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# Language-Improving Activities for Children with Autism Spectrum Disorder: Case Study of Amel Center in Adrar

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# Dedication

This work is dedicated to:

**My Father, may Allah have mercy on him**

**My mother, my sisters, and my brothers**

**My fiancé**

**And to All my friends**

# Acknowledgements

I would like to thank Mr. Boukli, my supervisor, for his help and guidance.

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I would like to thank Prof. Mostefaoui for his endless support.

I would like to thank my family for supporting me during this path especially my dear father.

**Thank you all for your endless love, support and encouragement.**

## Abstract

Language is used in every aspect of our daily life, any delay or exceptional development of this means of communication can deteriorate our interaction with others. Those delays can be an atypical way of receiving, processing, or producing utterance. This research tackles one of the disorders that affect the normal use of language: Autism Spectrum Disorder (ASD) which is a developmental disorder that affects social interaction, communication, and behaviors. Most kids diagnosed with ASD are unable to interact with others because of the rare or poor use of language. They show difficulties to express their needs so they just use a repetitive behavior. They seem to have no indifference to pain or high temperature, respond to specific sounds, and show excessive interest in objects. Lastly, they might be disturbed if any changes occurred to their daily routine even if it was their meal. However, many centers specialized in taking care of affected kids have developed special activities and workshops to help them learn the language. Those centers created personalized programs to provide a better help. They also tend to assist kids directly to overcome the obstacles and orient parents on how to help their exceptional kids. This thesis was supposed to focus on describing the approaches, methods, tests, and assessments used by the specialized "Amel Center for Autistic Kids" in Adrar, Algeria. Unfortunately, the pandemic situation and the lockdown that was imposed thereafter hindered the fulfillment of this last practical part of the thesis, thereby limiting this research work to the theoretical part only.

***Keywords:*** ASD, Language Acquisition, typical development, exceptional development, disorder, language impairments

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# List of Abbreviations

| | |
|---|---|
| LAD: | Language Acquisition Device |
| CDS: | Child-Directed Speech |
| LASS: | Language Acquisition Support System |
| ASD: | Autism Spectrum Disorder |
| AS: | Asperger's Syndrome |
| PDD-NOS: | Pervasive Developmental Disorder-Not Otherwise Specified or Atypical Autism |
| DSM VI: | Diagnostic and Statistical Manual of Mental Disorders |
| CDC: | Center for Disease Control and Prevention |
| RRBs: | Restricted Repetitive Behaviors |
| AAIDD: | American Association on Intellectual and Developmental Disabilities |
| WHO: | World Health Organization |
| PRT: | Pivotal Response Treatment |

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# General Introduction

Language characterizes human beings from all other beings. We use it to communicate through expressing emotions and needs, building relations, and interacting with others. Everything we do is based on using language. However, any delay or exceptional development of this means of communication can deteriorate our interaction with others. Those delays can be an atypical way of receiving, processing, or producing utterance.

This research tackles one of the disorders that affect the normal use of language: Autism Spectrum Disorder (ASD) which is a developmental disorder that affects social interaction, communication, and behaviors. Most kids diagnosed with ASD are unable to interact with others because of the rare or poor use of language. However, many centers specialized in taking care of affected kids have developed special activities and workshops to help them learn the language.

This research aims to study two main points:

- The nature of this developmental disorder and how it affects the language.
- How specialized centers in Adrar deal with kids and what ways they use to help them improve language use?

This research paper includes three chapters. The first chapter is entitled “Typical Development of Language” and introduces normal language development in relation with the brain. Additionally, it provides an overview on typical language acquisition. The second chapter deals with “Exceptional Language Development” in which the targeted disorder is highlighted, its symptoms, diagnosis, and its relation with language delays. As for the third chapter, it presents a specialized center case study to point out how to deal with ASD patients in Adrar. However, the Covid-19 pandemic lockdown hindered the conduct of the practical part, and the thesis is limited to the theoretical part only.

# Chapter One:

# Typical Development of Language

# 1. Chapter One: Typical Development of Language

## 1.2 Introduction

Languages are the main feature that humans have. Many studies and experiments focus on this special feature under the scope of linguistics. Neurolinguistics, as a sub-discipline of linguistics, studies some important aspects of the human language that are the location of language in the brain, and how brain injuries influence the language. In other words, Neurolinguistics tries to figure out language impairments in relation with damaged language-related areas in the brain. It tries to study how receiving, processing, and producing the language occur in undamaged brains.

## 1.2 Language and Brain

Any human activity is controlled, processed, and implemented by the brain through nerve impulses, which refer to the manner nerve cells or neurons communicate with each other through electrical signals towards the other organs like hands while catching, legs while walking, or lips while talking. As the language is the significant activity that distinguishes humans from the other living species, certainly the human's brain contains some parts that are responsible for this function. Neurolinguistics is concerned with studying the relation between the brain and language. This field of study tries to locate language functions in the brain, and identify brain influence on language, precisely, the influence of brain damages and disorders at the language lobe level.

## 1.3 The Brain's Structure

The brain is a complex organ composed of three main parts: brainstem, cerebrum, and cerebellum (Fig.1). The brainstem connects the other two parts with the spinal cord. It mainly deals with unconscious or automatic activities, such as breathing, heartbeats, and

body temperature. The cerebellum's function is to manage muscle movements and the body's balance and posture. Lastly, the cerebrum is the largest part of the brain. It is composed of the right and left hemispheres linked with fibers, called the corpus callosum, that transmit messages to the body; each hemisphere controls the opposite body side (Fig.2). It is responsible for functions like processing touch, hearing, vision, speech, emotions, and reasoning. However, the left hemisphere is dominant in hand use and language in about 92% of people (Mayfield, 2018).

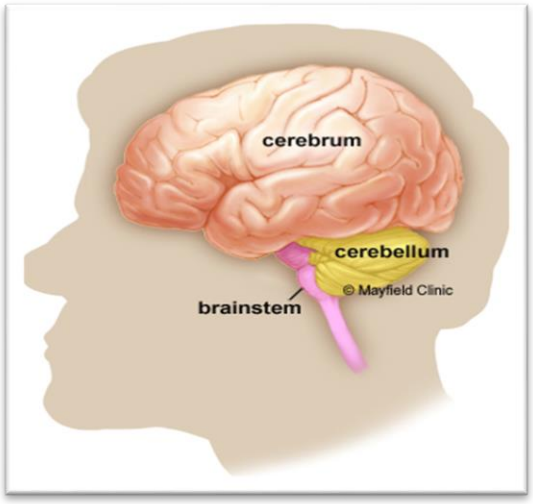
## 1.4 Neurolinguistics as a Science

Neurolinguistics is defined as the study of the relationship between language and the brain. It is an interdisciplinary branch of linguistics that involves the relations between psychology, neurology, biology, and speech pathology. However, it deals also with experimental research to figure out the essence of these relations using different methods and techniques. In other words, Neurolinguistics studies damaged brain relationship with language disorders and its role in language impairments; it studies undamaged brain to understand the development of language and communication and their relation with brain areas (Ahelsén, 2006, p. 3).

The emerge of Neurolinguistics as a science started with Broca and Wernicke and their interest to demonstrate and discover the brain's language-related areas although there were ancient neuroscience interests well before Egyptians and their concept of trepanation, and Greek concepts and research about the brain fluids and language. Therefore, the term Neurolinguistics appeared in the late 1970s by Whitaker in his series "Studies in Neurolinguistics" (Simpson, 2011, p. 460).

Figure 1

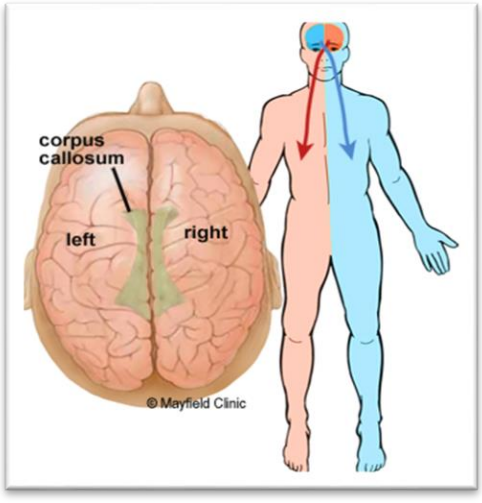
*The Brain's Structure.*




Source: *Mayfield Clinic*, by Mayfield Clinic, 2018. (https://mayfieldclinic.com/pe-anatbrain.htm).

Figure 2

*The Two Brain Hemispheres.*




Source: From *Mayfield Clinic*, by Mayfield Clinic, 2018. (https://mayfieldclinic.com/pe-anatbrain.htm).

## 1.5 Language Areas in the Brain

When it emerged as a science, Neurolinguistics focuses on discovering where the language is represented in the brain; many neurolinguists have been trying to spot out the brain areas that are responsible for language functions, such as how the human brain processes the language lexically, grammatically, semantically and pragmatically. Neurolinguists such as Broca observed patients with certain brain injuries to detect the influence of that injury on language impairments.

### 1.5.1 Gage's Case

Phineas P. Gage, a railroad foreman survived a massive accident while blasting away rocks to stretch a new railroad in September 1848, near Cavendish, Vermont (Yule, 2010, p. 157). An iron rod was thrown after some gunpowder exploded, and it entered Gage's left cheekbone and exited from the top of his skull. According to his doctors, this injury was self-recovered; however, he did suffer neither motor problems nor speech impairments. Gage died because of Epileptic seizures which area disorder of the nervous system that causes a state of unconsciousness with violent body movements. Thus, Gage's injury is medical evidence that the language-related areas are not in the right hemisphere of the brain (Encyclopedia Britannica, 2020, para.3).

### 1.5.2 Leborgne's Case

Louis Victor Leborgne was born in July 1809 in the French town Moret Sur Loing. Leborgne's health problems started with epileptic fits; therefore, he lost his ability to speak at the age of 30.Leborgne was also known as "Tan" which was the only word he could pronounce. Although he entered the psychiatry department of Bicêtre hospital, his health conditions did not improve, so he was oriented to the French surgeon Paul Broca. Broca

noted that Leborgne suffered right limb paralysis and lost his ability to stand by himself. His digestion and left body side were normal, but he suffered gangrene and infections in his lower right side, lost his right eye vision and the ability to speak and write. Broca stated that "This abolition of speech, in neither individuals who are paralyzed nor idiots, constitutes a symptom so singular that it seems to me useful to designate it with a special name. I will give it, therefore, the name of aphemia" (Nasser Mohammed et al., 2018, p. 122). That is to say, any brain injury which causes language impairment or difficulty is termed Aphasia. Louis Leborgne's medical condition made it clearer that language areas were located in the left hemisphere just above the left ear.

### 1.5.3 Broca's Area

After the case of Leborgne, Broca discovered a language-related area which was named Broca's area. This latter is responsible for speech production or articulation as it contains neurons that allow conveying impulses to the articulatory system to produce utterance (Nasser Mohammed et al., 2018, p. 122). Broca's area, also called anterior speech cortex, is located in the frontal anterior lobe (Fig.3). In 1860, Broca discovered that any damage in this specific area involves the inability to articulate utterance whereas nothing happens if the damage affected the same mirror area in the right hemisphere. Losing the ability to produce speech because of a brain injury is known as Broca's Aphasia (Yule, 2010, p. 158).

### 1.5.4 Wernicke's Area

It was discovered in the 1970s by the German neurologist Carl Wernicke. Wernicke's area or posterior speech cortex is located in the temporal lobe, and it is connected to Broca's area by the Arcuate Fasciculus (Fig.3) (Yule, 2010, p. 159). This area is responsible for language or speech comprehension, so any lesion in this area causes

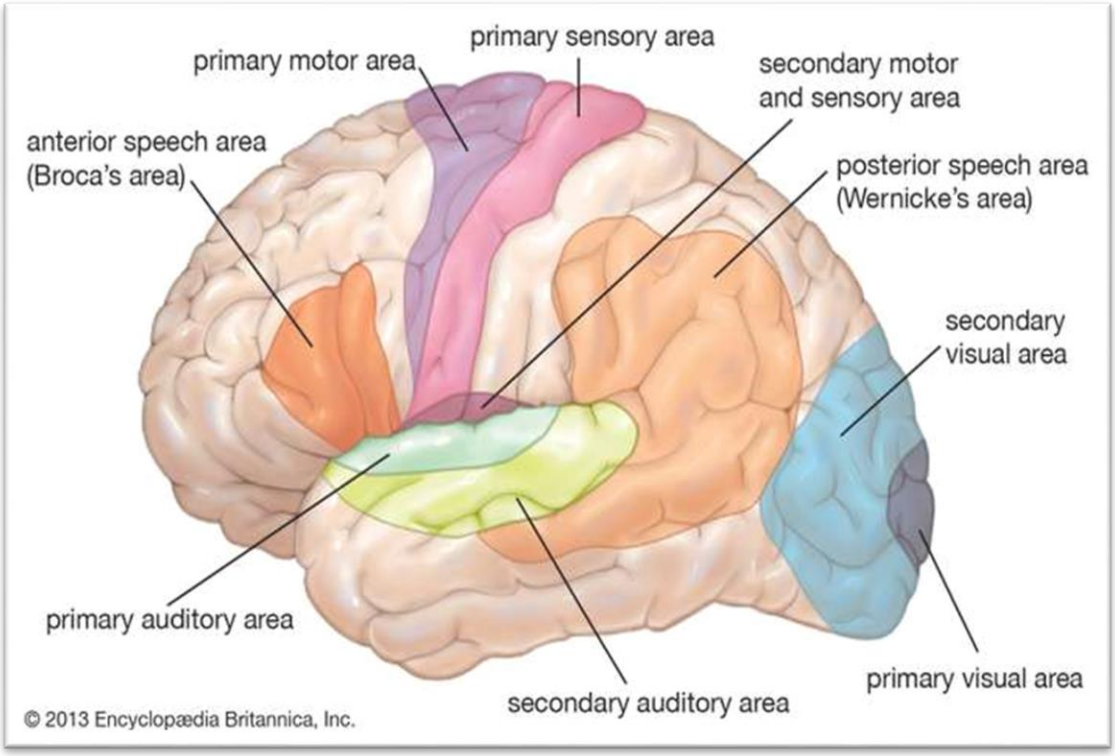
losing the ability to comprehend or process the speech. However, patients damaged in this area have neither producing speech sounds nor writing difficulties. Thus, this fluent but meaningless utterance is called Wernicke's Aphasia (Yule, 2010, p. 159).

### 1.5.5 The Motor Cortex and the Arcuate Fasciculus

Although the Motor Cortex is concerned with muscles and their movement, it plays a significant role as a language-related area. The part of the Motor cortex near the Broca's area is proved to be responsible for the muscles of the articulatory system while speaking as the face, jaws, tongue, and larynx (Fig.3). This was discovered by Penfield and Roberts (1959). They examined language-related areas while speaking using brain activation methods (Yule, 2010, p. 159).

Figure 3

*Functional Areas of the Human Brain.*




Source *Britannica Encyclopedia*, by Britannica, 2020. (https://www.britannica.com/science/Broca-area).

## 1.6 Language Acquisition

Languages have always been an interesting subject matter for scientists. Many types of researches have been made about languages. Language was identified as a brain function. For the sake of knowing its location in the brain, language-related areas were discovered. It was important to know how humans understand and produce the language since it is what distinguishes them from other creatures. Thus, another issue was questioned which is whether humans instinctively know the language, since they all have language areas in their brains, or they acquire it from their surrounding environment with the help of these language-related areas. Therefore, without any instructions, children start to use the language at a very young age. This process is known as language acquisition.

### 1.6.1 Definition of Language Acquisition

Yule (2010) defined Language Acquisition as a natural process and unconscious progress of language at the pre-school age level (p. 171). It is the process by which children develop their capacities to comprehend and use language in its situational aspects, such as expressing their hunger or pain by forming simple sentences, that may be syntactically wrong, or simply using only one word like “bread”. Children acquire the language according to their surroundings. For instance, if the child is raised with deaf parents and is exposed to television, he will not acquire the language used on the television but his parents’ sign language.

### 1.6.2 Stages of Language Development

Language acquisition needs special circumstances to naturally occur, such as environmental contact with other language users. However, it is important to note that children have an innate capacity to use the language which develops with the help of

external factors. Children generally develop their language at the same time through the same stages: Pre-linguistic stage, One-word stage, Two-word stage, and multiple-word stage. This development is bound to the physical or the biological growth of the child's brain. In other words, language acquisition is related to the development of the brain functions, the frequency of communication with language users, and to the psychological aspects such as motivation and reinforcement.

### 1.6.2.1 Pre-Linguistic Stage

The pre-linguistic phase, which approximately lasts from 0 to 13 months old, is the period before the child utters his first meaningful word. During this phase, babies bring their attention to objects non-verbally by touching or pointing, and they communicate by crying, cooing, and babbling. When cooing, they play with their vocals and use vowels before they develop the ability to bring the back of the tongue to meet the back of palate so that to produce sounds as[k]and [g] from which the name of the item is originated. Then, in the later cooing stage, they combine vowels and consonants to form sounds like [ba] and [ga]. Whereas in babbling, the baby starts to combine two bilabial sounds like [ba-ba] and [ma-ma] (Mehawesh, 2014, p. 19).

### 1.6.2.2 The One-Word Stage

By the age of 13 months, children start to use single units or utter only one word to represent their needs. The child starts uttering words in isolating, mainly producing the target word only; for instance, water in response to thirst or, food in response to hunger. This is called holophrastic, i.e. that a single word represents a whole sentence. Yule (2010) noted: "While many of these holophrastic utterances seem to be used to name objects, they may also be produced in circumstances that suggest the child is already extending their use. An empty bed may elicit the name of a sister who normally sleeps in the bed, even in

the absence of the person named" (p. 174). In other words, a child can say both words: "bed", and "the person's name", but cannot form a complex sentence.

### 1.6.2.3 The Two-Word Stage

By 18 to 20 months old, children start to use a combination of two words to express what they want. For example, the child says: "mama go" whether to say that his mother went or to ask if he can go with her. It depends on the situation, the context, and his or her intonation. In other words, in this phase, the child uses language in social situations and waits for feedbacks to know that talking worked. He becomes as a conversational partner (Yule, 2010, p. 174).

### 1.6.2.4 Multiple-Word Stage

Approximately at the age of 24 months, a child will be able to produce multiple units' speech. His lexical background and ability to form sentences with a correct order have grown in which his speech is more likely to adult's language. This stage is also known as 'Telegraphic Speech' i.e. a child can speak a correct sentence to represent his own wants. For instance, he or she can say that they want to go with his or her father in the car by saying "Baba go car" (Yule, 2010, p. 174).

## 1.6.3 Language Acquisition Theories

Many researchers focused on language development as it represents a vital aspect of the human's life. Thus, the question of "how children acquire language?" brought the attention of linguists to answer and come up with theoretical views to understand this issue. Mainly, children acquire their mother tongue by biological mechanisms, social interactions, or psychological stimuli. Therefore, four theories shed light on language acquisition.

### 1.6.3.1 Innateness Theory

Noam Chomsky argues that language acquisition is an innate structure or function of the human brain. Chomsky believes that there are structures of the brain that control the interpretation and production of speech. Children do not need any kind of formal teaching to learn to speak. He also separates competence and performance; he describes 'competence' as a capacity that is located as a psychological or mental property or function and ‘performance’ as the production of actual utterances. Thus, this innate structure is known as Language Acquisition Device (LAD) (Cowie, 2008, para. 3).

In short, competence involves “knowing” the language and performance involves “doing” something with the language. The difficulty with this construct is that it is very difficult to assess competence without assessing performance (see Table. 2).

### 1.6.3.2 Behaviorism Theory

B. F. Skinner is the representative of the behaviorism school. He believed that language is acquired through a set of principles; conditioning including association imitation, and reinforcement. Skinner viewed babies as ‘empty vessels’ into which language had to be ‘put’. Skinner also viewed language acquisition as a cognitive behavior (Table. 2) (Cowie, 2008, para. 9).

**Operant conditioning:**

- Children go through trial-and-error, in other words, they try and fail to use correct language until they succeed.
- Correct language is reinforced and shaped by the parents using gestures (smiles, attention and approval) which are pleasant to the child.

In his book *Verbal Behavior* (1957), Skinner differentiated between two types of verbal responses that a child makes:

- Verbal behavior that is reinforced by the child receiving something he or she wants.
- Verbal behavior caused by imitating others (Cowie, 2008, para. 10).

#### 1.6.3.3 The Cognitive Development Theory

According to the psychologist Jean Piaget, language is a part of the child's cognitive development. He argued that a child has to understand a concept before he or she can acquire a particular language form which expresses that concept (Donald et al., 2007, p. 51). Children build their own knowledge from experimenting in the world. They learn many things on their own without the intervention of adults. Moreover, children are naturally motivated to learn and do not need rewards from adults to motivate them and push them forward.

A child reaches a point where he or she understands the concept of conservation. In other words, kids will be aware that if an object was divided into two, it remains the same object such as a bar of chocolate. Also, they will be able to correctly order objects according to their size. This point of their cognitive development will help them understand concepts in language use like comparison and superlative forms. Furthermore, Piaget presented four phases or stages of the child's cognitive development: **sensorimotor, preoperational, concrete operational and formal operational stages** (See Table.1) (Donald et al., 2007, p. 53).

During children's first year, they appear to be ignorant of the presence of things that are not in their sights. In their mind, if an object disappeared, it means that it does no longer exist. Children will be aware that objects still exist when they are out of sight at the age of 18 months. It is called Object Permanence, and it is one of the major concepts of Piaget's theory of cognitive development (See Table 2) (Donald et al., 2007, p. 53).

Table 1

*Stages of the Cognitive Development*

| Stage (Approximate age) | Development |
|---|---|
| **Sensorimotor ( 0 to 2 years )** | • Children learn through their senses.<br>• They are aware of the fact of being different from unanimated objects<br>• They reach **Object Permanence**. |
| **Preoperational ( 2 to 7 years )** | • The emergence of language is clear.<br>• They use words to represent object.<br>• They become **egocentric:** they cannot understand the point of view of others. |
| **Concrete Operational ( 7 to 11 years )** | • They develop logical reasoning.<br>• They understand other's opinion.<br>• They develop the concept of **conservation:** object/2= Object |
| **Formal Operational ( $12^{+}$ years )** | • They develop hypothetical thinking and problem solving skills; they understand abstract thoughts.<br>• They think about the consequence of actions.<br>They develop performing mental operation without physical assists like math problems without using hands to count. |

Source: *Educational Psychology in Social Context* (pp. 53-55), by D. Donald, 2007, Oxford University Press.

### 1.6.3.4 Constructive Theory

Contrasting Chomsky, some theorists such as Bruner highlighted the importance of interactions and direct conversation between kids and their surroundings or caregivers. The significance of language is that it was found as a means of communication. Therefore, if humans want to communicate, they surely need to interact. Jerome Bruner, an interactionist, suggested adults talking to children works as a support to enhance the acquisition process. This talking process is called child-directed speech (CDS). Bruner also invented the term Language Acquisition Support System or LASS in contrast to Chomsky's LAD which refers to the child's surrounding caregivers. He means that every LAD cannot function alone but it needs LASS (Upton, 2011, para. 1). Studies about the

interaction between caregivers, precisely parents, and kids who were too young to speak showed that conversations are developed through games and non-verbal interactions well before actual words are uttered (World Health Organization, 2004, p. 8). (See Table 2).

**Table 2**

*Language Acquisition Theories*

| Linguist | Main concept | Theory |
|---|---|---|
| **B.F.Skinner** | Acquisition by imitation | Behaviorism |
| **N. Chomsky** | Language is an innate capacity | Innateness |
| **J. S. Bruner** | Acquisition by the interaction with other people | Constructive |
| **J. Piaget** | Complementary acquisition | Cognitive |

## 1.7 Conclusion

Children acquire language gradually with the help of the language-related areas in the human brain. Indeed, the process of acquiring the language passes through stages at the pre-school age level. This development happens naturally so the child grows with the capacity to express his feelings, wants, and needs and to serve his or her main raison: communication. However, some children are not able to develop this vital means because of some exceptions, mostly in their brains. Those exceptions influence the nature of the language acquired so they either use it incorrectly or do not use it at all.

# Chapter Two:

# Exceptional Development of Language

# 2. Chapter Two: Exceptional Development of Language

## 2.2 Introduction

Naturally, children generally develop their language at a rapid pace. They use the language for communication, social interaction, and for learning through asking and answering questions. In exceptional cases, kids are not able to use this vital function due to atypical development of language. These exceptional children lack the ability to communicate with others which will eventually cause them problems in school and social life.

## 2.2 Language Impairments

Language impairments are disorders of language that influence communication and lead to the need for exceptional learning circumstances. Language impairments are also defined as disorders that may cause difficulties in the four language skills, comprehension, or social interaction. It is not always related to age, gender, culture, or limited language proficiency but they are sometimes related to brain damages (The Florida Department of Education, n. d.).

### 2.2.1 Brain and Disorders

As mentioned before, the human brain contains areas that enhance the use of languages. Any lesion or damage to these areas causes language impairing or a disorder. This type of disorders is called aphasia, and it is related to the damaged area: Broca's aphasia or Wernicke's aphasia. However, there are other types called specific language impairments. Specific language impairment means "…a communication disorder that interferes with the development of language skills in children who have no hearing loss or intellectual disabilities" (National Institutes of Deafness and Other Communication

Disorders, 2019). In other words, specific language impairment is a condition of a remarkable delayed language development with no apparent handicapping conditions, such as autism or mental retardation.

## 2.3 Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder affects communication and the normal interaction between its sufferers and their surroundings due to genetic or brain factors. However, the term Autism Spectrum Disorder is used to refer to a range of disorders in which Autism is the most significant. This spectrum includes Asperger's syndrome (AS), and Pervasive Developmental Disorder-Not Otherwise Specified or atypical autism (PDD-NOS) (Amaral et al., 2006, p. 30). Hans Asperger defined Autism as "a developmental disorder, and therefore its behavioral manifestations vary with age and ability. Its core features, present in different forms, at all stages of development and at all levels of ability, are impairments in socialization, communication and imagination" (Frith, 1991, p. 2). However, Leo Kanner (1943), an Austrian child psychiatrist, described autism as "extreme aloneness" and explained as "Yet it is not the noise or motion itself that is dreaded. The disturbance comes from the noise or motion that intrudes itself, or threatens to intrude itself, upon the child's aloneness" (p. 245).

### 2.3.1 Flashback to the History of ASD

In 1943, Leo Kanner, at Johns Hopkins University in Baltimore, observed 11 children between the age of two and eight who had some noticeable characteristics: unwillingness to interact with others, high focus on objects, and resistance to any changes in their daily routine (Kanner, 1943, p. 217). At some point, children with those symptoms were diagnosed with Schizophrenia and declared autistic by the Swiss psychiatrist Bleuler. Then, Kanner distinguished between these two disorders. Kids with Schizophrenia were

noticed with personality shifts and changes in their interaction frequency with their relationships, whereas children with autism were not able to build such relationships in the first place (Amaral et al., 2006, p. 3).

Simultaneously, Hans Asperger also observed a group of kids who had the same characteristics at the University of Vienna in Austria. The same neural condition discovered in different countries although there are some arguments about who discovered it first. Since Kanner was a native German speaker, he might be aware of Asperger's work started in 1938. As evidence, Kanner (1943) started his introduction with: "Since 1938, there have come to our attention a number of children …." (p. 217)

There was another theory which introduced mothers as a cause of autism. This theory, known as "Refrigerator Parent" was also presented by Kanner who suggested that children are affected because of the lack of maternal affection and coldness towards their kids. He also described parents as robotics and saw their kids as objects for experiment. (Amaral et al., 1943, p. 3)

Bruno Bettelheim, an American psychologist, supported this theory which made it more widespread. In 1967, Bettelheim published his book *Empty Fortress: Infantile Autism and the Birth of the Self* in which he directly supported Kanner's view about the maternal lack of affection as a causal explanation for autism. He presented several cases of kids with autism who had unstable relationships with their parents such as Joey (Bettelheim, 1967, p. 233). Bettelheim intended to help parents provide better environment for their kids. He reported (1967) from his personal experience "This was my initial experience with trying to create a very special environment that might undo emotional isolation in a child and build up personality" (p. 8).

Bernard Rimland published his book *Infantile Autism: the Syndrome and Its Implications for a Neural Theory of Behavior* in 1964 in which he debated the theory of

Bettelheim. Rimland argued that infantile autism is caused by biological factors contrasting Bettelheim's theory of the environmental cause of autism. Bernard had a child with the same symptoms described by Kanner which made him interested more to discover causes of this disorder. After Rimland's book, many researches supported the fact that autism is biologically caused and stopped blaming mothers (Cohmer, 2014, para. 4).

### 2.3.2 Diagnosis of Autism Spectrum Disorder

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM VI), children are diagnosed with ASD when they show at least two symptoms or criteria related to social interaction, communication, and restricted repetitive behavior (RBBs) towards their daily routine before the age of 3 (Hyman et al., 2020, p. 4). (See Table 3). However, the lack of social interaction is defined as the main symptom to diagnose ASD. For instance, autistic kids tend to avoid eye contact with their caregivers and surroundings and show no interest in peers or caregivers. They however express feeling or needs with little repeated utterance or behavior (Center for Disease Control and Prevention [CDC], 2020).

Children with ASD always search for 'sameness'. It means they do not show any interest in any shifts in their daily routine, caregivers, and even food. Moreover, they have interests in objects they play with, and they may spend several hours playing with the same toy in the same house corner (Kanner, 1943, p. 218). They seem to have no indifference to pain or high temperature, respond to specific sounds, and show excessive interest in objects. Yet, they might blow minds with the information they have about cars because they love to play with car toys.

The least frequency of interaction and lack of communication, as the major symptoms of ASD, make parents notice the exceptional cases their kids are. Also, this makes them orient their kids for evaluation in order to understand their kids' condition and have a plan on how to deal with their needs and daily routine. Diagnosing kids at an early

age is recommended to get them treatment and monitoring before school age. The symptoms affect the children's ability to blend in their social and school life. Now, it is easier to help them by getting them into specialized centers with professional coaches. Indeed, how to help them depends on how serious the symptoms are since their severity varies from one kid to another.

Table 3

*DSM-V Criteria for ASD*

| Domain | Criteria |
|---|---|
| **Social interaction** | • The use of multiple non-verbal behaviors.<br>• Failure to develop peer relationships.<br>• Lack of spontaneous seeking to share enjoyment, interests, or achievements with people.<br>• Lack of social-emotional reciprocity. |
| **Communication** | • Delay or total lack of spoken language<br>• Disability in sustaining back and forth conversation.<br>• Repetitive language or use of idiosyncratic language (Echolalia). |
| **RRBs** | • Intense or excessive interest in objects.<br>• Inflexibility and rigidity towards daily routines.<br>• Stereotyped and repetitive simple motor behaviors. |

Source: "Identification, Evaluation, and Management of Children with Autism Spectrum Disorder," by Hyman et al., 2020, *American Psychological Association*, 145 (1), p. 5 (https://doi.org/10.1542/peds.2019-3447).

### 2.3.3 ASD versus Mental Retardation

Although people have mistaken them**,** ASD and mental retardation are actually different from each other. Autism is diagnosed when there is a noticeable difficulty within the social functioning as well as stereotypical restricted repetitive behaviors (RRBs). Moreover, Autism sufferers might have language impairments and intellectual disabilities (mental retardation). This latter is only diagnosed when scoring below the norms on standardized measures of intelligence or the IQ (Fig.4) (Sohn, 2020, para. 8). For instance, a kid aged 5 years old (chronological age) and is capable of doing what an average 5-year old can do (mental age), his IQ will be 100. It means he is typically developing (TD).

According to AAIDD (n. d) , mental retardation is diagnosed when IQ scores are below 80; to clarify, "it was possible to identify reliably the autistic feature in a large number of mentally retarded children by use of a standard instrument" (Kar et al., 1997, p. 308). In other words, children could be diagnosed with both ASD and mental retardation at the same time. However, previously, kids were diagnosed with ASD only if they showed Mental Retardation symptoms or other similar syndromes (Hyman et al., 2020, p. 2).

Figure 4

*The IQ Equation*

$$IQ = \frac{\text{mental age}}{\text{chronological age}} \times 100$$

### 2.3.4 ASD and Gender

Theories suggested that males are more often diagnosed with ASD than females. Although statistics have shown this result, the reason behind it is still unclear. At the level of symptoms, males and females act differently. Indeed, males are reported to show social-related symptoms as being behaviorally aggressive, socially uninterested, and generally

hyperactive. Females have shown emotions-related symptoms, such as depression, anxiety and high RRBs. The effect of sex chromosomes and sex hormones is assumed to be the main cause, so that Testosterone is likely to be the means by which ASD's genes are modulated (Zhang et al., 2020, p. 1).

## 2.3 ASD and Linguistics

As the most significant symptom of ASD is the lack of communication, patients show language-related symptoms. This could be related to a lesion in the language-related areas in the brain**.**

### 2.4.1 Language-Related Symptoms

According to Brown & Elder (2014), kids show disabilities in receiving, processing, or producing speech and difficulty in using language (p. 220). They also have problems with pragmatics; they are more likely to misunderstand indirect utterance. Kids with ASD develop atypical way of communication such as echolalia, neologism, reversed pronouns, and contact gestures (see Table 4). Eventually, they become unable to describe events, ask for information, or comment with utterance. Instead, they might grab your hand and take you to the kitchen to get them food.

Echolalia is defined to be the case of repeating speech utterance whether to communicate, learn language, or practice language. This condition, as a normal part of language development, affects kids in the learning phase by the age of 2 and disappears by the age of 3. Patients start to repeat what they hear and mix speech patterns to come up with meaningful sentences. As well as, echolalia can affect autistic kids if they have delayed speech development. Unlike in typical language development, echolalia is noticeable in autistic kids because of its continuity to an older age. It can be classified into two types: immediate echolalia in which kids immediately repeat speech, and delayed

echolalia when they echo speech after an extended period of time (Prizant & Rydell, 1984, p. 183).

Table 4

*Language-Related Symptoms of ASD*

| Term | Definition | Example |
|---|---|---|
| **Echolalia** | Children repeat what has been said to them either immediately or after some period of time. | Parent: "**Do you want a drink**?" Child with ASD: "**Do you want a drink?**" Child with ASD repeats question instead of providing an answer. |
| **Contact gestures** | Children use other peopleas a tool to get what theyneed or want. The gestureis not symbolic. | Child with ASD grabs adult's hand **without** making **eye contact** and drags to the television to get the adult to change the channel. |
| **Reversed pronouns** | Children use first (I, me)and second pronouns(you, he, she) incorrectly. | Child with ASD: "**You** want to go to thepark." TD child: "**I** want to go to the park." |
| **Neologism** | Children create word or assign a new meaning for a word that is not socially accepted. | Child with ASD is given popcorn duringa movie about a dog named Rebel. The next time the child wants popcorn, he/she asks for "Rebel." The word **Rebel is a neologism for popcorn.** |

Source: From "Communication in Autism Spectrum Disorder: A Guide for Pediatric Nurses," by Brown and Elder, 2014, *PEDIATRIC NURSING*, 40 (5), p. 220 (https://www.semanticscholar.org/paper/Communication-in-autism-spectrum-disorder%3A-a-guide-Brown-Elder/4698f23120f080df9b638db1269ce23b26d2133c)

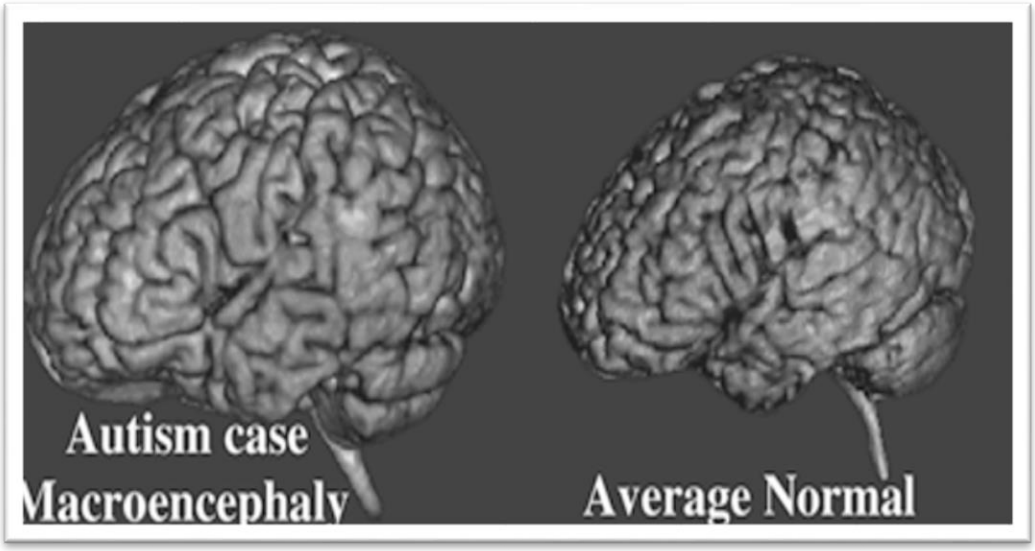
### 2.4.2 ASD Effect on Language-related Areas

Studies suggest that neuro-developmental disorders occur because of brain functional abnormalities which affect language-related areas which will eventually affect communication abilities of autistic kids. Typically, between the age of 1 and 4 years, infantile brains noticeably change in volume and synapses. The phase from infancy to preschool age is the phase when kids show development in cognitive, social, linguistic, and motor abilities. To elaborate, it is also the phase when the demonstration of ASD symptoms proves that any brain lesion affecting language skills happens in this specific period (Courchesne, 2002, p. 21). For kids with ASD, brain volume seems to be normal at the beginning; however, after 2 years, the results of the magnetic resonance imaging (MRI) showed that brain enlargement is higher than average (Fig.5) (Courchesne, 2002, p. 22).

Other studies suggested that the brain volume can occur in the left hemisphere, which might explain language deficits (McAlonan et al., 2005, p. 268). According to Just et al. (2004), examining connectivity between brain areas will demonstrate the areas correlated in a certain function (p. 1811). Kids with autism were examined while doing writing and comprehension tasks. The results have shown that language-related areas are less integrated. The activation in Broca's area was less than in Wernick's area (Just et al., 2004, p. 1812). In other words, kids with ASD lack speech production because of a noticeable decreased activation of Broca's area. Therefore, it seems that functional abnormalities are apparent in brains of children with autism, specifically in areas that control communication problems and language use.

Figure 5

*Average Brain Volume Compared to ASD Brain Volume*




Note: Two to four-year-old autistic and normal boys are plotted showing overall whole brain enlargement of the youngest autistic children. From "Abnormal Early Brain Development in Autism," by Courchesne, E, 2002, *Molecular Psychiatry*, *7*, p. 22 (doi:10.1038/sj.mp.4001169)

## 2.5 Language Improvement

According to the World Health Organization WHO (2019), approximately, one of 160 children was globally diagnosed with ASD, and it keeps increasing. As core features of this disorder, communication difficulties and language disabilities make it harder for kids to blend in their social life and school. Kids' lack of engagement and their personality differences have a negative impact on the development of social skills, and it can get them to experience bullying from their peers. Thus, special care is strongly needed to provide autistic kids with better circumstances for a better life. Nowadays, specialized centers provide services for those kids to facilitate their social engagement. They assist them through special activities and workshops in order to improve their language disabilities.

To illustrate those activities, Pivotal Response Treatment (PRT), created by Dr. Robert Koegel, Dr. Lynn Koegel, and Dr. Laura Schreibman, is defined as "a naturalistic intervention designed to target pivotal behaviors, such as motivation, and produce widespread gains in other areas" (Koegel et al., 2013, p. 817). To elaborate, PRT is a method provided to make kids interact spontaneously, and it aims to help kids express what they want using language and utterance instead of gestures and behaviors. For instance, if the kid wants his favorite toy, he will get it only if he or she names it. This treatment was proven to be effective in improving children's functional utterances and social communication (Gengoux et al., 2019, p. 8).

## 2.6 Conclusion

Autistic children have many language disabilities due to atypical language development. Lacking this vital function get kids into many issues, such as isolation and bullying. These are the main factors of establishing specialized centers and creating personalized activities to improve those abilities. Centers tend to assist kids directly to

overcome the obstacles and orient parent on how to help their exceptional kids. Many activities and workshops have been created to achieve the objective of improving kids' language skills. The next chapter discusses the activities used by a specialized center in Adrar to provide a better view on how this center deals with those kids.

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# Chapter Three: Case study

# 3. Chapter Three: Case study

## 3.1 Introduction

What are the ways used to diagnose kids? What is the program to improve language skills? What are the most effective activities that engage kids and why? How do you make children use language to communicate instead of gestures and behaviors? These questions occupy a special place at this third sub-section of the paper. It focuses on the describing, through interviews, the approach and methods used by the specialized center of Amel Center for Autistic Kids in Adrar, Algeria.

## 3.2 Amel Center

Amel Center is a space to deal with ASD patients from the age of 3 to 18 years old. It started working in November 2017. The center uses special testes to diagnose kids such as Gilliam Autism Rating Scale and pre-assessments to rate kids' current competencies. Their programs tend to improve language, attitude, and food system. Also, their staff is composed of administration, pedagogical and counseling specialists, doctors, and caregivers.

## 3.3 Methodology

In order to carry out this descriptive study, a set of questions were prepared to hold interviews with the center's staff. These questions are as follows:

1- How many kids with ASD do you have in your center?
   - Females versus males?
2- On what basis do you classify them in classrooms?
   - IQ?

- Age?
- Gender?
- Symptoms?

3- What are the ways you use to diagnose them?

4- What is your program to improve language skills?

5- What are the most effective activities that engage … kids and why?

6- How do you make children use language to communicate instead of gestures and behaviors?

## 3.4 Research Limitation

This study could not be held due to the strict lockdown restrictions of the government since March 2020. Also, after many tries to contact the center through their Facebook page, there was no answer.

# References


Ahlsén, E. (2006). *Introduction to neurolinguistics*. John Benjamins

Amaral, D., Dawson, G., & Geschwind, D. (2011). *Autism spectrum disorders*. Oxford University Press.

Bettelheim Bruno. (1967). *The empty Fortress: infantile autism and the birth of the self.* MacMillan Publishing.

Brown, A.B., & Elder, J.H. (2014). Communication in autism spectrum disorder: A guide for pediatric nurses. *Continuing Nursing Education*. 40 (5), 219-225. https://bit.ly/31Elyck

Cohmer, S. (2014, May 23). *Bernard Rimland.* The Embryo Project Encyclopedia. https://bit.ly/3dWYFpf

Courchesne, E. (2002). Anatomy and neurobiology of autism: Abnormal early brain development in autism. *Molecular Psychiatry*, 7, 21-23. Doi: 10.1038/sj.mp.4001169

Cowie, F. (2008, January 16). *Innateness and language.* Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/innateness-language/#ChoCasAgaSki

Frith, U. (1991). *Autism and asperger syndrome*. Cambridge University Press.

Gengoux, G.W., Abrams, D.A., Schuck, R., Millan, M. E., Libove, R., & Hardan, Y.A. (2019). Pivotal response treatment package for children with autism spectrum disorder: An RCT. *Pediatrics*, 144(3), 1-12. https://pediatrics.aappublications.org/content/144/3/e20190178

Hyman, S. L., Levy, S. E., &. Myers, S. M. (2020). Identification, evaluation, and management of children with autism spectrum disorder. *American Academy of Pediatrics*, 145(1), 1-71. https://doi.org/10.1542/peds.2019-3447

Just, M.A., Cherkassky, V. L., Keller, T. A., & Minshew, N. J. (2004). Cortical activation and synchronization during sentence comprehension in high-functioning autism: Evidence of under connectivity. *Brain*, 127, 1811–1821. Doi: 10.1093/brain/awh199

Kanner, L. (1943). Autistic disturbances of affective contact. http://mail.neurodiversity.com/library_kanner_1943.pdf

Kar, N., Khanna, R., & Kar, G. (1997). Autistic features in children with mental retardation. *Indian Journal of Psychiatry*, 39(4), 304-308. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2967163/pdf/IJPsy-39-304.pdf

Koegel, R. L., Bradshaw J. L., Ashbaugh, K., & Koegel, L. K. (2013). Improving question asking initiations in young children with autism using pivotal response treatment. Journal of Autism Developmental Disorder, 44, 816-827. DOI 10.1007/s10803-013- 1932-6

Mayfield Clinic. (2018). *Anatomy of the brain*. Retrieved November, 28, 2019 from https://bit.ly/31GOWi0

McAlonan, G. M., Cheung, V., Cheung, C., Suckling, J., Lam, G. Y., … & Chua1, S. E. (2005). Mapping the brain in autism: A voxel-based MRI study of volumetric differences and intercorrelations in autism. *Brain*, 128, 268–276. Doi: 10.1093/brain/awh332

Prizant, B., & Rydell, P. (1984). Analysis of functions of delayed echolalia autistic children. *Journal of Speech and Hearing Research,* 27, 183-192.

Simpson, J. (2011). *The Routledge handbook of applied linguistics.* UK Routledge.

Sohn, E. (2020). *The blurred line between autism and intellectual disability*. Spectrum. https://www.spectrumnews.org/features/deep-dive/the-blurred-line-between-autism-and-intellectual-disability/

Upton, P. (2011). *Language development/bruner*. Psychology Dictionary of Arguments. https://bit.ly/2TpKO1u

World Health Organization. ( 2019, November 7). *Autism spectrum disorders*. Retrieved June, 18, 2020 from https://bit.ly/2ToOgct

Yule, G. (2010). *The study of language* (4th ed.). Cambridge, England: Cambridge University Press.

Zhang, Y., Li, N., Li, C., Zhang, Z., Teng, H., Wang, Y., … & Sun, Y. Z. (2020). Genetic evidence of gender difference in autism spectrum disorder supports the female-protective effect. *Translational Psychiatry*, 10(4), 1-10. https://doi.org/10.1038/s41398-020-0699-8

## Suggestions for Further Reading


Bouton, C. (1991). *Neurolinguistics: historical and theoretical perspectives.* Plenum Press.

Zhuo, C., & Kuo, L. J. (2017). Language and literacy development among children with autism spectrum disorder.*Journal of Childhood Developmental Disorders*, 3(14). Doi: 10.4172/2472-1786.100052

Egisti, I. M., Marchena, A. B., Schuh, J., & Kelley, E. (2011). Language acquisition in autism spectrum disorders: A developmental review. *Research in Autism Spectrum Disorders*, 5(2), 681-691. https://doi.org/10.1016/j.rasd.2010.09.001

Mody, M., Manoach, S.D., Guenther, F., Kanet, T., Bruno, K.A., McDougle, C.J., & Stigler, K.A. (2013). Speech and language in autism spectrum disorder: A view through the lens of behavior and brain imaging. *Neuropsychiatry*, 3(2), 223-232. Doi:10.2217/npy.13.19

Naigles, R.L. (2013). Input and language development in children with autism. *Seminars in Speech and Language*, 34(4), 237-248. Doi: 10.1055/s-0033-1353446

Opera, C., & Stan, A. (2012). Mothers of autistic children: How do they feel? *Procedia Social and Behavioral Sciences*, 46, 4191-4194.
Doi: 10.1016/j.sbspro.2012.06.224.