Study of the semantic memory of children with Autism spectrum disorder (case study)

دراسة الذاكرة الدلالية لدى الطفل المصاب بطيف التوحد (دراسة حالة)

Boulhia Zahira[1,*]

[1] University of Algiers2 (Algeria), Zahira.boulahia@univ-alger2.dz

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Abstract:

This study aims at finding out more about the semantic memory of children with Autism spectrum disorder (ASD). The sample included two children with (ASD) aged between 9 and 10 who have been chosen on purpose. The descriptive method was used, case stud. The semantic memory scale of Abd al Aziz Saad was applied for data collection (the item of semantic repetition of words and digits, and the item of semantic order and classification of images). The results showed slight troubles in the semantic repetition of words, mainly in the semantic matching, troubles in the semantic repetition of digits, and slight troubles in the recognition of the semantic classification and order of images, mainly regarding the unfamiliar words.

Keywords: ASD, semantic memory, semantic repetition , words, digits, semantic classification

1. Introduction

Childhood is the first and most important developmental phase because it is the basis for shaping the character and choosing trends and inclinations. Besides, it witnesses the development of the mental, emotional, bodily, and other sides and capacities. Therefore, it must be stable to ensure a good development. Nevertheless, some changes and troubles during childhood may affect the process of development, including Autism Spectrum Disorder **[**ASD**]**. The latter is a complicated developmental disorder that manifests in the three first years of life, causing deficits in interaction, social communication, and behavior. In this regard, communication troubles are very important, as they affect the natural development and social communication (Metwali, 2018, p. 34).

In addition, ASD affects the natural development of the brain and the higher functions, such as cognition, attention and memory. The latter is responsible for collecting, processing, and storing information. Memory has different types with different functions. For instance, the semantic memory is part of the long-term memory and is devoted for the meanings of lexical terms, things, events, and the world. It is built based on sensor, audio, and visual data, which require attention, concentration, and

*Corresponding author

selection of the data to be retained. Obviously, any trouble in this memory influences the functional work of the cognitive process (Al Abbdadi, 2006, p.46). Based on what was said, our study aims at understanding and studying the semantic memory, as it is one of the higher cognitive functions for children with ASD.

2. Problem

ASD is one of the complicated developmental disorders that appear in the first 3 years of life, leading to neural troubles that affect the work of the brain. Sethen Han defines it as a developmental trouble that causes a comprehensive delay in development, and may be difficult to be clinically diagnosed, mainly regarding the cognitive abilities. Besides, DSM-V defines it as a categorical deficit in interaction and social communication, causing repetitive and restricted patterns of behavior, interests, and activities that must develop before the age of 2 (AL Hosni, 2020, p.33). It is a dangerous trouble that affects the cognitive, linguistic, and emotional aspects, leading to a general delay in development (Chaker Madjid, 2010, p.32). This disorder causes deficits in social communication, delay in language and speech acquisition, repetitive behaviors, and weak analysis and imagination in the first three years of childhood (Al Chami, 2004, p.49).

ASD has different causes and symptoms and provokes lifelong development deficits. In addition, it affects all the development aspects, mainly in social life and communication skills. Moreover, it causes troubles and problems in the cognitive functions and processes, mainly the higher functions, including language, cognition, attention, and memory. The latter is responsible for collecting, processing, and retaining information. In this context, Abu Hatab (1996) (as cited by Al Attoum, 2004)sees that memory is the mental process that stores and retrieves information in its original state after acquisition and learning. In the light of the current study, we shall focus on the semantic memory, which is part of the long-term memory. The semantic memory focuses on the meanings of lexical terms, things, events, and the world. Tul Wing defines it as the memory of words, concepts, reading and abstract thoughts. It is one of the basic factors for using any language; i.e., it has a tight relation with the linguistic performance, as it is the mental organization of information (words and different verbal symbols) the individual processes. In other words, it is the memory of facts about our external environment that are not bound to time or place (p.57).

Azaz Mouhamed defines it as Semantic memory is a fundamental system of language and general knowledge about the meaning of facts and concepts without reference to specific experiences. This memory pertains to knowledge of laws, concepts, worldview, and any specific information about the

experience of the situation , and semantic memory is considered as an encyclopedia of semantic concepts of the things we have around our external environment, and it is accessible and can be activated by various stimuli such as a word or image, external sounds of the environment, and tactile sensory stimuli. . (Azaz, 2011, pp. 70).

ASD affects the semantic memory, as confirmed by Belaidi & Khaous (2019), who evaluated the semantic memory of children with ASD using the test of Laadjal (2016). Besides Ben Hammou (2016) revealed the relation between the strategies of oral comprehension and the semantic memory of children with ASD using the descriptive method, oral comprehension strategies test of Abd al Hamid Khamsi, and the semantic memory test of Saad Abd al Aziz. The authorfound out statistically significant correlation between the immediate oral comprehension (lexical, complex, and morpho-syntax strategies) and the full comprehension strategies (auto-correction, perseverance, change of designation) and the semantic memory of children with ASD.

In this context, Abd al Halim (2004) as cited by (Boukherraz and al., 2025). compared the semantic memory of children with ASD to that of the normal children, focusing on 54 male and female cases. He found out a deficit in the memory for children with ASD and that their abilities are lower than those of normal children or those with other disabilities (p.265). Besides, Talbi (2022) evaluated the cognitive deficit of the semantic memory of included in public schools and compared children with level 1 and level 2 autism . To develop these cognitive processes, experts use speech therapy programs, mainly with children with ASD. Findings showed statistically significant differences in the semantic order between children with level 1 autism and those with level 2 autism on behalf of children with level 1 autism, and statistically significant differences in the retention of images names and semantic fluidity on behalf of children with level 01 autism. As confirmed by Azzaz (2011), who set a training intervention to develop the semantic memory skills and the linguistic development of children with ASD. Findings confirmed the success of the intervention during the experimental phase (as cited by Al-Malouma, 2019, p.43).

In addition, (Boukherraz et al., 2025) conducted a study to identify the role of semantic memory in oral comprehension. The study involved six children with mild autism, aged 9 to 12 years, of both sexes. The results show that the different functions of semantic memory are involved in oral comprehension, both in terms of immediate comprehension strategies (morphological, lexical, grammatical, and narrative)

and global comprehension strategies. The disorder is this memory hinders comprehension of the semantic rules and, thus, the oral language. Based on several observations, we shall focus on the semantic memory of children with ASD by answering the following questions:

- Are there troubles in the semantic repetition of words for children with ASD?
- Are there troubles in the semantic repetition of digits for children with ASD?
- Are there troubles in the recognition of the semantic classification and order of images for children with ASD?

3. Hypotheses

3.1 There are troubles in the semantic repetition of words for children with ASD.

3.2 There are troubles in the semantic repetition of digits for children with ASD.

3.3 There are troubles in the recognition of the semantic classification and order of images for children with ASD.

4. Objectives of the study

- ✓ Revealing the performance level in the dimensions of the semantic memory of children with ASD.
- ✓ Revealing the troubles in the semantic memory and its dimensions (semantic repetition of words, semantic repetition of numbers, and the semantic classification and order of images) of children with ASD.

5. Importance of the study

- ✓ Knowing the effect of ASD on the semantic memory.
- ✓ Shedding light on the semantic memory of children with ASD.
- ✓ Adding to the theoretical literature on the semantic memory and ASD.
- ✓ Providing scientific and practical contribution due tothe urgent need for such topics in the Arab world in general, and Algeria in particular.
- ✓ Predicting the troubles faced by children with ASD.

6. Determinants

6.1. The semantic memory

It is the mental encyclopedia that represents the cognitive organization of the individual. It is linked to the acts and ideas, and allows acquisition and retention of the world-related information. It includes the concepts and relation between symbols (Debrassou, 2005, p. 61). Procedurally speaking, it is the memory

that verbally and linguistically stores general information and understanding, and is necessary for the use of language. Besides, it is the memory of words, concepts, rules, and abstract thoughts.

6.1.1. The semantic repetition of words

It is reusing words or statements in text or speech to foster meaning and facilitate understanding and retention. In the semantic memory, the words and their meanings and symbolized; the symbols are fostered when repeated to facilitate their retrieval (Laadjal, 2016). Procedurally speaking, it is the ability measured through the item of semantic repetition of words in the semantic memory test of Saad Abd al Aziz.

6.1.2. The semantic repetition of digits:

It is the ability to correctly repeat a series of digits after listening to it, based on the general knowledge of digits and their types. It is part of the semantic memory that stores and retrieves the general knowledge on language, things, and facts (Laadjal, 2016). Procedurally speaking, it is the ability measured through the item of semantic repetition of digits in the semantic memory test of Saad.

6.1.3. The semantic classification and order of images

It is the ability to classify and order images in the semantic memory based on their meanings and hierarchical relations with the other concepts (Laadjal, 2016).Procedurally speaking, it is the ability measured through the item of semantic classification and order of images in the semantic memory test of Saad.

6.2. Autism Spectrum Disorder

According to DSM-5, it is a categorical deficit in interaction and social communication, causing repetitive and restricted patterns of behavior, interests, and activities that must develop before the age of 2 (Al Malouma, 2019, p.21). Procedurally speaking, it is the deficit that leads to issues in the sensor perception, language, and, thus, the ability of communication, discourse, learning, and socio-cognitive development. Besides, it causes isolation and emotional numbness.

7. Materials and Methods

7.1. Design

Based on the nature of the study, which requires different procedures for data collection and treatment, the descriptif design, case study, was used to find out more about the semantic memory

because it is the most suitable for the study problem, and because it suits most of the psycho-pedagogical researches.

The study was conducted in 2024 at a public institution "Child House" in Algiers. It is an annex to the school adaptation center "Ali Remli", which receives children with ASD. Then, we took enough time to observe and build relations with the cases to facilitate our work. Then, we applied the semantic memory test of Abd al Aziz Saad.

7.3. Participants

the study was conducted on 02 cases diagnosed with ASD. The selection criteria are:

- The 02 cases have been diagnosed by a psycho-pediatrician, and we consulted their medical files to confirm they suffer ASD.
- The cases are aged between 9 and 10 and have mild ASD according to Childhood Autism Rating Scale CARS, which was used by the speech therapist.
- The economic, social, and cultural levels of the patients are average.
- The cases have convergent linguistic and pragmatic levels, we sought the help of the speech therapist, the psychologist, and their parents.

Table 1 **The characteristics of the cases**

Cases	Name	Age	Gender	Severity
Case1	H F	9	Male	Mild
Case2	Z A	10	Male	Mild

7.4. Instruments

We confirmed the diagnosis of ASD with the medical, psychological, and linguistic data with the help of a psychologist and a speech therapist who included their reports in the medical files, and with acoustic, visual, neural, and psychological test.

7.4.1. The observation

The scientific clinical observation was conducted with the parents to find out more about the children's communication, language, and behavior. Besides, we conducted tests and recorded some behavioral and emotional aspects of the cases (reactions, expressions, nods, speech style, fear, depression,

and resistance) during the interview and the intervention. In addition, we paid attention to the development and response after the intervention.

7.4.2. The interview

The parents were interviewed for 30 mn to find out more about the children's speech therapy (history of the cases and the speech tests). Besides, we evaluated children for 15 to 20 mn and agreed to set a therapeuticplan and a clinical schedule according to the evaluation of each case.

7.4.3. DSM 5

DSM-5 (2013) is used to classify ASD according to these levels:

Level one: diagnostic simulation: - Weak communication and social interactions - Repetitive and restricted behaviors, interests, and patterns - Limited or weak functional performance.

Level two: Identification simulation: It aims at identifying other troubles that accompany ASD.

Level three: The simulation to identify the severity: The diagnostic criteria to determine the severity are divided into three categories. The needed support gradually decreases with the decrease of the severity.

The information of each case is summed up in the following table.

7.4.4. The semantic memory scale

It is a set of linguistic tests made by Saad(2009)(as cited by Bagaa, 2023) based on the scales of the linguistic abilities that study some aspects that require the semantic memory. This test includes images, words and sentences, and visual stimuli. It has 9 dimensions, namely: image naming, body parts recognition, semantic order and classification, comprehension by functional matching of sentences, semantic lexicon of images, judgment of things through semantic matching, fluency and semantic truncation, recognition of environment sounds, and guided semantic painting (pp. 79-81).

As for the dimensions of the scale, we find:

- The phonological semantic dimension of the memory
- Comprehension and audio verbal memory
- Phonological and semantic cognition and awareness

Each dimension has given educational tools, answer time, score, and a sample answer scale of 184 points. As for the psychometric properties of the scale, in his study, Laadjal (2016) examined the validity and consistency using Pearson coefficient ofcorrelation between the items of the semantic memory test

and the items of the Cognitive Evaluation Battery BEC 96 of J.L. Signoret. For images naming, Pearson coefficients of correlation between the semantic memory scale and the items of the battery were between 0.1 and 0.39. Three of the coefficients are significant at 0.05. As for the recognition of the body parts, the coefficients are between 0.1 and 0.55, four items are significant at 0.01. Regarding the semantic order and classification, the coefficients are between 0.1 and 0.37, four items are significant at 0.05. Regarding the comprehension by the functional matching of sentences, the coefficients are between 0.01 and 0.43. Two items are significant at 0.01 and two at 0.05. For the semantic lexicon of images, the coefficients are between 0.01 and 0.46; two items are significant at 0.01 and two at 0.05. As for the judgement of things through semantic matching, the coefficients are between 0.01 and 0.62; two items are significant at 0.01 and 03 at 0.05. Regarding the fluency and the semantic truncation, the coefficients are between 0.01 and 0.53. Three items are significant at 0.05 and three at 0.01. Concerning the recognition of the environment sounds, the coefficients are between 0.01 and 0.79. Two items are significant at 0.05 and six at 0.01. As for the guided semantic painting, the coefficients are between 0.01 and 0.68. Two items are significant at 0.05 and three at 0.01. The remaining coefficients are significant at 0.05, showing that all the items of the semantic memory test are correlated with the items of BEC 96 battery. Thus, the semantic memory test is valid and measures what it is meant for.

To examine the consistency of the test, the designer used:

- The split-half test by calculating the odd items (1.3.5.7.9) and the even items (2.4.6.8). For the first part, the result is 0.23, while for the second, it is 0.43. This is acceptable and shows the consistency.
- Spearman-Brown formula is 0.519 and Spearman-Brown split-half is 0.52; they are convergent and show consistency.
- The application and reapplication of the test showed values of 0.40 and 0.83 for the normal children at significance level 0.01 (Laadjal, 2016 ; Bagaa, 2023, pp. 79-81).

7.5. Data analysis

Since we proceeded by way of a case study, the data is analyzed by content analysis of the interviews and observation, and the results of the semantic memory test.

8. Results and discussion

8.1. Results

8.1.1. Presentation of case 1

The observation and the interview show that HF is 09 years old child with mild ASD according to DSM 5. He was unwanted because of psychological and familial reasons. He suffered delay in making his first steps until the age of 18 months. He was diagnosed with ASD at three years old at psychiatric hospital in Algiers. We observe a weak communication and visual contact with others, and behaviour that do not allow for acquiring information that enriches the lexical linguistic balance. He started receiving treatment at the Child House Centre in 2019. The interview shows a presence and support from the family that could improve the interaction and adaptation in the child.

Besides, we noticed that the case is excited for the test despite the weak visual communication with the expert. The case showed different attitudes in answering the test items.

Table 2 **Results of the semantic memory test**

Items	Correct answers	Wrong answers	Rate of success	Rate of failure
The semantic repetition of words	14/20	6/20	70	30
The verbal repetition	8/10	2/10	40	60
The semantic correlation	6/10	4/10	30	70
The semantic repetition of digits	1/9	8/9	11	89
Recognition of semantic order and classification of images	10/14	4/14	71	29

The results show that the highest rate for the case is in the semantic repetition of words with (14/20) 70%. It expresses the ability of the case to semantically repeat the words. The rate of the verbal repetition (which is one of the items of the semantic repetition of words) is (8/10) 40% of the total item. As for the semantic matching (which is one of the items of the semantic repetition of words) that tests the word matching with its lexical field, the degree was (6/10) with a rate of 30%; i.e., the case has an average level in the semantic matching of words. Besides, the rate of failure is (6/20), with a rate of 30%, showing that the case suffers difficulties in the semantic matching of words with their lexical field. Therefore, we can say

that the case has fairly good level in the semantic repetition of words, very good level in the verbal repetition as a secondary item, and difficulty in semantic matching of words, indicating troubles in the semantic memory.

In addition, the rate of success in the semantic repetition of words is 11% (degree of 9/11). It is very low and shows a high rate of failure estimated at 89% (degree of 8/9). The case could not answer the item and repeated only one out of three series in the 1st set, and no series in the rest of sets due to their gradual complexity. Based on the provided information, observation, and results of the table, we can say that the case has difficulty in the semantic repetition of words and deficits in the retention of digits and in retrieving and repeating the information. Thus, the case has a low level in this item. Moreover, the table shows the results of measuring the recognition of the semantic classification and order of images. In this regard, the success rate was good and estimated at 71% (a degree of 10/14), showing that the case almost recognized and classified all the images. Thus, we can say the case does not have difficulty in recognizing, ordering, and classifying the images, and that the level in this item is good, as the failure rate is 29¨% (degree of 4/14). Based on these quantitative results, the level of the case is good and acceptable, showing that the case can recognize, classify, and order some images, such as pets, wild animals, vegetables, fruits, etc.

The analysis of the results and data of each item shows that the good rates of good answers were in the item of the semantic repetition of words and in the semantic classification and order of images, while the low results were in the semantic comprehension and matching of words with their semantic lexicon. For instance, in the list of words in the item of the semantic repetition of words, the case managed to repeat each word verbally, but with difficulty the semantic matching. Regarding the item of recognition of the classification and order of images, the rate was good because this item has lot of sensor audiovisual inputs; the results were good mainly for the familiar things. Concerning the item of semantic repetition of words, the level was very weak, showing that the semantic memory of numbers is troubled because the case could not repeat the digits of the three sets, except one out of three series in one set due to the gradual complexity. These results will be compared to those of the other case to check the convergence of the results and deny or confirm the hypotheses.

8.1.2 Presentation of case2

The observation and the interview show that ZA is 09 years old child, with mild ASD according to DSM 5. ZA is a 10 years old child with ASD. He is the eldest of his parents. The father is a health technician and the mother is a teacher. He was a wanted baby, however, during pregnancy, the mother fell sick and was hospitalized for 15 days. Besides, the child was born prematurely. His first smile was when he was 30 months, the first step was on time, and the first word was in the age of 1 year. During the interview, we noticed interaction, adaptation, emotionality, many movements, and weak eye contact. The case showed different attitudes towards answering the test items.

Table 2 **The results of the semantic memory test**

Items	Correct answers	Wrong answers	Rate of success	Rate of failure
The semantic repetition of words	17/20	3/20	85	15
The verbal repetition	5/10	5/10	50	50
The semantic correlation	3/10	7/10	35	65
The semantic repetition of digits	4/9	5/9	45	55
Recognition of semantic order and classification of images	10/14	4/14	71	29

The results show that the highest rate for the case is in the semantic repetition of words with (17/20) 85%. The failure degree in this item was (3/20) with a rate of 15%. The case got a rate of 50% of success in the item, i.e., a degree of (5/10). As for the semantic matching of words, the case has a success rate of 35% and a degree of (3/10). Therefore, the case has an average level in the phonological aspect and a low level in the lexical aspect that reflects difficulty in the semantic matching, except in some familiar words.Regarding the semantic repetition of digits, the success rate was (9/4) 45%. The case answered the entire set 01 and got a grade of (3/3). As for set 2, the case got a grade of (1/3) because the series in this set are made up of 04 digits, and the case could not complete the remaining sets, which are made up of 03 to 05 digits. The level of the case was under average, as the failure rate is (5/9) 55%.

As for the results of the item of the recognition of the semantic classification and order of images, the success rate was 71% (degree of 10/14), as the case classified the images and ordered them according to the given instruction. The level was good, showing that the case has a good lexical memory, and the failure rate was 29% (degree of 4/14) since the case faced difficulties in some instructions, such as classification of fish and distinguishing it from insects, and classification of work and play tools.

8.2 Discussion

8.2.1. Semantic repetition of words

It states that there are troubles in the semantic repetition of words for children with ASD. The results of the semantic memory test for cases1 and 2 show slight differences between them in the semantic repetition of words, as they got convergent rates, mainly in the verbal repetition. In this context, case1 got a rate of 70% because the verbal repetition exceeds the semantic matching while case2 got 85%, which is high. These differences may be attributed to the speech therapy and its duration, and to the cognitive abilities, such as attention, comprehension, and information procession. In this context, Talbi (2022) states that there are statistical differences between children regarding the activity of the semantic memory, as the two cases with ASD suffered troubles and difficulties in the semantic matching of words; i.e., matching the word with its lexical field (the lexical level). Thus, the two cases repeated most of the words verbally, mainly that children with ASD suffer echolalia, which is one of the common features of ASD. However, the semantic matching was low and most of the troubles come from deficits in information retention and retrieval, weak communication and visual contact with the external world, and behaviours that do not allow for acquiring information that enriches the lexical linguistic balance. Thus, we confirm there are troubles in the fluency and lexical matching of words for children with ASD. These children face fluency difficulties despite the verbal linguistic capacity, good phonological level, and speech therapy. In this context, the study of Belaidi & Khaous (2019) evaluated the semantic memory of children with ASD using the semantic memory test of Laadjal Yacine on 04 cases chosen on purpose, aged between 06 and 10. In addition, it used the analytical descriptive method and found out that the semantic memory is highly and negatively affected.

Based on what was said, we confirm the hypothesis that says that children with ASD under study face troubles in the semantic repetition of words, mainly in the semantic matching, because there are troubles in the lexical and semantic levels though the phonological level is good.

8.2.2. Repetition of digits

It states that there are troubles in the semantic repetition of digits for children with ASD.The semantic memory test and the results of the semantic repetition of digits for the two cases show that case two got a rate of 45% because it repeated the same series and got a low level compared to the first case that got a very low level and a rate of 11% because it repeated only one series out of 09. In this regard, case 01 repeated the first series that is made up of 03 digits (3, 5, and 9) while case 02 repeated the entire first set and managed to move to the second set, where it repeated just one series of 04 digits (2, 7, 4, and 9) because the series show gradual complexity. In this regard, the case did not recall the correct order of the sets. For example, the case repeated the series (3, 5, 2) as (3, 5, 8, 2) and could not remember other digits due to the weak short-term memory and inability to retain and retrieve information correctly. In this context, Piaget as presented by Houdé (2012) confirms that counting is not scientific unless the child manages to perceive retention, as the number, according to him, is built with three logical capacities, namely classification, order, and retention. In addition, Barnhil (2007) states that the weak capacities of children with ASD in math, counting, and repetition are due to the inability to understand the symbols, the incomplete cognitive structures, and the non understanding of the spatio-temporal concepts, size, length, and retention. In this regard, the higher mental abilities are tightly linked to the mathematical reasoning; therefore, children with ASD face difficulties in solving problems, even if their intelligence is average or above the average. And in this context The study of Abd al Halim Mohamed (2004)(as cited by Boukherraz et al., 2025) focused on the semantic memory and compared normal children, mentally retarded children, and children with ASD. The sample included 54 male and female children. Findings showed a deficit in the semantic memory of children with ASD, and that their memory is less active than the normal peers and those with other disorders or disabilities (p.265).

The analysis of our results confirms the 2nd hypothesis and that our informants face troubles in the semantic repetition of digits.

8.2.3. Decognition of the semantic classification and order of images

It states that there are troubles in the recognition of the semantic classification and order of images for children with ASD. The obtained results and the qualitative and quantitative analyses show convergence between the two cases regarding the results, as case 01 got a rate of 85% while case 02 got a rate of 71%. The results in this item were very good, as the images helped understand the instruction and retrieve the semantic concepts. The cases classified the images well; for instance, they classified the animals together, the kitchen tools together, etc. In addition, the two cases correctly classified and order most of the images. According to Bousfield's model (1953) of classification levels, which expresses the free recall of words according to their belonging, the two cases put concepts in different classes in the memory and can recall the words when seeing the images and hearing the instruction(as cited by Balchin & Garner, 2019).

Nevertheless, we found out some troubles in the semantic order and classification of unfamiliar images, as confirmed by the study of Ben Hammou (2016), which confirms that there is variance between the cases, as different cases show low, average, and fairly good levels in recognizing categories thanks to distinction between fruits and vegetables, for instance. Thus, the semantic order troubles faced by children with ASD cause troubles in understanding and classifying words and statements based on their meanings; this affects their efficient communication and integration within the society. Thus, we can say the two cases under study suffer slight troubles the semantic classification and order of images.

The analysis of the results of the two cases and the discussion of the three hypotheses show that our informants suffer slight troubles in the semantic repetition of words, troubles in the semantic repetition of digits, and slight troubles in the semantic order and classification of images. Therefore, we can say there are troubles in the semantic memory of our informants similar to those reported in previous studies. Based on these findings, we suggest widening the scope of research on a bigger sample to get generalizable results.

9. Conclusion

This study focused on ASD from a psychocognitive perspective and tackled the semantic memory that represents the axis of the human knowledge. In this regard, this memory includes a set of functional items that allow the individuals to represent their acquisitions, as it allows for the retention and active procession of information during the daily cognitive tasks. The study aimed at knowing the level of semantic memory of some children with ASD. Findings showed that ASD affects some cognitive processes, namely the semantic memory, which, in turn, affects the rest of cognitive capacities and verbal and non-verbal communications, as the qualitative and qualitative results of our informants show. Thus, we can say that our informants show qualitative and quantitative specificities in the semantic memory. However, we cannot generalize our results on the rest of ASD children because we used case studies. Based on what was said, we recommend:

- Studying a wider sample to generalize results and using more exact methods, such as the experimental and quasi-experimental methods.
- Exposure to the different levels of the semantic memory and exact relations with information storage.

Early care of the patients with ASD for the good qualification in language, cognition, and semantic memory.

- Study of the semantic memory of children with ASD of different severities (moderate and high).

- Making successive studies on children with ASD before and after intervention of the semantic memory.
- Taking advantage of the research outcomes to set therapeutic programs.

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