**Democratic And Popular Republic Of Algeria**

**Ministry Of Higher Education And Scientific Research**


**Salhi Ahmed University Centre Naama**

**Institute of Letters and Foreign Languages**

**Section of English**

# Language comprehension and speech production for autistic children (Autism spectrum disorder)

**Dissertation Submitted to the Department of English as a Partial Fulfilment of the requirement for the degree of Master in Linguistics**

**PRESENTED BY:**

Miss. Dich Anfel Amira
Miss. Mosbahi Rania

**SUPERVISED BY:**

Dr. Fatmi Fayçal

**BOARD OF EXAMINERS**

| | | |
|---|---|---|
| **Dr. Nadjia boussebha** | **president** | **Naama University Centre** |
| **Dr. Fatmi fayçal** | **supervisor** | **Naama University Centre** |
| **Dr. Mariem kouraichi** | **Examiner** | **Naama University Centre** |

**Academic Year:2022-2023**

## Dedications

Above all, I thank ALLAH for giving me the courage and faith to carry out this work.

I dedicate this small project

To the bravest, most compassionate, and most beautiful woman in my eyes, to the one who knew how to give me love and joy in life, to the one who constantly expressed affection and overlooking of me and my kind mum.

My dear father, who has always been there for me, who has shown me the true meaning of life, who congratulates me, rewards me for my accomplishments, and inspires me to keep moving forward.

This work is a result of your encouragement, support, and selfless sacrifices. God willing provide you protection and a long, healthy, and happy life.

To those who supported me night and day and throughout my journey.

My dearest sisters.

I dedicate this work to my uncle's son Ilyas

To all my family and friends.

To those I have had the good fortune to know, in the best and worst moments of my life, to my most faithful friends Rania and khaoula.

**Dich Anfel Amira**

## Dedications

My almost gratitude goes to god almighty for giving me strength and courage to reach to

where I am today

I dedicate this modest work

My parents, who are the foundation of who I am today, are much appreciated for their support: To my mother, the most gorgeous, beautiful creature that god has created on earth. To this

source of tenderness, patience and generosity.

To my father, the most beautiful creature that god has created. He gave me the greatest gift

anyone could give to another person, he believed in me.

To my dear and only sister (Lamia), my best confident, her husband

for encouraging me.

To all members of my family.

To my dear partner Anfel my sweet friend who had the patience to support me

during this dissertation.

To all my friends and loved one's.

To the head master of English department. I would like to

thank you for your support as well as your judicious; recommendations have

reinforced my spirit and my motivation to succeed in this work.

To all my teachers from the first to the last year. Thank you.

**Mosbahi Rania**

## Acknowledgement

First and foremost, we thank God, the Almighty, for providing us with the strength and patience to complete this work.

We would like to express our sincere appreciations to our supervisor for his

guidance from the beginning .Thank you for your availability, encouragements and kindness.

As well as, we would like to express our deep gratitude for your remarks and suggestions for

improving this manuscript.

"Nothing would have been the same without you."

All thanks and appreciations go to the jury members who devoted their valuable time to read

and evaluate this work and providing us with constructive and useful comments for the

continuation of this work.

We would like to express our heartfelt gratitude to the professionals, researchers, educators, and therapists who have dedicated their time and expertise to improving the lives of autistic individuals

Additionally our appreciations to teachers, psychologists and speech

pathologist who provided us with their experience information. Without

forgetting the little buds whom, with their smiles and innocence, gave us good energy to carry on with this investigation.

We would like to thank the headmaster of the English department, and all

of his administrative staff, as well as all of the teachers who guided us through our journey.

**Anfel and Rania**

## Abstract:

This research tackle one of the disorders that affect the normal use of language: autism spectrum disorder which involves deficits in language development whose symptoms are usually identified early in childhood and remain present throught one's lifetime; children with ASD often exhibit difficulties In language comprehension and literacy development as well as the speech production due to the inability to interact with others that is they are linguistically impaired within the scope of this dissertation, the study attempts to cover how the autistic children are taught in order to comprehend language and produce speech sheding light to what extent the collaboration between specialists ( teacher / speech language pathologit) and parents can improve the language comprehension and speech production of autistic children. Moreover, A qualitative research, using a semi-structured interview and participants observation had been utilized to collect data about the study concerning ASD The results of the presented qualitative research helped to understand the importance of collaboration, and the efficiency of used strategies.



**Key words:** Autistic children, language impairement, Speech-language Pathologist, Autism spectrum disorder.



## Résumé:

Cette recherche aborde l'un des troubles qui affectent l'utilisation normale du langage : le trouble du spectre de l'autisme, qui implique des déficits dans le développement du langage et dont les symptômes sont généralement identifiés tôt dans l'enfance et persistent tout au long de la vie. Les enfants atteints de TSA présentent souvent des difficultés de compréhension du langage et de développement de l'alphabétisation, ainsi que de production de la parole en raison de leur incapacité à interagir avec autrui, ce qui les rend linguistiquement déficients. Dans le cadre de cette thèse, l'étude tente de couvrir la manière dont les enfants autistes sont

enseignés afin de comprendre le langage et de produire de la parole, en mettant en lumière dans quelle mesure la collaboration entre les spécialistes (enseignant/pathologiste du langage) et les parents peut améliorer la compréhension du langage et la production de parole chez les enfants autistes. De plus, une recherche qualitative, utilisant une interview semi-structurée et l'observation des participants, a été utilisée pour collecter des données sur l'étude concernant les TSA. Les résultats de la recherche qualitative présentée ont permis de comprendre l'importance de la collaboration et l'efficacité des stratégies utilisées.
Mots clés : Enfants autistes, déficience du langage, pathologiste du langage, trouble du spectre de l'autisme.

الملخص:

تناولت هذه الدراسة إحدى الاضطرابات التي تؤثر على الاستخدام الطبيعي للغة: اضطراب طيف التوحد الذي يتضمن نقصًا في تطور اللغة ويتم التعرف عادة على أعراضه في وقت مبكر في الطفولة وتستمر طوال العمر؛ حيث يظهر الأطفال ذوو اضطراب طيف التوحد صعوبات في فهم اللغة وتطور القراءة والكتابة، فضلاً عن صعوبات في إنتاج الكلام نتيجة عدم القدرة على التفاعل مع الآخرين، مما يجعلهم غير قادرين على استخدام اللغة بشكل طبيعي. في إطار هذه الرسالة البحثية تم التطرق إلى كيفية تعليم الأطفال المصابين بالتوحد لفهم اللغة وإنتاج الكلام، مسلطًا الضوء على مدى تأثير التعاون بين المتخصصين (المعلم/أخصائي اللغة والنطق) وأولياء الأمور في تحسين فهم اللغة وإنتاج الكلام لدى الأطفال المصابين بالتوحد. علاوة على ذلك، تم استخدام بحث نوعي باستخدام مقابلة شبه منظمة ومراقبة المشاركين لجمع البيانات المتعلقة بالدراسة المتعلقة بطيف التوحد. ساهمت نتائج البحث النوعي المقدمة في فهم أهمية التعاون وفعالية الاستراتيجيات المستخدمة.

الكلمات المفتاحية: الأطفال المصابين بالتوحد، اضطراب اللغة، أخصائي اللغة والنطق، اضطراب طيف التوحد.

## List of tables:

## List of figures:

## List of abreviations:

**ASD:** Autism Spectrum Disorder

**CDD:** Childhood Disintegrative Disorder

**PDD-NOS:** Pervasive Developmental Disorder-Not Otherwise Specified

**AAC:** Augmentative and Alternative Communication

**DTT:** Discrete Trial Training

**NET:** Natural Environment Teaching

**VB:** Verbal Behavior

**FBA:** Functional Behavior Assessment

**PRT:** Pivotal Response Treatment

**TEACCH:** Treatment and Education of Autistic and related Communication Handicapped Children

**PECS:** Picture Exchange Communication System

**SGD:** Speech Generating Device

## Table of Contents



## Chapter one

# General introduction

Our existence is shaped and validated by the way language is used in our interactions and communication; simply put, language distinguishes human beings from all other beings from the moment we are born.

Various scholars have been interested in Child development, in particular. It is commonly introduced as a collection of various obligatory occurring changes. Accordingly language is a result of interactions between cognitive and linguistic processes; which in fact is seen as an integrated faculty which develops in parallel with the physical development, thinking and behavior.

Autistic people for instance live in a sensory world. Their self-stimulatory behaviours are all conencted with senses. Thus, there is controversy as to whether indeed they are supposed to be categorized or not. Furthermore, the group of autistic individuals is highly heterogenic, thus, posing many problems in the definition and classification of the disorder. It is more and more accepted today that there may be a wide spectrum of autistic disorders, ranging over various variations of Autism that manifest themselves within distinct degrees of severity. Autistic individuals suffer from a circumscribed brain abnormality that affects development from birth; as such, it is a disorder for life, consequently Autism Spectrum Disorder (ASD) is defined as a complex developmental disorder that affects communication and social interaction, usually detected in early childhood. The symptoms of ASD range from mild to severe and can include difficulties with language and speech.

Hense, The present work seeks to introduce One of the hallmark features of ASD ; the impaired language comprehension and speech production. Children with ASD may have difficulty understanding and using language appropriately, making it challenging for them to communicate effectively with others. They may also have other difficulties namely those related to pragmatic skills, such as taking turns in conversation and understanding the social rules of communication.

It is to be mentioned at this level that, in terms of speech production, individuals with ASD may clearly demonstrate delayed or atypical language development, including delayed onset of babbling, the limited use of gestures, and delayed acquisition of the first words. They may also have difficulty with the prosody and intonation of their speech, which can make their speech sound monotone or robotic.

Indeed, this work is an attempt to explore and describe the extent to which shows how important it is to note that every individual with ASD is unique, and the severity of speech and language difficulties can vary widely. Yet early intervention and therapy can help improve language comprehension and speech production in individuals with ASD. Therefore, helping them better communicate and interact with others.

as far as the autistic children are concerned and In order to investigate the efficiancy and effectiveness of speech process and language comprehension, the following problematic has been put forward: What challenges do autistic children encounter when trying to comprehend language and verbally communicate, and how effective is parent- teacher and pathologists collaboration in coping with these difficulties ?

for the sake of comprehending this intricate and complex issue, this work attempts to shed a light on the following sub-questions:

1. What are the most common strategies for developing language learning in autistic children?

2. What are the difficulties encountered by speech-language pathologists when dealing with autistic children throught the speech production process?

3. How to overcome the difficulties concerning language comprehension?

In order to answer the aforementioned questions the following hypothesis have been put forward:

1. Applied Behavior Analysis (ABA) and treatment and Education of Autistic and related Communications Handicapped Children (TEACCH) proved to be the methods of developing language in children with autism.

2. There are remarkably many difficulties experienced by speech-language pathologists when dealing with autistic children such as: anger, rejecting, and/or insisting on not following the instructions.

3. probably reinforcement and punishment seem to be two fundamental solutions to these difficulties.

As a result, in order to confirm and validate the hypotheses stated above, this exploratory work which is also meant to be descriptive to scrutinize the speech language pathologist, and the narrow collaboration of both teacher and parents. This investigation will opt for two research instruments in order to collect qualitative data shiftly a semi-structured interview and a structured classroom observation.

This dissertation is divided into two chapters. The introductory chapter deals with theoretical background, reviewing relevant literature on autism spectrum disorder, including its history, definition, types, symptoms, causes, diagnosis, and treatment, as well as the support of parents, teachers, and speech language pathologists. It also represents the difference between speech and language and communication, as well as techniques and strategies for developing autistic children's language.

Whereas, the second chapter takes a more practical approach. It demonstrates the methods and research instruments used in the field work; mainly interviews, and observation, as well as data analysis and the discussion. Furthermore, it aims to answer the research questions either by confirming or infirming the research hypotheses. lastly, some suggestions and recommendations to promote language to children with autism are provided.

## 1.1. Introduction :

Language development in children with ASD can be delayed or disordered, with some children showing no language at all. Others may have a good vocabulary but struggle with the social use of language, such as understanding sarcasm, humor, or idioms. Children with ASD may also have difficulty with the pragmatics of language, which includes the ability to use language for different purposes, such as greeting, informing, or requesting.

Speech development can also be impacted in children with ASD, with some exhibiting difficulty in articulation or speaking with fluency. Children with ASD may also struggle with prosody, which is the melody and intonation of speech that conveys emotions and attitudes. Overall, language and speech difficulties in children with ASD can impact their ability to communicate effectively and participate in social interactions, which can lead to social isolation and difficulties in forming relationships. Early intervention and support can help children with ASD to develop their language and communication skills, which can improve their overall quality of life.

Therefore, this chapter is devoted to reviewing relevant literature that aims at providing information on the research questions mentioned above. It attempts to clarify the concept of language, then goes through the difference between speech, language, and communication, providing the reader with some definitions before offering an overview of autism spectrum disorder and its types and explaining how it affects the normal process of language.

## 1.1. Communication definition :

According to Hernández and Garay (2005), The communication is a process of social interaction of a verbal or non-verbal nature, with intentionality of transmission and that can influence, with and without intention, in the behavior of the people who are in the coverage of said emission , it is also described as : an act of interchanging ideas, information, or messages from one person or place to another, via words or signs which are understood to both parties, therefore consisted of seven major elements :

sender, message, encoding, channel, receiver, decoding, and feedback ; A message is encoded then sent from one individual (sender) to another (receiver), through a channel. That message is then decoded and given feedback, if communicated effectively.

Thus communication is also classified as : verbal ; using language and speech ; and non-verbale ; gestures, facial expressions (Both have been identified as linguistic communication) in addition to written, visual (charts, graphs, etc.)

## 1.2. Language definition :

Language is the source of human life, most everyone knows at least one language. People concider language as a system of expression of thoughts, feelings, ideas and desires by the use of spoken sounds or convention symbols or the use of words in a structured way to convey meaning, According to Sapir (1921) : language is a purely human and non-instinctive method of communicating ideas, emotions, and desires through a system of voluntarily produced sounds.

Furthermore,Saussure (1966) contended that language must be considered as a social phenomenon, a structured system that can be viewed synchronically (as it exists at any particular time) and diachronically (as it changes in the course of time). Besides Cambridge International Dictionary of English (1995) offers the following definition: a system of communication consisting of sounds, words, and grammar.

### 1.2.1. Language components :

language consists of some aspects of content or meaning that is coded or represented by linguistic form for some purposes or use according to Bloom and Lahey (1978) language is devided into three major components: form, content, and use, which are further broken down into five basic rules system :

- Syntax: The rules that govern word order to form clauses, phrases, and sentences.
- Morphology: The rules that govern change in meaning at the word level.
- Phonology: The rules that govern the structure, distribution, and sequencing of speech-sound patterns.
- Semantics: The rules that govern the meaning and context of words or grammatical units.
- Pragmatics: The rules that govern language use across communication contexts.

They all work together and are necessary for everyday communication. Understanding the role these five components play in language development is how goals are written and treated. Having a grasp on them and how they are related, makes it easier to listen to a language sample and quickly assess missing links in a child's language, naturally children with language impairement such as autistic children face a great obstacle because of the lack of some of these components.

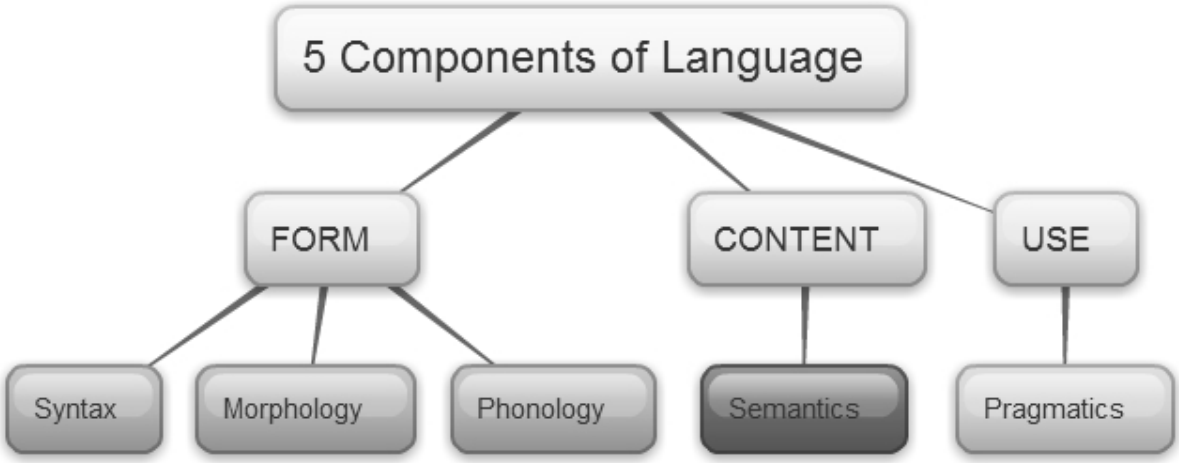


**Figure 1.1. The five Language components.**

### 1.2.2. Language comprehension and language production :

Language is generally divided into two categories: receptive (listening, reading) and expressive (speaking, writing) ; Receptive language is the ability to understand language. While expressive language, refers to the ability to produce language.

#### 1.2.2.1. Language comprehension :

(Gough & Tunmer, 1986) defined Linguistic comprehension as the process by which lexical (i.e., word) information, sentences, and discourses are interpreted, as a broader definition in the same context Language comprehension refers to the ability to understand and interpret spoken or written language. It involves the processing of linguistic information, including vocabulary, grammar, syntax, and semantics, in order to derive meaning from language(extract inteneded meanings from language). This process is complex and involves various cognitive processes, such as attention, memory, and reasoning. Linguists study language comprehension to better understand how language is processed and how it influences communication and cognition.

As a rule, comprehension develops faster than production, althought it can be difficult and ambiguous because some combination of words give a different meaning, i.e the expression can often be interpreted more than one way such as homographes( words that look alike but sound different).

**a. Language comprehension components :**

- Background knowledge
- Vocabulary knowledge
- Language/ text structure
- Language comprehension process :
- Speech perception: perception of smallest units of speech on up
- lexical access: finding the entry in memory
- word recognition: getting the meaning of individual words
- sentence understanding: putting words together and extracting meaning

- discourse processing: understanding connected sentences and deriving intent of spoken (as well as literal message).

**b. Language comprehension stages (normal child) :**

- Prelinguistic Comprehension: Even before infants produce words, they demonstrate comprehension of language through their response to familiar sounds, gestures, and simple commands.
- Single-Word Comprehension: By around 9-12 months, infants begin to comprehend the meaning of common words and phrases. They can follow simple instructions and recognize familiar objects or people when named.
- Two-Word Comprehension: Around 18-24 months, children show understanding of two-word combinations and follow more complex instructions. They comprehend basic questions, prepositions, and simple concepts.
- Early Sentence Comprehension: Between 24-36 months, children demonstrate comprehension of longer and more complex sentences. They understand grammatical structures, pronouns, and more abstract concepts.
- Advanced Comprehension: By the age of 3-5 years, children comprehend a wide range of vocabulary, complex sentence structures, and abstract language. Their comprehension abilities continue to expand as they grow.
-

### 1.2.2.2. Language production :

Language production refers to the process involved in creating and expressing meaning through language (speak or write fluently) ; it is a complex and dynamic process that involves multiple cognitive and linguistic skills. It is influenced by various factors, such as the speaker's or writer's knowledge, motivation, attention, and the communicative context in which the language production occurs. According to levelt (1989), language production contains four successive stages :

- Conceptualization
- Formulation
- Articulation

- Self monitoring (scovel 1998 :27)
-

## a. Language production components :

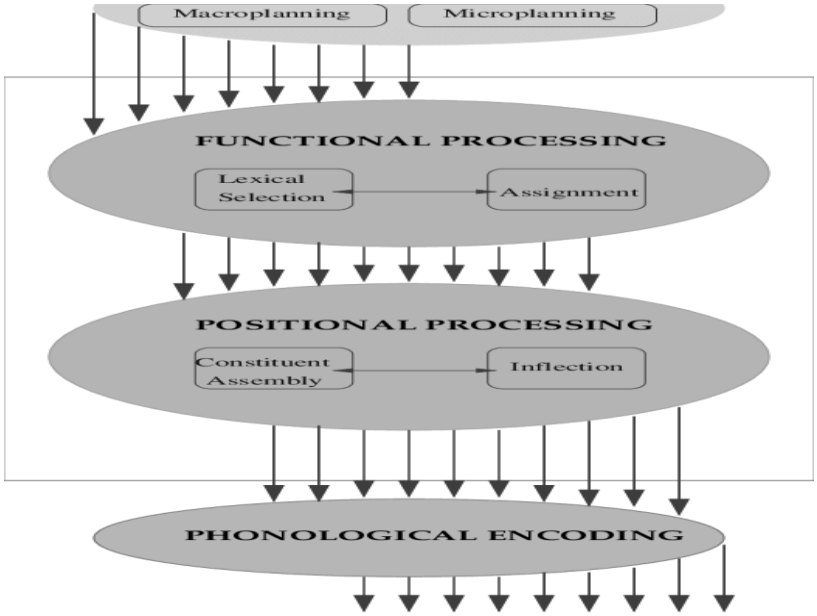


**Figure 1.2 The Components of the Language Production System (adapted from Bock and Levelt 1994).**

## b. Language production process :

- Conceptualization: This is the first stage, where the speaker or writer decides what to say and formulates the idea or message they want to convey.
- Formulation: In this stage, the speaker or writer converts the conceptualization into a linguistic form. This involves choosing appropriate words, organizing them into phrases and sentences, and selecting grammatical structures that accurately convey the intended message (select words to express concepts).
- Articulation: This is the physical production of speech or writing, where the speaker or writer activates the relevant motor systems to produce sounds or write words.

- Monitoring: During language production, the speaker or writer continuously monitors their own output to ensure that it matches their intended message and is appropriate for the context.
- Self-correction: If the speaker or writer detects errors or inconsistencies in their output during monitoring, they may engage in self-correction to revise their language production accordingly.

## 1.3. Speech definition :

Speech is a human vocal communication using language (spoken words or sound symbols), sapir (1921), pointed out that SPEECH is so familiar a feature of daily life that we rarely pause to define it. It seems as natural to man as walking, and only less so than breathing. Yet it needs but a moment's reflection to convince us that this naturalness of speech is but an illusory feeling. The process of acquiring speech is, in sober fact, an utterly different sort of thing from the process of learning to walk, and that it is a human activity that varies without assignable limit as we pass from social group to social group, because it is a purely historical heritage of the group, the product of long-continued social usage refering to his analysis of the symbolic associations of words,he wrote that: "Th elements of language, the symbols that ticket off experience, must therefore be associated with whole groups,delimited classes, of experience rather than with the single experiences themselves. Only so is communication possible, for the single experience lodges in an individual consciousness and is, strictly speaking, incommunicable. To be communicated it needs to be referred to a class which is tacitly accepted by the community as an identity" (p. 9).

Speech is derived into two elements :

### 1.3.1. Speech perception :

Speech perception refers to the ability to perceive linguistic structure in the acoustic speech signal. During the course of acquiring a native language infants

must discover several levels of language structure in the speech signal, including phonemes (speech sounds) which are the smallest units of speech. Although phonemes have no meaning in themselves, they are the building blocks of higher-level, meaningful linguistic units or structures, including morphemes, words, phrases, and sentences.

### 1.3.2. Speech production :

Is the process that begin when the talker formulate the message in his / her mind to transmit to the listener via speech (Rabiner and juang 1993).

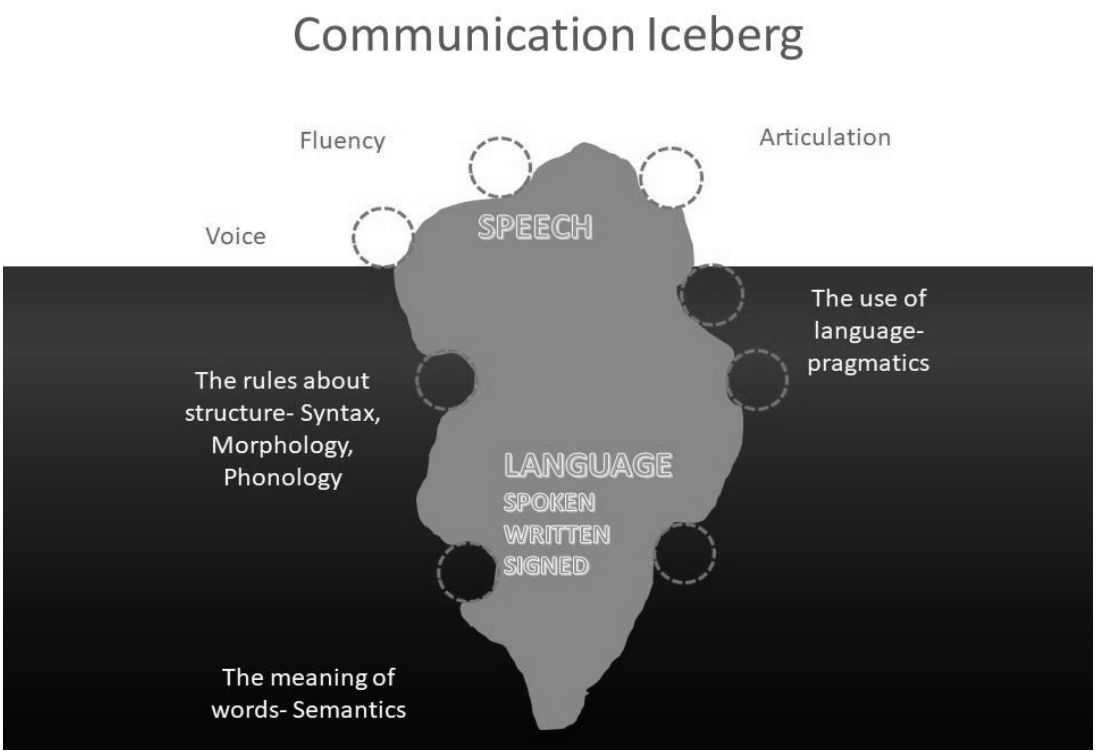


**Figure 1.3. difference between language and speech ( the iceberg of communication)**

### 1.3.3. Speech production stages (normal child) :

- Cooing and Babbling: In the first few months of life, infants produce cooing sounds and engage in vocal play, exploring different vowel and consonant-like sounds.

- Reduplicated Babbling: Around 6-9 months, infants start babbling repetitive syllables, such as "bababa" or "dadada." This stage lays the foundation for speech development.
- Variegated Babbling: Around 9-12 months, infants begin to produce more varied combinations of consonant and vowel sounds, imitating intonation patterns and experimenting with different speech-like sounds.
- First Words: Typically, around 12-18 months, children produce their first recognizable words. Initially, their vocabulary consists of simple and concrete words that are meaningful to their daily experiences.
- Two-Word Utterances: Between 18-24 months, children begin combining two words to express basic ideas or requests, such as "more juice" or "big dog." Their vocabulary expands gradually.
- Telegraphic Speech: Around 24-30 months, children start using short phrases and sentences that contain key content words, omitting grammatical markers and function words. For example, "Mommy go store."
-

| Age | Attention and Listening | Understanding (Receptive language) | Talking (Expressive Language) | Social Communication and Use of Language | Speech Sounds |
|---|---|---|---|---|---|
| 0-11 m ont | • Turns towards sounds and locates a range of sounds accurately<br>• By 6m can pay fleeting attention but easily distracted by new event<br>• Stops and looks when hears own name<br>• Is intrigued by new events and actions<br>• Listens to, distinguishes, and responds to intonations and the sounds of voices | • By 6m responds to different tones of voice<br>• Recognises parent's voice<br>• By 10m stops and looks when hears own name<br>• By end of 1st year, begins to understand frequently used words such as "all gone", "bye bye", "no"<br>• Understands single signs | • Communicates in a variety of ways including smiling, gurgling, crying, making sounds<br>• By 6m will engage in sound play with familiar adult<br>• Babbling in strings of connected but different sounds, e.g. 'ba-da-ga'<br>• By 12m, may hear "word" like utterances e.g. "dada", "mama", "gogo"<br>• Can point to object or activity to express wants and needs<br>• May have 1 -5 "words" by 12m, related to child's own world and functional<br>• needs | • Gazes at faces and copies facial movements e.g. sticking out tongue<br>• Makes sounds with their voice for social interaction<br>• By 12m uses voice, gesture, eye contact & facial expression to make contact with people and keep their attention<br>• Initiates an interaction with adult | • Babbles with range of sound combinations<br>• By 12m consonants such as "b, d, g, m, n, w" predominate |

| | | | | | |
|---|---|---|---|---|---|
| 8-20 months | • Likes to listen to a wide variety of sounds<br>• By 12m concentrates on most powerful stimulus, difficult to re-focus<br>• Is easily distracted by noises or other people talking<br>• By 18m will attend to own choice of activity, tolerates limited intervention | • By 12m understands key words in phrase e.g. "Where's your nose?"<br>• By 12m recognises photos of familiar people and objects<br>• Understands simple words in context and understands more than they can say<br>• Understands naming words<br>• e.g. shoe ,ball | • Creates personal words as begins to develop language<br>• Uses around 10-20 single words although these may not be clear<br>• Beginning to use words for a range of purposes | • Likes being with familiar adults and watches and copies their body language including gesture and pointing<br>• Realises that their voice and actions have an effect on others<br>• Use pointing with eye gaze to share an interest and<br>• make a request | • Speech consists of mix of "jargon" and some real words<br>• May be difficult to understand |
| 16-26 months | • Listens to and enjoys rhythmic patterns in rhymes and stories<br>• Starts to focus on an activity of own choice<br>• Responds to own name and can move attention briefly and then re-focus<br>• Single channelled attention | • Understands action words<br>• e.g. "sleep", "jump"<br>• By 2y, understands simple instructions/phrases when context apparent, e.g. "get mummy's shoes"<br>• Understands instructions with | • By 24m beginning to put 2 words(or signs) together e.g. "Mummy's car", "more juice"<br>• Uses different types of everyday words, nouns, adjectives, verbs<br>• Uses up to 50 words<br>• Asks questions e.g. "where drink?" | • Interested in stories, songs and rhymes<br>• Begins to express feelings | • By 2y6m starting to use "f, s, sh"<br>• Immaturities heard e.g. "tar" for "car"<br>• "pu" for "spoon" |

| | | | | | |
|---|---|---|---|---|---|
| | | 2 key words (or signs)<br>• e.g. "make teddy jump" | | | |
| 22 -36 months | • Begins to listen to talk with interest, but still distracted<br>• By 30m can attend to adults choice of activity for short time | • Can identify objects by use<br>• e.g. "Which one do we eat?"<br>• Understands simple concepts such as in/on/under, big/little<br>• Understands simple "who", "what", "where " questions but not "why" or “when?”<br>• Understands a simple story with pictures | • Is learning new words frequently and rapidly<br>• uses up to 300 words<br>• Can link 3-4 words together<br>• Starting to use past tense e.g. "me falled over"<br>• Using some question words e.g. "what?", "where?" | • Can hold a short conversation but jumps from topic to topic<br>• Expresses emotions towards adults and peers<br>• Has some favourite stories, songs and rhymes<br>• Uses language to share feelings, experiences and<br>• thoughts | • By 3y all vowels are present.<br>• Consonant sounds such as "s, f, sh, z, v, ch " used<br>• Usually understood by<br>• others |

| | | | | | |
|---|---|---|---|---|---|
| 30-50 months | • By 36m can shift to a different task if attention fully obtained<br>• Listens to others in 1:1 or small groups when conversation interests them<br>• Is able to follow directions (if not intently focused on own activity)<br>• Listens to stories with increasing attention and recall | • By 3y beginning to understand instructions with 3 key words e.g. "Give the big ball to teddy"<br>• Understanding increasing number of "describing" words e.g. "cold", "top"<br>• Beginning to understand negatives e.g. "can't"<br>• Understands "why" questions | • Uses simple statements and questions, often with gesture<br>• Uses sentences with 4-6 words<br>• Beginning to use linking words such as<br>• "and", "because"<br>• Increasing vocabulary 500-1500 words (by 4yrs)<br>• Uses complex sentences to elaborate an idea<br>• Uses talk to: connect ideas; explain what is happening; anticipate what might happen next; recall past<br>• experiences | • Can initiate conversations<br>• Joins in with rhymes and stories<br>• Enjoys rhythmic activities and shows awareness of rhyme and alliteration<br>• Understands turn taking and sharing<br>• Can describe main story settings, events and principal characters<br>• Talks freely about home and community | • Mostly understood by others, even in connected speech<br>• By 4y uses "f, s, sh" etc consistently<br>• Blends still simplified e.g. "sp"□"p"<br>• "tr"□ "t" |
| 40-60 + months | • Sustains attentive listening, respond to what they have heard with relevant comments, questions or actions<br>• Attention is more | • Understands "how?" by giving explanations<br>• More aware of abstract ideas including time in relation to past, present and future | • Sentence length and complexity gradually increasing<br>• More question words e.g." when?, how?"<br>• Uses sentences that are easily understood by adults and peers<br>• Uses language to | • Has confidence to speak to others about their own wants and interests<br>• Takes account of what others say | • By 5y fully intelligible to others<br>• May not use "th"<br>• May swop "w" for "r"<br>• May find it difficult to say |

| | | | | | |
|---|---|---|---|---|---|
| | flexible and able to listen and do at the same time; two channelled<br>• Can take verbal direction without needing to interrupt the task and look up<br>• By 5y, maintains attention, concentrates and sits quietly when appropriate | • Understands humour e.g. jokes, nonsense rhymes<br>• Understands a simple story without pictures<br>• Understands instructions with sequence words: "first…next…last"<br>• Understands everyday conversations unless ambiguous | imagine and recreate roles and experiences in play<br>• Will ask the meaning of words<br>• Extends vocabulary, by grouping & naming, exploring the meanings and sounds of new words<br>• By 5yrs using 5000 words | • Uses language for a range of purposes<br>• Uses talk to pretend and for imaginary situations<br>• Uses language to express needs/feelings in appropriate ways<br>• Works as part of a group or class, taking turns | 3 consonants together e.g. scratch<br>• Multi-syllabic words difficult |

**Table 1.1. Speech, language and communication development chart**

## 1.4. Autism spectrum disorder :

### 1.4.1. Autism spectrum disorder definitions :

Autism spectrum disorder (ASD) has captured the interest of many researchers throughout the past years, many definitions can be cited ; Catherine & Sarah (2006: 1) stated that: “autism is a syndrome that emerges in the first three years of life and is defined by a pattern of qualitative abnormalities in reciprocal social interaction, communication, and repetitive interests and behaviors” , (Landa, 2008)[1] is another one who defined ASD « as a kind of psychiatric illness. The main symptom of this disease is the lack of social development, communication skill and also along with repeating fixed behaviors ». another definition indicated that : The term 'autism spectrum disorder' refers to an early-onset neurodevelopmental condition which is currently diagnosed on the basis of deficits in three core areas of behaviour: impaired social interaction, impaired communication and repetitive behaviours/interests (American Psychiatric Association, 1994; World Health Organization, 1992).

### 1.4.2. ASD symptoms :

The timing and severity of autism's early signs vary widely. Some infants show hints in their first months. In others, symptoms become obvious as late as age 2 or 3. Not all children with autism show all the signs, for this reason, a professional evaluation is crucial. According to Autism Speaks Foundation (n.d), the following "red flags", if appear, may indicate the child is at risk for an autism spectrum disorder:

**By 6 months :**

- Few or no big smiles or other warm, joyful and engaging expressions.
- Limited or no eye contact.

**By 9 months :**

- Little or no back-and-forth sharing of sounds, smiles or other facial expressions

**By 12 months:**

- Little or no babbling
- Little or no back-and-forth gestures such as pointing, showing, reaching or waving
- Little or no response to name.

**By 16 months:**

- Very few or no words.

**By 24 months:**

- Very few or no meaningful, two-word phrases (not including imitating or repeating)

At any age

- Loss of previously acquired speech, babbling or social skills
- Avoidance of eye contact
- Persistent preference for solitude
- Difficulty understanding other people's feelings
- Delayed language development
- Persistent repetition of words or phrases (echolalia)
- Resistance to minor changes in routine or surroundings
- Restricted interests
- Repetitive behaviors (flapping, rocking, spinning, etc.)
- Unusual and intense reactions to sounds, smells, tastes, textures, lights and/or colors.

### 1.4.3. ASD Diagnosis :

There is no medical test to diagnose the autism spectrum disorder, sometimes autistic children are mistakenly diagnosed with different disorders such as ADHD, or their parents are told that nothing is wrong. While other times kids are diagnosed with ASD while they are not just because they tend to be alone or because of their lack of communication. Therefore, therapy and the right support from specialists in addition to conversations with parents came out with reliable methods to ensure a precised evaluation.

According to (Autism Treatment Center of America, n.d., para. 2), the diagnosis of autism has two stages. The first stage is a developmental screening during "well-child" check-ups. The second stage involves a thorough evaluation by a multidisciplinary team.

### 1.4.4. ASD Causes :

Autism spectrum disorder has no single known cause. Given the complexity of the disorder, and the fact that symptoms and severity vary, there are many causes :

- **Genetic Factors:** Studies have shown that autism tends to run in families, suggesting a strong genetic component. Certain genes have been identified as potential contributors to the development of autism, although the exact genes and how they interact with each other and the environment is not yet fully understood.
- **Environmental Factors:** Exposure to certain environmental factors during pregnancy or early childhood has been suggested as a possible risk factor for autism. These factors may include prenatal exposure to toxins or infections, complications during pregnancy or childbirth, or exposure to environmental toxins such as lead.
- **Brain Development:** Research has shown that abnormalities in the structure and function of the brain may contribute to the development of autism. Differences in the way that the brain processes and responds to sensory information have also been observed in individuals with autism.

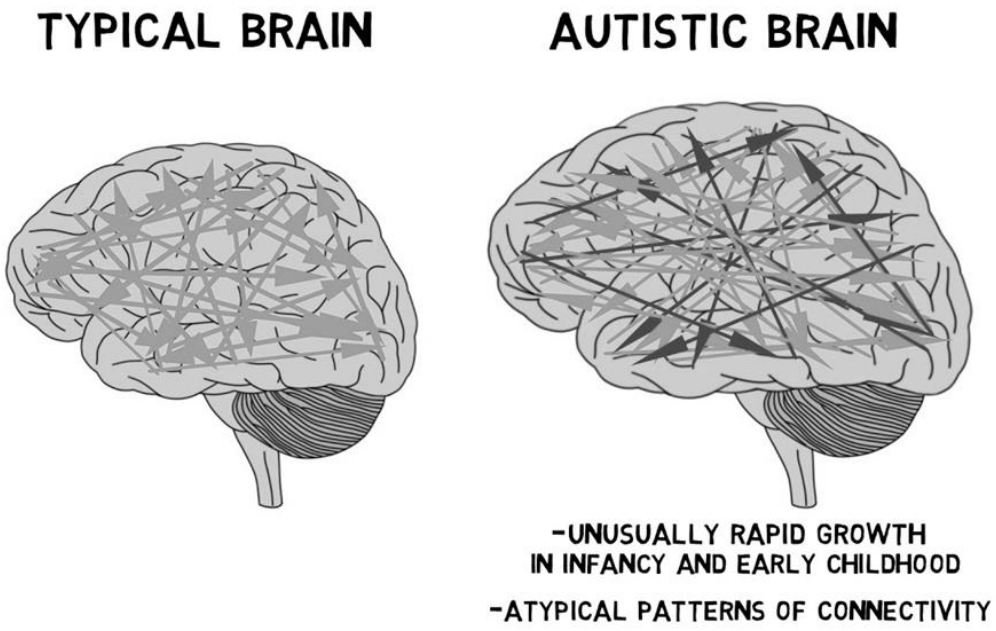


**Figure 1.4. comparaison between atypical child brain and autistic child brain**

- **Other Medical Conditions:** Some medical conditions, such as Fragile X syndrome, tuberous sclerosis, and Rett syndrome, are associated with an increased risk of autism.

### 1.4.5. ASD Types :

The medical community used to categorize autism into five different types. This categorization is now out of date, the American Psychiatric Association (2013) updated "The Diagnostic and Statistical Manual of Mental Disorders" (DSM-5). This changed the way providers diagnose autism.

But many people are still familiar with the old categories, Historically, experts identified five types of autism:

#### 1.5.5.1. Asperger's Syndrome:

Asperger's Syndrome is a developmental disorder in which there are qualitative abnormalities in reciprocal social interactions that resemble those observed in

autism. Restricted interests and repetitive, stereotyped activities are also present. On the other hand, cognitive development and language development are of good quality, it is often associated with Motor clumsiness. It has been categorised as level1 of autism disorder by the DSM-5 diagnostic manual. What should be known about the level1 spectrum disorder is that children have a high average intelligence and strong verbal skills. (Gargseth 2022). In general, a child with level 1 autism spectrum disorder will display the following symptoms:

- Inflexibility in thought and behavior
- Challenges in switching between activities
- Executive functioning problems
- Flat monotone speech, the inability to express feelings in their speech, or change their pitch to fit their immediate environment
- Difficulty interacting with peers at school or home

### 1.5.5.2. Rett Syndrome:

A rare genetic disorder primarily occurs in girls in twelve years “Female 1:9000 and male 16 cases”. (Zimmerman 2008 p, 84).Rett syndrome is a rare neurodevelopmental disorder that is noticed in infancy. The disorder mostly affects girls, although it can still be diagnosed in boys. Rett syndrome presents challenges that affect almost every aspect of a child's life. The good thing is your child can still enjoy and live a fulfilling life with the proper care. You can have family time together and provide support to allow the child to do what they enjoy.

Common symptoms of Rett syndrome include:

- Loss of standard movement and coordination
- Challenges with communication and speech
- Breathing difficulties in some cases

### 1.5.5.3. Childhood Disintegrative Disorder (CDD):

Childhood disintegrative disorder (CDD), also known as Heller's syndrome or disintegrative psychosis, is a neurodevelopmental disorder defined by delayed onset of developmental problems in language, motor skills, or social function. A child experiences normal development in these areas only to hit a snag after age three and up to age 10. The developmental loss can be very heartbreaking for parents who had no idea their child had autism challenges all along.

The cause of CDD is unknown though researchers link it to the neurobiology of the brain. Childhood disintegrative disorder is more common in boys. Out of every 10 cases of the disorder, nine will be boys, and only one will be a girl.

In CDD, the child will have normal development up to the time when the disorder starts, and regressions suddenly start to occur in more than two developmental aspects of their life. The child may lose any of the following skills and abilities:

- Toileting skills if they had already been established
- Acquired language or vocabularies
- Social skills and adaptive behaviors
- Some motor skills

### 1.5.5.4. Kanner's Syndrome:

Kanner's syndrome is named according to the psychiatrist Leo Kanner "Kanner's autism". It is also called infantile psychosis. This early form of autism is the best known. It generally reaches three or four boys for every one girl and is observed in all races, in all aspects of life, whatever their intellectual and emotional socio-economic level are. Generally, in the female sex, the attack is much more serious with a massive deficit of the sphere as well as cognitive of the language. Symptoms appear very early in 2/3 of cases. For the rest of the cases, they occur from 2 or 3 years after an apparently normal psychomotor development. (Villard 1984 p, 05).Children with Kanner's syndrome will appear attractive, alert, and intelligent with underlying characteristics of the disorder such as:

- Lack of emotional attachment with others

- Communication and interaction challenges
- Uncontrolled speech
- Obsession with handling objects
- A high degree of rote memory and visuospatial skills with major difficulties learning in other areas

### 1.5.5.5. Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS)

Pervasive developmental disorder not otherwise specified (PDD-NOS) sometimes referred to as "a typical autism" is a mild type of autism that presents a variety of symptoms. The autistic child may experience challenges in developing language, social, walking and other skills. (Baird et al 2001 p, 468).

The identification of this type start by observing the child and noting what area the child displays a deficit in, such as interacting with others. PDD-NOS is sometimes referred to as "subthreshold autism," as it is a term used to describe an individual that has some but not all symptoms of autism.

### 1.4.6. Characteristics associated with ASD :

Characteristics that are included in the criteria for the diagnosis of autism fall into what is known as the autism triad of impairments: impairment of social development, impairment of social communication and impairment of social understanding and imagination. (Wing and Gould, 1979; Frith, 2003; TagerFlusberg, 2000; Howlin, 2003).

### 1.4.7. Language characteristics Associated with ASD :

One of the first indicators of autism is an inability to develop language. Children with autism typically have deficits in both language comprehension and language production. Despite the fact that the reasons of linguistic issues are numerous,

Many studies believe that the issues in autistic children's development are caused by a range of circumstances that occur before, during, or after birth, impacting brain development, the next figure represents the different areas of an atistic brain :

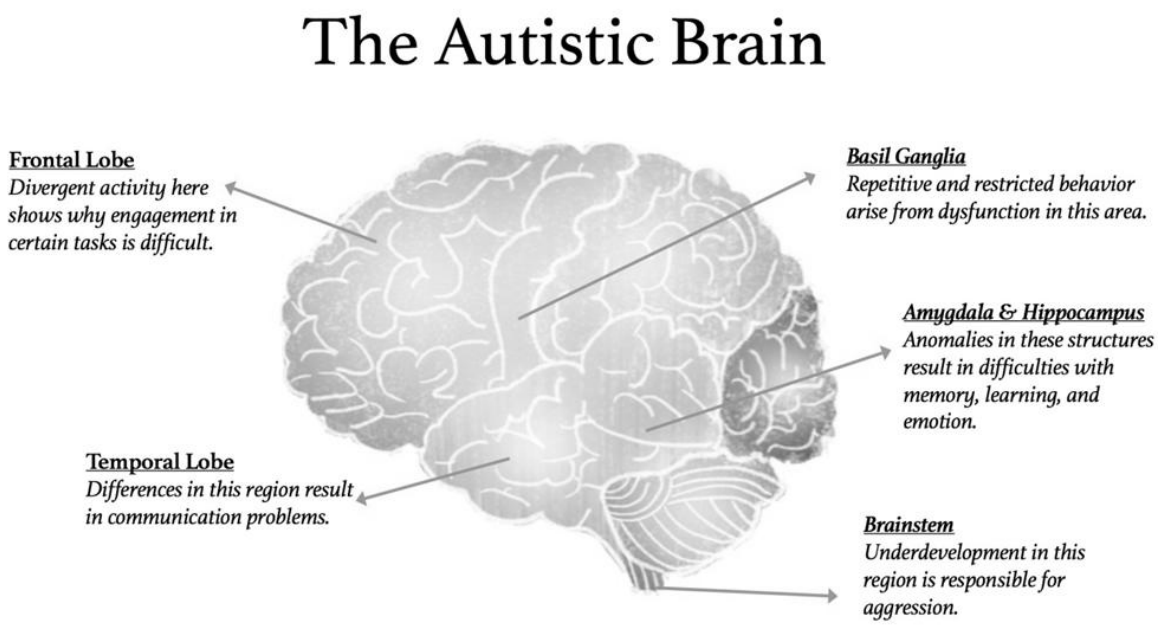


**Figure 1.5. The areas of an autistic brain that explains language characteristics**

The language development of children with ASD is also characterized by several atypical language features such as: echolalia, use of jargon, and varying intonation. (Eigsti, de Marchena, Schuh, Kelley, 2011; Eigsti, Bennetto, Dadlani, 2007) :

**a. Echolalia :**

Research has shown that echolalia can serve a communicative strategy for autistic children as a language acquisition technique to help them initiate or maintain conversations , The echolalia refers to the imitation and repetition from other's speech, and it can be classified into three types according to Roberts (2014):

- Exact echolalia: here the autistic child repeats exactly and right after what he hears.

- Delayed echolalia: it can be defined as echoing of a phrase after some delay or lapse of time (Simon, 1975); that is, those children who repeat for example their favorite movie or song scripts.
- Mitigated or modified echolalia: it refers to any change in echoed emission for communicative purposes; it can be exact or delayed echolalia. For example, pronouns changing in the repetition: what are you doing? And the child repeats: what am I doing?

**b. Jargon :**

is another characteristic of language development of children with autism, in which they produce nonsense words. It serves a specific role in language acquisition and development of children on the spectrum (Eigsti, Bennetto L, Dadlani, 2007). Many autistic children use jargon as a means of maintaining conversations or expressing their needs (ibid) that is considered difficult to decipher into a meaningful conversation.

**c. Varying intonation :**

atypical production of supra-segmental features such as: accent, rhythm, stress, and intonation, have also been reported in individuals with autism (McCann, Peppé, Gibbon, O'Hare, Rutherford 2007; Diehl, Bennetto, Watson, Gunlogson, McDonough, 2008). Typically, those who are diagnosed with autism embody some atypical supra-segmental features, such as: inappropriate speech volume, flat or sing song intonation (Shriberg, Paul, McSweeny, Klin, Cohen, Volkmar, 2001).

According to (Rogé 2003 p, 34) , Language disorders are sometimes more difficult to distinguish due to possible overlap of certain signs, These signs are :

**d. The use of pronouns :**

Pronoun inversion is the substitution of one pronoun by another. (contejean & Doyen 2012 p, 57). The pronominal inversion "I, you" does not take place in these children, showing that they do not appropriate the sentence or do not

modify it to adapt it to the new situation example: the child says, "you want your dessert" instead of saying I want my dessert". (Tardif & Gepner 2003 p, 13).

### e. Language Comprehension :

Comprehension of speech and language is normally done through sound, this requires paying attention to the sounds, then being able to decipher the sounds in terms of words, then being able to understand the words in terms of intended meanings, and, finally, appreciating the meanings in terms of intentions, actions, vision (perception of gestures and signs or of printed words) and touch (Braille) can also be used as alternative or additional routes into the perception of letters and words. (Greenfield and Smith, 1976).

### f. Focusing on literal meaning :

In the case of autism spectrum disorder, focusing on the literal meaning of a word produces understandable responses and selecting keywords or phrases than focusing on their literal meaning. Nevertheless, for normal people this may seem inappropriate in a conversation. (Bazilchuk 2015).

### g. Pragmatic language skill :

The pragmatics of language is considered as the use of language in communication, the adaptation of language to the situation and to the interlocutor. It is opposed to the formal aspects of language, which are phonology, lexicon and syntax. Some forms of autism, in particular Asperger's 20 syndrome, thus mainly affect pragmatic, while the formal aspects are relatively preserved. However, more than 50% of autistic children have a total absence of language. (Contejean & Doyen 2012 p, 58).

### h. Nonverbal communication :

Several youngsters who are affected by autism develop little in the way of language skills, relying most of the time on nonverbal communication techniques such as pointing, gesturing, or even crying and use of sounds due to

not understanding their feelings, frustration, or being unable to use the right words. (Rogé 2003 p, 23, 24).

### i. Make eye contact and communication :

Eye contact is one of the things autistics struggle with, for them avoiding eye contact is helpful to talk clearly, since it takes away all the stimuli that come while pointing to others eyes. In addition, it helps them to focus on communication purely. (Gernsbacher et al 2016 p, 879).

### j. Hyperlexia :

is a term used to describe an advanced ability or intense interest in reading skills demonstrated by some individuals on the autism spectrum. While hyperlexia is not exclusive to autism and can also be present in neurotypical children, it has been observed as a language characteristic in some autistic children. They often exhibit early and impressive reading abilities, such as decoding words at a young age, but may have challenges with comprehension or using language in a functional and interactive manner.

| Linguistic area | Force | weaknesses |
|---|---|---|
| Phonology | Acquisition of the articulatory repertoire in the same order as the children | The appearance of a pseudo-accent |
| Lexical | Several Semantic Fields developed | Vocabulary of concrete names better developed than that of<br>Abstract names, verbs, adjectives or adverbs. |
| Morphology | Acquisition of syntax = same steps<br>In the usual development | If delayed acquisition: weaker understanding<br>The Pronominal Inversion |

| | | |
|---|---|---|
| | Canonical Phrases Easier understood | Less complex syntax structures<br>Treatments of metallingual nature with difficulties with the<br>sarcasm, irony, allusions and metaphors beyond the<br>Strict framework of morphosyntax |
| Speeches | | Difficulties in organizing speech |
| pragmatic | | Processing indirect requests literally<br>Difficulty Identifying Tones<br>Special prosody in production, change of subject<br>discourse, does not respect speech turns or tendencies to<br>The monologues |
| The internal language | It is possible in situations that require<br>verbalized | In situations of visual-spatial or visual-motor nature:<br>Language as a Resolution Strategy<br>problem is |

**Table 1.2. Atypics of Language in Autism**

### 1.4.8. Language comprehension and speech production stages for Autistic children :

Autistic children may experience challenges in language comprehension and speech production, which can vary in severity from individual to individual. Here are the general stages of language development in autistic children:

- Preverbal stage: In this stage, children may exhibit delays or difficulties in acquiring early communication skills such as joint attention (sharing attention with others), gesturing (pointing, waving), and using nonverbal communication to express needs and desires. They may have limited understanding of spoken language.
- Single-word stage: At this stage, children begin to produce single words to express their needs and wants. They may have a limited vocabulary and rely on memorized phrases or echolalia (repeating words or phrases heard) for communication. Comprehension of spoken language may still be limited.
- Two-word stage: Children progress to combining two words to form simple phrases or sentences. They may use basic word combinations like "more milk" or "want toy." However, grammar and syntax may still be simplified or inconsistent.
- Phrase and sentence stage: In this stage, children start to use longer and more complex phrases and sentences. They acquire a broader vocabulary and demonstrate improved grammar and sentence structure. However, pragmatic language difficulties, such as challenges in social language use and understanding subtle nuances, may still be present.

It's important to note that language development can vary significantly among autistic individuals, and some may experience significant delays or challenges in language acquisition. Additionally, some individuals with autism may rely on alternative forms of communication, such as augmentative and alternative communication (AAC) systems, to supplement or replace speech production.

### 1.4.9. Strategies of developing language for autistic children :

There are many treatment programs for autistic children, due to the individual differences for each autistic child and based on the results achieved with each case, however Before concidering tackling with any of these strategies through the process of indoctrination and education the child's behaviour must be modified.

The next stated programs reprsents the most effective methods :

#### 1.4.9.1. ABA (Applied behavior Analysis) :

ABA is almost always implemented one-on-one; that is one autistic child and one therapist. Therefore, different skills can be taught to the autistic child such as: imitation, receptive language, expressive language, and grammar. (Smith, 2002).it stands for Applied Behavior Analysis. It is a scientific discipline that focuses on understanding and improving human behavior by systematically applying behavioral principles and techniques. ABA has been widely used to address a variety of behavioral challenges and developmental disabilities, including autism spectrum disorder (ASD).

ABA involves assessing the individual's behavior, identifying the factors that influence it, and implementing interventions to bring about positive changes. These interventions are based on principles of learning theory, such as reinforcement, shaping, prompting, and fading.

| | Reinforcement | punishment |
|---|---|---|
| Positive | Something is added to increase the likelihood of a behavior. | Something is added to decrease the likelihood of a behavior. |
| Negative | Something is removed to increase the likelihood of a behavior. | Something is removed to decrease the likelihood of a behavior |

**Table1.3. Positive Vs. Negative Reinforcement and Punishment**

There are several types or approaches within ABA that are commonly used. Here are some of the major ones:

- Discrete Trial Training (DTT): When the child gives an incorrect answer, it is most likely ignored (Zaman, 2011).DTT involves breaking down skills or behaviors into small, manageable components and teaching them through repeated trials. It typically involves a structured environment, clear prompts, and reinforcement for correct responses.
- Natural Environment Training (NET): NET focuses on teaching skills in natural or everyday settings, rather than in structured drills. It emphasizes using the individual's interests and motivations to promote learning and generalization of skills.
- Verbal Behavior (VB): VB focuses on language and communication skills. It analyzes the function of language (such as requesting, labeling, or social interaction) and teaches communication using strategies like manding (requesting), tacting (labeling), and intraverbals (conversational skills).
- Functional Behavior Assessment (FBA): FBA is a process of analyzing and understanding the function or purpose of challenging behaviors. It involves identifying the antecedents (triggers) and consequences (reinforcements) that maintain the behavior. The information gathered helps develop behavior intervention plans.
- Pivotal Response Treatment (PRT): PRT is a naturalistic approach that focuses on pivotal areas of development, such as motivation, response to multiple cues, and self-initiation. It aims to increase the child's ability to respond to a variety of stimuli and develop communication, play, and social skills.
- Early Intensive Behavioral Intervention (EIBI): EIBI involves providing intensive and comprehensive ABA services to young children diagnosed with autism or developmental delays. It typically involves 20-40 hours of therapy per week and targets various areas of development.

### 1.4.9.2. TEACCH (teach treatment and education of autistic and related communication hanicapped children)

It was established by Eric Shopler in the early1970s. It established the intervention approach termed ‘structured teaching’ which is based on understanding the learning characteristics of autistic individuals and the use of visual aides to encourage independence, The TEACCH method is also considered as a comprehensive educational approach that does not deal with just one aspect of language and behavior, but provides a holistic preparation for the child through this program. The treatment method is individually designed according to the needs of each child, with a maximum of 5 or 6 children per teacher and an assistant in a single class. A separate educational program is designed for each child to meet their specific needs. One advantage of this program is that it considers the autistic child based on their condition and organizes a specialized program for them, taking into account their social, cognitive, motor, and linguistic abilities through well-designed assessments.

This program enters the world of the autistic child and utilizes their strengths, such as their attention to detail and love for routines. It prepares the child for the future, trains them to rely on themselves, helps them find a vocational function, and it is important for parents to understand:

- How the autistic child thinks and what their world is like.
- What is the appropriate means of communication for the child?
- How to strengthen social communication.
- How to prepare the home and environment.
- How to teach the child human emotions.
-

### 1.4.9.3. Auditory Integration Program :

This method, mentioned by Guy Bérard, is considered a therapy for training the brain to correctly receive information. This type of therapy is applied by listening to filtered music using headphones. Individuals with autism often have auditory sensitivity, either being hypersensitive or having hearing impairments. Therefore,

the treatment method is based on improving the auditory abilities of these individuals through an initial hearing assessment.

The following are some of the results of auditory training:

- Increased concentration for longer periods.
- Improvement in academic achievement.
- Decreased impulsivity and recklessness.
- Improved organizational skills.
- Improvement in reading abilities.
- Increased social communication.
- Ability to ignore peripheral stimuli and focus on the sensory stimulus.
- Encouragement to complete required school assignments.
- Clear speech with improved ability for verbal expression.

This program has helped ten thousand individuals facing learning difficulties, autism, depression, and communication challenges. Approximately 90% of the participants showed improvement, including progress in reading, writing, concentration, and social communication.

#### 1.4.9.4. PECS (Picture Exchange Communication System) :

PECS is one of the strategies developped by the ABA as a communication strategy for non-verbal autistic children. It helps people to converse via graphics. Althought this strategy affects the development of the autistic child's spoken language. it is a form of augmentative and alternative communication (AAC) designed to assist individuals with communication difficulties, particularly those with autism spectrum disorder (ASD) or other communication disorders.

PECS utilizes visual supports to promote communication and is based on the following main principles:

- Picture-based communication: PECS emphasizes the use of pictures or visual symbols as a means of communication. The individual is taught to exchange

pictures with a communication partner to express their needs, wants, or ideas.

- Communication initiation: PECS focuses on teaching individuals to initiate communication. They are encouraged to approach a communication partner, present a picture card, and exchange it for the desired item or action.
- Physical prompting and fading: Initially, individuals are given physical prompts to help them understand and perform the PECS exchange. These prompts are gradually faded over time, promoting independent communication skills.
- Reinforcement: PECS incorporates the use of reinforcement to motivate individuals to use the system. Reinforcement can be in the form of preferred items, activities, or social praise, provided immediately after a successful communication exchange.
- Systematic instruction: PECS follows a structured teaching approach, breaking down communication skills into small, achievable steps. Each step is taught systematically, gradually building upon previous skills.
- Generalization: PECS aims to facilitate generalization of communication skills across different settings, communication partners, and materials. The individual is encouraged to use PECS in various environments and with various people to enhance their communication abilities.

The principles of the picture extchange communication system explains the ABA interventions for autistic children are called operant model. Learning is the result of consequences that follow a behavior, and these consequences determine the likelihood of a behavior to happen again (Donaldson, 2014). The operant models comprise three basic parts: an antecedent which is an occurrence of experience that happens before an action occurs. Then, there is a conduct from the individual.

### 1.4.9.5. SGD (Speech Generating Devices)

Speech generating devices (SGD) are electronic devices that are portable in nature and can produce either synthetic or digital speech for the user. SGD may be used

with graphic symbols, as well as with alphabet keys, SGD can be used effectively with children and youth with ASD who have limited or no verbal speech from early childhood through high school. The evidence base indicates that SGD are effective with learners ranging from 3 to 20 years of age. The evidence-based research studies were conducted in clinical or school settings. Although there is little evidence for this practice being implemented at home, application of SGD in this setting seems logical. Thus the skills and intervention goals that can be adressed by this device target skills that help children and youth with ASD effectively communicate with others in a variety of situations and settings. The evidence base suggests that within the communication domain, a variety of skills can be targeted for intervention, including initiation, expressive language (verbal), joint attention/gestures (non-verbal), and pragmatics (conversation skills). The research also demonstrates that reading and math skills can be addressed using SGD.

The followings are some key principles commonly associated with SGDs:

- Access Methods: SGDs offer various access methods to accommodate individuals with different physical and cognitive abilities. These can include touch screens, switches, eye-tracking technology, head pointers, or other assistive devices that enable individuals to activate the device and select messages.
- Symbol Sets: SGDs typically employ symbol sets to represent words, phrases, and concepts. These symbols can range from simple pictures to more abstract symbols, depending on the individual's needs and cognitive abilities. Common symbol sets used in SGDs include PCS (Picture Communication Symbols), Blissymbols, Widgit symbols, or customized symbol libraries.
- Voice Output: SGDs feature synthesized or digitized voice output to produce audible speech. The device converts text or symbols into spoken words, enabling the user to express themselves vocally. Voice output options may include different voices, speech rates, and customization options to suit individual preferences.

- Vocabulary Organization: SGDs use a hierarchical or categorical organization to structure vocabulary. This facilitates efficient navigation and retrieval of words and phrases. Vocabulary can be organized by topic, parts of speech, frequently used words, or personalized categories based on the user's specific communication needs.
- Language Representation: SGDs support different languages and may provide language-specific features such as grammar rules, verb conjugation, and word prediction to aid language production. They can also accommodate bilingual or multilingual communication.
- Customization and Personalization: SGDs allow for customization to meet individual communication needs. Users can add personalized messages, create specific categories or pages, program frequently used phrases, and adapt the device's layout to align with their preferences and communication goals.
- Communication Partner Support: SGDs often provide features to facilitate communication with others. These may include word prediction, message history, pre-programmed phrases, or communication boards that enable a communication partner to respond effectively.

## Conclusion :

To sum up, this theoritical chapter examines language comprehension and speech production in both typical children and children with autism spectrum disorder, the researcher presented some definitions about language in general and its components, adding necessary terms such as communication and speech, in addition every needed information about autism spectrum disorder (definition, types, diagnosis…) were mentioned, moving further in this chapter, language improvement in autistic children was presented with some strategies of developing language, the review of relevant literature will be followed in the next chapter by a situation analysis and detailed description of data collection methods, then an interpretation and discussion of the results.

## 2.1. Introduction:

This practical chapter examines strategies and interventions for enhancing language comprehension and speech production in autistic children. The research draws on classroom observation and interviews with speech and language pathologist, teacher and parents. Language difficulties present significant obstacles for autistic children, impacting their ability to understand and express themselves effectively. This chapter explores the challenges faced by autistic children in language comprehension and speech production, highlights effective assessment methods, investigates intervention approaches, underscores the importance of collaboration, and addresses implementation challenges, providing a description of: the research methodology and the instruments, the setting of the study, participants and the sample population. In addition, it includes the analysis and interpretation of the data collected. Finally, the researcher tries to put forward some suggestions and recommendations.

## 2.2. research methodology :

Before delving into a description of the method used in this dissertation, consider several definitions of the term "research" offered by various scholars. According to Grinnell (1994:4) the word research is Composed of two syllables, re and search. The dictionary defines the former as a prefix meaning again, anew or over again and the latter as a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles.

Burns another scholar who defines research as “a systematic investigation to find answers to a problem” (1997:2). In their definitions, both Grinnell and Burns share the word ‘systematic’; that is to say, a research should not be taken in a haphazard way but according to a particular and an organized method. One of the paramount methods is the case study method.

### 2.2.1. The Research Design :

The current work relies on an exploratory research design, which is appropriate for the study at hand because its goal is to determine how autistic children understand and comprehend language in order to produce sounds and the various tools used by these children to enhance their learning capacity and at the same time facilitate the teacher's or the speech pathologist's work .

### 2.2.2. The Research Methods:

The qualitative method is used in this research in order to analyse the data gathered from our observation of autistic children as well as the interview conducted with their teacher who is a linguist and a speech pathologist.

### 2.2.3. The research setting and research participants :

The study took place at Amani Ahmed primary school from 05 mai to 24 mai during the academic year (2022/2023). The research was carried out with a total of four children affected with autism spectrum disorder (all of them were boys), ranging in age from four (04) to nine (09) years old. The sample was observed in order to determine how they comprehend language and produce speech.

### 2.2.4. Sample population :

The key factor of any scientific research is the selection of the sample. Leedy and Ormrod (2005:199) refer to a sample as "a subset of a population" that should be representative, by which the researchers will be able to draw a conclusion about the entire population. In this research, a speech pathologist and a teacher were chosen to be a reference to garantee the validity of the present study. Taking into consideration their experiences in teaching children with autism. Thus, the aim was to draw a comparison between them to see whether they use the same techniques and procedures in the process of language comprehension and speech production development in Chapter Two Research Design, Data Analysis , and Implications Also, to see if they utilize the same techniques to overcome difficulties when dealing with such

children asking them about the impact of collaboration between parents, teacher, and pathologist to improve the child's capacity through the process of language comprehension and speech production.

### 2.2.5. The research tools

**a- Observation :**

This tool was adapted in order to observe autistic children language comprehension and whether they produce speech or not in a classroom environment taking into concideration the challenges they face during the process.

**b- Interview :**

Interviews can be defined as a qualitative research method which involves "conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation." (Boyce.C. & Neale.P., 2006).

This instrument (semi structured interview) is used with Amani Ahmed school's teacher and a speech pathologist for a purpose of supporting the data collected from the observation and to provide broader information about the research problem.

## 2.3. Data Analysis and disscusion :

In the research under discussion, the primary collected data, through the use of interview and observation, has been annalyzed in accordance with the outline laid down for the purpose at the time of developing the research plan with the goal of discovering useful information, suggesting conclusions, and supporting decision when obtaining tested results, Therefore, the researcher analyzed the data qualitatively in the aim of providing a rich, contextualized understanding of the SLP's experience with autistic children and the teacher-parents collaboration.

### 2.3.1. Annalysing of the results :

**a- Observation :**

During the observation phase, it was discovered that each autistic child has his or her own unique style of language comprehension and speech production. For that purpose the sample was separated into two categories for this difference: verbal and nonverbal autistic children.

## 1. Verbal autistic children:

**Verbal children's name:** Zakariya and Mohammed

**Age:** Nine (09) years old/ Seven (07) years old. School year: Third year primary/ second year primary

**Description of children:**

Zakariya is a multilingual boy (speaks Arabic, French, English, German…) diagnosed with Asperger syndrome. he is verbal with fluent speech using multiword, communicate regularly and spontaneously. He also builds an adaptive behaviour that is to say a self-depending like dressing by himself, making himself happy by enjoying others company and calling them with their names, he also enjoys playing games and he loves greetings, Zakariya has also high grades with the score of 09/10.

Mohammed is a hyperactive child, he cannot make the class comfortable, although he talks less to people and in fact, he is the one who has above average intelligence. Mahdi is fluent in Arabic language and he is so good with memorizing verses and poemes; he speaks all time in Arabic instead of our dialect, He develops unique and unusual communication skills such as biting himself, tantrums or crying to escape from a subject or simply running away, however he has the ability to share attention on an object with another person, also he is pointing to direct attention which is absent in autistic children.

Language characteristics in both Zakariya and Mohammed are largely close and cited below :

- **Verbal language :**

Zakariya and Mohammed give a lot of importance to the verbal language and the speech production ; they like to be heard, more than the nonverbal one so that their language is significant. That means that they have a correct vocabulary and

a meaningful rich advanced grammar as well as the language comprehension since most of their responses are correct.

- **Expressive language :**

It is found that autistic children may convey what they want verbally that means autistic children do not have difficulty expressing themselves using any possible form of speech production or sometimes only sounds. But as they are expressing themselves they do not talk even though sometimes they understand what others are saying. They prefer to keep the conversation as short as they can.

- **Morphology :**

The study finds that both children form and combine words using different components, which build on them the ability to form from words the correct sentences, and from sounds the right pronunciation.

- **Phonology :**

they have no difficulties in reading nor spelling, The phonological problems are not totally present in Zakariya and mohammed however they usually have problems when they are exposed to new sounds.

- **Pragmatics :**

It is a little bit difficult to assume that these children have pragmatic deficits, since autistic children's statements are extremely limited and since they rarely engage in long conversations. Sometimes if they do not want to respond or do not understand what others say they keep quiet or they behave in a way of avoidance to ignore getting involved in any form of dialogue.

- **The use of pronouns :**

It is viewed that autistic children cannot distinguish between the pronoun “I” and “you”, they refer to themselves with the pronoun “You” (for example you play instead of I play); while to others with “I” (I go instead of you go). However, Zakariya can distinguishes plural from singular while mohammed is able to speak to himself when no one talks to him.

- **Performing a play :**

Zakariya can perform sometimes but when he does he lack words or expressions in a play yet Mohammed can perform any play he has already seen.

- **Telling a story :**

Both of them can tell a story, that already happened such as going on a picnic, or a story already taught. However, not imaginary stories because imagination is largely absent with them they are very logical.

- **Lack of focus :**

Autistic children cannot keep focus on one thing nor keeping one subject of a conversation, they change overly the topic even if it was a course or they break in the middle Zakariya usually requests to go out.

- **Receptive language :**

The receptive language is present in both Zakariya and Mohammed; they understand what others say to them and respond. It is true that sometimes they do not respond to orders and commands but it does not mean that they do not understand but they just refuse to apply them.

- **Echolalia/ Imitations :**

Children with ASD tend to repeat words already heard on TV or imitate the members of their family. Zakariya and Mohammed use this concept to understand what their teacher says to them, self-talk as a means to memorize or for self-stimulating called as stemming.

- **Literal meaning of words :**

Autistic children do not understand figures of speech such as methaphor since they understand the literal meaning of words. For example, their teacher gave to Zakariya and Mohammed an example of “you are a shining star” they have been looking for the star everywhere, they even gotten out looking up at the sky.

- **Appropriate questions :**

Both Zakariya and Mohammed ask appropriate questions, they ask questions to comprehend what they did not understand as well as the ask questions about several things like objects animals in order to enrich their knowledge. Additionally, they understand the questions asked by anyone.

- **Relevant answers :**

When they are questioned, they provide relevant answers to the question, Zakariya answers in all the languages he knows .Nevertheless, when he does not

know the answer he starts screaming. Moreover, he puts his hands covering his ears when he is lost in an answer. However, Mohammed cannot be concentrated for a long time; he loses his concentration, answering only when he wants if he does not want he rejects responding and changes the topic.

- **Nonverbal language :**

Children with autism do not pay attention to nonverbal communication. As a result, they do not compensate for their linguistic gaps with gestures. They also respond to visual aids used in the classroom to teach them language.

- **Using eye contact to communicate :**

Even if they understand what a teacher communicates through eyes, they prefer avoiding eye contact when communicating.

- Using gestures to express language :

Autistic children communicate language by waving their hands, tugging or manipulating others' hands, and pointing.

- **Social relationship :**

Zakariya and Mohammed like building social relations and making friends, they are so sociable, and like joining a conversation in the classroom or even outside the classroom. They participate in all activities that take place in the classroom, and they remember their mate’s names Yet they usually ignore responding to their teacher or when they don’t recognise other faces.

Activities and materials used in the classroom :

Children with autism while developing language use activities and materials used by their teachers in order to improve their skills. These activities are represented in (figure 01).

(a)


(b)

(c)


(d)

**Figure 2.1 : Some activities followed by Amani Ahmed School's teacher with autistic students. (a) Shows matching similar objects to help children with ASD memorize and recognise objects. (b) Is an activity of visual perception it helps autistic children expressing their feelings. (c) is an activity to increase children's focus and patience, (d) Is about teaching ASD learners how to express their feelings.**

2. **Nonverbal children's name:** Iyad And Yacine

**Age:** four (04) years old/ seven (07) years old

**Description of the children**

iyad is an autistic boy ; he is in preschool year, yet he is in a public school so to be prepared for his insertion with his mates and get familiar with the classroom environement. he is totally a nonverbal student except when his teacher forces him to repeat things over or once he has an answer to provide, and he may pronounce words but incorrectly.

Iyad is aggressive with disruptive behaviour and he hits his classmates. When he is lost or when he wants to get out, he breaks things, shouts and cries as a means of discharging his anger, yet when his teacher tries to calm him he becomes more aggressive and pushes his teacher who tries to calm him.

Yacine is a nonverbal child. According to his teacher and parents, yacine was a verbal child who met all of his developmental milestones, but he immediately lost his language and became speechless at a certain age, finding difficulties in memorising names of objects.

Yacine is friendly; he always laughs as a way of expressing himself, or he expresses his feelings by hugging and kissing.

Both Yacine and iyad despite their disorder are self-dependent children, that is to say, they are doing their personal issues by themselves, but this self-dependency is not found in the classroom education mostly. They cannot write by themselves, they needs support from their teacher by holding her hand.

Observed Language characteristics in Yacine and iyad are :

- **Verbal language :**

Iyad and Yacine are nonverbal, which means they have no language at all. They try to communicate but fail due to their inadequate language skills, which is why they are frequently demotivated. Furthermore, they express language through sounds that are not understood or through screaming and yelling.

- **Expressive language :**

The two autistic children face difficulties with expressive language issues. They are unable to establish communication or speech and are characterised by an inability to convey their feelings or needs. Moreover, they convey their emotions through noises or gesture language or by holding the teacher's hand and guiding her so she can detect what they actually want or need.

- **Morphology :**

The morphological process challenges both yacine and iyad. In other words, the process of combining words to transmit a message is very difficult because of their limited vocabulary and the lack of background knowledge, and their difficulty with word production.

- **Phonology :**

Yacine and iyad struggles when forming words or any meaningful speech; they frequently use a distinctive tone with no comprehension.

- **Pragmatics :**

Because autistic children's remarks are relatively restricted and rarely participate in extensive dialogues, it is impossible to presume that these children have pragmatic impairments or skills. If they do not want to answer or do not understand, they may remain silent and seek other distractions or simply walk away.

- **The receptive language :**

Yacine and iyad regularly struggle with receptive language; they sometimes understand their teacher's words, or seek for repetitions and sometimes not understanding a single word unless it is attached with an object.

- **Semantic :**

Yacine and iyad have difficulty understanding what they say or what others say to them. They understand only the terms they are already familiar with, but not when these words are replaced with their synonyms.

- **Echolalia :**

Children with autism are most impacted by echolalia; however, this is not the case with iyad at least. He has no idea of echolalia since he is speechless, on the other hand yacine sometimes repeat few maningless sounds he heard on Tv.

- **Literal meaning of words :**

As all autistic children, yacine and iyad understand the literal meaning and not the pragmatic language.

- **Appropriate questions :**

They are not able to ask appropriate questions, or express exactly their needs as an example iyad goes out when he needs to without taking permission, but they often able to understand the questions asked by the teacher.

- **Relevant answers :**

These children cannot respond to questions using language due to their lack of full language comprehension hence when their teacher asks them to come to the board and do some exercises or to count numbers they can do it.

- **Nonverbal language :**

They value nonverbal communication and utilise it as an alternative of speech production since they are nonverbal children.

- **Using gestures as a mean of communication :**

Both of them use gestures to communicate, for example if iyad wants to eat, he takes the teacher to his bag or he cries until the teacher asks him. yacine uses some gestures to convey messages and to communicate. He waves with his index finger to say no, nodding his hand to say yes or shrugging his shoulders, moving his hands to say byby, pulling or manipulating others hands.

- **Social relationships :**

yacine is friendly he built with his classmates a strong relation in contrast to iyad who is too much aggressive and he hits his classmates when they try to play with him so that he cannot build with them a good relationship.

- Consequently Autistic children commonly encounter challenges in both language comprehension and speech production. These challenges include:

**Language Comprehension:**

a. Difficulty understanding figurative language and metaphors, often interpreting words and phrases literally.

b. Limited comprehension of words or concepts outside their familiar vocabulary, struggling with synonyms or unfamiliar terms.

c. Inconsistent response to commands or instructions, sometimes not responding at all or requiring repetition.

**Speech Production:**

a. Limited expressive language skills, characterized by a reduced ability to convey thoughts, feelings, and needs through speech.

b. Verbal communication may be absent or minimal, with reliance on sounds, gestures, or other nonverbal means.

c. Morphological challenges, facing difficulties in combining words and constructing grammatically correct sentences.

d. Phonological difficulties, especially with unfamiliar or new sounds, resulting in pronunciation problems.

e. Echolalia, a tendency to repeat words or phrases heard without understanding their meaning or context.

### 2.3.1.2. Analysis of interview :

### a/ Analysis of speech language pathologist interview :

During the interview ( composed of 09 questions),the speech-language pathologist shared and provided valuable insights based on his professional experience. The discussion covered various aspects related to language comprehension and speech

production in autistic children, including assessment methods, intervention approaches, and the challenges encountered in practice.

**Question 01:** How many children with autism do you work with in each session? And how many sessions per week?

- The SLP said that the number of children with Autism Spectrum Disorder undergoing ABA therapy is 13 cases. The number of sessions varies from one case to another depending on the severity of the disorder, ranging from one to two sessions per week. He prefers to work with individual cases most of the time, according to each child's specific needs.

**Question 02:** Can you share your experience working with children with autism, their unique challenges, and their strengths in language comprehension and speech production?

- He Answered Based on his experience that working with this population, it is a very demanding task, especially in the absence of adequate support from families and society's lack of awareness about the characteristics of Autism Spectrum Disorder. Autistic children, like those with other disorders, can be categorized into three types: mild, where their language skills are good but there is a deficit in social interaction; moderate, where they have weak language skills; and severe, where they may have limited or absent language skills along with multiple disabilities such as intellectual disability, hearing impairment, and motor difficulties.

**Question 03 :** What assessment methods or tools do you typically use to evaluate the language comprehension abilities of children with autism? How do you adapt these assessments to meet their needs?

- The pathologist mentioned that the assessment tools used for evaluating language comprehension and production are limited in the Algerian context, and if available, they are often not tailored for children with Autism Spectrum Disorder. Examples of such tools include "The Language

Development Scale for Autistic Children" by Ahmed Mohamed Khadir and the "Oral Language Comprehension Test (O52)" by Abdelhamid Khamessi.

**Question 04 :** Does positive/negative reinforcement and punishment occur when dealing with children with autism? And how?

- The SLP confirmed the use of positive and negative reinforcement, he said it occurs during sessions with children with Autism Spectrum Disorder. He indicated that he reinforce desirable behaviors through rewards, which can vary depending on the child, such as hugs, providing toys, or offering treats. Conversely, in the case of negative behaviors, he often ignore them to prevent their recurrence.

**Question 05:** In your experience, what are some effective intervention methods or strategies to support language comprehension in children with autism? How do you tailor these interventions to meet each child's individual needs?

- The speech pathologist said that in the intervention process, we create an individualized treatment plan based on the results obtained from assessments and applied interventions specific to each case.

**Question 06:** Can you discuss the role of visual supports, such as visual schedules or visual prompts, in enhancing language comprehension for children with autism? How have you observed these supports impacting their communication abilities overall?

- He said taht Visual supports play an important role in facilitating communication with children on the autism spectrum. These supports can include pictures, drawings, or written word lists. They are highly beneficial and contribute significantly to enhancing language comprehension and production. They help children who struggle with understanding and using language to communicate effectively.

**Question 07 :** Are there specific Augmentative and Alternative Communication (AAC) methods or tools that you have found effective in promoting speech production in children with autism? How do you determine the most suitable communication methods for each child?

- the interviewee affirmed that there are several alternative and augmentative communication (AAC) methods and tools available. One such method is the Picture Exchange Communication System (PECS), which is designed to create effective communication for children who have difficulties in understanding and producing spoken language, are non-verbal, or have a limited vocabulary. The most appropriate method depends on the child's cognitive abilities and individual skills. There is no one-size-fits-all approach for all children with autism, as each case has its specific characteristics and requires specific methods and programs.

**Question 08:** What are some common challenges or barriers you encounter when working with children with autism in understanding language and producing speech? How do you deal with these challenges in your practice?

- The SLP answered that the common challenges he struggles with when working with children with Autism Spectrum Disorder in language comprehension and production include the lack of acceptance by families of their child's condition ( when they refuse to accept), insufficient resources and specialized tools for this population, and a lack of expertise in the field of autism. Addressing these challenges requires raising awareness among families and providing guidance and support, creating a suitable environment for working with this population, staying updated and trained in this field, and keeping abreast of new developments in language intervention and production for children with autism.

**Question 09:** How do you collaborate with teachers, parents, and other professionals to support language development in children with autism? What strategies or approaches have you found helpful in promoting collaboration and maximizing outcomes ?

- The interviewee said that at it is already known, providing care for children with autism requires a multidisciplinary team approach, where each professional focuses on a specific aspect. This team complements each other's work, as it is not possible to address communication without considering behavior, physical, and functional aspects of the child. Collaboration with parents involves developing a therapeutic program at home that complements the proposed plan, and the same applies to teachers, who need to adhere to the plan to achieve the desired goals.

## b/ Analysis of teacher interview :

**Question 01:** How many children with autism do you have in class?

- She answered that in her current class, she has six children with autism. Each child has unique needs and abilities, requiring individualized support and accommodations to facilitate their learning and development.

**Question 02:** Can you share your experience working with children with autism, their unique challenges, and their strengths in language comprehension and speech production?

- She said that Working with children with autism has been both rewarding and challenging she also said that one of the unique challenges they face in language comprehension is difficulty understanding complex sentences or multiple instructions. They may require simplified language and visual supports to aid their understanding. In terms of speech production, children with autism often exhibit difficulties in expressive language, such as vocabulary and sentence structure. However, they also possess strengths, such as an attention to detail and an ability to learn and retain information in a structured and visual manner.

**Question 03:** Does positive/negative reinforcement and punishment occur when dealing with children with autism? And how?

- She answered that Positive reinforcement is commonly used when working with children with autism as it helps reinforce desired behaviors and encourages learning. It involves providing rewards, such as praise or small tokens, to reinforce positive behaviors. Negative reinforcement and punishment, on the other hand, are generally not recommended. These techniques can be aversive and may cause distress or exacerbate challenging behaviors in children with autism. Instead, a proactive approach focused on positive reinforcement, visual supports, and clear expectations is more effective in promoting desired behaviors.

**Question 04:** In your experience, what are some effective intervention methods or strategies to support language comprehension in children with autism? How do you tailor these interventions to meet each child's individual needs?

- She said that Some effective intervention methods for supporting language comprehension in children with autism include visual supports, structured routines, and social stories. Visual supports, such as visual schedules or visual prompts, provide visual cues that enhance understanding and reduce anxiety. Structured routines and clear expectations help provide predictability and support comprehension. Tailoring interventions involves understanding each child's specific strengths, challenges, and learning styles. Individualized education plans (IEPs) can guide the development of targeted interventions to meet each child's unique needs.

**Question 05:** Can you discuss the role of visual supports, such as visual schedules or visual prompts, in enhancing language comprehension for children with autism? How have you observed these supports impacting their communication abilities overall?

- She answered that Visual supports play a vital role in enhancing language comprehension for children with autism. Visual schedules provide a clear

visual representation of daily routines and activities, reducing anxiety and helping children understand what is expected. Visual prompts, such as picture cards or symbols, can aid in understanding and following instructions. She also affirmed that she has observed that these supports help children with autism better comprehend language by providing them with visual cues and reinforcing their understanding of verbal communication. They enhance their communication abilities by reducing confusion and facilitating the expression of their needs and thoughts.

**Question 06:** Are there specific Augmentative and Alternative Communication (AAC) methods or tools that you have found effective in promoting speech production in children with autism? How do you determine the most suitable communication methods for each child?

- The teacher said that AAC methods and tools, such as picture exchange communication systems (PECS) or speech-generating devices, have shown effectiveness in promoting speech production in children with autism. The suitability of communication methods is determined through a collaborative and individualized assessment process. This involves considering the child's current communication abilities, motor skills, and cognitive abilities, along with their preferences and the support of speech-language pathologists. The selected AAC method is then tailored to the child's needs and gradually implemented to encourage speech production and enhance their overall communication skills.

**Question 07:** How do you collaborate with parents and other professionals to support language development in children with autism? What strategies or approaches have you found helpful in promoting collaboration and maximizing outcomes?

- The teacher confirmed the fact that Collaboration with parents and other professionals is crucial in supporting language development in children with autism. She added that Regular communication with parents helps maintain

consistency between home and school environments , Sharing observations, strategies, and progress updates fosters a collaborative approach. The teacher tested that Meetings and parent-teacher conferences provide opportunities for discussing goals, reviewing strategies, and adjusting interventions. Additionally, involving speech-language pathologists, occupational therapists, and other professionals in the child's team helps develop comprehensive plans and individualized interventions. Maximizing outcomes is achieved through shared goal-setting, continuous feedback, and a supportive partnership between all involved parties.

### c/ Analysis of The child's Mother Interview:

**Question 01:** Could you please provide some background information about your child?

- She informed that she has a six-year-old son named Alex who has been diagnosed with autism.

**Question 02:** How does autism impact your child's ability to understand spoken language? Have you met any specific challenges?

- She said that Autism affected her son's language comprehension. And that He struggles with processing complex sentences and multiple instructions. She informed that she and her dad noticed that using simple, concrete language and incorporating visual cues or gestures supports his comprehension.

**Question 03:** In terms of visual cues and non-verbal communication, how do they assist your child in understanding spoken language? Have you seen any improvements in his comprehension?

- The mother reported that Visual cues and non-verbal communication have been beneficial for her son, the parent used visual schedules, picture cards, and social stories to aid his understanding and routine comprehension.

Additionally, gestures and facial expressions help reinforce verbal communication, making it easier for him to comprehend and interpret their intentions and emotions.

**Question 04 :** shifting the focus to speech production, how does autism impact your child's ability to express themselves verbally? Have you noticed any specific challenges in their vocabulary or sentence structure?

- She Answered that Autism significantly affects her son’s expressive language skills. He has difficulty finding the right words to express his thoughts and needs. His vocabulary and sentence structure are impacted, and he requires assistance in developing communication skills. She added that they had been working with speech therapists who utilize visual prompts, sign language, and AAC devices to support his verbal communication also she confirmed the noticeable progression while visiting the pathologist.

**Question 05:** Does the teacher recomanded to follow up on your child at home? if yes, what did he suggests ?

- The mother answered by yes, the teacher advised her to follow and track her son’s behavior to help creat the indepandancy, and minimise the unliked reactions while maximising the level of taking commands.

**Question 06:** Lastly, what strategies do you use at home to encourage your child's verbal communication skills? Have you felt any progress or improvements in his speech development?

- She Answered they created at home a nurturing environment that fosters verbal communication.as well as engaging in activities such as reading books, singing songs, and playing interactive games that promote language development.she added that they utilize repetition and reinforcement to help him learn and practice new words and phrases. While progress may vary,they have observed improvements in his speech development through consistent practice and support.

### 2.3.2. Data interpretations :

#### 2.3.2.1. Interview data interpretation:

##### a- SLP Data interpretation:

The analysis of the speech-language pathologist interview provided valuable insights into the field of language comprehension and speech production in autistic children. The interview covered wide range of aspects related to assessment methods, intervention approaches, and the challenges encountered in practice. According to the speech-language pathologist, the number of children with Autism Spectrum Disorder (ASD) undergoing ABA therapy was 13 cases, with the frequency of sessions ranging from one to two sessions per week, depending on the severity of the disorder. Individualized attention was emphasized to cater to the specific needs of each child. Working with children with autism was described as a demanding task, particularly due to the lack of support from families and societal awareness about ASD. The speech-language pathologist categorized autistic children into mild, moderate, and severe cases based on their language skills and additional disabilities. Assessments for language comprehension abilities in autistic children were acknowledged as limited in the Algerian context, with available tools often not tailored for this population. Positive and negative reinforcement were reported as occurring during sessions with children with ASD, with desirable behaviors being reinforced through rewards and negative behaviors often ignored. Individualized treatment plans were highlighted, based on assessment results and tailored interventions specific to each child's case. Visual supports, such as visual schedules and prompts, were recognized as beneficial for enhancing language comprehension and communication in children with autism. Augmentative and Alternative Communication (AAC) methods, including the Picture Exchange Communication System (PECS), were mentioned as effective tools for promoting speech production. However, the interviewee emphasized the importance of determining the most suitable communication methods based on individual cognitive abilities and skills. Common challenges encountered in working with children with autism included family acceptance, limited resources and specialized

tools, and a lack of expertise in the field. Collaboration with teachers, parents, and other professionals was emphasized as crucial, with a multidisciplinary approach being necessary to address the various aspects of communication and overall development in children with autism.

**b- teacher data interpretation:**

The analysis of the teacher's interview highlights important insights regarding working with children with autism and supporting their language development. The teacher currently has six children with autism in her class, each requiring individualized support and accommodations. Language comprehension poses a unique challenge, and the teacher mentioned the need for simplified language and visual supports, often utilizing principles from Applied Behavior Analysis (ABA). In her experience, positive reinforcement, such as rewards and praise, is commonly used to reinforce desired behaviors and encourage learning. Negative reinforcement and punishment, however, are generally avoided due to their potential aversive effects and the risk of exacerbating challenging behaviors. The teacher emphasized a proactive approach that focuses on positive reinforcement, visual supports, and clear expectations to promote desired behaviors. The use of ABA principles, along with tailored interventions and collaborative efforts with parents and professionals, plays a vital role in supporting language development and maximizing outcomes for children with autism.

**c- mother data interpretation:**

The interview with the mother provided valuable insights into the impact of autism on their child's language comprehension and speech production. her six-year-old son, faces challenges in understanding complex sentences and multiple instructions, requiring the use of simplified language and visual cues for support. Autism significantly affects his expressive language skills, impacting his vocabulary and sentence structure. Collaborative efforts with speech therapists, who employ visual prompts, sign language, and AAC devices, have shown promising results in supporting his verbal communication. The parent has observed progress in his

speech development through consistent practice and support, fostering a nurturing environment at home. These findings highlight the importance of collaboration between parents, teachers, and professionals in facilitating language development in children with autism.

#### 2.3.2.2. Classroom observation data interpretation:

The observed data from the classroom provides valuable insights into the language and communication patterns of autistic children, specifically Zakariya, Mohammed, Iyad, and Yacine. Zakariya and Mohammed exhibit strengths in verbal language and speech production, displaying a proficient vocabulary, advanced grammar, and strong language comprehension. However, they prefer brief and concise conversations, often understanding what others say but choosing not to engage in lengthy dialogue. Additionally, they face challenges with nonverbal communication, limited imagination, and occasional lack of focus. They rely on gestures to express themselves and demonstrate difficulties with unfamiliar sounds and figurative language.

On the other hand, Iyad and Yacine face significant challenges in expressive language, as they are nonverbal and struggle to establish communication or convey their needs effectively. They resort to sounds, gestures, and physical guidance to express their emotions and communicate with others. These children also encounter difficulties in morphology, phonology, semantics, and pragmatic skills. They have limited vocabulary and struggle with word production, comprehension of words beyond their familiar terms, and appropriate question formation. Furthermore, they have a literal understanding of words and lack the ability to ask relevant questions.

In terms of receptive language, Zakariya and Mohammed demonstrate strong comprehension skills, albeit occasionally resisting instructions. Iyad and Yacine face difficulties in understanding the teacher's words, often requiring repetition or relying on visual cues. Echolalia, the repetition of words or sounds, is present to some extent with Yacine, but not with Iyad.

Both groups of children exhibit challenges in nonverbal communication, with Zakariya and Mohammed preferring to avoid eye contact and relying on gestures,

while Iyad and Yacine use gestures as their primary means of communication. Despite their difficulties, all the children show a desire for social interaction, with Zakariya, Mohammed, and Yacine actively participating in classroom activities and forming connections with peers. However, Iyad struggles with aggression and building positive relationships with his classmates.

To address the challenges faced by these children, a comprehensive intervention plan should be implemented. Activities that focus on expanding vocabulary, improving phonological skills, introducing figurative language, and enhancing pragmatic abilities could be beneficial. Visual aids, such as pictures and gestures, can assist in comprehension and communication. Individualized therapy sessions, social skills training, and collaboration with speech-language pathologists and educators would provide a holistic approach to support these children in their language and communication development.

Overall, understanding the specific strengths and challenges of Zakariya, Mohammed, Iyad, and Yacine in language and communication allows for targeted interventions and support strategies to be implemented, fostering their linguistic growth and enhancing their overall participation and engagement in classroom settings.

### 2.3.3. discussion of the main findings:

This exploratory research is based on observation of students affected by autism spectrum disorder ASD and an interview conducted with a speech language pathologist and a teacher and a mother It aims to investigate how an autistic child comprehend language and produce speech and the challenges they encounter during the process, In addition, how can a teacher overcome them, with the assistance of the SLP and parents. The findings show that the process of language comprehension and speech production in typical children differs from that of autistic children. It has been proven that autistic children do not exhibit the same language impairments and that each child is unique and has their own set of language characteristics, that researchers should not generalize when dealing with children with ASD.

Furthermore, findings from the present study indicate that autistics employ visual aids to help them learn more efficiently, and auditory learning to reinforce their speech production, they tend to repeat phrases, statements, and that they want to follow a distinct pattern without changes (strict routines) also it is preferable for them that their teacher repeat the lesson in concrete language so that they can understand it better, the main problem their teachers face is that they struggle explaining to them since autistic children struggle to comprehend language or to focus on words and sometimes to even remain staying at one place; they are generally diagnosed with ADHD as well. autistic children are unable to express themselves for they live in their own world, consequently they face challenges in delivering clear and meaningful phrases due to phonological and morphological difficulties. Thus, it can be inferred from these findings that children with autism have difficulty with language comprehension (receptive language), leading to confusion since they are unable to understand spoken language. This lack of understanding greatly impedes their ability to effectively communicate and engage in meaningful interactions.

It has also been found that teachers and their collaboration with SLP and parents play a crucial role in facilitating language comprehension and speech production processes for children with language deficits Whereas, the first step is behavior modification before diving into the learning process. They serve as instrumental figures in supporting and guiding these children through specialized therapy designed to address their specific language challenges. Additionally, this collaboration is instrumental in empowering these children to independently navigate and progress in their lives, ensuring that their language difficulties do not hinder their overall development and success.

## 2.4. suggestions and recommendations:

In this final section of the present study, several suggestions and recommendations are put forward to assist professionals and parents in facilitating the language development of children with autism, be it receptive or expressive. It is crucial to acknowledge that providing educational services to children with autism it’s very

challenging and demanding considerable effort, patience, creativity, and collaboration from all involved parties, as already mentioned It is important to note that these suggestions and recommendations should be adapted and personalized to each individual child, considering their specific strengths, challenges, and learning styles:

1. Individualized Intervention: Tailor language intervention programs to the specific needs of each autistic child, considering their unique strengths and weaknesses. Implement strategies that focus on enhancing their language comprehension and speech production skills.
2. Visual Supports: Utilize visual aids, such as pictures, symbols, and visual schedules, to enhance language comprehension. Visual supports can provide additional cues and indorse understanding.
3. Augmentative and Alternative Communication (AAC): Introduce and encourage the use of AAC systems, including picture-based communication boards, sign language, or digital devices, to provide effective communication and overcome speech production challenges.
4. Social Communication Training: Provide social communication training to help autistic children develop pragmatic language skills, such as turn-taking, roles and maintaining conversations, and understanding non-verbal cues.
5. Parent and Teacher Collaboration: Foster collaboration between parents, teachers, and therapists to create a consistent and supportive language learning environment. Regular communication and shared strategies can reinforce language skills across different contexts.
6. Multi-Sensory Approaches: Incorporate multi-sensory approaches into language activities, combining auditory, visual, and tactile modalities to enhance language comprehension and engagement.
7. Positive Reinforcement: Utilize positive reinforcement techniques, such as praise, rewards, and encouragement, to motivate and reinforce language comprehension and speech production efforts.

8. Structured and Predictable Environment: Create a structured and predictable environment with clear routines and visual cues to support language comprehension and reduce anxiety or confusion.
9. Peer Interaction and Social Skills Training: Encourage peer interaction and provide social skills training to foster communication and language development in social contexts. Engaging in conversations and cooperative activities with peers can enhance language comprehension and speech production.
10. Ongoing Assessment and Monitoring: Continuously assess and monitor the progress of autistic children in language comprehension and speech production. Adjust interventions and strategies as needed based on their increasing needs and progress.
11. Public Awareness and Education: It is crucial to enhance public awareness and understanding of Autism Spectrum Disorder (ASD) to foster a more inclusive society. Increasing awareness about ASD among the general population can help reduce stigma, promote acceptance, and create a supportive environment for autistic individuals. Education initiatives should be implemented to provide accurate information about ASD, its characteristics, and the challenges faced by autistic children in language comprehension and speech production. By promoting awareness and understanding that eventually will pave the way for more inclusive and accommodating society for individuals with ASD; such as organizing workshops for parents of autistic children to inform them more about the condition of their children to fulfill their knowledge.

## 2.5. conclusion:

to conclude, this practical chapter delves into the language comprehension and speech production abilities of children with autism, aiming to clarify the data collection methods and procedures employed by the researcher in this study. The focus was solely on qualitative data analysis, obtained through interviews and observations. These two distinct instruments were carefully designed to investigate

and describe the instructional approaches utilized in teaching children with autism, the subsequent challenges encountered, and the provided solutions. The chapter presented an interpretation and discussion of the main findings, evaluating the hypotheses formulated for the research questions and determining their validation or rejection. Lastly, this dissertation offers practical suggestions and recommendations to therapists and parents, intended to address the difficulties and obstacles they may encounter when working with children with Autism spectrum disorder.

## General conclusion:

Autism is considered as one of the most severe disorders as it affects all the child's aspects including language development. Researchers define autism spectrum disorder (ASD) as a collection of neurodevelopental diseases characterized by basic abnormalities in multiple domains: social interaction, communication and repetitive mouvements and stereotypic behavior in addition to inflexible adherence to routines and highly restricted fixated interests and hyperactivity. Children with ASD have varying degrees of disability based on that the generalization of results or the drop of judgement on all particularities are prohibited, still, regardless the severity of the disorder, the impact affected on the language integrity of children give way to several challenges and learning obstacles especially that autistic children's main issue is even comprehending their mother language in order to reply back or just producing any form of speech, this issue is uniformly life changing for children with ASD as well as their families; the lack of awareness prevent them from acknowledging and containing the autistic child.

The researche looks into the faced challenges that hind the language comprehension and speech production, it questioned the strategies used to improve autistic children's language as well as the effectivity of teacher – parents collaboration, in addition to the methods used by the speech language pathologist to improve verbal language, the study confirmed that the use of ABA method as well as the reignforcement/ punisement by both teacher and SLP are helpful for children with ASD.

This work encompassed two main chapters. In the first chapter, the study aims at exploring theoretical concepts, indentifying language, speech and communication and exploring the autism spectrum disorder.

As for the second chapter, it was more practical. Including thus a description of the methodology the sample population, and the instruments used in this

research. Furthermore, a data analysis of the interview and observation was presented, followed by an interpretation and discussion of the main findings.

By the end of the study, specialists and parents had received a collection of guidelines and recommendations for developing language in autistic children.

The findings of this investigation were intriguing; It has been demonstrated that autistic children struggle when understanding language, (receptive language) which affects their speech production This alters understanding of one's messages. This language issue is accompanied by phonological difficulties in which children do not correctly pronounce words, rendering them meaningless. The most common issue in almost all autistic children is echolalia, which these students use to compensate for their lack of comprehension or as a method of memorizing.

The study additionally reveals that children with autism differ from other children due to their impairment, which hinders them from continuing to grow and develop their language. Autistic children are unable to hold a conversation because they use brief, short phrases as a result of a restricted vocabulary and a weak grammatical structure. They do not always use proper intonation and do not always understand the meaning of certain sentences.

This investigation also indicates that teachers and speech pathologists support parents significantly in the development of their children's linguistic skills. They provide them instructions and specific therapy to help them learn language and move forward in life.

Finally, the completed research included a number of limitations. First, the researcher ran into a time constraint; the investigation began a little late due to a variety of causes: the lack of reliable resources and the small number of participants, there is only few cases in mental pedagogical centers and the children there are unable to speak or comprehend language (ASD with intellectual disability), also the lack of professional speech pathologists yet what makes the subject even more interesting and worth tackling is that there are always new methods and approaches, new experiences each specialist

discovers new way to devellope both receptive and expressive language due to the variety of cases.

In the end, it is worth noting that this brief investigation will pave the way for future investigations that may be approached in a variety of ways. It is highly recommended to raise awareness and provide guidance and assistance on the subject of autism spectrum disorder and language to support autistic children in their journey and not to leave them alone, as living in their heads must be terrible for them.

# BIBLIOGRAPHY


1. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.
2. American Speech-Language-Hearing Association. (n.d.). Augmentative and Alternative Communication (AAC) and Autism Spectrum Disorder. Retrieved from https://www.asha.org/public/speech/disorders/autism/Communication-Options-in-Autism/

3. Bishop, D. V. M., & Norbury, C. F. (2002). Exploring the borderlands of autistic disorder and specific language impairment: A study using standardized diagnostic instruments. Journal of Child Psychology and Psychiatry, 43(7), 917-929. doi:10.1111/1469-7610.00210

4. Bondy, A., & Frost, L. (2001). The Picture Exchange Communication System. Behavior Modification, 25(5), 725-744. doi:10.1177/0145445501255004
5. Book: Badr, I. M. (2004). Autistic Child Diagnosis and Treatment. Anglo Library, Cairo, pp. 117-118.
6. Chawarska, K., Paul, R., Klin, A., Hannigen, S., Dichtel, L. E., & Volkmar, F. (2007). Parental recognition of developmental problems in toddlers with autism spectrum disorders. Journal of Autism and Developmental Disorders, 37(1), 62-72. doi:10.1007/s10803-006-0338-7
7. Courchesne, E., Mouton, P. R., Calhoun, M. E., Semendeferi, K., Ahrens-Barbeau, C., Hallet, M. J., & Barnes, C. C. (2011). Neuron number and size in prefrontal cortex of children with autism. JAMA: Journal of the American Medical Association, 306(18), 2001-2010. doi:10.1001/jama.2011.1638
8. De Saussure, F. (2011). Course in general linguistics. (W. Baskin, Trans.). New York, NY: Columbia University Press.

9. Kasari, C., Freeman, S., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: A randomized controlled intervention study. Journal of Child Psychology and Psychiatry, 47(6), 611-620. doi:10.1111/j.1469-7610.2005.01567.x
10. Lord, C., Rutter, M., DiLavore, P. C., Risi, S., Gotham, K., & Bishop, S. L. (2012). Autism Diagnostic Observation Schedule (2nd ed.). Los Angeles, CA: Western Psychological Services.
11. Norbury, C. F. (2014). Practitioner review: Social (pragmatic) communication disorder conceptualization, evidence and clinical implications. Journal of Child Psychology and Psychiatry, 55(3), 204-216. doi:10.1111/jcpp.12138
12. Ozonoff, S., Young, G. S., Carter, A., Messinger, D., Yirmiya, N., Zwaigenbaum, L., ... & Stone, W. L. (2011). Recurrence risk for autism spectrum disorders: A Baby Siblings Research Consortium study. Pediatrics, 128(3), e488-e495. doi:10.1542/peds.2010-2825
13. Paul, R., Fuerst, Y., Ramsay, G., Chawarska, K., & Klin, A. (2011). Out of the mouths of babes: Vocal production in infant siblings of children with ASD. Journal of Child Psychology and Psychiatry, 52(5), 588-598. doi:10.1111/j.1469-7610.2010.02346.x
14. Rapin, I., & Dunn, M. (2003). Update on the language disorders of individuals on the autistic spectrum. Brain and Development, 25(3), 166-172. doi:10.1016/S0387-7604(02)00225-6
15. Schopler, E., & Mesibov, G. B. (Eds.). (1988). Autism in Adolescents and Adults. Springer Science & Business Media.
16. Smith, T. (2001). Discrete trial training in the treatment of autism. Focus on Autism and Other Developmental Disabilities, 16(2), 86-92. doi:10.1177/108835760101600205
17. Tager-Flusberg, H. (2004). Strategies for conducting research on language in autism. Journal of Autism and Developmental Disorders, 34(1), 75-80. doi:10.1023/b:jadd.0000018077.17374.1e

18. Tager-Flusberg, H. (2006). Defining language phenotypes in autism. Clinical Neuroscience Research, 6(3-4), 219-224. doi:10.1016/j.cnr.2006.08.001
19. Tager-Flusberg, H., Paul, R., & Lord, C. (2005). Language and communication in autism. Handbook of Autism and Pervasive Developmental Disorders, 1, 335-364.
20. Website: Integrity, Inc. (n.d.). What are the 5 types of autism? Retrieved from https://www.integrityinc.org/what-are-the-5-types-of-autism/#:~:text=There%20are%20five%20major%20types,developmental%20disorder%20%E2%80%93%20not%20otherwise%20specified.
21. Website: Middletown Centre for Autism. (n.d.). Strengths and skills in students with autism. Retrieved from https://best-practice.middletownautism.com/what-is-autism/strengths-and-skills-in-students-with-autism/
22. Website: ScienceDirect. (n.d.). Speech perception. Retrieved from https://www.sciencedirect.com/topics/medicine-and-dentistry/speech-perception
23. Wing, L., & Gould, J. (1979). Severe impairments of social interaction and associated abnormalities in children: Epidemiology and classification. Journal of Autism and Developmental Disorders, 9(1), 11-29.
24. Wodka, E. L., Mathy, P., & Kalb, L. (2013). Predictors of phrase and fluent speech in children with autism and severe language delay. Pediatrics, 131(4), e1128-e1134. doi:10.1542/peds.2012-2121
25. Zwaigenbaum, L., Bauman, M. L., Stone, W. L., Yirmiya, N., Estes, A., Hansen, R. L., ... & Fein, D. (2015). Early identification of autism spectrum disorder: Recommendations for practice and research. Pediatrics, 136(Supplement 1), S10-S40. doi:10.1542/peds.2014-3667C

# Appendices

مقابلة مع الطبيب الأرطفوني:

الإسم ..... الجنس ذكر ☐ أنثى ☐

اللقب.....

المستوى التعليمي .....

الخبرة الطبية.....

**الأسئلة:**

1. كم عدد الأطفال المصابين بالتوحد الذي تعمل معه في الجلسة؟ وكم عدد جلسات الأسبوع؟ .6
2. هل يمكنك مشاركة تجربتك في العمل مع الأطفال المصابين بالتوحد وتحدياتهم الفريدة ونقاط قوتهم في مجالات فهم اللغة وإنتاج الكلام؟
3. ما هي طرق أو أدوات التقييم التي تستخدمها عادة لتقييم قدرات الفهم اللغوي لدى الأطفال المصابين بالتوحد؟ كيف يمكنك تكييف هذه التقييمات لتلائم احتياجاتهم؟
4. هل يحدث التعزيز الإيجابي / السلبي والعقاب عند التعامل مع الأطفال المصابين بالتوحد؟ و كيف؟
5. في تجربتك ، ما هي بعض أساليب التدخل أو الاستراتيجيات الفعالة لدعم فهم اللغة لدى الأطفال المصابين بالتوحد؟ كيف تفصل هذه التدخلات لتلبية الاحتياجات الفردية لكل طفل؟
6. هل يمكنك مناقشة دور الدعم المرئي ، مثل الجداول المرئية أو المطالبات المرئية ، في تعزيز فهم اللغة للأطفال المصابين بالتوحد؟ كيف رأيت أن هذه الدعامات تؤثر على قدراتهم في التواصل بشكل عام؟
7. هل توجد طرق أو أدوات اتصال معززة وبديلة محددة (AAC) أو أدوات وجدتها فعالة في تعزيز إنتاج الكلام لدى الأطفال المصابين بالتوحد؟ كيف تحدد أنسب طرق الجميح للسيارات لكل طفل؟
8. ما هي بعض التحديات أو الحواجز الشائعة التي تواجهها عند العمل مع الأطفال المصابين بالتوحد على فهم اللغة وإنتاج الكلام؟ كيف تتعامل مع هذه التحديات في ممارستك؟
9. كيف تتعاون مع المعلمين وأولياء الأمور وغيرهم من المهنيين لدعم تطوير اللغة للأطفال المصابين بالتوحد؟ ما هي الاستراتيجيات أو الأساليب التي وجدتها مفيدة في تعزيز التعاون وتعظيم النتائج؟

## Appendix 1:

**SLP's interview**

**First name: ..... Family name: .....**

**Gender: masculine ☐ feminine ☐**

**Educational level: .....**

**Medical experience: .....**

**Question 01 :** How many children with autism do you work with in each session? And how many sessions per week?

**Question 02 :** Can you share your experience working with children with autism, their unique challenges, and their strengths in language comprehension and speech production?

**Question 03 :** What assessment methods or tools do you typically use to evaluate the language comprehension abilities of children with autism? How do you adapt these assessments to meet their needs?

**Question 04 :** Does positive/negative reinforcement and punishment occur when dealing with children with autism? And how?

**Question 05 :** In your experience, what are some effective intervention methods or strategies to support language comprehension in children with autism? How do you tailor these interventions to meet each child's individual needs?

**Question 06 :** Can you discuss the role of visual supports, such as visual schedules or visual prompts, in enhancing language comprehension for children with autism? How have you observed these supports impacting their communication abilities overall?

**Question 07 :** Are there specific Augmentative and Alternative Communication (AAC) methods or tools that you have found effective in promoting speech production in children with autism? How do you determine the most suitable communication methods for each child?

**Question 08 :** What are some common challenges or barriers you encounter when working with children with autism in understanding language and producing speech? How do you deal with these challenges in your practice?

**Question 09 :** How do you collaborate with teachers, parents, and other professionals to support language development in children with autism? What strategies or approaches have you found helpful in promoting collaboration and maximizing outcomes ?

**مقابلة مع الأستاذ**

**الإسم .....** **الجنس ذكر** ☐ **أنثى** ☐

**اللقب.....**

**المستوى التعليمي .....**

**الخبرة التعليمية.....**

**الأسئلة:**

**السؤال 01:** كم عدد الأطفال المصابين بالتوحد في الفصل ؟

**السؤال 02:** هل يمكنك مشاركة تجربتك في العمل مع الأطفال المصابين بالتوحد وتحدياتهم الفريدة ونقاط قوتهم في فهم اللغة وإنتاج الكلام ؟

**السؤال 03:** هل يحدث التعزيز والعقاب (الإيجابي/السلبي) عند التعامل مع الأطفال المصابين بالتوحد ؟ و كيف!

**السؤال 04:** في تجربتك، ما هي بعض طرق أو استراتيجيات التدخل الفعالة لدعم فهم اللغة لدى الأطفال المصابين بالتوحد ؟ كيف تصمم هذه التدخلات لتلبية الاحتياجات الفردية لكل طفل ؟

**السؤال 05:** هل يمكنك مناقشة دور الدعم البصري، مثل الجداول الزمنية المرئية أو التلميحات المرئية، في تعزيز فهم اللغة للأطفال المصابين بالتوحد ؟ كيف لاحظت أن هذه الدعائم تؤثر على قدرات الاتصال بشكل عام ؟

**السؤال 06:** هل هناك طرق أو أدوات اتصال تعزيزية وبديلة محددة وجدتها فعالة في تعزيز إنتاج الكلام لدى الأطفال المصابين بالتوحد ؟ كيف تحدد أنسب طرق الاتصال لكل طفل ؟

**السؤال 07:** كيف تتعاون مع الآباء وغيرهم من المهنيين لدعم تطوير اللغة لدى الأطفال المصابين بالتوحد ؟ ما هي الاستراتيجيات أو النهج التي وجدتها مفيدة في تعزيز التعاون وتعظيم النتائج ؟

## Appendix 2:

**Teacher's interview translated to English**

**First name: ..... Family name: .....**

**Gender: masculine ☐ feminine ☐**

**Educational level: .....**

**Teaching experience: .....**

**Question 01:** How many children with autism do you have in class?

**Question 02 :** Can you share your experience working with children with autism, their unique challenges, and their strengths in language comprehension and speech production?

**Question 03 :** Does positive/negative reinforcement and punishment occur when dealing with children with autism? And how?

**Question 04 :** In your experience, what are some effective intervention methods or strategies to support language comprehension in children with autism? How do you tailor these interventions to meet each child's individual needs?

**Question 05 :** Can you discuss the role of visual supports, such as visual schedules or visual prompts, in enhancing language comprehension for children with autism? How have you observed these supports impacting their communication abilities overall?

**Question 06 :** Are there specific Augmentative and Alternative Communication (AAC) methods or tools that you have found effective in promoting speech production in children with autism? How do you determine the most suitable communication methods for each child?

**Question 07 :** How do you collaborate with parents and other professionals to support language development in children with autism? What strategies or approaches have you found helpful in promoting collaboration and maximizing outcomes?

**مقابلة مع أم الطفل**

**الإسم.....**

**اللقب.....**

**المستوى التعليمي .....**

**المهنة.....**

**الأسئلة:**

**السؤال 01:** هل يمكنك تقديم بعض المعلومات الأساسية عن طفلك؟

**السؤال 02:** كيف يؤثر التوحد على قدرة طفلك على فهم اللغة المنطوقة؟ هل واجهتي تحديات محددة؟

**السؤال 03:** بالنسبة للإشارات البصرية والاتصال غير اللفظي، كيف تساعدين طفلك في فهم اللغة المنطوقة؟ هل لاحظتي تحسنًا في فهمه؟

**السؤال 04:** فيما يتعلق بإنتاج الكلام، كيف يؤثر التوحد على قدرة طفلك على التعبير عن نفسه بشكل شفهي؟ هل لاحظتي تحديات محددة في مفرداته أو هيكل الجمل؟

**السؤال 05:** هل يوصي المعلم بمتابعة طفلك في المنزل؟ إذا كان الأمر كذلك، ما الذي اقترحه؟

**السؤال 06:** أخيرًا، ما الاستراتيجيات التي تستخدمينها في المنزل لتشجيع مهارات التواصل اللفظي لطفلك؟ هل لاحظتي أي تقدم أو تحسن في تطور كلامه؟

## Appendix 3

**Mothers' interview**

**First name: ..... Family name: .....**

**Educational level: .....**

**Profession: .....**

**Question 01 :** Could you please provide some background information about your child?

**Question 02 :** How does autism impact your child's ability to understand spoken language? Have you met any specific challenges?

**Question 03 :** In terms of visual cues and non-verbal communication, how do they assist your child in understanding spoken language? Have you seen any improvements in his comprehension?

**Question 04 :** shifting the focus to speech production, how does autism impact your child's ability to express themselves verbally? Have you noticed any specific challenges in their vocabulary or sentence structure?

**Question 05 :** Does the teacher recomanded to follow up on your child at home? if yes, what did he suggests ?

**Question 06 :** Lastly, what strategies do you use at home to encourage your child's verbal communication skills? Have you felt any progress or improvements in his speech development?