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SELECTIVE ATTENTION AND THE VISUOSPATIAL SKETCHPAD IN CHILDREN WITH ASPERGER SYNDROME: A CLINICAL FIELD STUDY

Choual Nacera[1] , Habas Sabrina[2]

[1]Lecturer A, Department of Speech Therapy (Orthophonie), Hassiba Ben Bouali University, Chlef, Algeria. n.choual@univ-chlef.dz
[2]Specialist in Clinical Psychology, Chlef, Algeria

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Abstract
This study aimed to assess the level of selective attention and visuospatial sketchpad functioning in children diagnosed with Asperger syndrome, and to examine the nature of the cognitive performance associated with these two cognitive functions in this population. The study was guided by a general hypothesis positing the existence of deficits in selective attention and visuospatial sketchpad capacity in children with Asperger syndrome compared to typically developing peers. To test this hypothesis, a clinical methodology based on case study design was employed, drawing on a set of instruments comprising direct clinical observation, semi-structured clinical interview, the Stroop Test for selective attention, and the Baddeley Test for the visuospatial sketchpad. The study was conducted at the Autism Unit of the Psychiatric Hospital of Ténès, in the wilaya of Chlef, Algeria, for the purpose of selecting appropriate cases for the main study. The main study comprised four children diagnosed with Asperger syndrome, ranging in age from 6 to 9 years, over the period from 15 March 2025 to 22 March 2025.

The findings revealed that children with Asperger syndrome demonstrated relatively high levels of performance in both selective attention and visuospatial sketchpad tasks. The majority of cases achieved good results on the Stroop and Baddeley tests, suggesting the absence of severe impairment in either of these cognitive functions among the cases studied.

Keywords: selective attention; visuospatial sketchpad; Asperger syndrome; Stroop Test; Baddeley model.

1. Introduction

Cognitive psychology has witnessed remarkable advances over recent decades in the study of higher-order cognitive processes. Scholarly attention has increasingly been directed toward understanding the mechanisms of attention, memory, and cognition, which are recognized as the foundations of mental activity and human behavior. Cognitive processes are among the most important domains for explaining how individuals receive, organize, process, and retrieve information—thereby enabling adaptation to the environment and engagement with diverse situations.

Attention is among the fundamental cognitive functions that allow the individual to select relevant stimuli from a vast array of environmental inputs, a capacity commonly referred to as selective attention. This concept denotes the individual's ability to concentrate perceptual resources on a specific stimulus while simultaneously inhibiting irrelevant stimuli (Posner & Petersen, 1990).

The significance of selective attention is particularly pronounced in children, especially within educational and social contexts, where the child must focus on relevant instructions and stimuli while suppressing external distractors. Any dysfunction in this capacity may result in learning difficulties, impaired academic performance, and disruptions in social interaction.

Working memory, for its part, constitutes one of the most important cognitive systems responsible for the temporary storage and processing of information during the execution of complex mental tasks. Baddeley and Hitch proposed their influential model of working memory, which comprises several subsystems, including the visuospatial sketchpad—a component specifically dedicated to the processing and short-term retention of visual and spatial information (Baddeley & Hitch, 1974).

The visuospatial sketchpad is indispensable for a wide range of cognitive activities, including reading, writing, arithmetic, planning, and organization, and plays a central role in interaction with the surrounding environment. Research interest in this function has grown considerably in the context of children with neurodevelopmental disorders, most notably autism spectrum disorder (ASD) and Asperger syndrome.

Asperger syndrome is classified as a high-functioning form of autism spectrum disorder, characterized by relatively preserved linguistic and cognitive abilities alongside notable difficulties in social interaction, cognitive flexibility, and nonverbal communication (American Psychiatric Association, 2013).

Numerous studies have documented cognitive difficulties related to executive functions, attention, and working memory in children with Asperger syndrome. However, findings have been inconsistent: some studies have identified clear deficits in selective attention and the visuospatial sketchpad, while others have demonstrated that this population retains good levels of cognitive performance, particularly among children with higher intellectual ability.

Within the Arabic and Algerian research context, neuropsychological studies addressing Asperger syndrome remain relatively scarce, underscoring the need for broader investigation into the cognitive dimensions of this condition. It is within this context that the present study was conducted, with the aim of assessing selective attention and visuospatial sketchpad functioning in children with Asperger syndrome and interpreting the nature of their cognitive performance in light of contemporary cognitive psychological theory.

2. Statement of the Problem

Contemporary research has demonstrated a growing interest in understanding neurodevelopmental disorders, particularly autism spectrum disorders, which represent among the most complex conditions from psychological and cognitive standpoints. Within this domain, Asperger syndrome stands out as a distinctive developmental pattern characterized by relatively good cognitive and linguistic abilities alongside clear difficulties in social interaction, attention, and cognitive flexibility.

Selective attention is among the fundamental executive functions enabling the individual to focus perceptual resources on a given stimulus while disregarding irrelevant inputs. It is closely linked to learning, memory, and problem-solving processes, constituting a necessary condition for all effective cognitive activity.

Multiple studies have confirmed that children with Asperger syndrome experience varying degrees of selective attention disruption due to dysfunction in the neural networks governing executive control and voluntary attention. Keehn et al. (2013) demonstrated the presence of dysregulated activation in the frontal-parietal regions associated with selective attention in children with autism spectrum disorder.

The visuospatial sketchpad is likewise considered among the most important cognitive components associated with academic achievement and cognitive adaptation, enabling the temporary retention and processing of visual and spatial information during the performance of diverse tasks. Baddeley (2000) identified the visuospatial sketchpad as one of the core components of working memory.

A number of studies have shown that children with Asperger syndrome may experience weaknesses in the visuospatial sketchpad, particularly in tasks requiring simultaneous processing of information or sequential organization of data (Ozonoff et al., 2005).

In the Algerian research context, studies addressing the neuropsychological dimensions of children with Asperger syndrome remain limited, with most existing work focusing on behavioral and social aspects rather than engaging in detailed analysis of specific cognitive processes.

The research problem of the present study may therefore be articulated in the following general question:

General Research Question:

Is there a deficit in selective attention and visuospatial sketchpad functioning in children with Asperger syndrome?

Sub-questions:

- Do children with Asperger syndrome exhibit a deficit in selective attention?
- Do children with Asperger syndrome exhibit a deficit in visuospatial sketchpad capacity?

3. Research Hypotheses

General Hypothesis:
Children with Asperger syndrome demonstrate deficits in both selective attention and visuospatial sketchpad functioning compared to typically developing peers.

Sub-hypotheses:
- Children with Asperger syndrome exhibit reduced selective attention skills.
- Children with Asperger syndrome demonstrate a deficit in the capacity and efficiency of the visuospatial sketchpad.

4. Significance of the Study
The significance of the present study derives from the theoretical and applied importance of the topic of cognitive processes in children with Asperger syndrome. The study's significance may be elaborated as follows:
- Shedding light on the cognitive dimensions associated with Asperger syndrome, particularly selective attention and the visuospatial sketchpad.
- Enriching the Arabic and Algerian research literature with a field study examining executive functions in children with Asperger syndrome.
- Contributing to the development of neuropsychological diagnostic approaches for this population.
- Providing empirical data applicable to the design of therapeutic and educational intervention programs.
- Directing the attention of professionals and parents toward the importance of developing cognitive functions in children with autism spectrum disorders.

5. Objectives of the Study
The present study aims to achieve the following primary objectives:
- To assess the level of selective attention in children with Asperger syndrome.
- To evaluate the efficiency of the visuospatial sketchpad in children with Asperger syndrome.
- To examine the nature of the relationship between selective attention and the visuospatial sketchpad.
- To apply neuropsychological measurement instruments within the Algerian context.
- To interpret the cognitive performance of children with Asperger syndrome in light of contemporary theoretical frameworks.

6. Conceptual and Operational Definitions

6.1. Conceptual Definitions
- **Selective Attention:** The individual's ability to direct attention toward a specific stimulus while inhibiting other stimuli that are irrelevant to the task at hand (Lavie, 2005).
- **Visuospatial Sketchpad:** A subsystem of working memory responsible for the temporary retention and processing of visual and spatial information during the performance of cognitive activities (Baddeley, 2000).
- **Asperger Syndrome:** A neurodevelopmental disorder classified within autism spectrum disorders, characterized by difficulties in social interaction and repetitive behaviors alongside relatively preserved linguistic and cognitive abilities (APA, 2013).

6.2. Operational Definitions
- **Selective Attention:** The score obtained by the child on the Stroop Test for selective attention.
- **Visuospatial Sketchpad:** The score obtained by the child on the Baddeley Test for the visuospatial sketchpad.

- **Asperger Syndrome:** A clinically diagnosed condition according to DSM-5 criteria, manifesting in the child as difficulties in social interaction and repetitive or stereotyped behaviors.

7. Review of Prior Studies

The following table presents a consolidated summary of the most relevant prior studies addressing selective attention and working memory in children with autism spectrum disorders and Asperger syndrome, presented in tabular form to facilitate comparison and analysis:

Table 1. Summary of Prior Studies

Author & Year	Study Topic	Sample	Tools	Key Findings
Louzai (2008)	Selective attention and working memory	4 cases	Stroop & memory tests	Disturbances in selective attention and working memory
Boujamia (2017)	Relationship between selective attention and working memory	Children with dyslexia	Stroop & memory tests	Slowed response time during cognitive tasks
Ozonoff et al. (2005)	Executive functions in children with Asperger syndrome	ASD children	Cognitive tests	Relative weakness in working memory
Keehn et al. (2013)	Selective attention in children with autism	Autistic children	fMRI	Dysregulation in attentional neural networks

Table 1 presents a concise overview of the most significant prior studies addressing selective attention and working memory in children with autism spectrum disorders and Asperger syndrome. The majority of studies identified cognitive difficulties related to executive and attentional functions. Louzai (2008) found disturbances in selective attention and working memory in the cases examined, while Boujamia (2017) documented slowed response times during cognitive tasks involving attention and memory. Ozonoff et al. (2005) reported a relative weakness in working memory in children with Asperger syndrome, and Keehn et al. (2013) identified dysregulation in the neural networks responsible for selective attention in children with autism spectrum disorder.

The importance of these studies lies in providing a theoretical and empirical foundation for the present research, and in informing the selection of appropriate instruments and methodology for examining selective attention and the visuospatial sketchpad in children with Asperger syndrome. The variability in prior findings regarding cognitive performance in this population further justifies the need for additional clinical studies that account for the individual and cognitive characteristics of children with Asperger syndrome.

8. Research Methodology

The present study employed a clinical methodology based on the case study design, owing to its suitability for the nature of the research problem and its capacity for in-depth analysis of the psychological and cognitive dimensions of individual cases.

9. Scope and Boundaries of the Study

- **Temporal Scope:** The study was conducted over the period from 15 March 2025 to 22 April 2025.
- **Spatial Scope:** The study was conducted at the Psychiatric Hospital of Ténès, wilaya of Chlef, Algeria.

10. Study Sample

sample consisted of four children diagnosed with Asperger syndrome. Their characteristics are presented in the following table:

Table 2. Sample Characteristics

Case	Sex	Age	Educational Level	Socioeconomic Level
Case 1	Male	6 years	Kindergarten / Pre-school	Low
Case 2	Male	6 years	Kindergarten / Pre-school	Middle
Case 3	Male	7 years	Grade 1 (Primary)	Good
Case 4	Male	9 years	Grade 4 (Primary)	Low

Table 2 presents the essential characteristics of the study sample, comprising four children with Asperger syndrome between the ages of 6 and 9 years—a developmental period considered particularly important for the maturation of cognitive processes, especially attention and working memory. All participants were male, a finding consistent with the well-documented higher prevalence of autism spectrum disorders and Asperger syndrome among males relative to females, as noted in numerous contemporary neuropsychological studies.

Educational levels ranged from pre-school to Grade 4 of primary school, enabling the observation of individual differences related to cognitive development and academic progression. Variation in the socioeconomic backgrounds of the families—ranging from low to good—may have exerted differential influences on the nature of family support and educational experiences to which the children were exposed.

These characteristics reflect a degree of relative diversity within the sample, lending the study broader scope in describing cognitive performance across different social and educational contexts. They also assist in interpreting the individual differences that emerged during the administration of the psychological and cognitive tests.

Sample selection criteria were as follows:

- The child must have a confirmed diagnosis of Asperger syndrome.
- The child must be currently enrolled in school.
- Age between 6 and 10 years.
- The child must be capable of understanding test instructions.

11. Research Instruments

The present study employed a set of psychological and clinical instruments selected to be consistent with the clinical methodology and the aims of the research, in order to gather as comprehensive information as possible regarding the level of selective attention and visuospatial sketchpad functioning in children with Asperger syndrome. These instruments yielded quantitative and qualitative data that enabled precise analysis of the cognitive performance of the cases studied.

11.1. Direct Clinical Observation

Clinical observation is among the most important foundational tools in psychological and clinical research, allowing the researcher to monitor the behavior of the subject directly within naturalistic conditions or during the administration of psychological tests. In the present study, clinical observation was used to monitor the cognitive and emotional behaviors of the children during interviews and testing, including attention levels, responses to instructions, degree of interaction with the examiner, capacity for concentration, hesitation or impulsivity, and the affective reactions accompanying performance.

Direct clinical observation also facilitated the identification of behavioral characteristics associated with Asperger syndrome, such as limited social communication, stereotyped movements, and preoccupation with peripheral stimuli, alongside assessment of psychological comfort and self-

confidence during the cognitive tasks. This instrument enabled the researchers to construct a comprehensive picture of the psychological and cognitive profile of each case.

11.2. Semi-Structured Clinical Interview

The study additionally employed the semi-structured clinical interview as an effective tool for gathering information pertaining to the case's personal, familial, social, and cognitive circumstances. This type of interview is characterized by its flexibility, allowing the researcher to pose targeted questions related to the study's objectives while affording the child or parent the opportunity to provide additional information relevant to understanding the child's psychological and cognitive situation.

The interviews elicited information regarding age, educational level, family and social context, developmental history, and the nature of the difficulties experienced by the child at school or at home. The interviews also served to build a relationship of trust between the researcher and the cases, which facilitated the administration of the tests and yielded more accurate and objective responses.

11.3. The Stroop Test for Selective Attention

The Stroop Test is among the most widely used neuropsychological instruments for assessing selective attention, cognitive flexibility, and response inhibition. It measures the individual's ability to focus on a specific stimulus while ignoring interfering or task-irrelevant stimuli.

The test consists of a set of cards containing color words printed in incongruent ink colors. In certain subtasks, participants are asked to read the words; in others, they are required to name the ink color rather than read the word itself. The interference condition increases task difficulty, requiring the child to inhibit the automatic reading response and attend exclusively to the color of the ink.

The Stroop Test was used in the present study to assess the level of selective attention in children with Asperger syndrome and to evaluate their capacity for cognitive control and resistance to distraction. It also provided data on hesitation, error rates, and response speed across the cases studied.

11.4. The Baddeley Test for the Visuospatial Sketchpad

The Baddeley Test for the visuospatial sketchpad was administered as an important measure of one of the components of working memory as conceptualized in the Baddeley model—the system responsible for processing and temporarily retaining visual and spatial information.

The test measures the child's ability to recall the positions of shapes and colors and to accurately reproduce them following brief presentation. It comprises a series of progressively difficult sequences in which the child is required to observe the arrangement of lines and colors within grids and then reconstruct them from visuospatial memory.

The test enabled assessment of the visuospatial sketchpad capacity in children with Asperger syndrome and examination of their levels of perceptual organization and visual attention. The results revealed the extent to which the cases were capable of retaining and processing visual information accurately, contributing to a better understanding of the cognitive performance of this population.

12. Presentation of Results

12.1. Stroop Test Results

Table 3. Stroop Test Results — Case 1

Task	Errors	Hesitations	Error Score
Reading 1	9	2	11
Reading 2	11	3	14
Color Naming	13	6	19
Interference	8	5	13

The results for Case 1 indicate that the child demonstrated a relatively good level of selective attention and cognitive control, completing the various Stroop subtasks with an acceptable rate of errors and hesitations. The highest error score was recorded on the color-naming task, which is expected given that this task requires sustained processing speed and continuous concentration on chromatic stimuli. The interference task also produced a relative increase in hesitations, indicating some difficulty in inhibiting the automatic reading response and attending solely to the ink color. Nevertheless, the case maintained a satisfactory level of overall performance, reflecting a meaningful degree of cognitive flexibility and selective attention in the child with Asperger syndrome.

Table 4. Stroop Test Results — Case 2

Task	Errors	Hesitations	Error Score
Reading 1	7	4	11
Reading 2	12	5	17
Color Naming	8	2	10
Interference	13	5	18

The results for Case 2 reflect a good capacity for selective attention tasks, particularly on the color-naming subtest, which recorded the lowest error score across all tasks, indicative of the child's effective visual focus and color discrimination ability. In contrast, the error score increased markedly on the interference task, suggesting some difficulty with executive control and inhibition of automatic word-reading responses. Moderate hesitation rates were also observed, which may be interpreted as the child's attempt to verify response accuracy prior to answering. Overall, the results indicate that this case possesses a good level of selective attention, despite some minor disturbance under conditions of cognitive conflict.

Table 5. Stroop Test Results — Case 3

Task	Errors	Hesitations	Error Score
Reading 1	10	2	12
Reading 2	5	3	8
Color Naming	9	4	13
Interference	12	6	18

Table 5 indicates that Case 3 completed the Stroop tasks with relatively good scores, with the best performance recorded on the second reading task—suggesting the child's capacity to process colored words with reasonable speed and accuracy. However, the interference condition produced elevated error and hesitation scores, reflecting some relative difficulty in managing competing stimuli and inhibiting automatic responses. Some errors on the color-naming task also suggest a mild slowing of visual perceptual processing. Despite displaying some minor distraction during clinical interviews, the child was able to maintain acceptable performance across the test's subtasks, indicating a satisfactory level of selective attention.

Table 6. Stroop Test Results — Case 4

Task	Errors	Hesitations	Error Score
Reading 1	4	7	11
Reading 2	11	5	16

Color Naming	5	6	11
Interference	8	10	18

The results for Case 4 demonstrate good performance on the majority of Stroop subtasks, particularly on the first word-reading task, where errors were relatively limited despite a considerable number of hesitations. The child also managed the interference task at an acceptable level, although the high hesitation count may suggest a deliberate, reflective cognitive strategy prior to responding. The second reading task recorded a relatively higher error score, indicating that the semantic-color conflict posed a cognitive challenge for this case. Overall, the child's performance reflects a sound capacity for selective attention and perceptual focus.

The overall Stroop results indicate that children with Asperger syndrome in the present sample were able to perform selective attention tasks at a relatively high level, demonstrating the ability to discriminate between linguistic and chromatic stimuli and to respond to task requirements in an acceptable manner. Difficulties were most pronounced on interference subtasks, which require executive control and response inhibition—consistent with the higher-order cognitive demands associated with prefrontal cortical functioning. Individual variability was also observed across cases in terms of error rates and hesitation frequencies, attributable to differences in concentration levels, cognitive flexibility, educational background, and symptom severity. Overall, the test results reflect the retention of a relatively good level of cognitive efficiency and selective attention by the children in this sample.

12.2. Visuospatial Sketchpad Test Results

Table 7. Visuospatial Sketchpad Test Results

Case	Total Score	Percentage
Case 1	37 / 42	88.09%
Case 2	40 / 42	95.23%
Case 3	40 / 42	93.02%
Case 4	40 / 42	95.23%

Table 7 shows that all four cases achieved relatively high scores on the visuospatial sketchpad test, with percentages ranging from 88.09% to 95.23%, reflecting a good level of competence in processing and temporarily retaining visual and spatial information within working memory.

Cases 2 and 4 recorded the highest success rates at 95.23%, demonstrating a strong capacity to recall the positions of lines and colors and to reproduce them accurately, alongside high levels of concentration and perceptual organization during task execution. Case 3 also produced a high score of 93.02%, despite minor errors related to color sequencing and the reconstruction of certain complex patterns—difficulties that were limited in scope and did not substantially affect overall performance.

Case 1, while achieving the lowest score relative to the other cases, remained well within the satisfactory range; the child successfully completed the majority of tasks with only minor difficulties on the more complex sequences. Individual differences between cases may be attributed to variations in concentration and attention, educational experience, and the particular cognitive characteristics of each child.

These results affirm that children with Asperger syndrome may retain good visuospatial sketchpad capacity, particularly in tasks that rely on visual perception and spatial organization of information. The findings support studies suggesting that this population may demonstrate relative strengths in visual processing compared to certain other cognitive or social domains. They also underscore the importance of using precise neuropsychological instruments to identify the true

cognitive abilities of children with Asperger syndrome, beyond the generalizations often associated with autism spectrum disorder.

13. Qualitative Analysis

The qualitative findings of the visuospatial sketchpad test indicated that children with Asperger syndrome in the present sample possess a notable capacity for processing and temporarily retaining visual and spatial information—evidenced by their success in recalling the positions of lines and colors and reproducing them with relative accuracy. During test administration, it was apparent that the cases employed diverse mental strategies to organize visual information, such as focusing on color sequences or attempting to form a comprehensive mental image of the target configuration prior to reproducing it on the blank grid.

Clinical observation during testing revealed that the majority of children demonstrated a notable degree of concentration and attention while executing the tasks, carefully following instructions and attempting to minimize errors—reflecting a good capacity for cognitive control and directed attention. Some cases were characterized by calm and organized responding, while others exhibited a degree of hesitation or self-correction, particularly when transitioning to more complex sequences; however, this did not prevent them from ultimately achieving good performance.

Analysis of error patterns indicated that most errors were not attributable to severe cognitive impairment, but rather to minor difficulties in retaining color sequences or reconstructing certain composite line configurations requiring simultaneous processing of multiple visual and spatial elements. Errors tended to increase in the later sequences of the test, a finding readily explicable by the heightened cognitive load and increased working memory demands as the test progressed.

Some cases also displayed a tendency to focus on local details rather than the global configuration of the stimulus, which is consistent with cognitive characteristics associated with Asperger syndrome—children with this condition are known to attend more to fine-grained details than to holistic stimulus organization. Nevertheless, this processing style did not substantially compromise final performance and, in some instances, actually aided certain children in recalling the positions of lines with greater precision.

The children also performed better on tasks requiring direct visual perception than on those demanding sequential mental reorganization of information, suggesting that the cognitive performance of this population may be sensitive to the nature and presentation format of the task. Clear instructions and the progressive structure of the test contributed to reducing anxiety and improving performance levels, particularly among cases that initially displayed some hesitation or sensitivity to the testing situation.

Overall, the qualitative evidence indicates that children with Asperger syndrome possess a good level of competence in visual and spatial information processing, and that the difficulties observed in some cases were limited in scope and do not rise to the level of severe cognitive impairment—being typically associated with increased task complexity or with the individual cognitive characteristics of each case.

14. Discussion

The findings of the present study indicate that children with Asperger syndrome demonstrate a relatively good level of performance in both selective attention and visuospatial sketchpad functioning. The cases achieved relatively high scores on both the Stroop and Baddeley tests, suggesting that they possess cognitive abilities enabling them to manage competing stimuli, attend to relevant information, and process visual and spatial information with acceptable efficiency.

These findings partially contradict studies reporting clear disturbances in executive functions, attention, and working memory in children with autism spectrum disorders, including Asperger syndrome. This divergence may be attributed to several scientific, methodological, and cognitive factors.

- **First**, the good performance observed may be attributable to the relatively high cognitive level of the participating children. Asperger syndrome is classified as a high-functioning autism spectrum disorder, and children with this diagnosis typically present with average or above-average intelligence alongside preserved basic linguistic and cognitive abilities (American

Psychiatric Association, 2013). These preserved capacities may enable the development of compensatory cognitive strategies that allow children to manage tasks requiring attention or visuospatial processing.

- **Second**, the results may be interpreted in the light of the nature of Asperger syndrome itself. Emerging evidence suggests that cognitive difficulties in this population are not uniform but vary substantially as a function of task type, complexity, and the context in which the task is presented. Children with Asperger syndrome may achieve good performance on structured, visually clear tasks—particularly those relying on fixed rules and logical sequencing—while encountering greater difficulty with unstructured or socially embedded tasks.
- **Third**, the educational environment and cognitive training may have played an important role in enhancing the cognitive performance of the cases studied. Children who receive appropriate educational support or ongoing training in perceptual and visual activities may develop stronger attentional and working memory skills. School enrollment for all participants likely contributed to reinforcing concentration, sustained attention, and information organization through continuous exposure to instructional stimuli and classroom activities.
- **Fourth**, the small sample size may have had a notable influence on the results; with only four cases, caution is warranted when generalizing findings to the broader population of children with Asperger syndrome. The cognitive characteristics of this population exhibit considerable inter-individual variability, and study findings may differ as a function of sample size and measurement instruments.
- **Fifth**, individual differences among the children played a fundamental role in interpreting the findings. Observed variation in response speed, concentration levels, error rates, and hesitation frequencies confirms that Asperger syndrome does not necessarily produce a uniform pattern of cognitive performance; some children may retain high cognitive abilities in certain domains while experiencing difficulties in others.

It may further be noted that children with Asperger syndrome tend to perform well on cognitive tasks involving visual and spatial information when instructions are clear, well-organized, and presented progressively in a manner that reduces anxiety and confusion. Children in the present sample were more successful on tasks dependent on direct visual perception and clear spatial organization, a finding consistent with studies suggesting relative strengths in visual processing and detail-oriented perception within this population.

The present findings are consistent with research confirming that children with Asperger syndrome retain good levels of cognitive performance on structured visual tasks. Happé and Frith (2006) observed that some high-functioning individuals with autism possess strong capacity for processing visual details and analyzing spatial patterns. The results are also compatible with Weak Central Coherence Theory, which postulates that individuals with autism tend to focus on fine-grained local details—a tendency that may confer a relative advantage in certain visual and spatial tasks.

Despite the positive findings reported, the study does not discount the existence of cognitive difficulties in children with Asperger syndrome, particularly in tasks requiring high cognitive flexibility or the simultaneous processing of multiple information streams. Understanding the cognitive profile of this population therefore requires a comprehensive perspective that attends to both strengths and weaknesses, rather than focusing exclusively on deficits.

15. Results

The present study concludes that children with Asperger syndrome demonstrated relatively good levels of selective attention and visuospatial sketchpad functioning. Results on both the Stroop and Baddeley tests showed that the cases were capable of performing the required tasks at relatively high levels, in terms of response speed, accuracy, and the capacity to retain and process visual and spatial information.

Findings indicated that the children were generally able to direct their attention toward target stimuli while inhibiting distractors, and to reconstruct visual and spatial information with a good degree of accuracy and organization. This suggests that Asperger syndrome is not necessarily associated with severe deficits across all executive and cognitive functions, and that children with this diagnosis may

retain good perceptual capacities—particularly in tasks dependent on visual organization and logical sequencing.

The results also served to refute the sub-hypotheses positing clear deficits in selective attention and visuospatial sketchpad functioning in children with Asperger syndrome, highlighting the importance of engaging with this population through a balanced cognitive lens that attends to strengths alongside difficulties.

The study further underscored the value of neuropsychological assessment instruments in evaluating the cognitive abilities of children with autism spectrum disorders, given the precise information they yield regarding executive functioning and mental performance. The combined use of clinical observation, interviewing, and cognitive testing was shown to enable a deeper understanding of the psychological and cognitive profile of this population.

Cognitive performance in children with Asperger syndrome was found to be influenced by multiple factors, including task type, clarity of instructions, educational environment, and the quality of family and pedagogical support, in addition to inter-individual differences. Any diagnostic or psychological and educational intervention process should therefore take these factors into account.

It may further be concluded that children with Asperger syndrome possess cognitive potentials amenable to development when appropriate educational and psychological conditions are provided, particularly in domains related to visual perception, organized attention, and analytical reasoning. This opens productive avenues for the development of specialized training programs aimed at enhancing executive functions and cognitive abilities in a more effective and sustainable manner.

In light of these findings, the study affirms the necessity of reconsidering the stereotypical view that reduces children with Asperger syndrome to their deficits and impairments alone, demonstrating that they possess cognitive strengths that can be productively mobilized within educational and rehabilitation processes to improve psychological, social, and academic adjustment.

16. Conclusion

The present study examined selective attention and the visuospatial sketchpad in children with Asperger syndrome, a topic of significance in cognitive and neuropsychology given the central role of cognitive processes in learning, social adaptation, and academic achievement.

Through a clinical methodology and the use of neuropsychological instruments—namely the Stroop Test for selective attention and the Baddeley Test for the visuospatial sketchpad, complemented by direct clinical observation and semi-structured clinical interview—the study constructed a relatively comprehensive picture of the cognitive capacities of the cases examined.

Results indicate that children with Asperger syndrome may retain a good level of cognitive competence, particularly in tasks related to visual perception, organized attention, and spatial information processing. This demonstrates that this population does not necessarily suffer from global cognitive impairment, and may indeed possess clear cognitive strengths in certain mental functions.

The study also highlighted the importance of the educational environment and pedagogical interventions in developing cognitive capacities in children with Asperger syndrome, demonstrating that clear instructions and the progressive structuring of tasks contribute substantially to improving performance and reducing errors and hesitations. The design of educational and training programs that account for the cognitive characteristics of this population and capitalize on their strengths is therefore of paramount importance.

The study additionally affirmed the need for sustained attention to the cognitive dimensions of children with autism spectrum disorders, beyond behavioral and social aspects alone, since an understanding of the mental processes underlying behavior contributes to the development of more effective approaches to diagnosis and psychological and educational support.

The findings remain bounded by sample size and methodological constraints, underscoring the need for further field studies with larger and more diverse samples, using advanced neuropsychological instruments that allow for deeper understanding of cognitive functions in children with Asperger syndrome—thereby contributing to improved quality of psychological and educational care for this population within Algerian and Arab society.

Recommendations

- Develop specialized training programs aimed at enhancing selective attention and working memory.
- Adapt curricula to accommodate the cognitive characteristics of children with Asperger syndrome.
- Create learning environments that minimize distractors and sensory overload.
- Conduct studies on larger and more representative samples.
- Examine the relationship between executive functions and academic achievement.
- Use a broader and more diverse range of neuropsychological assessment instruments.

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