everyday life: Empirical, theoretical, and pragmatic considerations. *Am J Occup Ther*. 2001; 55(6):608-20. [DOI:10.5014/ajot.55.6.608] [PMID]
- [9] Ahmadi Kahjoogh M, Farahbod M, Soortigi H, Rassafiani M. [Sensory Processing patterns in children with autism disorder from Winnie Dunn's perspective (Persian)]. *J Except Child*. 2011; 10(4):385-93. [Link]
- [10] Matsushima K, Kato T. Social interaction and atypical sensory processing in children with autism spectrum disorders. *Hong Kong J Occup Ther*. 2013; 23(2):89-96. [DOI:10.1016/j.hkjot.2013.11.003]
- [11] Pfeiffer BA, Koenig K, Kinnealey M, Sheppard M, Henderson L. Effectiveness of sensory integration interventions in children with autism spectrum disorders: A pilot study. *Am J Occup Ther*. 2011; 65(1):76-85. [DOI:10.5014/ajot.2011.09205] [PMID] [PMCID]
- [12] Law M. Participation in the occupations of everyday life. *Am J Occup Ther*. 2002; 56(6):640-9. [DOI:10.5014/ajot.56.6.640] [PMID]
- [13] Yan J, McCullagh P. Cultural influence on youth's motivation of participation in physical activity. *Journal of sport Behavior*. 2004; 27(4):378-90. [Link]
- [14] Engel-Yeger B, Jarus T, Law M. Impact of culture on children's community participation in Israel. *Am J Occup Ther*. 2007; 61(4):421-8. [DOI:10.5014/ajot.61.4.421] [PMID]
- [15] Lounds Taylor J, Adams RE, Bishop SL. Social participation and its relation to internalizing symptoms among youth with autism spectrum disorder as they transition from high school. *Autism Res*. 2017; 10(4):663-72. [DOI:10.1002/aur.1709] [PMID] [PMCID]
- [16] Bauminger N, Kasari C. Loneliness and friendship in high-functioning children with autism. *Child Dev*. 2000; 71(2):447-56. [DOI:10.1111/1467-8624.00156] [PMID]
- [17] Billstedt E, Gillberg IC, Gillberg C. Autism in adults: Symptom patterns and early childhood predictors. Use of the DISCO in a community sample followed from childhood. *J Child Psychol Psychiatry*. 2007; 48(11):1102-10. [DOI:10.1111/j.1469-7610.2007.01774.x] [PMID]
- [18] Chamberlain B, Kasari C, Rotheram-Fuller E. Involvement or isolation? The social networks of children with autism in regular classrooms. *J Autism Dev Disord*. 2007; 37(2):230-42. [DOI:10.1007/s10803-006-0164-4] [PMID]
- [19] Howlin P, Goode S, Hutton J, Rutter M. Adult outcome for children with autism. *J Child Psychol Psychiatry*. 2004; 45(2):212-29. [DOI:10.1111/j.1469-7610.2004.00215.x] [PMID]
- [20] Locke J, Ishijima E, Kasari C, London N. Loneliness, friendship quality and the social networks of adolescents with high-functioning autism in an inclusive school setting. *J Res Spec Educ Needs*. 2010; 10(2):74-81. [DOI:10.1111/j.1471-3802.2010.01148.x]
- [21] Lyons J, Cappadocia MC, Weiss JA. Social characteristics of students with autism spectrum disorders across classroom settings. *J Dev Disabil*. 2011; 17(1):77-82. [Link]
- [22] Petrina N, Carter M, Stephenson J. The nature of friendship in children with autism spectrum disorders: A systematic review. *Res Autism Spectr Disord*. 2014; 8(2):111-26. [DOI:10.1016/j.rasd.2013.10.016]
- [23] Chen YW, Bundy AC, Cordier R, Chien YL, Einfeld SL. Motivation for everyday social participation in cognitively able individuals with autism spectrum disorder. *Neuropsychiatr Dis Treat*. 2015; 11:2699. [DOI:10.2147/NDT.S87844] [PMID] [PMCID]

- [24] Orsmond GI, Shattuck PT, Cooper BP, Sterzing PR, Anderson KA. Social participation among young adults with an autism spectrum disorder. *J Autism Dev Disord.* 2013; 43(11):2710-9. [DOI:10.1007/s10803-013-1833-8] [PMID] [PMCID]
- [25] Verdugo MA, Navas P, Gómez LE, Schalock RL. The concept of quality of life and its role in enhancing human rights in the field of intellectual disability. *J Intellect Disabil Res.* 2012; 56(11):1036-45. [DOI:10.1111/j.1365-2788.2012.01585.x] [PMID]
- [26] World Health Organization (WHO). International classification of functioning, disability and health: Children and youth version: ICF-CY. Geneva: World Health Organization; 2007. [Link]
- [27] Constantino JN, Todd RD. Autistic traits in the general population: A twin study. *Arch Gen Psychiatry.* 2003; 60(5):524-30. [DOI:10.1001/archpsyc.60.5.524] [PMID]
- [28] Schaaf RC, Hunt J, Benevides T. Occupational therapy using sensory integration to improve participation of a child with autism: A case report. *Am J Occup Ther.* 2012; 66(5):547-55. [DOI:10.5014/ajot.2012.004473] [PMID]
- [29] Croonenberghs J, Bosmans E, Deboutte D, Kenis G, Maes M. Activation of the inflammatory response system in autism. *Neuropsychobiology.* 2002; 45(1):1-6. [DOI:10.1159/000048665] [PMID]
- [30] Interagency Autism Coordinating Committee (IACC). IACC strategic plan for autism spectrum disorder research: 2012 update. Washington, D.C.: Interagency Autism Coordinating Committee; 2012. [Link]
- [31] Ahmadi Sj, Safari T, Hemmatian M, Khalili Z. [The psychometric properties of Gilliam autism rating scale (GARS) (Persian)]. *Res Cogn Behav Sci.* 2011; 1(1):87-104. [Link]
- [32] Amini M, Mehraban AH, Haghni H, Asgharnejhad AA, Mahani MK. Development and validation of Iranian children's participation assessment scale. *Med J Islam Repub Iran.* 2016; 30:333. [Link]
- [33] Shahbazi M, Mirzakhany N, Alizadeh Zarei M, Zayeri F, Daryabor A. Translation and cultural adaptation of the sensory profile 2 to the Persian language. *Br J Occup Ther.* 2021; 84(12):794-805. [DOI:10.1177/0308022621991768]
- [34] Nesaeyan A, Kazemi F, Pishyare E, Hashemi Azar J, Farrokhi N. [Sensory processing patterns of autistic children from teachers' point of view (Persian)]. *North Khorasan Univ Med Sci.* 2013; 5(3):653-61. [DOI:10.29252/jnkums.5.3.653]
- [35] Pastor-Cerezuola G, Fernández-Andrés MI, Sanz-Cervera P, Marín-Suelves D. The impact of sensory processing on executive and cognitive functions in children with autism spectrum disorder in the school context. *Res Dev Disabil.* 2020; 96:103540. [DOI:10.1016/j.ridd.2019.103540] [PMID]
- [36] Mamas C, Daly AJ, Cohen SR, Jones G. Social participation of students with autism spectrum disorder in general education settings. *Learn Cult Soc Interact.* 2021; 28:100467. [DOI:10.1016/j.lcsi.2020.100467]
- [37] Simmons DR, Robertson AE, McKay LS, Toal E, McAleer P, Pollick FE. Vision in autism spectrum disorders. *Vision Res.* 2009; 49(22):2705-39. [DOI:10.1016/j.visres.2009.08.005] [PMID]
- [38] Kojovic N, Ben Hadid L, Franchini M, Schaer M. Sensory processing issues and their association with social difficulties in children with autism spectrum disorders. *J Clin Med.* 2019; 8(10):15-25. [DOI:10.3390/jcm8101508] [PMID] [PMCID]
- [39] Little LM, Dean E, Tomchek S, Dunn W. Sensory processing patterns in autism, attention deficit hyperactivity disorder, and typical development. *Phys Occup Ther Pediatr.* 2018; 38(3):243-54. [DOI:10.1080/01942638.2017.1390809] [PMID]
- [40] Little LM, Sideris J, Ausderau K, Baranek GT. Activity participation among children with autism spectrum disorder. *Am J Occup Ther.* 2014; 68(2):177-85. [DOI:10.5014/ajot.2014.009894] [PMID] [PMCID]
- [41] Bayrami M, Mahmoodalilou M, Hashemi T, Alizadeh Zarei M. [Perceptual integration and visual object recognition in children with high functioning autism (Persian)]. *Journal of Kermanshah University of Medical Sciences.* 2014; 17(10):637-46. [Link]
- [42] Jasmin E, Couture M, McKinley P, Reid G, Fombonne E, Gisel E. Sensori-motor and daily living skills of preschool children with autism spectrum disorders. *J Autism Dev Disord.* 2009; 39(2):231-41. [DOI:10.1007/s10803-008-0617-z] [PMID]
- [43] Reynolds S, Bendixen RM, Lawrence T, Lane SJ. A pilot study examining activity participation, sensory responsiveness, and competence in children with high functioning Autism Spectrum Disorder. *J Autism Dev Disord.* 2011; 41(11):1496-506. [DOI:10.1007/s10803-010-1173-x] [PMID] [PMCID]
- [44] Hilton C, Ratcliff K. Sensory processing and motor issues in autism spectrum disorders. In: Matson, JL, Sturmey P (editors). *Handbook of autism and pervasive developmental disorder.* Berlin: Springer; 2022. [DOI:10.1007/978-3-030-88538-0\_4]
- [45] Derakshan N, Eysenck MW. Anxiety, processing efficiency, and cognitive performance: New developments from attentional control theory. *Eur Psychol.* 2009; 14(2):168-176. [DOI:10.1027/1016-9040.14.2.168]

## مقاله پژوهشی

# ارتباط بین الگوی پردازش حسی و مشارکت اجتماعی در کودکان ۶ تا ۱۲ ساله مبتلا به اوتیسم: یک مطالعه مقطعی

محمد شاهسواری<sup>۱</sup>، مهدی علیزاده زارعی<sup>۱\*</sup>

۱. گروه آموزشی کاردرمانی، مرکز تحقیقات توانبخشی، دانشکده علوم توانبخشی، دانشگاه علوم پزشکی ایران، تهران، ایران.

## چکیده

تاریخ دریافت: ۱۴ مرداد ۱۴۰۱

تاریخ پذیرش: ۰۱ آبان ۱۴۰۱

تاریخ انتشار: ۳۰ آذر ۱۴۰۱

**مقدمه:** اختلال طیف اوتیسم یکی از شایع‌ترین اختلالات تکامل عصبی در کودکان و نقص در عملکردهای اجتماعی فرد، رفتارها، علایق محدود و تکراری است. از جمله علائم این بیماری آشفتگی در عملکرد حسی است که می‌تواند مشارکت اجتماعی افراد مبتلا را دچار اختلال کند. بنابراین، هدف مطالعه حاضر تعیین ارتباط بین الگوی پردازش حسی و مشارکت اجتماعی در کودکان مبتلا به اوتیسم ۶ تا ۱۲ سال است.

**مواد و روش‌ها:** این مطالعه کاربردی به روش مقطعی توصیفی و تحلیلی در سال ۱۴۰۱ به انجام رسید. جامعه پژوهش شامل کودکان ۶ تا ۱۲ ساله مبتلا به اختلال طیف اوتیسم شهر تهران بودند که به شکل در دسترس به تعداد ۵۴ نفر در مطالعه شرکت کردند و ۴۹ نفر از آنها بعد از کسب معیار ورود، وارد مطالعه شدند. ابزارهای جمع‌آوری اطلاعات شامل مقیاس رتبه‌بندی اوتیسم گیلیام، مقیاس پاسخگویی اجتماعی، ابزار سنجش مشارکت اجتماعی اسمکا، و پرسشنامه ارزیابی الگوی پردازش حسی بودند. در نهایت، داده‌ها به کمک آماره‌های توصیفی و تحلیلی به کمک نرم‌افزار SPSS نسخه ۲۶ تحلیل شدند.

**یافته‌ها:** نمره کلی اوتیسم در کودکان مورد مطالعه،  $76/22 \pm 33/82$  بوده است. از بین متغیرهای پردازش حسی نیز بیش‌ترین میانگین مربوط به ثبت حسی ( $51/17 \pm 18/55$ ) و کم‌ترین آن مربوط به جستجوی حسی ( $40/16 \pm 93/92$ ) بود. بین اکثر متغیرهای الگوهای پردازش حسی و مشارکت اجتماعی و برعکس رابطه معناداری مشاهده نشد.

**نتیجه‌گیری:** نتایج نشان داد که الگوهای پردازش حسی با مشارکت اجتماعی در کودکان مبتلا به اوتیسم فاقد ارتباط است. ارتباط آماری معکوس و معنی‌داری بین مشارکت اجتماعی و الگوی جستجوی حسی وجود دارد. بنابراین، مشکلات حسی شدیدتر در این کودکان با مشکلات اجتماعی برجسته‌تر و عملکرد انطباقی کمتر مرتبط است.

## کلیدواژه‌ها:

کودکان اوتیسم، درک حسی، مشارکت اجتماعی

Use your device to scan and read the article online



**Cite this article as** Shahsavay M, Alizadeh Zarei M. The Relationship Between Sensory Processing Pattern and Social Participation in 6-12-year-old Children With Autism: A Cross-sectional Study. Function and Disability Journal. 2022; 5:E68. <http://dx.doi.org/10.32598/fdj.5.68>

<http://dx.doi.org/10.32598/fdj.5.68>

## \* نویسنده مسئول:

مهدی علیزاده زارعی

نشانی: تهران، دانشگاه علوم پزشکی ایران، دانشکده علوم توانبخشی، مرکز تحقیقات توانبخشی، گروه آموزشی کاردرمانی.

تلفن: ۳۰۷۰۰۶۵ (۹۱۲) +۹۸

رایانامه: [mehdi.alizadeh@yahoo.com](mailto:mehdi.alizadeh@yahoo.com)