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Faculty of Letters and Languages

Department of English



Investigating speech patterns Features within Children with Autistic Spectrum Disorder.

case study of the Psychiatry and El NOUR association in Tiaret

A Dissertation submitted to the department of English in partial fulfillment of the requirement of the degree of master in linguistics..

Presented by:

-YAHIAOUI Hayet

-TIFOUR Anfal

Supervised by: Dr KhlaedBelarbi

Dr Ahmed Bouzouina

Board of Examiners

Supervisor

Dr.Khlaed Belarbi

University of Tiaret

CO- Supervisor

Dr.Ahmed Bouzouina

University of Tiaret

President

Dr.Toubida Mostapha

University of Tiaret

Examiner

Dr.Moulay HaceneYacine

University of Tiaret

Academic year: 2023/2024

Dedication

In the name of Allah the most Merciful most Gracious.

I dedicate this work to the source of happiness my parents and I would like to take the opportunity to have mercy on the most precious soul, my father and I extend my sincere thanks to my mother , I hope that I make you proud of me.

All my highest expressions of thanks to mybeloved siblings Yassmine, Marouane in specific and to all Yahiaoui family, my dear friends and all who supporting me throught out my lif in general.

Last but not least to every student who has specific needs, you are not alone.

Hayet.

All Praise is to Allah for providing me with patience, power of the mind, health and protection to get through my studies successfully.

I dedicate this work:

To my parents for loving me unconditionally, supporting me throughout my life, and giving me strength to reach my dreams. To my mother Fatima, the kindest soul, I pray to Allah for you to be in heaven.

I dedicate it to my sisters Douaa, Soumia, Ikram, Rahma, Tasnim, Chahed and Chifaa. To my lovely brother Mostapha.

I dedicate it to all my family and friends.

Anfal

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List of abbreviations:

AAC: Augmentative and Alternative Communication

ABA: Applied Behavior Analysis

AOS: Apraxia of Speech

ASD: Autism Spectrum Disorder

CDD: Childhood Disintegrative Disorder

DLD: Developmental Language Disorder

DSM-5: Diagnostic and Statistical Manual 5

LD: Language Disorder

PD: Pragmatic Disorder

PDD-NOS: Pervasive Development Disorder Not Otherwise Specified

VD: Vocabulary Development

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General Introduction:

Human being is born with the ability to deal with different natural social aspects in his life. Language with its different types is one of these aspect that use for communication. At early age; human brain traits the native language as new knowledge and required all the principal skills. It passes through complex process in order to recognize the input and to produce later on the output; to serve their different needs. This mechanism considered as one of the high complex function of human brain; it can struggle by several factors. In which, patients' life can be effected specially in language development.

The research divided into three chapters:

The first chapter reviews a relevant literature a normal and abnormal language development in the Autistic children providing theories and definitions of autism and the relationship between the language disorder and autism; also it represents the diagnosing features according to the existing variables.

The second chapter is concerned with the practical part of the conducted research; it describes the methodology utilized in the process of data collection the setting, the samples and the research instrument including both the pilot and the main study.

The third chapter is about the data displaying and analysis discussing and interpreting the results in the light of literature review, this chapter seeks to answer the research questions either by confirming or infirming the research hypothesis and finally some suggestions and recommendations to promote language to children with autism spectrum disorder.

1. Problem Statement:

So, the inability to communicate represents real challenge for those people and lead them to live in isolation. In other words, autism considered as the well -known factors that results language disorder. The number of diagnosis children with autism spectrum disorder is increased day after day with huge manner.

Autism is a disorder which can have serious consequences for people who suffer from it, families and the community. Launched in late 2018, the Autism PROFAS C+ project is an institutional cooperation project between Algeria and France. It supports the implementation of a coordinated national medical –social system for screening, diagnosing and treating autism in Algeria. To mark World Autism Awareness Day, Professor Mohamed Chakali and the expert Said Acef take look at the issues and actions supported by the project. Also; another

study conducted students from Algiers 2 University in 2023 entitled (Autism spectrum disorder in Algeria schooling of autistic children, current situation). This study describes in detail autism spectrum disorder (ASD) as phenomenon and it highlights the current situation of the autistic children in Algeria. Autism was treated long as mental illness (cited by Lenoir et al, 2007). This disorder occurs during early childhood and affects the ability to communicate and reciprocal social interactions. (American Psychiatric Association, 2013). ASD characterized by deficits in social communication and the presence of the restricted interests and repetitive behavior (cited by Hodges, Fealko&Soares, 2015). Additionally, the World Health Organization (2023) states that autism spectrum disorder are a diverse group, the signs of which can be detected in early childhood but are usually diagnosed at a later stage. The abilities and needs of people with autism vary and may change over time. Developmental language disorder (DLD) is a lifelong language condition characterized by difficulty using and/or understanding language. DLD also impacts learning and acquiring language, making the effects cumulative (Rudolph & Leonard, 2016)

In this regard, we asked the following questions:

A. The General Question :

- To what extent is the autistic children impaired?

B. The specific Questions :

- What are the main features of language disorder that could appear within autistic children?
- Is there any statically significant correlation between autism and language disorder?

2. Hypotheses of the study :

The aforementioned questions led to formulate the following hypotheses:

A. General Hypothesis

- Autism is psychological phenomenon that appeared at early age.

B. Specific phenomenon :

- Language disorder has several features such as echolalia, jargon, metaphorical language.
- Autism spectrum disorder is one reason behind langauge disorder phenomenon. So, they are interrelated.

3. The objectives of study:

This research attempts to investigate and explore the extent to which specialists the autistic language within children is featured to be with many impediments; other words this work addresses three objectives,

- **First**, it aims to highlight the concept of Autism Spectrum Disorder (ASD).
- **In addition** , it seeks to outline the difficulties that faces the autistic children to understand and produce the language,
- **Moreover**, it tries to describe the linguistic difficulties related to autistic children.

4. The significance of study :

This research lies in its implications for:

- Understanding the relationship between language and autism spectrum disorder, as well as the needs for the future researches to characterize the language development with autistic children.
- It will help the parents and pathologists to deal with it.
- This study provides a new insight into the psycholinguistic field by presenting the diagnosing features according to new variables.
- Furthermore, it does not focus only on the psychological side but the psycholinguistic.
- Overall, this study represent an important step forward the psycholinguistic field.

5. Research design :

In order to realize the aforementioned objectives, we designed a descriptive analytical case study research targeting patients with autism spectrum disorder at psychiatry of Tiaret and Nour association in ksarChellala. The undertaking of such subject, we use mixed method to collect qualitative and quantitative data through using observation and interview as a pair of research instruments. The study is designed to collect statistical data as guide to describe and to analyze the linguistic deficiencies within patient with autism. The results will be analyzed and discussed for stronger evidence to respond on the research inquires.

6. Research Tools :

For enriching this research efficiently, it is necessary to provide stable instruments to patients with autism. The first suitable instruments is observation which used as tool to figure out the phenomenon and its features from in the sample Psychiatry of Tiaret and

Nourassociation with total number of 19 participants . They are tested in receptive and expressive language.

In addition to observation, structured interview is implemented to determine the phenomenon itself, the features and the relationship between autism and language disorder, and interesting suggestions and recommendations to help children with autism.

7. Delimitations of the study :

During the study, as researchers we faced some obstacles to select our sample. Since hyper activity and mutism are factures that prevent us to communicate with them. In addition to those obstacles, sometime we find difficulties to decode patients' speech.

Chapter One: literature

Review

Bernard Bloch and George Trager (1942) formulated this definition: « a language is a system of arbitrary vocal symbols by means of which a social group cooperates ».

According to **Frank Smith** : « language is not a genetic gift, it is social gift. Learning a new language is a member of the club; the community of speakers of that language. »

Human brain is divided into hemispheres. Language centers are located on the left hemisphere of the brain because all the analytical aspects are located there, according to **DrAnanyaMandal (News medical & life sciences,2023)**.

The cooperation of Broca's area and Wernicke's area with basal nuclei form a language implementation system .Since, Wernicke's area is located in the cerebral cortex. It is responsible for language comprehension and the damage in this area affects the understanding of language (receptive language). While, Broca's area is located in the left frontal lobe, it is responsible for language production including speech and correct grammatical structures. The damage in Broca's area results an impaired speech, incorrect structures without affecting the understanding of the mother tongue (receptive language). These procedures are released in less than one second in the human brain and give to the human beings the ability to receive (input) and to express their thoughts and needs (output).

Language has several shapes not only symbols and sounds but also it includes facial expressions and gestures.

(Ahmed Bouzouina, lecture language processing ,18 November,2024)

2.1 Language components:

Language consists of five interrelated components, which are phonology, morphology, syntax, semantics and pragmatics. They are classified according to form, content and use according to **Bloom and Lahey (1978)**. **Ferdinand de Saussure, Noam Chomsky and Paul Grice** are the linguists. Who studied language carefully as a sample and identified these components.

Phonology focuses on different realization of human speech sounds. **Hale and Reiss (2000)** defined phonological substance as the physical properties of speech sounds, including articulators and acoustic aspects.

Whiles, morphology clarifies the construction of words which combined together to form sentence and the creation of new words from existing ones according to **semantic scholar organization**.

Syntax governs the relationship between words and sentences' structures. **Noam Chomsky(1957)** in his book 'Syntactic structures' said «Syntax is the study of the principles and processes by which sentences are constructed in particular languages.»

In other words, semantics deals with literal meaning of sentences but, pragmatics identifies meaning across different contexts.

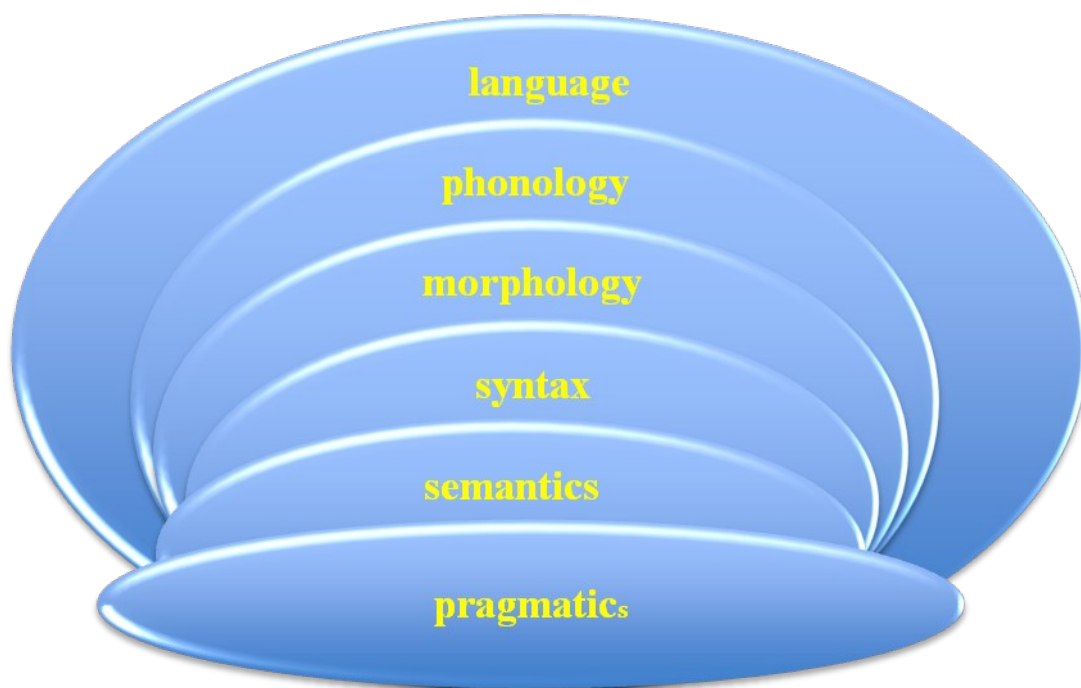


Figure 02: language components.

This figure shows the interconnection of the main components of language. Since, the form of human speech governed by syntax and it is transmitted through phonology. Speech expresses literal meaning which is semantics and it is employed in different situation through pragmatics.

2.2 Language use:

Language represents a tool to receive and express thoughts, emotions and even needs according to the implied meaning in specific context. At the end to get effective communication as **the international pragmatics association (IPrA) highlights in 1986**.

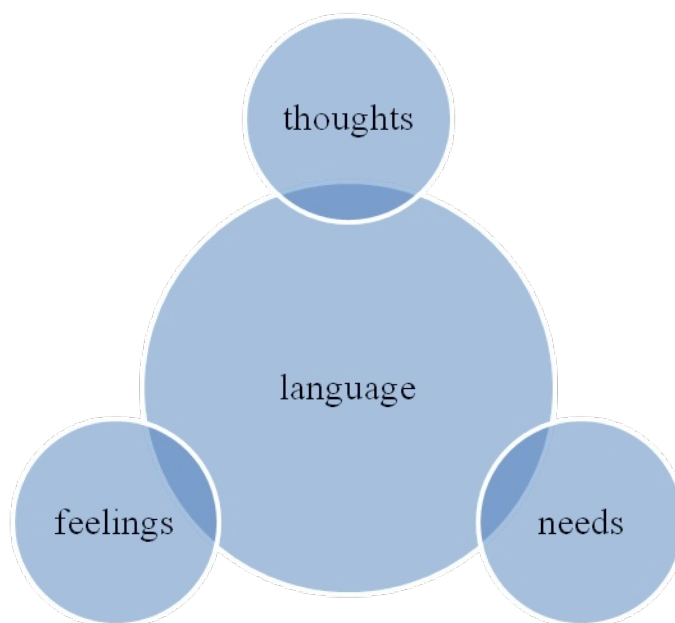


Figure 03: the intersection of language use.

This figure illustrates the relationship between language and the different human responses. Through using language, we can express our needs, thoughts and feelings. So, they are interrelated disciplines.

2.3 Language development:

In any life circle, childhood represents the basic sequence, in which a child can build the basics, personality and language. **Lightbown and Spada 2006** use the concept of development stage to express the acquisition and the development of the native language through time. Also, it is known by milestones. Various factors can influence language development (LD) such as genetic factors, nutrition or psychological conditions.

2.3.1 Stages of language development:

There are six main stages of language development:

<p>1. Pre-linguistic stage.</p>	<ul style="list-style-type: none"> • It occurs between 0 and 6 months. • Children in this phase communicate with sounds such as giggles, cries, laughs. • They use facial expressions
<p>2. Babbling stage.</p>	<ul style="list-style-type: none"> • This stage started from 6 months to 9 months. • Children at the age begin to babble, making noises and using syllables.
<p>3. Holophrastic stage.</p>	<ul style="list-style-type: none"> • The third phase happens between the age of 9 months and 18 months. • Children start saying single words to express their needs or to identify the object.
<p>4. Two-word stage.</p>	<ul style="list-style-type: none"> • This phase depends on the holophrastic stage. • It starts from the age of 18 months to 24 months. • They group words such as « thank mom. »
<p>5. Telegraphic stage.</p>	<ul style="list-style-type: none"> • It occurs between the ages of 24 months and 30 months. • Child develops the ability to understand the basic instructions. • Also, he/she can speak phrases and he knows about 50 words including some preposition and descriptive words.
<p>6. Multi-word stage.</p>	<ul style="list-style-type: none"> • Beyond 30 month • They build more complex sentences to communicate better. • He /she can identify color directions and feelings.

(According to National Institutes of Health, 2021)

Table 01: The universal stages of language development.

Language development is a process through which child can improve his ability to use language and his communicative skills .Although the stages of language development are universal.

2.3.2 Theories of language development:

The child acquires his mother tongue first from his environment by imitating sounds and mimicking words. Then, he relies any signified with its signifier (semiotic theory), which means the human brain creates a mental image to any sign or symbol already required according to **Ferdinand de Saussure**

<p>Innateness theory</p>	<p>In 1957, Noam Chomsky claimed that any child born with the ability to acquire and to use language effectively. He provided the concept of language acquisition device in order to clarify the biological linguistic ability</p>
<p>Behaviorism theory</p>	<p>B.F.Skinner is the psychologist and behaviorist, who conducted research about how behaviors are acquired and modified through operant conditioning which includes punishment and reinforcement. This study focuses on the relationship between the external stimulus and response (reactions) as key features. Skinner described language in his work verbal behavior in 1957. He claims that: "behavior reinforced through the mediation of other persons" which means that language acquisition can improve by reinforcing the use of specific methods or expressions.</p>
<p>Cognitive theory</p>	<p>In 1936, Jean Piaget provided theory that investigates the Crucial role of the external stimulus in shaping human behavior. He employed this theory on language acquisition in order to explain how child creates schemas through interaction with the external environment, and use it to express himself. These two fundamental stages represent assimilation and accommodation.</p>
<p>Social interaction theory</p>	<p>In 1978 Vygotskysaid : "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function." In this regard, he presented the theory of social interaction which highlights the impact of society and the surroundings on child's cognitive level.</p>

Table 02 : language development theories.

Several linguists are influenced by this cognitive phenomenon, and they provide theories in order to clarify language development. This table explains each provided theory in detail which clarifies the language development through time according to each linguist.

2.4 Developmental language disorder (DLD):

In the last year, we noticed that many people suffer from language disorder. This work defined this phenomenon.

2.4.1 Definition:

Language disorder is the inability to use language effectively. It can prevent comprehension as well as it can also affect the way people express meaning. The difficulties in perceiving new knowledge, recognizing it, and reuse that language with different structures cannot be caused only by damage in specific areas in the brain, but also it is caused by psychological factors and autism spectrum disorder. It appears at the age of three Years in most cases. Language disorder (LD) classification varies depending on operational criteria.

(Mccann,Peppé,Gibbon,O'Hare,Rutherford,2007;Shriberg,Mcsweeney,Klin,Cohen,Volkmar, 2001)

2.4.2 Types of language disorder:

Language disorder classified according to specific symptoms to three main types:

A. Receptive language disorder:

This type is characterized by difficulty in understanding language. In this case, the patient misunderstands the stimulus, so the response will be meaningless. For instance, children with receptive language disorder could not recognize verbal expressions or even the nonverbal expressions such as gestures.

(Clark, Watson, Cohen, O'Hare, Cowie, Elton, Nasir; Archives of Disease in Childhood, 2007)

B. Expressive language disorder:

This type affects the way people express their needs and feelings. They are always shy and they have kind of anxiety. Because, they could not use complex sentences, compound words, or the appropriate words in the appropriate situation. In order to preserve themselves and fix the situation, they depend on specific strategies like repeating words or specific expressions (echolalia).

(Eigsti, Marchena, Schuh, Kelly, 2011)

(Eigsti, Benneto, Dadlani, 2007)

C. Mixed receptive - expressive language disorder:

Receptive and expressive language disorder affect the two functions and touch all communicative skills listening, speaking and reading, writing like the case of autism spectrum disorder.

(Hudry, leadbitter, Temple et al, 2010)

2.4.3 Studying language disorder at semantic level and pragmatic level:

Communication with people leads to using language with its components and functions. Studying language disorder at semantic level and pragmatic level gives a chance to find solutions through using these two levels.

A. Semantic level

This phenomenon struggles with the process that links each object or expression with its literal meaning.

Vigliocco et al recently conducted a study on how autistic children can acquire concepts or words in abstract ways. As a result, the study found that the patient with language disorder faces great difficulties to use abstract concepts semantically well. Children with language impairment have syntactic, morphological and semantic deficits that cannot be attributed to low cognitive abilities, poor motor skills or impaired sensory system.

Also, other studies test the behavioral response to check how children with LD recognize the different stimulus.

**(Martin Fujik, Bonnie Brinton, Handbook of child language disorders, chapter:
Pragmatics and Social Communication in Child Language Disorder, 2017)**

B. Pragmatic level:

Pragmatic disorder first appeared in the Diagnostic and Statistical Manual in 2013. Pragmatic disorder is a newer discovery and the symptoms of autism spectrum disorder and pragmatic disorder are similar, even overlapping, yet different.

A person struggling with PD may have trouble with tones or sharing their thoughts. Speech, nonverbal communication, and social interactions are the most common challenges for individuals who have social pragmatic communication disorder. Because , pragmatics represents the implied meaning of Language in specific context.

(Autism Spectrum Disorder & Asperger's , Social Pragmatic Disorder by Avivit Ben-Aharon,2019)

3. Speech:

Speech is communication of meanings by means of symbols; which usually take the form of spoken or written words in this chapter we are going to detail it:

3.1 Definition:

Speech is such a common aspect of human existence that its complexity is often overlooked in day to day life. Speech is the result of many interlinked intricate processes that need to be performed with precision. Speech production is an area of interest not only for language learners, language teachers, and linguists but also people working in varied domains of knowledge. The term ‘speech’ refers to the human ability to articulate thoughts in an audible form. It also refers to the formal one sided discourse delivered by an individual, on a particular topic to be heard by an audience. **Article by NamrataRathoreMahanta.**

According to **William labov in his book (Sociolinguistics patterns)** “Speech varies

Linguistically based on social factors such as class, ethnicity, and region” .Labov's research focuses on studying linguistic variation in speech within different social groups.

So, Speech is the expression of ideas and thoughts by means of articulate vocal sounds, or the faculty of thus expressing ideas and thoughts.

3.2 Mechanisms of Speech:

Speech mechanism is a function which starts in the brain, moves through the biological processes of respiration, phonation and articulation to produce sounds. These sounds are received and perceived through biological and neurological processes. The lungs are the primary organs involved in the respiratory stage, the larynx is involved in the phonation stage and the organs in the mouth are involved in the articulatory stage. The brain plays a very important role in speech. Research on the human brain has led to identification of certain areas that are classically associated with speech. In 1861, French physician Pierre Paul Broca discovered that a particular portion of the frontal lobe governed speech production.

This area has been named after him and is known as Broca's area. Injury to this area is known to cause speech loss. **In 1874, German neuropsychiatrist Carl Wernicke** discovered that a particular area in the brain was responsible for speech comprehension and remembrance of words and images. At a time when the brain was considered to be a single Wernicke demonstrated that the brain did not function as a single organ but as a multi pronged organ with distinctive functions interconnected with neural networks. His most important contribution was the discovery that brain function was dependent on these neural networks.

Today it is widely accepted that areas of the brain that are associated with speech are linked to each other through a complex network of neurons and this network is mostly established after birth, through life experience, over a period of time. In order to understand speech mechanism one needs to identify the organs used to produce speech. It is interesting to note that each of these organs has a unique life-function to perform. Their presence in the human body is not for speech production but for other primary bodily functions. In addition to primary physiological functions, these organs participate in the production of speech. Hence speech is said to be the 'overlaid' function of these organs. The organs of speech can be classified according to their position and function.

The respiratory organs consist of: The Lungs and trachea. The lungs compress air and push it up the trachea. The phonatory organs consist of the Larynx: The larynx contains two membranes- like structures called vocal cords or vocal folds. The vocal folds can come together or move apart. The articulators consist of: lips, teeth, roof of mouth, tongue, oral and nasal cavities In short Speech mechanism is a complex process unique to humans.

It involves the brain, the neural network, the respiratory organs, the larynx, the oral cavity, the nasal cavity and the organs in the mouth. Through speech production humans engage in verbal communication. Since, earliest times efforts have been made to comprehend the mechanism of speech. In 1791 Wolfgang von Kempelen made the first speech synthesizer.

In the first few decades of the twentieth century scientific inventions such as x-ray, spectrograph, and voice recorders provided new tools for the study of speech mechanisms.

In the later part of the twentieth century electronic innovations were followed by the digital revolution in technology. These developments have made new revelations and have given new direction to the knowledge of human speech mechanisms. In the digital world an Understanding of speech mechanisms has led to new applications in speech synthesis.

Speech mechanism studies in present times are divided into areas of super specialization Which focus intensively on any specialized attribute of speech mechanism.

(N. RathoreMahanta, Mechanism of speech production ,2017

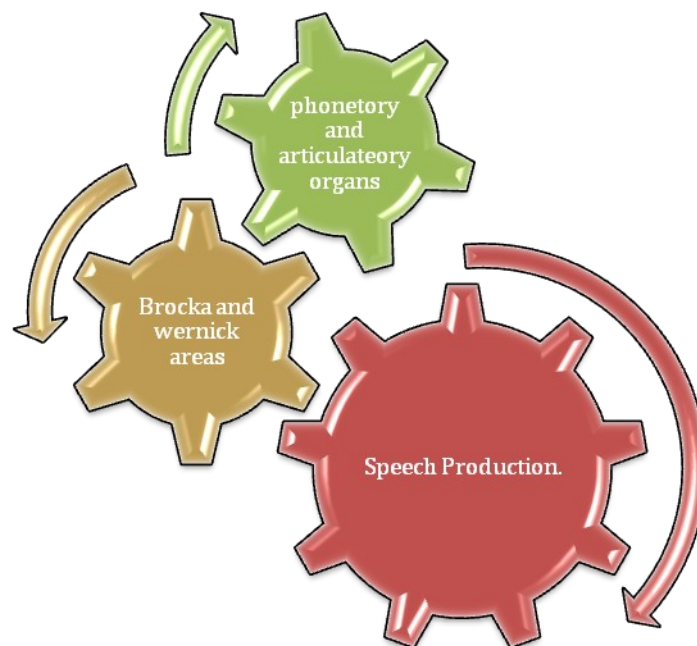


Figure 04: speech mechanism.

Figure four clarifies the role of phonatory organs, articulators, Broca and Wernickareas in speech production.

3.3 Types of speech :

Speech classified according to purpose into four main types:

1. Informative speech: when speech includes interesting information.
2. Persuasive speech: when speech aims to convince the audience with certain belief or idea.
3. Demonstrative speech: when speech include demonstrations.
4. Entertaining speech: when it provides pleasure or enjoyment.

3.4 Speech Act Theory:

Speech act theory is a subfield of pragmatics this area of study is concerned with the ways in which words can be used not only to present information but also carry out actions.

Speech acts Theory Was built by Wittgenstein and Austin in 1962. Austin said: "Language as a way of marking factual assertions and other uses of language tended to be ignored ". Wittgenstein came up with the idea of," Do not ask for meaning, ask for the use "Showing language is a new vehicle for social activity. The speech act concept was proposed by J.L. Austin in 1962. One of the founders of pragmatics and later developed by J.R Searle in 1969, both philosophers of language believe that language is not only used to inform or to describe things, it is often used "to do things " or to perform act in other words actions

Performed via utterance are generally called speech acts .

3.4.1 Types of Speech Acts:

According to J.L Austin 1962 there are three types of speech act:

Locutionary act	The locution is the grammatical structure of the utterance (Literal meaning of the utterance). The basic production of meaningful utterance.
Illocutionary act	It is about what is meant by what the speaker tries to convey with the different words. An utterance is produced with some functions in mind. Thus it has a communicative force. The same location can have possible meanings depending on the context.
Perlocutionary act	The intended or unintended effect of the speech utterance on the hearer (effect on feelings, thoughts or actions of the hearer)

(MoulayHaceneYacine, lecture of speech act theory, 28 October 2021)

Table 03: types of speech act.

This table illustrates the types of speech act.

3.5 Speech Disorders:

This issue is going to be explored and explained as follows:

3.5.1 Definition:

Speech Disorder is a speech issue occurs when you have difficulties generating the necessary speech sounds to speak in your native language. People with speech disorders typically (but not always) understand what they want to communicate. However, individuals may have difficulty putting those thoughts into words and verbalizing them. This can take a variety of forms. For some persons, it may appear like they are struggling to perform the necessary muscle motions for clear speech. Others may have difficulties managing their breath while speaking. Some people may be able to speak, while others may be unable to do so and may require alternative communication methods.

3.5.2 Types of speech Disorder :

Speech disorder has ten types classified according to specific symptoms.

3.5.2.1 Stuttering:

Stuttering is probably one of the first speech disorders that most people will think of when asked to name examples. It is distinguished by the repetition of sounds, blocks of speech, and repetition of words, sounds, or syllables. People who stutter know what they want

to say, but have difficulty producing speech. One of the most common types of speech disorders, the National Institute on Deafness and Other Communication Disorders estimates that approximately 3 million Americans stutter. Stuttering often becomes obvious when a child is first learning to speak. However, roughly 75 percent of children who develop a stutter will outgrow it eventually.

3.5.2.2 cluttering :

Stuttering is not the only fluency condition; cluttering is one as well. When someone is experiencing cluttering, they typically speak quickly or jerkily and frequently pause with words like "like," "hmm," and "um." In addition, syllables are frequently omitted or collapsed, and the speech cadence is aberrant. Cluttering symptoms typically initially appear in children, and they can be treated with early speech-language pathology intervention.

3.5.2.3 Issues Related To Autism Spectrum Disorder :

Autism spectrum disorder itself is not a speech disorder. Nonetheless, social communication is a challenge for a lot of kids with autism. Furthermore, a small percentage of children with autism is nonverbal, which means they either cannot communicate at all or speak little to no words. AAC, or augmentative and alternative communication, is the primary means of communication for nonverbal kids. According to the Centers for Disease Control, one in every 36 children has autism. Communication and difficulties with speech are frequently among the initial indications of autism. Childhood apraxia of speech is one of the most prevalent speech problems linked to the autism spectrum. When your child struggles with the motor coordination needed to produce sounds and words, it is known as apraxia.

Noteworthy speech issues that are frequently connected to autism spectrum disorder include.

3.5.2.4 Lisp :

Like stuttering, lisp is very common and easily recognized. The most prevalent kind of lisp is called "interdentally," which occurs when a speaker pretends to make a "s" sound

instead of producing the "th" sound. According to a study published in the Journal of Communication.

Disorders, 23% of the young adults in the study spoke with a lisp, and there were no appreciable differences between the male and female participants.

3.5.2.5 Aphasia:

Aphasia is a disorder which is caused when there is damage to your brain's language ability. It frequently manifests in those who suffered from a stroke. But it can also happen with a brain tumor, degenerative brain illness, or severe brain damage. This condition affects not only speech but also the comprehension of written and spoken words. There are about two million aphasics in the United States, according to the National Aphasia Association.

3.5.2.6 Dysarthria :

The symptoms of dysarthria include laborious speech, slower, slurred speech, irregular speech rhythm, limited jaw and tongue movement, and trouble articulating. It's a result of damage to the muscles or nerves used for speaking, including the lips, tongue, vocal chords, and diaphragm. Individuals of all ages can be affected by dysarthria. In younger individuals, it is often linked to conditions such as cerebral palsy and muscular dystrophy. In adults, it often appears following a stroke or brain tumor.

3.5.2.7 Mutism :

A person with selective mutism is able to talk, but they only do so under specific circumstances. A child who speaks exclusively at home and not at school serves as an example. It's typical in kids who are really timid or who struggle with social anxiety. It is important to remember that there are other factors involved besides shyness. According to the American Speech Language Hearing Association, 0.5% of children are thought to be selectively mute.

3.5.2.8 Apraxia Of Speech:

A disorder known as Apraxia of Speech (AOS) is characterized by a disruption in the neurological route that connects the brain to the speech-generating muscles. Although people with apraxia of speech know what they want to say, the brain can't send the messages to the mouth needed in order for them to actually speak.

3.5.2.9 Spasmodic Dysphonia:

Spasmodic dysphonia is distinguished by vocal cord spasms when an individual tries to speak. The voice becomes wobbly, moaning, or twitchy as a result. It typically affects individuals between the ages of 30 and 50 and is associated with age-related changes, such as abnormalities of muscle tone.

3.5.2.10 Issues Related To Cleft Palate :

The conditions known as cleft lip and cleft palate impact the lip and soft palate located towards the back of the throat. With cleft palate, your mouth is not closed off from your nose when speaking, and this can lead to air escaping from your nose. The result is often speech.

4. Autism:

Autism is a psychological phenomenon that has a heavy impact on a child's life. This chapter describes this phenomenon in detail.

4.1 History and definition :

Many psychologists defined autism. Grunya Sukhareva, a Russian doctor who characterized autism in the 1920s,

Also, Swiss psychiatrist Eugen Bleuler provided the term "autism" in 1911 to describe some cases of schizophrenia.

The concept of autism has evolved during time. It changes in its meaning and its symptoms.

Furthermore, there are some theories that assume that autistic children pass through difficult psychological conditions, which causes autism. Also, another research emphasizes genetic influences on autism, with concordance rates among identical twins ranging from 60-90%. Evidence-based interventions for autistic children focus on enhancing cognitive, communication, and social skills through reinforcement while decreasing problem behaviors through approaches like applied behavior analysis (ABA) and developmental models.

Autism spectrum disorder (ASD) is an abnormal psychological state that has a great impact on social interaction, cognitive level and behaviors. Children with (ASD) can interact and learn but in different ways from others. ASD symptoms can appear in the first three years.

Lord C, Risi S, DiLavore PS, Shulman C, Thurm A, Pickles A. Autism from 2 to 9 years of age. Arch Gen Psychiatry. 2006 Jun;63(6):694-701

4.2 Types of autism spectrum disorder:

Types of autism spectrum disorder.	Explanation.
<ul style="list-style-type: none"> ● Kanner's syndrome: 	<p>It was named referring to the famous researcher Leo Kanner, who wrote one of the original reports on autism in 1943.</p> <p>This type is characterized by strong resistance to change and peculiar attachment to objects.</p>
<ul style="list-style-type: none"> ● Asperger's syndrome : 	<p>This type defines disorder but it is a separate disorder from autism. It is characterized by the lack of deficit in cognitive development.</p>
<ul style="list-style-type: none"> ● Rett syndrome : 	<p>It always affects girls . In the first years , Children with Rett syndrome grow to a normal level but after they suffer from a slowing development and loss of physical control of their muscles</p>
<ul style="list-style-type: none"> ● Childhood disintegrative disorder (CDD): 	<p>Epilepsy highly appears in children with childhood disintegrative disorder. Also, it includes the loss of communicative skills. CDD is considered a rare type that derived from the autism umbrella.</p>
<ul style="list-style-type: none"> ● Pervasive Development Disorder Not Otherwise Specified (PDD-NOS): 	<p>Individuals with PDD-NOS have difficulties with socialization and communication skills and difficulties with changes in routine.</p>

Table 04 : Types of autism spectrum disorder.

Autism spectrum disorder (ASD) classified according to several symptoms into five types.

4.3 Aetiology of the Disorder:

Research indicates an increase in autism cases, little is still understood about its etiology. Research suggests that autism develops either from a combination of genetic and non-genetic, or environmental, influences.

Researchers have discovered tiny common genetic variants and uncommon gene alterations, or mutations, in autistic individuals, suggesting a genetic component. The interplay of genetic and environmental variables is a rapidly expanding field of study for example; a woman's exposure to harmful contaminants during pregnancy may trigger a genetic mutation leading to autism in her child. No link has been found between autism and vaccines.

Progress has been made toward understanding different environmental risk factors, and the clearest evidence involves events before and during birth, such as:

Advanced parental age at time of conception, prenatal exposure to air pollution or certain pesticides. Maternal obesity, diabetes, or immune system disorders, extreme prematurity or very low birth weight, any birth difficulty leading to periods of oxygen deprivation to the baby's brain.

4.4 DSM-5 Autism Diagnostic Criteria:

Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history.

A. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

B. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

C. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Specify current severity: Severity is based on social communication impairments and restricted repetitive patterns of behavior.

D. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text): Stereotyped or repetitive motor movements, use of objects, or speech (simple motor stereotypes, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take the same route or eat food every day).

Highly restricted, fixated interests are abnormal in intensity or focus (strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).

Hyper or hypoactive to sensory input or unusual interests in sensory aspects of the environment (Apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

Specify current severity: Severity is based on social communication impairments and restricted, repetitive patterns of behavior.

E. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).

F. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

G. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Specify if:

- With or without accompanying intellectual impairment
- With or without accompanying language impairment.

4.5 Severity levels for autism spectrum disorder :

Levels of autism:	Classification measures:
<p style="text-align: center;">Level 1:</p> <p>Requiring support:</p>	<ul style="list-style-type: none"> • Deficits in social communication cause noticeable impairments. • Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication. • They attempt to make friends are odd and typically unsuccessful. • Inflexibility of behavior causes significant interference with functioning in one or more contexts. • Difficulty switching between activities. • Problems of organization and planning hamper independence.
<p style="text-align: center;">Level 2</p> <p>"Requiring substantial support"</p>	<ul style="list-style-type: none"> • • Marked deficits in verbal and nonverbal social communication skills. • Social impairments apparent even with support in place. • Limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and how has markedly odd nonverbal communication. • Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviors appear frequently enough to be obvious to the casual observer and interfere with functioning in variety of contexts. • Distress and/or difficulty changing focus or action.
<p style="text-align: center;">Level 3</p>	<ul style="list-style-type: none"> • Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning. • Very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches

"Requiring very

Table 05: Levels of Autism spectrum disorder.

Autism spectrum disorder divided into three levels according to specific measures.

4.6 Social (Pragmatic) Communication Disorder Diagnostic Criteria :

Persistent difficulties in the social use of verbal and nonverbal communication as manifested by all of the following:

- A. Deficits in using communication for social purposes, such as greeting and sharing information, in a manner that is appropriate for the social context.
- B. Impairment of the ability to change communication to match context or the needs of the listener, such as speaking differently in a classroom than on the playground, talking differently to a child than to an adult, and avoiding use of overly formal language.
- C. Difficulties following rules for conversation and storytelling, such as taking turns in conversation, rephrasing when misunderstood, and knowing how to use verbal and nonverbal signals to regulate interaction.
- D. Difficulties understanding what is not explicitly stated (e.g., making inferences) and non literal or ambiguous meanings of language (e.g., idioms, humor, metaphors, multiple meanings that depend on the context for interpretation).
- E. The deficits result in functional limitations in effective communication, social participation, social relationships, academic achievement, or occupational performance, individually or in combination.
- F. The onset of the symptoms is in the early developmental period (but deficits may not become fully manifest until social communication demands exceed limited capacities).
- G. The symptoms are not attributable to another medical or neurological condition or to low abilities in the domains of word structure and grammar, and are not better explained by autism spectrum disorder, intellectual disability (intellectual developmental disorder), global developmental delay, or another mental disorder.

4.7 Symptomatology of autism :

Symptoms of autism classified into two categories.

4.7.1 Social Communication and Interaction :

A child diagnosed with autism spectrum disorder may exhibit any of the following symptoms in addition to difficulties with speech and social interaction:

- Fails to respond to his or her name or appears not to hear you at times.
- Resists cuddling and holding, and seems to prefer playing alone, retreating into his or her own world.
- Has poor eye contact and lacks facial expression.
- Doesn't speak or has delayed speech, or loses previous ability to say words or sentences.
- Can't start a conversation or keep one going, or only starts one to make requests or label items.
- Doesn't express emotions or feelings and appears unaware of others' feelings
- Doesn't point at or bring objects to share interest.
- Inappropriately approaches a social interaction by being passive, aggressive or disruptive.
- Has difficulty recognizing nonverbal cues, such as interpreting other people's facial expressions, body postures or tone of voice.

(Eigsti ;Benneto L ;Dadlani ;2007)

4.7.2 Patterns of behavior:

A child or adult diagnosed with autism spectrum disorder may have restricted, recurring interests, activities, or behavioral patterns, such as any of the following:

- Performs repetitive movements, such as rocking, spinning or hand flapping
- Performs activities that could cause self-harm, such as biting or head-banging
- Develops specific routines or rituals and becomes disturbed at the slightest change.
- Has problems with coordination or has odd movement patterns, such as clumsiness or walking on toes, and has odd, stiff or exaggerated body language Is fascinated by details of an object, such as the spinning wheels of a toy car, but doesn't understand the overall purpose or function of the object is unusually sensitive to light, sound or touch, yet may be indifferent to pain or temperature.

- Doesn't engage in imitative or make-believe play

- Fixates on an object or activity with abnormal intensity or focus

- Has specific food preferences, such as eating only a few foods, or refusing foods with a certain texture. Some kids with autism spectrum disorder exhibit less behavioral problems and are more socially engaged as they get older. Eventually, some people—typically the ones with the least serious issues—may have regular or almost normal lives. Some, on the other hand, still struggle with language or social skills, and adolescence can exacerbate emotional and behavioral.

Pratt.C ;Hopf.R &Larriba –Quest .k ;characteristics of individuals with an autism spectrum disorder (2017)

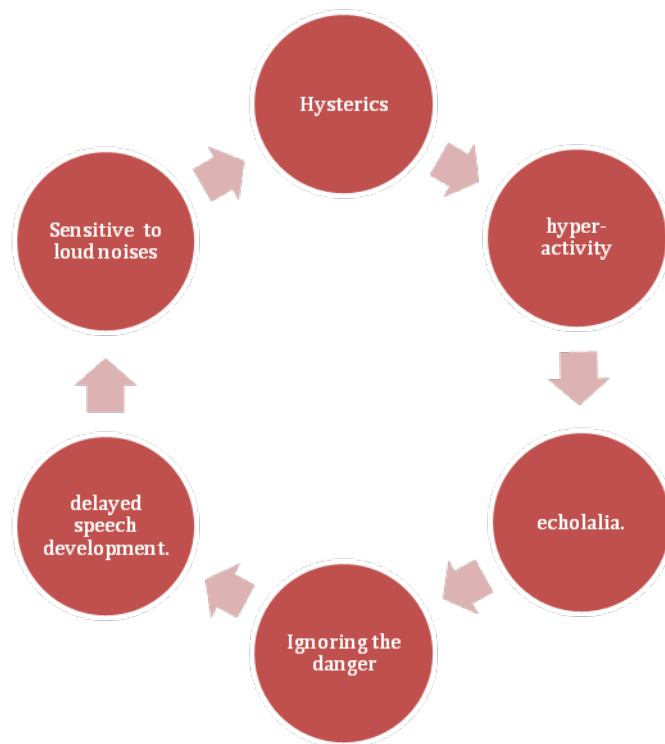


Figure 05: autism's early signs.

This figure illustrates the early signs of autism spectrum disorder.

4.8 Language development of autistic children:

Young children with ASD often communicate through their distinct behavioral reactions roughly half of children with autism never acquire expressive language (Gleason, 2005). They do not communicate with others or utilize words to get what they need. Though receptive language is frequently assumed to be more developed, expressive language in these youngsters is hindered. While children may show that they can utilize words and sounds, they may do it in strange ways (**Scheuermann & Webber, 2002**). Some other kids exhibit echolalia, which is the practice of mimicking the words of others; for example:

A : (Normal person): Hello, how are you?

B :(Autistic child with echolalia): Hello, how are you?

Here, the autistic child repeat what has been asked instead of providing an answer, and thus, this is echolalia.

Also; autistic children have difficulties to follow directions and make difference between left and right. This issue can lead to another problem which represents delayed vocabulary development (VD). Generally; autistic child sticks on limited number of words and poor

grammatical sentences to express his needs ; or he depends on body language to avoid daily interaction .

Abnormal use of intonation rhythm and stress is atypical production of supra –segmental feature on autism spectrum disorder ; it appear specially in their answers .

Pratt.C ;Hopf.R &Larriba –Quest .k ;characteristics of individuals with an autism spectrum disorder (2017)

(Shriberg et al ;2001)

(Hudry ;Leadbitter ;Temple et al ;2010)

Chapter Two:

Methodology Procedures

I. Pilot study:

Before initiating our study on language features within autistic children, a pilot study was held to achieve the following:

1. Objectives of pilot study:

Pilot study represents an essential step to test language disorder from its dimensions comprehension and production through using a designed scale in one hand. On the other hand; it gives the precise and the final form of research which aims to achieve the following:

- Approaching the population with autism.
- Highlighting the concept autism spectrum disorder.
- Describing the linguistic deficiencies related to autistic children.
- Presenting the diagnosing features according to new variables.

2. Limitations of pilot study:

In the large scale study we face different limitations arranged as followed:

2.1 Environment limitation:

The study has been conducted in two different places. The psychiatry of Tiaret was the first environment where the study has took place .The pediatric service represents an equipped service that supports at least 100 children with different deficiencies including autism. The medical stuff is a complete stuff which, consists of head of service, speech therapists, psychologist, nurses and service agents. They are all formatted to manage different situations.



Figure 06: psychiatry of Tiaret



Figure 07: Pediatric service.

The second place was Nour association. It is located in KaserChalala , which was founded in 2019 by university students . They spent great effort to implement this project

from an idea .the association started with 10 autistic children only. After the association grow up through time. Now, it helps around 160 autistic children. The staff consists of director of association, assistant director, two pathologists and five psychologists.

2.2 Time:

18 December 2023, the researchers were in direct contact with autistic children and their speech therapists through many exploratory visits until 28 December 2023.

3. Population:

During the pilot study, the researchers have met in close children with language disorder because of autism.

3.1 Characteristics of population:

The autistic children are main unit in this study which characterized by difficulties in learning, unusual behavior, language disorder and speech impairment.

- Echolalia is one of the most common feature that represents repetition of words, phrases and even sentences with no communicative purpose.
- Metaphorical language represents all idioms and metaphors that people use to serve communication purposes. The autistic child faced trouble in using and understanding figurative language.
- Jargon is another feature which represents the nonsense words that autistic children produce.

4. Delimitation of the sample participants:

The pilot study allowed us to determine the criteria of participant's selection.

4.1 Criteria of participant selection:

The participants of our study should be:

- Diagnosed with autism spectrum disorder.
- Suffered from speech and language disorder.
- Talking child in order to determine the level of impairment.
- Aged between 3 years old and 12 years old.

4.2 Criteria of exclusion:

The criteria of exclusion any participant from the study depends on:

- a. The autistic Child suffered from mutism .
- b. The hyper activity prevents hardly the pilot study.

5. Method :

The pilot study has been conducted on a qualitative approach through analytical descriptive method to achieve the following:

- To assess the language of children with autism.
- To describe language disorder.
- To investigate the language disorder features.
- To measure the level of language impediment with autistic children.
- To collect empirical data about language disorder within autistic children.

6. Tools :

This study depends on specific tools which represent observation and interview. They represent an exploratory tool for comprehension, language production in autistic children.

A. Observation:

Researchers depend on observation which allows us to discover through direct contact the level of linguistic impairment. Also, it checks the ability to comprehend and to produce language for each one.

B. Interview:

Interview with the autistic children allowed us to examine the ability of autistic child to read and write. It released according to the following steps:

➤ **Procedures :**

- A) **Reading skills:** participants read a paragraph or list of words in 5 minutes.
- B) **Writing skills:** participants discussed an idea through pictures and games.

➤ **Scales application schedule :**

Each patient took for this test from 15 min to 20 min.

Also, speech therapists and children's parents do great effort to simplify for us the concept of autism spectrum disorder as possible as can and to determine exactly the linguistic impairment features from their daily experiences .

II .The main study:

In the main study the researchers focus on the sample, the method used and the results found.

1. Sample:

A total of 22 children with autism spectrum disorder were required for the study. Three individuals with ASD have to be excluded because the tasks were too difficult for these participants since they have mutism. The final sample consisted of 19 children with ASD.

Both genders males and females from 06 to 12 years old are part of the study.

Some of these participants are joined to groups to learn and the others learn separately.

1.1 Sample features :

Study the sample part is characterized as follow:

1.1.1 Clinical characteristics:

There are three clinical characteristics:

1.1.1.1 Mutism :

Autistic people can find making and sustaining eye contact extremely uncomfortable. Scientists are still working to determine the exact cause, although evidence points to problems with sensory and cognitive processing as well as social communication.

1.1.1.2 Hyperactivity :

Autism and hyperactivity disorder are not observed together in every child with autism. However one of the most common signs used to diagnose autism is hyperactivity. The majority of autistic children exhibit both hyperactivity and attention deficit disorder. Excessive mobility can also be observed around two years of age. It's probable that this will persist for a long period among autistic people. This makes controlling the situation very difficult. After a certain period of time it may diminish. In fact, sometimes, only in certain situations and places, excessive mobility can be observed.

1.1.1.3 Avoiding the eye contact :

Many people believe that a child's lack of eye contact is a sign of autism because they frequently observe it in autistic children. However, it's important to remember that not everyone with autism avoids eye contact, and not everyone who does so also has autism. The

condition known as alexithymia is the cause of the loss of eye contact. phrase used to indicate emotional difficulties. According to current studies, alexithymia affects only about 50% of autistic individuals and approximately 10% of the general population.

1.1.2 Linguistic Attitude Characteristics:

1.1.2.1 Echolalia:

The term (echolalia) refers to the repeating or echoing of sounds and phrases. Since it is a technique the child utilizes to learn how to talk and share their needs and thoughts with others. It is really a normal part of their development. Around the age of three, if the child still repeats words and phrases after the toddler stage. It may indicate that they have autism.

1.1.2.1.1 Types of echolalia:

Echolalia classified into four types:

A) Immediate echolalia:

This type of repetitive speech occurs immediately after you say something to your child.

B) Delayed echolalia:

As you may be able to guess, delayed echolalia is when the child repeats words or phrases; they hear later in the day. They could repeat these phrases with intention, or they could just be repeating the sounds they heard.

C) Interactive echolalia:

Also, it called « functional echolalia ». Interactive echolalia is when a child uses a phrase; they have memorized as a means to communicate.

D) Non-interactive echolalia:

This type of repetitive speech is also referred to as « non-functional echolalia ». This form of echolalia in autism means the phrases and words the child uses repeatedly do not serve a function. Rather, the child is simply repeating words and phrases.

1.1.2.2 Jargon :

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. Many autistic children use jargon as a means of maintaining conversations or expressing their needs that is considered difficult to decipher

into a meaningful conversation. In addition to the unusual language patterns described above, 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 ; Benneto ,
Watson ,Gunlogson ,Mc Donough,2008).**

According to APA(2000) speech , language ,and communication needs are split into three main areas :

A) . Abnormal speech sounds development :

Children with autism face a problem in the articulation of speech sounds. The latter can be totally absent in those children. Therefore, they cannot build up words and speaking fluently without hesitating.

B) Abnormal receptive and expressive language development :

By language, we mean both understanding (receptive language) **and** talking (expressive language). Unfortunately, autistic children cannot enjoy these abilities. Most individuals with autism have both receptive and expressive language problems .Autistic children have difficulties in understanding what have been said to them. Generally, receptive language goes along with expressive language disorder, which means they have trouble using spoken language. We may find autistic children express their needs using their own way which is represented in stereotyped behaviors and each autistic child has his / her own way to express himself/herself.

C) Abnormal social communication development :

We mean by communication the way in which language is used to interact with others. Children with autism may not have the chance to experience this ability. Abnormal social communication development in autistic children is used to define pragmatic development deficit .However; children who are diagnosed with autism can communicate neither verbally nor non-verbally. This later means that autistic individual cannot use gestures, and facial expressions.

1.1.2.3. Metaphorical language:

People with autism spectrum disorder (ASD) frequently have difficulties comprehending metaphorical language. People with ASD have been found to have trouble comprehending and using figurative language, which includes idioms, proverbs, and metaphors. These difficulties could be connected to retained structural language abilities but decreased non-literal language abilities.

Happé, F. G. (1995)

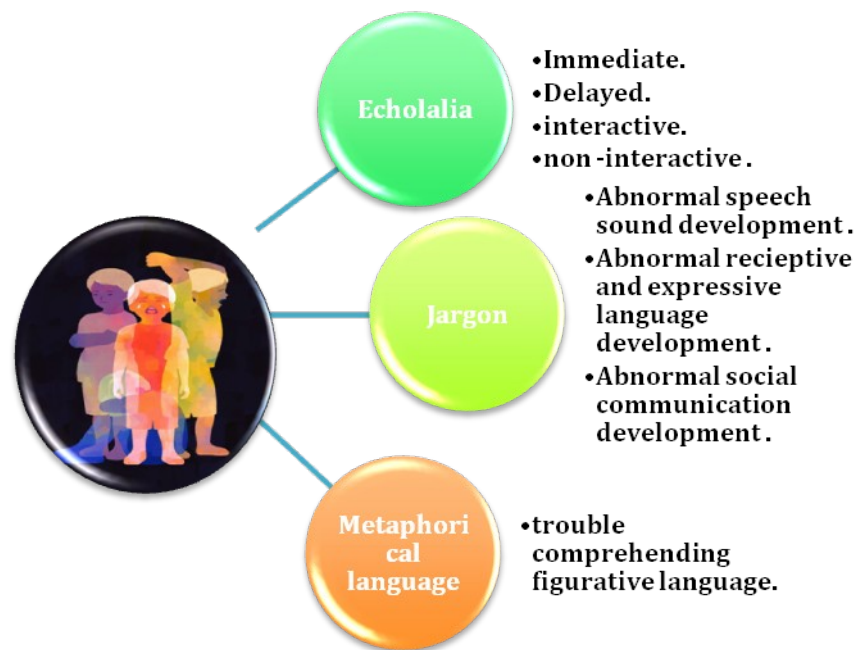


Figure 08: Types of each linguistic attitude.

This figure clarifies the types of each feature.

1.1.3 Features of sample:

Name	Age	Features	Social conditions
Patient 01 : M	10 Years old	Wrong spelling and echolalia	Medium
Patient 02 : A	12 Years old	Correct spelling and structure	Medium
Patient 03 : N	06 Years old	Wrong spelling and echolalia	Medium
Patient 04 : Ch twi1	06 Years old	Correct structure with wrong spelling and echolalia	Medium
Patient 05 : M twin 2	06 Years old	Correct structure with wrong spelling and echolalia	Medium
Patient 06 : I	06 Years old	A problem of pronunciation NO structure and he avoid the eye contact.	Medium
Patient 07 : K	06 Years old	Active and smart a weak eye contact with echolalia	Medium
Patient 08 : S	07 Years old	A correct structure excellent spelling, no echolalia	Medium
Patient 09 : B	12 Years old	Correct structure, no echolalia	Medium
Patient 10 : I	05 Years old	Faced a difficulty on spelling the words , a correct structure ,a weak echolalia	Good
Patient 11 : A	08 Years old	No echolalia faced a difficulty on spelling	Medium
Patient 12 : S	08 Years old	Could not spell well, wrong structure, Echolalia	Medium

Patient 13 :M	06Years old	Difficulties in spelling words, unstructured sentences, echolalia.	Medium
Patient 14 :F	08Years old	Active, weak eye contact, no echolalia.	Medium
Patient 15 : I	10Years old	Correct structure, weak eye contact, excellent spelling.	Medium
Patient 16 : I	09Years old	Echolalia, unstructured sentences, weak eye contact, words without sense.	Medium
Patient 17 :A	06 Years old	Weak eye contact, difficulties in pronouncing words.	Medium
Patient 18 : K	10 Years old	Weak eye contact ,echolalia , wrong structure	Medium
Patient 19 :M	09 Years old	Active, smart, echolalia, difficulties in spelling words .	Medium

Table 06: Personal features of each participant.

The table explains the personal features of each participant, which represents their names, age, characteristics and social conditions.

1.1.4 The statistics of each feature:

Echolalia	Jargon	Metaphorical Language
15	12	19

In order to illustrate better these related to each feature, we use this graph.

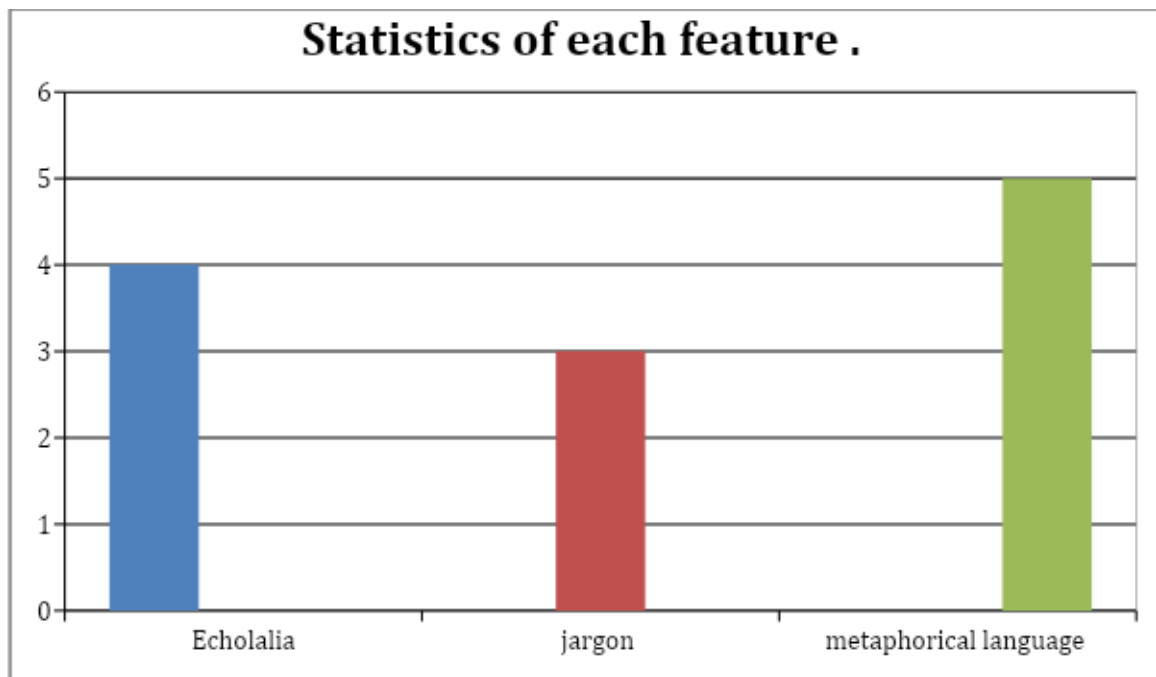


Chart 01: Features level.

This graph interprets table's data. In which the three features are arranged.

1.1.5 Inclusion Criteria:

The sample study must be:

- Diagnosed with autism spectrum disorder.
- Suffered from speech and language disorder.
- Talking child in order to determine the level of impairment.
- Aged between 3 years old and 12 years old.

2. Research method:

This work has been conducted at psychiatry of Tiaret and El Nour association for children with specific needs including (ASD). Interview and records with psycho-therapist, and speech therapists and the observation grade have been used to collect data. This research is descriptive; we use both quantitative and qualitative research, the quantitative since the research deals with numbers and statistics, providing objective, reliable, and valid results.

The qualitative method provides the details and the features on the variables and involves collecting descriptive data.

1) Analytical descriptive method :

Analytical descriptive method represents a set of procedures that researchers follow to release specific objectives and find valid results.

The study involves analyzing autism spectrum disorder as principal phenomena, describing its clinical characteristics and exploring the relationship between language disorder and autism using the data. This method allowed to highlight the linguistic deficiencies of autistic children in order to well trait the problem .we have adopted the following descriptive method:

2) The content analysis:

Autism is a variable developmental disorder that appears by age three and is characterized especially by difficulties in forming and maintaining social relationships, by impairment of the ability to communicate verbally or nonverbally, and by repetitive behavior patterns and restricted interests and activities.

(Autism-Webseter.com ,DictionaryMeriem, Webseter .Accessed 10 May 2024)

Disorder	Features	Types	Frequency
Autism spectrum disorder	Echolalia	1). Immediate echolalia 2).Delayed echolalia 3).Interactive echolalia 4).Non-interactive echolalia	100
	Jargon	1).Abnormal speech sounds development 2). Abnormal receptive and expressive language development 3).Abnormal social communication development	50
	Metaphorical Language	Metaphorical language	10

Table 08: Features' frequencies

The three main features and their types are classified to determine the frequency of each one. This table helps us to analyze and determine the level of each one.

3. Tools:

The researchers depend on the observation and the interview as tool to find out the data and to analyze them.

3.1 Analytical observation:

We obtain after the observation this analysis. They are classified as follow :

3.1.1 Classifications of impairment:

We classify autism diagnosis level according to each main criterion:

Autism diagnosis level	The main criteria
- Level 01	<ul style="list-style-type: none"> - Children with level 01 are able to communicate verbally. - They have difficulties in social situation. - Changing activities represents stressful task for them.
- Level 02	<ul style="list-style-type: none"> -They need substantial support. - The children interact with limited number of people .
- Level 03	<ul style="list-style-type: none"> -They do not interact verbally. -the children exhibit extremely the difficult behaviors.

Table 09: The main criteria of autism diagnosis level.

This table explains the main criteria of the three levels according to DSM-5. There are three stages of autism spectrum disorder (ASD), according to the DSM-5. In addition to receiving an autism diagnosis, a person may also receive an ASD Level 1, ASD Level 2, or ASD Level 3 designations. The degree of their symptoms and the amount of help they require in their daily lives are the main factors used to determine the autism diagnosis level.

3.2 Interview:

Interview in research is the second qualitative tool used to collect more data about children diagnosed with ASD.

3.2.1 Expert's interview analysis:

During our visits, we met psychologists, psycho-therapists and speech therapists. Each one of them defined autism according to his/her field but they all agree that autism is a psychological shell. It isolates the child from the external environment, in which he/she faces stress, anxiety, the inability to interact with the others. These symptoms lead to linguistic deficiencies, frequent crises, and even violent behavior. In order to well treat those children, it must join the efforts all as society starting from their parents. Since, the family represents the first hand in this case which provides the support and the motivation to their children. Here, the psychologists apply techniques and specific methods to improve their behavior first, and then they move to the second stage which is ameliorating the communicative skills.

3.2.2 Parent's interview analysis:

Being responsible for child with specific needs is not an easy task. According to them, the awareness about the child's case reduces 50% from their sufferance to start fixing the situation.

4. Limitation:

4.1 Space :

The main study also conducted in the same places after taking the authorization from English department of IbnKhalidoun University. Psychiatry of Tiaret is our first destination which is located in HamdaniAdda. Pediatrics service has prepared staff which received every day around 15 cases with specific needs including autistic children. Nour association in KaserChallala represents the second place, where we complete our study. It consists of speech therapists and psychologists and young volunteers to help those children.

4.2 Time:

In order to collect enough data; we are supposed to visit pedo -psychiatry of Tiaret and Nour association frequently through sessions.

➤ Distribution of sessions :

	Psychiatry	Nour Association
18 Dec 2023 – 24 Dec 2023	0 session	4 sessions
24 Dec 2023 – 28 Dec 2023	4 sessions	2 sessions

Table 10: Distribution of sessions

This table represents the arrangement of sessions that the researchers followed during our study.

5. Statistical analysis measures:

The numerical measures are used to quantify variability and the relationship.

A. frequencies:

Refer to the chart of the content analysis.

B. Correlation analysis:

(1) Grade of autism:

Patients :	Grades :
Patient 01 :	06/10
Patient 02 :	05/10
Patient 03 :	07/10
Patient 04 :Ch twin 1	07/10
Patient 05: M twin 2	07/10
Patient 06:	08/10
Patient 07 :	08/10
Patient 08 :	03/10
Patient 09 :	05/10
Patient 10:	03/10
Patient 11 :	05/10
Patient 12 :	03/10
Patient 13 :	07/10
Patient 14 :	04/10
Patient 15 :	03/10
Patient 16 :	08/10
Patient 17 :	07/10
Patient 18 :	08/10

Patient 19 :	07/10
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Table 11: patients' grades

This table represents the grade of each autistic child according to the evaluation made by psychologist.

(2) The grade of language disorder:

	The deficiency according to :			
Patients :	Sounds	Structure	Meaning	Language disorder grades :
Patient 01 :M	03 /03	03/03	03/03	09/10
Patient 02 :A	01/03	01/03	01/03	03/10
Patient 03 :N	03/03	03/03	03/03	09/10
Patient 04 : Ch twin1	03/03	01/03	01/03	05/10
Patient 05 : M twin2	03/03	01/03	01/03	05/10
Patient 06 : I	01/03	03/03	03/03	07/10
Patient 07 : K	03/03	01/03	01/03	05/10
Patient 08 :S	01/03	01/03	01/03	03/10
Patient 09 :B	01 /03	01/03	01/03	03/10
Patient 10 :I	03/03	01/03	01/03	05/10

Patient 11 :A	03/03	01/03	01/03	05/10
Patient 12 :S	03/03	03/03	03/03	09/10
Patient 13 :M	03/03	03/03	03/03	09/10
Patient 14 :F	01/03	03/03	03/03	07/10
Patient 15 :I	03/03	01/03	01/03	05/10
Patient 16 :I	03/03	03/03	03/03	09/10
Patient 17 :A	03/03	01/03	01/03	05/10
Patient 18 :K	01/03	03/03	03/03	07/10
Patient 19 :M	03/03	03/03	03/03	09/10

Table12: Language disorder grades of each autistic child.

In order to calculate the grade of language disorder of each autistic child; we collect the points according to deficiency in sounds, structure and meaning.

(3) The correlation between X and Y :

Depending on these data, we are supposed to determine the correlation between autism spectrum disorder and language disorder.

X and Y are the two variables of this study.

- X = Level of autism.
- Y = Language disorder grades.

Pearson coefficient measures the strength and the direction of the relationship between the two variables.

- **The formula of Pearson coefficient :**

$$R = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

- X = Level of autism.
- Y = Language disorder grades.
- \bar{X} = mean X
- \bar{Y} = mean Y
- n = the number of participant

$$\bar{X} = \frac{\sum X}{n}$$

$$\bar{Y} = \frac{\sum y}{n}$$

X values :	Y values :	(x - \bar{x})	(y - \bar{y})	(x - \bar{x})²	(y - \bar{y})²
06	09	0.15	2.73	0.02	7.49
05	03	-20.84	-3.26	0.70	10.64
07	09	1.15	2.73	1.34	7.49
07	05	1.15	-1.26	1.34	1.59
07	05	1.15	-1.26	1.34	1.59
08	07	2.15	0.73	4.65	0.54
08	05	2.15	-1.26	4.65	1.59
03	03	-2.84	-3.26	8.07	10.64
05	03	-0.84	-3.26	0.70	10.64
03	05	-2.84	-1.26	8.07	1.59
05	05	-0.84	-1.26	0.70	1.59
03	09	-2.84	2.73	8.07	7.49
07	09	1.15	2.73	1.34	7.49

04	07	-1.84	0.73	3.39	0.54
03	05	-2.84	-1.26	8.07	1.59
08	09	2.15	2.73	4.65	7.49
07	05	1.15	-1.26	1.34	1.59
08	07	2.15	0.73	4.65	0.54
07	09	1.15	2.73	1.34	7.49

• **Results & Calculation :**

- N=19
- \bar{X} =5.842
- \bar{Y} =6.263
- **r=0.839**

(4) **The graphical chart :**

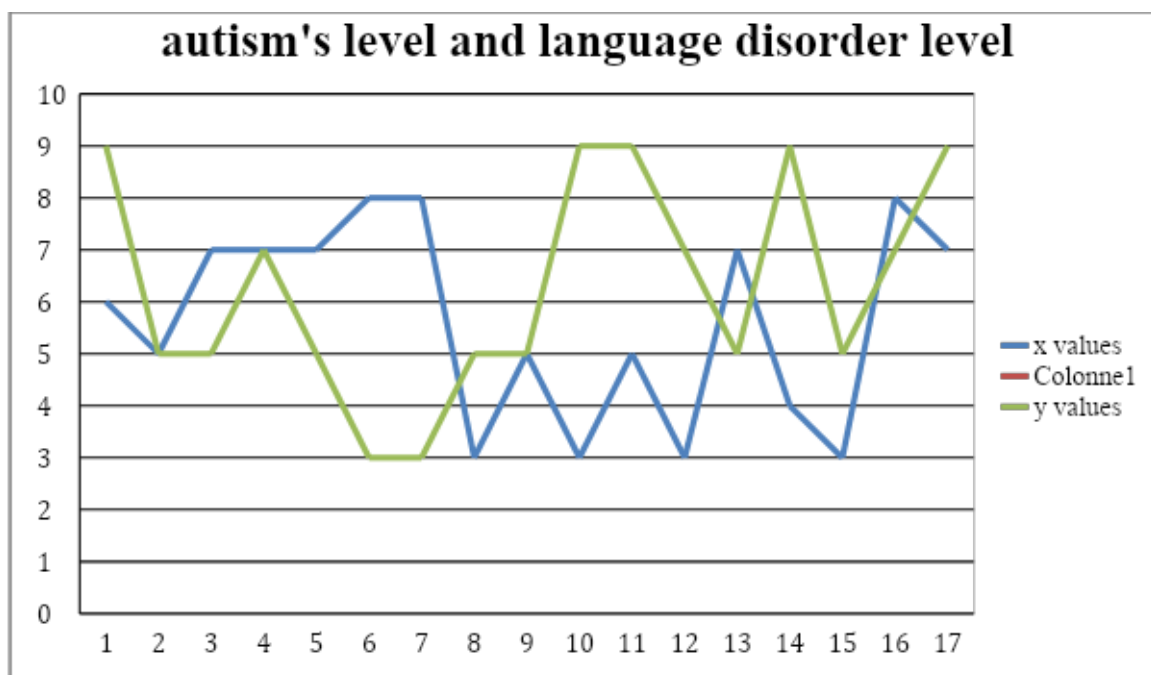


Chart 02:Autism's level and language disorder level

These graphical charts represent the level of autism and language disorder according to each participant. The two levels of the same child are close to each other.

Chapter three:

***Data Displaying and Analysis, Discussing
and Interpreting the Results in the light of
literature review***

1. Data Displaying and Analysis:

In this chapter we are going to display the main features of the impaired language of the study participants.

1.1 Level of Impairment:

The level of impairment differs from one participant to another. Since, autism spectrum disorder affects the main components of language .It classifies according to:

1.1.1 Sounds:

Human speech sound is the coordination and the control of certain processes, that they produce phonemes that convey specific message or information.

A) Articulation process :

The articulation process involves the movement of specific organs to produce sounds (vowel, consonant). The majority of children who are diagnosed with ASD, they faced challenges in pronouncing words specially the unfamiliar words. So, they imitate sounds or the way speakers articulate. During our experience, we noticed that autistic children produce different realization to the same phoneme for example:

- There are some cases instead of producing /k/ sound they use /t/ sound, for instance the word (كعك) is pronounced (تعت).
- There are also cases in which they pronounced /r/ sound instead of /l/ sound, for example the word (سرير) is used as (سلیل).
- They use /z/ sound instead of /ژ /, for example the word (جزر) is pronounced (ززر).

The autistic children have random speech that is not governed by place, voicing level and manner (VPM), so they give aspiration to non aspirated consonant. Also, vocal stemming and echolalia are used as way to express anxiety, sometimes happiness, and admiration. Vocal

stemming represents the repetitive vocalization such as gagging, bubbling and mimicking sounds. While, echolalia is the repetition of words.

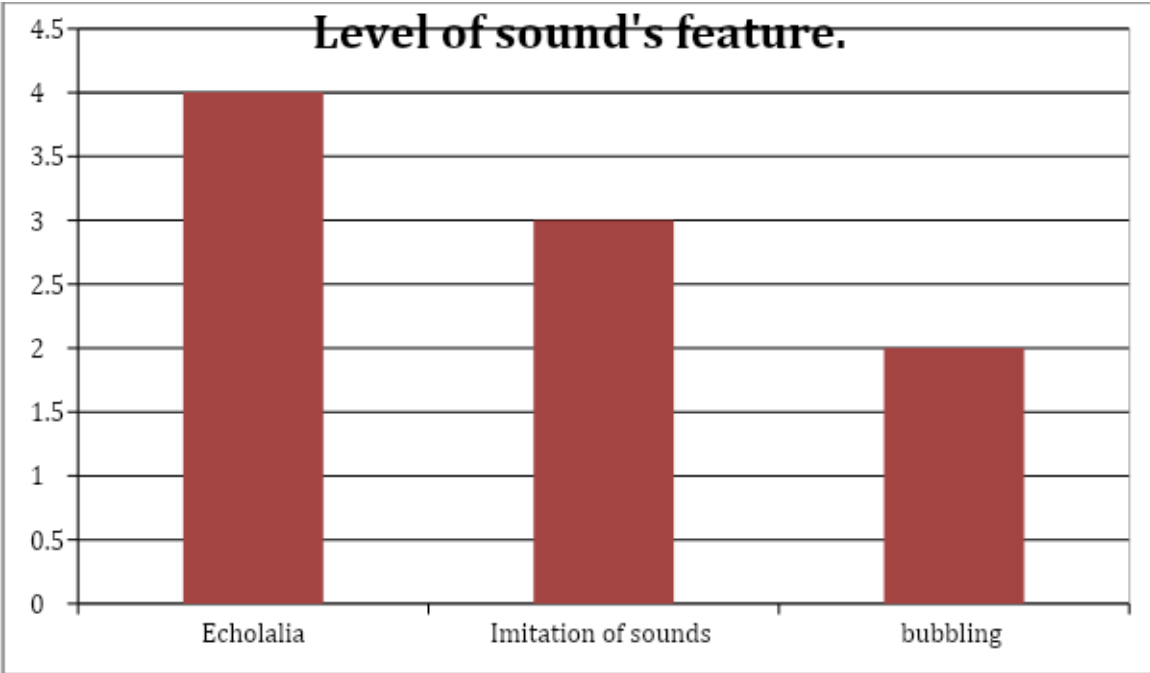


Chart 03: Levels of sound's feature.

According to our results, we have created this histogram to illustrate the level of each feature.

B) Intonation:

Intonation is the level of sounds used according to each situation in the speech. It can be up or down. Generally, the children with ASD faced challenge concerning this point. Since, the majority of autistic children they could not transmit their ideas and their emotions (love, agreement, etc.) through their high level of sound.

1.1.2 Structure :

Our daily expressions are governed by structures, which arrange the linguistic elements to form a complete meaningful sentence.

A) Sentences structures:

The autistic children use specific structure in words and sentences. We noticed that the majority of autistic children depend on using words instead of sentences. For instance, he/she depends on one word like (water) and shorter utterances rather than using request like (could you give me some water, please?) or complex sentences. Also, they could not differentiate between male and female. So, those children attribute the male by female's pronouns and vice versa, for instance child uses the verb in Arabic “(يلبس) and (يشرب) to a female. Additionally, the prepositions represent the linguistic element that autistic children could not employ correctly in their speech for example: autistic child said :(I'm going from home) instead of (I'm going to home.)

B) Words structures:

➤ In addition, children with ASD employ some word formation process like clipping, jargon and back formation as way to shorten the longer words and to avoid the direct contact with the others. Here are some examples used by autistic children:

- The word (تفك) means (كتب).
- The word (سقط) used instead of (سقط).
- The word (وقة) means (ورقة).

1.1.3 Meaning :

Each person perceives the world differently from others. Generally, children with ASD can only understand the semantic meaning (literal meaning) of their native language but not pragmatic meaning (implied meaning). Thus, they can recognize all the concrete objects. Unlike, the emotions represents for them hard task to understand; since the feelings and emotions are abstract concepts such as love and hate.

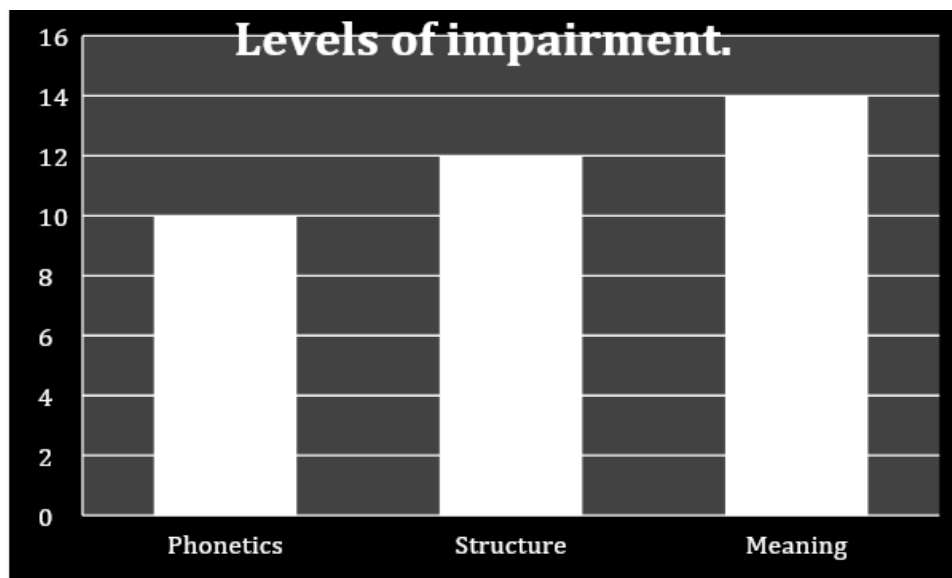


Chart 04: Levels of impairment.

This histogram shows the classification of data according to each level of impairment .So, we noticed that the high level represents the impairment in meaning. Since the weakness in phonological system and the impediment structural system leads to the impairment in meaning.

2. Discussing and Interpreting the Hypotheses in the Light of the Literature Review:

In this stage, we are going to interpret the results in the light of hypotheses discussion. Our study suggested three hypotheses. They are:

2.1 The general hypotheses:

The general hypothesis of the study states that « Autism spectrum disorder is psychological phenomenon that appeared at early age ».

According to **Lord C, Risi S, DiLavore PS, Shulman C, Thurm A, and Pickles** autism spectrum disorder (ASD) is an abnormal psychological state that has a great impact on social interaction, cognitive level and behaviors. Children with (ASD) can interact and learn but in different ways from others. ASD symptoms can appear in the first three years. The concept of autism has evolved during time. It changes in its meaning and its symptoms.

Furthermore, there are some theories that assume that autistic children pass through difficult psychological conditions, which causes autism. Also, another research emphasizes genetic influences on autism, with concordance rates among identical twins ranging from 60-90% Evidence-based interventions for autistic children focus on enhancing cognitive, communication, and social skills through reinforcement while decreasing problem behaviors through approaches like applied behavior analysis (ABA) and developmental models.

Autism spectrum disorder (ASD) is an abnormal psychological state that has a great impact on social interaction, cognitive level and behaviors. Children with (ASD) can interact and learn but in different ways from others. ASD symptoms can appear in the first three years.

Lord C, Risi S, DiLavore PS, Shulman C, Thurm A, Pickles A. Autism from 2 to 9 years of age. Arch Gen Psychiatry. 2006 Jun;63(6):694-701

We confirm that autism spectrum disorder is psychological phenomenon. It inhibits all the aspects related to child's life, in which he/she could enjoy his/her life phases. Autism spectrum disorder does not have a specific cause, but it appears through several symptoms. Developmental language disorder is one of the symptoms and one of the hard outcomes of autism. In which, the autistic children cannot understand or even use their mother tongue effectively. Also, they have poor eye contact and lacks facial expression which could not

express emotions or feelings and appears unaware of others' feelings. They prefer isolation and they behaved with aggressive way sometimes.

2.2 Specific hypotheses:

There are two specific hypotheses:

2.2.1 First specific hypothesis:

It states that: « Language disorder has several features such as echolalia, jargon, and metaphorical language ».

According to Kurt Vonnegut (2014) his work entitled 'Slaughterhouse Five' concluded that Echolalia is a mental disease which makes people immediately repeat things that well people around them say . Also, Bleszynski (2010) to Kurt Vonnegut (2014) his work entitled 'Slaughterhouse Five' claimed that echolalia is considered a conscious action aimed at presenting certain content undertaken without the ability to act independently within a segmental system. It involves the autistic person in the interaction.

Thus, they suffer from different linguistic, echolalia deficiencies is the common feature that majority of the autistic child characterized by. In our experiences, most of autistic children repeat our question at least twice or three times for example they repeated the questions related to games. So, it occurs in about 75% of children with ASD. It is the repetition of the words and the phrases that autistic child heard, in order to serve different needs such as memorizing information or expressing enjoyment in the rhythm of language.

Albert Einstein said that: « If you can't explain it simply, you don't understand it well enough.»

Jargon is classified as the second common feature after echolalia. We noticed during our conversations that some children create words, sounds or gestures without any sense for us

but for them they have meaning such as clapping hands to attract the attention. This is what is known by jargon.

Metaphorical language is the least feature that we have noticed on our Sample .Thus, they cannot express themselves fluently, also, they misunderstand the figurative language proverbs and idioms.

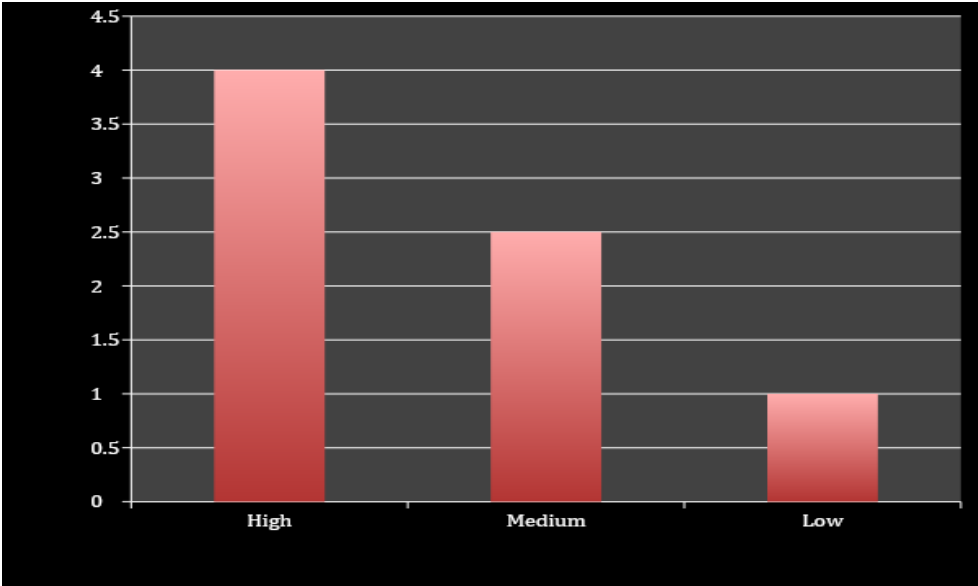


Chart 05: The arrangement of levels.

This histogram explains the arrangement of levels, in order to use them as based to classify our data. According to our outcomes:

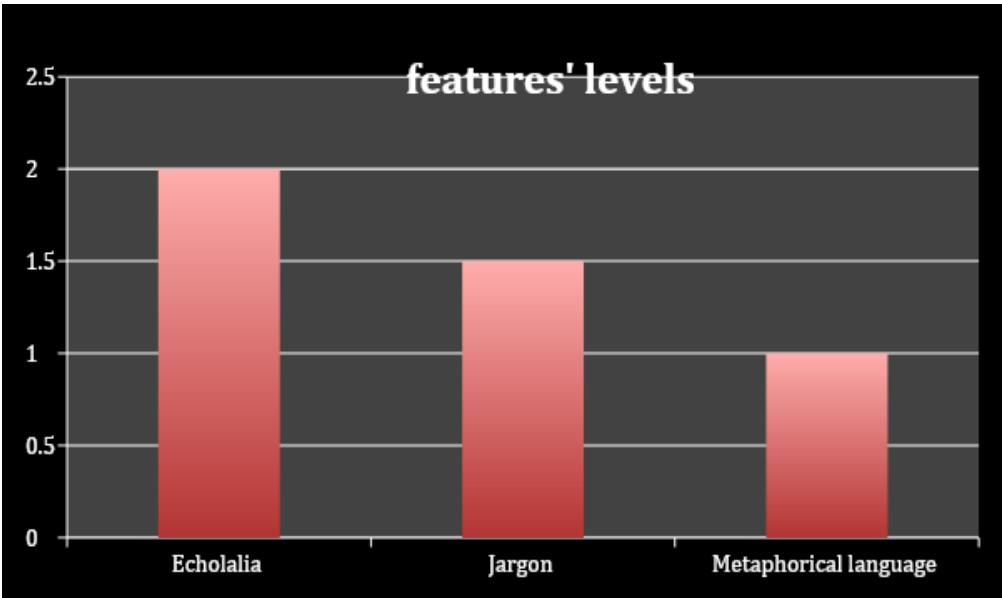


Chart 06: Features' levels.

We noticed that echolalia arranged as the high features that is appeared on our sample, then jargon represents the medium level since 50% from the participants do not have this feature. Metaphorical language classified as the low level.

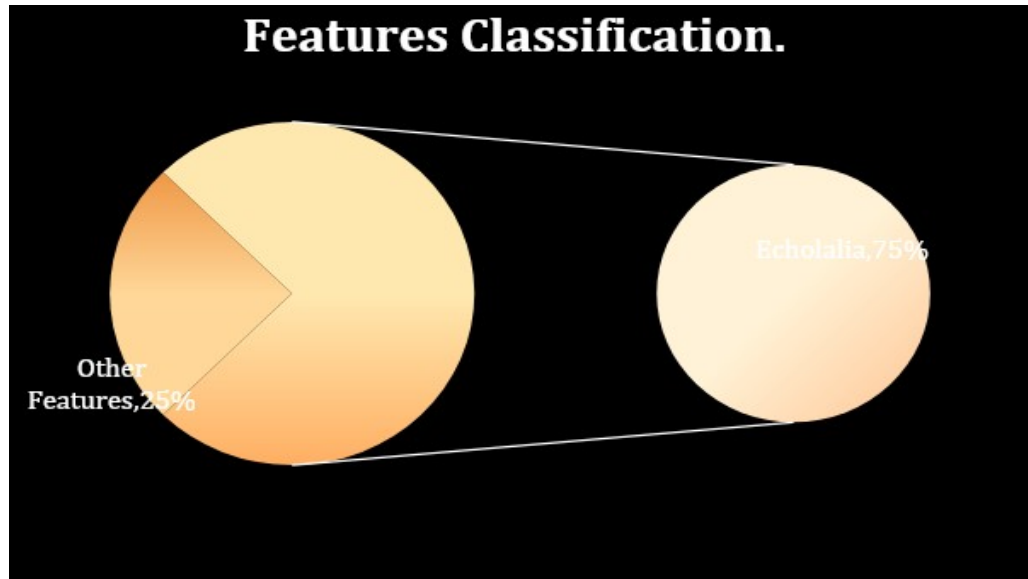


Figure 09 : features classification.

2.2.2 Second specific hypothesis:

It states that: « Autism is one reason behind language disorder phenomenon; so they are interrelated ». After the calculation of the results upon the correlation coefficient Pearson. We found($r= 0.83$) which confirm that there is significant correlation between autism and language disorder can lead to causation with 80%.

Pearson's Coefficient Result	Degree of Freedom	Significance Level	N
0.83	Df=(n-1)	$\alpha= 0.5$	19

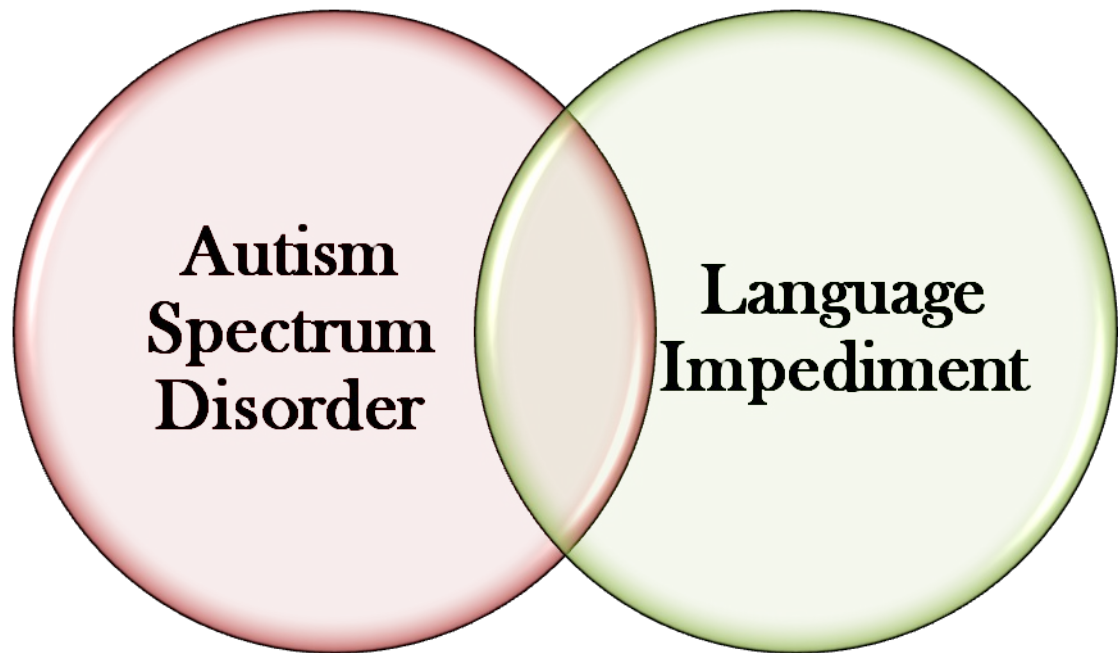


Figure 10: The correlation between autism and language impediment.

This figure shows the interconnection of the two phenomena autism and language impediment.

3. Recommendations :

In this section, we present some suggestion and recommendation made by psycho-therapists that could help autistic children and their parents in specific and the whole society in general:

- Having an idea about autism spectrum disorder is necessary nowadays because all we are responsible for those children.
- Autistic children are children with specific needs .So, we have to accept them and at least integrate them as part of the society.
- Helping their parents with the simplest action can be able to achieve great success and to change several minds.

General conclusion:

Autism is a unique challenge that children and parents face. It affects a child's life in general and language development in specific. Autism is a developmental disorder that is considered as one of the most severe disorders as it affects all the child's aspects including language development. It is a challenge of indeterminate causes. Therefore, the only thing that is recommended is the early intervention that reduces future risks. There are several interventions to develop autistic children's language and children with autism have their unique challenges. So, each autism intervention should be tailored to meet the child's specific needs.

It is harder for children with autism to learn and use language. The children diagnosed with autism have diagnostic features that are varied but they interpret difficulties in expressive and receptive language that can represent a great challenge in social interaction at semantic level first; then the pragmatic level. This study came up with interesting results. The results revealed that speech language pathologists use a practical framework that led to make great efforts in vain in which adversely affects the development of the autistic child.

Thus, this study aimed to highlight autism and language disorder as concepts. Also, we discovered the three main deficiencies related to this phenomenon, which represent echolalia as the most common feature, jargon as the second one and metaphorical language. We investigated at the end of research the correlation between autism spectrum disorder and language disorder. Based on the previous studies, this research found out interesting results according to new variables. Thus our work is crucial for parents, teachers and normal people at least to recognize the early signs and the symptoms of autism spectrum disorder. Since, this disorder is not necessarily linked to mental retardation. To conclude, these children have the chance to follow a regular education can only increase their chance to flourish in their lives, and bring something more to society.

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Appendices

Appendix A:

الجمهورية الجزائرية الديمقراطية الشعبية
People's Democratic Republic of Algeria

Ministry of Higher Education and Scientific Research
University of Ibn Khaldoun, Tiaret
Faculty of Letters and Languages
Department of English



وزارة التعليم العالي والبحث العلمي
جامعة ابن خلدون، تيارت
كلية الآداب واللغات
قسم اللغة الإنجليزية

إلى السيد (ة): مديري المؤسسة الاستشفائية للأمراض العقلية والنفسية

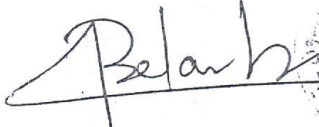
الموضوع: طلب السماح للطلبة بإجراء ترميم

بصفتي رئيس قسم اللغة الإنجليزية بكلية الآداب واللغات بجامعة ابن خلدون تيارت، أتقدم إلى سيادتكم الموقرة بطلب السماح للطلبة
بجناحي حياة وطيفورا اية انفال المسجلتين بالسنة الثانية ماستر لسانيات اللغة الإنجليزية بنسب القسم بإجراء بحث علمي لإعداد مذكرة
التخرج.

وفي الأخير تقبلوا مني أسى عبارات التقدير والاحترام

حرر بتيارت في 2023/12/0512

رئيس القسم


بلعربي خالد
رئيس قسم اللغة الإنجليزية
بكلية الآداب واللغات



المؤسسة الاستشفائية المتخصصة في الأمراض العقلية والنفسية
رقم: ...
بتاريخ: 17/12/2023

مدير المؤسسة الاستشفائية
المتخصصة في الأمراض العقلية
النفسية: براهيم موليوط



Appendix B :

الجمهورية الجزائرية الديمقراطية الشعبية
People's Democratic Republic of Algeria

Ministry of Higher Education and Scientific Research
University of Ibn Khaldoun, Tiaret
Faculty of Letters and Languages
Department of English



وزارة التعليم العالي والبحث العلمي
جامعة ابن خلدون، تيارت
كلية الآداب و اللغات
قسم اللغة الإنجليزية

إلى السيد (ة): مديري جمعيات التوحد

الموضوع: طلب السماح للطلبة بإجراء تريض

بصفتي رئيس قسم اللغة الإنجليزية بكلية الآداب واللغات بجامعة ابن خلدون تيارت. أتقدم إلى سيادتكم الموافقة بطلب السماح للطلبة
بجياوي حياة وطيفور أية انقال المسجلتين بالسنة الثانية ماستر لسانيات اللغة الإنجليزية بنفس القسم بإجراء بحث علمي لإعداد مذكرة
التخرج.

وفي الأخير تقبلوا مني أسى عبارات التقدير والاحترام

حرر بتيارت في 2023/12/0512

رئيس القسم

Belab
Belab
رئيس قسم اللغة الإنجليزية
كلية الآداب و اللغات

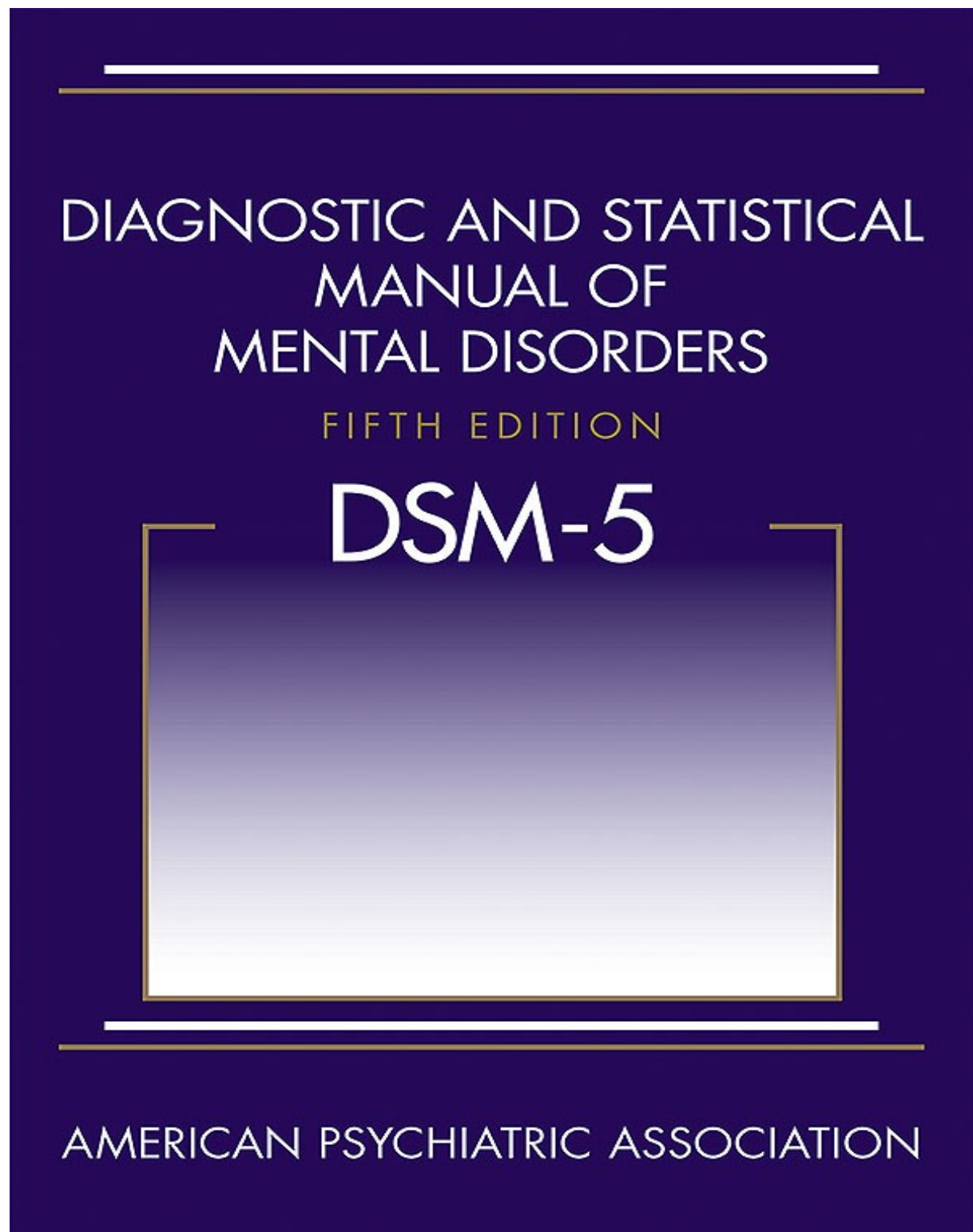
lu et approuve
رئيس الجمعية
عرواح الطيب

Appendix C : Psychiatry of Tiaret



Appendix D: pediatric service.





Abstract:

Investigating speech patterns Features within Children with Autism Spectrum Disorder is crucial subject nowadays, since the number is increasing in the light of the lack awareness of this phenomenon. This study focuses on investigating speech patterns features within children with autism spectrum disorder focusing on echolalia, jargon and the metaphorical language. It aims to maintain the difficulties and challenges that face the autistic children in understanding and producing the language at semantic and pragmatic levels. For this reason, we designed a descriptive analytical case study research targeting children with autism spectrum disorder at psychiatry of Tiaret and Nour association in ksar Chellala. In order to undertake this research, we use mixed method to collect qualitative and quantitative data through using observation and interview as research instruments. The study is designed to describe autism spectrum disorder, to analyze the linguistic deficiencies within patient with autism and to explore the relationship between autism and language disorder. The results describe autism as psychological phenomenon and they analyze the linguistic features to find out the correlation between the autism and language disorder.

Key words: Autism spectrum disorder, Echolalia, Jargon, Metaphorical language

Résumé :

L'étude des caractéristiques des modes de parole chez l'enfant atteints de troubles du spectre autistique un sujet crucial de nos jours, car leur nombre augmente en raison du manque de sensibilisation à ce phénomène. Cette étude se concentre sur l'étude des caractéristiques des modèles de parole chez les enfants atteints de troubles du spectre autistique en se concentrant sur l'écholalie, le jargon et le langage métaphorique. Il vise à maintenir les difficultés et les défis auxquels sont confrontés les enfants autistes dans la compréhension et la production du langage aux niveaux sémantique et pragmatique. Pour cette raison, nous avons conçu une étude de cas analytique descriptive ciblant les enfants atteints de troubles du spectre autistique à la psychiatrie Tiaret et l'association Nour à ksar Chellala. Afin d'entreprendre cette recherche, nous utilisons une méthode mixte pour collecter des données qualitatives et quantitatives en utilisant l'observation et les entretiens comme instruments de recherche. L'étude est conçue pour décrire les troubles du spectre autistique, pour analyser les déficiences linguistiques chez les patients autistes et pour explorer la relation entre l'autisme et les troubles du langage. Les résultats décrivent l'autisme comme un

phénomène psychologique et analysent les caractéristiques linguistiques pour découvrir la corrélation entre l'autisme et les troubles du langage.

Thèmes clés : troubles du spectre autistique, écholalie, jargon, langage métaphorique

الملخص:

يعد البحث في سمات أنماط الكلام لدى الأطفال المصابين باضطراب طيف التوحد موضوعاً بالغ الأهمية في الوقت الحاضر، حيث أن أعداده في تزايد في ظل قلة الوعي بهذه الظاهرة. تركز هذه الدراسة على دراسة ميزات أنماط الكلام لدى الأطفال الذين يعانون من اضطراب طيف التوحد مع التركيز على الايكولاليا والمصطلحات واللغة المجازية. ويهدف إلى الحفاظ على الصعوبات والتحديات التي تواجه الأطفال المصابين بالتوحد في فهم وإنتاج اللغة على المستويين الدلالي والعملي. ولهذا السبب، قمنا بتصميم دراسة حالة وصفية تحليلية تستهدف الأطفال الذين يعانون من اضطراب طيف التوحد في الطب النفسي لتيارت وجمعية نور بقصر الشلالة. من أجل إجراء هذا البحث. نحن نستخدم طريقة مختلطة لجمع البيانات النوعية والكمية من خلال استخدام الملاحظة والمقابلة كأدوات بحث. تم تصميم هذه الدراسة لوصف اضطراب طيف التوحد، وتحليل القصور اللغوي لدى مريض التوحد واستكشاف العلاقة بين التوحد واضطراب اللغة. ووصفت النتائج التوحد كظاهرة نفسية، وتم تحليل السمات اللغوية لمعرفة العلاقة الارتباطية بين التوحد واضطراب اللغة

الكلمات المفتاحية: اضطراب طيف التوحد، الايكولاليا، المصطلحات اللغوية، اللغة المجازية