

## Executive functioning and Social Skill in children with autism: A case series

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### ABSTRACT

Autism spectrum disorder (ASD) is a developmental disorder that affects communication and behavior. Although autism can be diagnosed at any age, it is described as a “developmental disorder” because symptoms generally appear in the first two years of life. Autism affecting almost 2% of children in World. Autism is characterized by severe and pervasive impairments in several important areas of development: reciprocal social interaction and communication as well as behavior. Executive function (EF) has been of interest and has a role in contributing to specific impairments, described as poor regional coordination and integration of prefrontal executive processes that integrate with other emotion and social circuits. Understanding how autism affects social functioning development at both behavioral and neuropsychological level is important for the conception of effective and early interventions to improve social and communicative skills in individuals suffering from this pathology. **Methods:** The aim of the present study is to understand the executive functioning and social skills by a case series of 5 children diagnosed with Autism. In the present study 5 male children with IQ=70 or above within the age range of 6-12 were undertaken to assess Executive Functioning and Social skills. Color Trail Test, Animal Cancellation Test, Design Fluency Test and Maze Test were administered to executive functioning and Autism social skills profile was administered to assess the social functioning of Autism. **Results:** Findings indicated significant impairment in Executive functioning and social skills which require early psychosocial interventions.

**Keywords:** Autism, Executive Functioning, Social Skills.

Autism Spectrum Disorder (ASD) is a developmental disorder which influences communication skills and behavior. In spite of the fact, ASD can be diagnosed at any developmental age and symptoms are generally appeared in first two years of life. Diagnostic and Statistical Manual of Mental Disorders (DSM-5), characterized people with autism as having difficulties with communication and interaction skill with other people, restricted interest and repetitive behaviors, presence of symptoms that affect the person’s

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Received: May 20, 2020; Revision Received: June 16, 2020; Accepted: June 25, 2020

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ability to function in school, work and other functional areas in life. Psychological treatment services can improve a person's symptomatology and functional ability; though it is a lifelong disorder noticeable improvement can be recognized. Symptom Focused intervention parental counseling and training can also be included. Prevalence of autism was once considered as relatively low but current epidemiological data have altered this perception. Recent estimated prevalence rate of ASD in India ranges from 0.15% to 1.01%. Neuro-pathological studies showed that ASD has its origin in abnormal brain development in prenatal life (Bauman and Kemper, 2003; Rodier, 2002). During postnatal development atypical acceleration in brain growth (Courchesne et al., 2003; Lainhart et al., 1997). Adaptation to variable of the environment is difficult for children with autism. They show rigid behavior, could not alter previous behavioral patterns and face difficulties to adopt new plans (Kenworthy et al. 2010; Yerys et al. 2009). Studies show that, people with ASD are having difficulties in establishing communication and creating social relationships caused by a problem with social motivation (Chevallier et al., 2012). The longitudinal research predicts the deficits of social functioning throughout the life occur in ASD. Social communication skills include a broad array of verbal and nonverbal behaviors used in reciprocal social interaction. Weaknesses in social communication are universal in children with ASD across ages and ability level, in spite of heterogeneity of language abilities (Tager-Flusberg, Joseph, & Folstein, 2001).

Disorders which has onset in childhood are marked by persistent and developmentally inappropriate symptoms include cognitive and behavioral abnormalities. Researches on autism and other neuro-developmental disorders suggest that unique and special deficits in social and communication skills could be noticed but given less emphasis on its underlying cognitive functioning. Communication skill includes verbal, linguistic and non verbal interaction with others. Along with communication and social skill, difficulties in executive functioning are also found significant. According to Monsell (2003); Turner et.al ;1999) executive functioning is a deficit area of children with autism especially cognitive flexibility, planning, decision making, problem solving and set shifting (Russell, 1997). However, not much studies are found in India on cognitive functioning and social behavior in ASD as compared to studies conducted on cognitive functioning of Attention Deficits Hyperactive Disorders (Kotnala & Halder 2018). Whereas, understanding social behavior is not complete without knowing the connection with executive functioning. Restricted and stereotype patterns of behavior interest and activities lead to impairment in executive functions that are put into practice to autonomic activities. Symptom patterns of autism decrease skills to organize, be flexible, anticipate, plan, set objectives and goals, control impulse. Major difficulties with people on the autism spectrum experience with lack of motivation, coping with changes, self-regulation and control as well as an impact of practical daily life skills that associate with self-organization and planning i.e. dressing, cleaning, organizing, which need to understand in context of planning intervention.

### *Aim*

- The aim of the present study is to understand the executive functioning and social skills by a case series of 5 children diagnosed with Autism.

## **METHODOLOGY**

For the present study, 5 male children with autism were selected. Purposive sampling method has been used and the duration of the study was 2 months. Inclusion criteria for the present study were –

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Children Diagnosed with autism, 2) male gender, 3) the age range of the present sample 6-12 years.

- 1. Color Trail Test-** This test is substitution of Trail Making Test to avoid the influence of language. In the present study, tailor made color trail test was developed. For Part 1, the respondent uses a pencil to rapidly connect red circles numbered 1-25 in sequence. For Part 2, the respondent rapidly connects numbered circles in sequence, but alternates between blue and red.
- 2. Animal Cancellation Test-** This test of WISC IV was used to assess the selective attention of the children with autism. In this test the child was asked to omit the animals from the list of pictures.
- 3. Design Fluency Test –** This test has been used to assess the ability to produce novel designs. The subject produces the new forms and cannot reproduce these forms from memory.
- 4. Maze Test –** This test was administered to assess the planning ability of the child. The test requires the subject to trace through the maze and reach the end point. The test has 5 mazes which have to be completed in the given time limit.
- 5. Autism Social Skills Profile-** The ASSP is a new assessment tool that provides a comprehensive measure of social functioning for children and adolescents with ASD. The items on the ASSP represent a broad range of social behaviors typically exhibited by individuals with ASD including initiation skills, social reciprocity, perspective-taking, and nonverbal communication. Internal consistency of the instrument was high for the total sample ( $\alpha = .926$ ) and the high-functioning group ( $\alpha = .940$ ).

All these were administered to assess the executive functioning and Autism social skills profile was administered to assess the social functioning of Autism.

### *Case Details*

Most of the participants were well kempt and tidy and they looked age appropriate. Eye contact of the participants was mostly not present though touch with surroundings was present. Rapport was established with difficulty and their attitude towards the examiner was uncooperative. They could not able to sustain their attention for long and were having difficulties in following instructions. Two of the participants were restless throughout the session and repeated encouragement was needed to complete the assessments. Through behavioural observation it can be seen that presence of silly smiling, hyperactivity and rigidity were present in the most of the participants. It was seen that irritability and temper tantrums were present in some of the participants.

## RESULTS

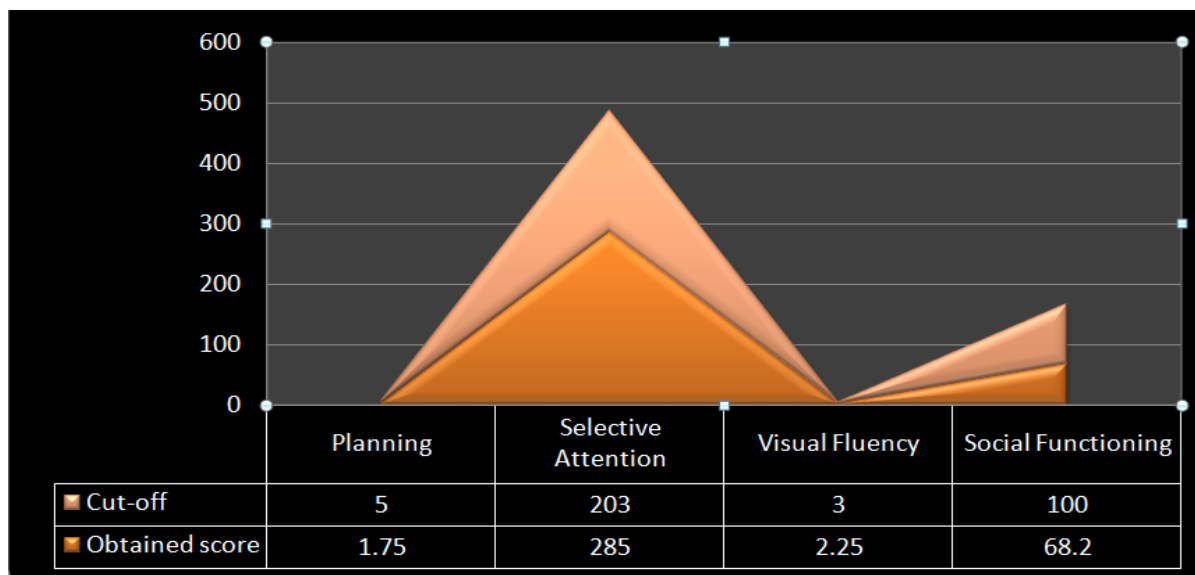
*Table 1 showing Details of sample for the study*

<b>Sample Size</b>	5
<b>Age Range</b>	6-12 Years
<b>Gender</b>	Male
<b>IQ</b>	63-94
<b>SQ</b>	68-86

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**Table 2: Describing the variables of executive functioning, attention and social functioning of the 5 children with autism:**

Cognitive functioning	Domain	Measures	Score	Impression
<b>Executive Functioning</b>	Planning	Maze Test	1.75	Below Average
	Cognitive Flexibility	Colour Trail Making Test	80.5	Average
	Visual Fluency	Design Fluency	2.25	Below Average
<b>Attention</b>	Selective Attention	Animal Cancellation Test	15.25	Below Average
<b>Social Functioning</b>	Social Skills	Autism Social Skills Profile	68.2	Below Average



## DISCUSSION

The present study is exploring the attention, executive functioning, and social functioning by a case series of children with Autism Spectrum Disorder (ASD). Table 1 suggests age range of the participants is found to be 6 to 12 years and range of intellectual functioning is found to be 63 – 94 which indicates they fall under high functioning autism category. Finding suggests that there is significant impairment in the domain of selective attention, visual fluency, planning and social skills.

In the present study, result reveals that difficulties or impairment in selective attention in children with autism is prominent. Selection of relevant stimuli while ignoring the irrelevant stimuli in the environment is difficult for them (Anna and John, 2009). Children with ASD having difficulties in inclusion of information in a single coherent and general attentional field.

In case of children with autism local information processing takes place before global information. Perception of irrelevant specific details of images or objectives disturbs entire attention process. Hyperactivity and inattention are prevalent behaviours in children with autism and it interferes with focusing on a task and daily functioning abilities. Daily living

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functioning, social activities and self help skill and occupational functioning get impaired due to difficulties of compensatory process of attention (Belmonte, 2003).

As there is impairment in organizing daily life activities, maintaining social functioning and coping which impedes poor planning in children with ASD (Van den Bergh, 2014; APA 2013). Children with autism tend to fail in processing contextual meaning. Result suggests that there is also a significant impairment in domain of visual fluency. Previous studies suggested that children with ASD have deficits in abilities which are related to visual fluency compared to normal children (Lewis and Boucher, 1991). It has been found that deficiency in social communication is evident in these children with ASD.

Children with autism often delayed in expressive and receptive language that leads to minimal understanding of speech indicating poor communication skills. Difficulties in social orientation, interaction and social maintaining that are the desire to maintain and improve social relationships are common in ASD. Children with ASD are often unable to use appropriate gestures to give meaning to their speech which leads to improper communication and can misinterpret their expression. Poor awareness in social behaviour and interaction skills is recognisable in children with ASD (Debbie and Sarah, 2015; Bishop, 2014). Implication of the present study is to enlighten the difficulties in different domains of Executive functioning and social functioning in Autism.

### CONCLUSION

It can be concluded that advancement of cognitive rehabilitation programmes for children with autism could be developed by focusing on domains which has been found to be impaired. Few studies have been done in the domain of visual fluency. Significant impairment in Executive functioning and social skills which require early psychosocial interventions.

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### ***Acknowledgements***

The author appreciates all those who participated in the study and helped to facilitate the research process.

### ***Conflict of Interest***

The author declared no conflict of interest.

**How to cite this article:** S. Ghosh, S. Samajdar & S. Halder (2020). Executive functioning and Social Skill in children with autism: A case series. *International Journal of Indian Psychology*, 8(2), 860-866. DIP:18.01.101/20200802, DOI:10.25215/0802.101