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Faculty of Letters and Languages  
Department of English  
Section of English

Receptive Vocabulary Comprehension among Children  
with Down Syndrome: Case of Khalil Abdeslem  
Primary School, Tlemcen

Dissertation submitted to the Department of English as a partial  
fulfilment of the requirements for Master's degree in Language Studies

**Presented by**

Ms. Amiri Wissam

**Supervised by**

Prof. Amine BELMEKKI

**Board of Examiners**

**Dr. DIB Iman**

**Prof. Amine BELMEKKI**

**Mr. MEGHAGHI Slimane**

**President**

**Supervisor**

**Examiner**

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## Dedications

Praise be to **God**; through whose grace all good things are done. The dream of graduation has finally come true.

I have been waiting for this day to see the pride and happiness in the eyes of my mom and dad. Today, I dedicate my graduation to the fountain of tenderness and a heart of white, who greets me with a smile and bids me farewell with a prayer, **my dear mother.**

**My dear father**, who taught me persistence and perseverance, the source of hope and ambition.

How happy I am to see you proud and happy with my success. May God protect you and keep you as a crown on my head.

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## **Statement of Original Authorship**

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **Abstract**

In today's world, supporting individuals with special needs has become a critical global issue, as it requires extensive services to ensure their integration into everyday life. Among these individuals, children diagnosed with Down syndrome who exhibit distinctive developmental traits that grab the attention of psychologists, educators, and speech-language pathologists. Language development, in particular, is an area of challenges for these children. While much research has emphasized expressive language, there is a considerable awareness of the need to better understand receptive vocabulary abilities, specifically, how DS children comprehend and process spoken language. This thesis tends to examine receptive vocabulary comprehension within this group, illuminating the factors that influence it and providing insights for promoting language interventions and educational support. This research employed a deductive reasoning framework, utilizing an exploratory, single instrumental, and holistic case study approach with a mixed-methods design. The research was conducted in Tlemcen province, including Down syndrome children and their teachers. Data collection involved semi-structured interviews with five teachers across two classrooms, alongside a non-participant classroom observation, complemented by two standardized tests administered to 15 pupils. The findings indicate that receptive vocabulary challenges in children with Down syndrome vary depending on the severity of intellectual disability and the development of social skills. Also, the presence of trisomy 21 indeed impairs memory and language-related areas of those individuals. Concerning vocabulary breadth and depth, it seems that vocabulary depth (word meaning) is not significantly more impaired than vocabulary breadth (word recognition). Additionally, the results highlight the importance of communication supports in facilitating language comprehension. In light of these findings, several recommendations are suggested. Activities that enhance short-term memory. Also, encouraging parental involvement through strategies like joint attention, repetition, and the use of visual aids. Finally, promoting context-specific research in Algeria is essential to develop inclusive educational strategies that respond to the actual needs of children with Down syndrome.

## Table of Content

|  |       |      |
|--|-------|------|
| Dedications                                  | _____ |      |
| Acknowledgements                             | _____ | II   |
| Statement of Original Authorship             | _____ | III  |
| Abstract                                     | _____ | IV   |
| List of Tables                               | _____ | VIII |
| List of Figures                              | _____ | IX   |
| List of Graphs                               | _____ | X    |
| List of Acronyms                             | _____ | XI   |
| General Introduction                         | _____ | 1    |
| Chapter One: Literature Review               | _____ | 5    |
| 1.1 Introduction                             | _____ | 6    |
| 1.2 Language:                                | _____ | 6    |
| 1.3 Language Components:                     | _____ | 7    |
| 1.3.1 Language Content:                      | _____ | 7    |
| 1.3.2 Language Form:                         | _____ | 8    |
| 1.3.3 Language Use:                          | _____ | 9    |
| 1.4 Language Development in Normal Children: | _____ | 10   |
| 1.4.1 Milestones of Language Development:    | _____ | 11   |
| 1.4.2 Theories of Language Development:      | _____ | 14   |
| 1.4.2.1 Behaviorism Theory:                  | _____ | 14   |
| 1.4.2.2 Innateness Theory:                   | _____ | 15   |

|  |    |
|--|----|
| 1.4.2.3 Cognitive Theory _____   | 15 |
| 1.4.2.4 Social Interaction Theory _____                                | 16 |
| 1.5 Down Syndrome _____  | 16 |
| 1.5.1 History _____  | 16 |
| 1.5.2 Genetic Basis and Aetiology _____                                | 17 |
| 1.5.3 Types of Down Syndrome: _____                                    | 18 |
| 1.5.4 Symptoms of Down Syndrome: _____                                 | 19 |
| 1.5.5 Language Development in Children with Down Syndrome: _____       | 20 |
| 1.5.6 Semantic Deficiency: _____                                       | 22 |
| 1.5.7 Interventions and Strategies: _____                              | 24 |
| 1.6 Conclusion: _____  | 25 |
| Chapter Two: Research Design and Methods _____                         | 26 |
| 2.1 Introduction _____   | 28 |
| 2.2 Research Context and Methodology _____                             | 28 |
| 2.3 Research Setting _____   | 29 |
| 2.4 2.4 Sample Population _____  | 30 |
| 2.5 Research Sampling Techniques _____                                 | 31 |
| 2.6 Research Instruments _____   | 32 |
| 2.6.1 Teachers' Interview _____  | 33 |
| 2.6.2 Classroom observation _____                                      | 33 |
| 2.6.3 Tests _____  | 34 |
| 2.7 Conclusion _____   | 35 |
| Chapter Three: Data Analysis, Interpretation and Recommendations _____ | 36 |
| 3.1 Introduction _____   | 38 |
| 3.2 Teachers' Interview Analysis _____                                 | 38 |
| 3.2.1 Second-Year Level Teachers _____                                 | 39 |
| 3.2.2 Fifth-Year Level Teachers _____                                  | 42 |

|  |    |
|--|----|
| 3.3 Classroom Observation Analysis _____   | 46 |
| 3.3.1 Language Comprehension _____   | 47 |
| 3.3.2 Comprehension Deficits _____   | 47 |
| 3.3.3 Engagement and Attention _____   | 48 |
| 3.3.4 Teachers' Communication Style _____  | 49 |
| 3.4 Tests Analysis _____   | 49 |
| 3.4.1 Receptive Vocabulary Test Analysis _____                                       | 50 |
| 3.4.2 Baby and Baby Bottle Test Analysis _____                                       | 51 |
| 3.4.3 Receptive Vocabulary and baby and The Bottle Tests Comparison Analysis _____   | 52 |
| 3.5 Discussion of The Key Findings _____   | 53 |
| 3.6 Limitation of The Study _____  | 55 |
| 3.7 Recommendations _____  | 56 |
| 3.8 Conclusion _____   | 57 |
| General Conclusion _____   | 58 |
| Bibliography _____   | 62 |
| Appendices _____   | 75 |
| Appendix A: Certificate of Master Dissertation Supervision _____                     | 76 |
| Appendix B : Authorisation Letters _____   | 77 |
| Appendix C: Time Table of 2 <sup>nd</sup> Year and 5 <sup>th</sup> Year Levels _____ | 78 |
| Appendix D: Interview Guide _____  | 79 |
| Appendix E : Observation Grid _____  | 81 |
| Appendix F: A Pupil's Use of a Symbolic Representation For The Digit Six _____       | 83 |
| Appendix G: Receptive Vocabulary Test _____  | 84 |
| Appendix H: The Baby and Baby Bottle Test _____                                      | 90 |

## List of Tables

|  |    |
|--|----|
| Table1.1. Milestones Related to Speech and Language .....                                      | 11 |
| Table 2.1 <i>Sample Population Characteristics</i> .....                                       | 32 |
| Table 3.1 Teaching Experience with Down Syndrome Pupils .....                                  | 39 |
| Table 3.2 Teaching Experience with Down Syndrome Pupils .....                                  | 42 |
| Table 3.3 Summary of Challenges and Teaching Strategies for Pupils with Down<br>Syndrome ..... | 45 |
| Table3.4 Frequency Distribution of Receptive Vocabulary Scores (N=15) .....                    | 50 |
| Table3.5 Frequency Distribution of Baby and Baby Bottle Test Scores (N=15) .....               | 52 |

## List of Figures

|   |                                    |
|---|------------------------------------|
| Figure1.1. The Intersection of Language Components .....                                      | 10                                 |
| Figure1.2 Karyotype for trisomy Down syndrome: Notice the three copies<br>chromosome 21 ..... | 18                                 |
| Figure 2.1 Justification for The selection of Research Instruments.....                       | 35                                 |
| Figure2.1 Triangulation of Data Collection Methods .....                                      | <b>Erreur ! Signet non défini.</b> |

## **List of Graphs**

Graph 3.1 Frequency Distribution of Receptive Vocabulary Test Scores \_\_\_ 51

Graph 3.2 Frequency Distribution of Baby and Baby Bottle Test Scores \_\_\_ 52

Graph3.3 Receptive Vocabulary Test VS The Baby and Baby Bottle Test \_ 53

## List of Acronyms

1. **AAC** : Augmentative and Alternative Communication
2. **AAIDD**: American Association on Intellectual and Developmental Disabilities
3. **ASHA**: American Speech-Language-Hearing Association
4. **AWIT**: Association de la Wilaya pour l'Insertion des Trisomiques/ Regional Association for the Integration of people with Down syndrome
5. **BBB Test**: Baby and Baby Bottle Test
6. **CDS** : Child-Directed Speech
7. **DS** : Down Syndrome
8. **EI** : Early Intervention
9. **ID** : Intellectual Disability
10. **LAD** : Language Acquisition Device
11. **LASS** : Language Acquisition Supported System
12. **MLU**: Mean Length of Utterance
13. **NDSS** : National Down Syndrome Society
14. **PECS** : Picture Exchange Communication System
15. **PPVT** : Peabody Picture Vocabulary Test
16. **RV Test** : Receptive Vocabulary Test
17. **SBR** : Shared Book Reading
18. **SLI** : Specific Language Impairment
19. **TD** : Typically Developing
20. **UG** : Universal Grammar

# **General Introduction**

## **General Introduction**

Language impairments refer to considerable challenges in acquiring comprehending, or using spoken, written, or other symbolic communication systems, which cannot be solely explained by general developmental delays (American Speech-Language-Hearing Association [ASHA], 1993). These impairments can occur across one or multiple areas, including phonology, morphology, syntax, semantics, and pragmatics, often hindering a child's ability to understand or produce language appropriately in social, academic, and everyday settings. Notably, language impairment may manifest as a primary disorder, such as in specific language impairment (SLI), or a secondary condition associated with more extensive developmental disorder, including intellectual disabilities (ID).

Intellectual disability is known by restrictions in intellectual functioning and adaptive behavior that appear during the developmental period (American Association on Intellectual and Developmental Disabilities [AAIDD], 2021). Among this diverse population, children with Down syndrome (DS), a genetic disorder caused by the presence of an extra copy of chromosome 21, known as trisomy 21, where instead of two there are three copies (Lubec and Engidawork, 2002). It is claimed that 1 in every 1000 births are infants with DS (Hassold & Sherman, 2000).

The language profile of children with DS exhibits a well-established pattern of language impairment that significantly impacts their social engagement and academic achievements (Chapman & Hesketh, 2000). Within this profile, receptive vocabulary, the ability to comprehend the words and their meanings. Although it remains less impaired than expressive vocabulary, it still significantly deviates behind that of typically developing peers (Laws & Gunn, 2002). Challenges in this area can hinder a child's ability to follow instructions, grasp academic content, and engage effectively in conversations (Nation & Snowling, 1998).

This research seeks to investigate the nature of receptive vocabulary comprehension among children diagnosed with Down syndrome, aiming to outline patterns of strength and challenges, as well as highlight the strategies used to overcome these challenges. Through a detailed examination of this domain, the study tends to enhance

the growing body of knowledge that supports clinical practices, educational planning, and theoretical frameworks of language development in individuals with cognitive disabilities.

Consequently, the researcher attempts to answer the following questions:

1. What are the expected standard levels of receptive vocabulary in children with Down syndrome?
2. In what ways do the genetic and neurobiological factors associated to Down syndrome affect the identified deficits in receptive vocabulary?
3. What the role does communication supports (such as visual aids, gestures, or sign language) play?

The aforementioned questions promote the researcher to propose three hypotheses:

1. Children with Down Syndrome exhibit lower standard levels of receptive vocabulary compared to age-matched typically developing peers.
2. Vocabulary depth (understanding word meanings) is more impaired than breadth (recognizing words) due to hippocampal deficits.
3. Children with Down Syndrome who have access to additional communication supports will demonstrate significantly higher levels of receptive vocabulary compared to those who do not use these supports.

To accomplish the research objectives, this study employs deductive reasoning and implements an exploratory, single instrumental, and holistic case study approach. The study takes place in the province of Tlemcen, specifically at Khalil Abdeslam primary school. The central focus of the study is on children with Down syndrome and their teachers. The data collection process incorporates various methods. Initially, semi structured interviews were conducted with five teachers across two classes. Furthermore, non-participant classroom observations were carried out in both classes. The first class comprised 10 pupils aged 10, studying in the 2nd year, while the second class consisted of 11 pupils between the ages of 14 and 18, who were in the 5th year. Finally, two standardized tests were used as the last research instrument. The first one is the Receptive Vocabulary Test on its Arabic version, which aimed to

assess DS word comprehension. The second known as the Baby and Baby Bottle Test (adapted from the Camel and Cactus Test) to evaluate semantic knowledge. The researcher carefully selected every element of the data collection phase, where each instrument was systematically identified to support prior selection. This strategy was essential for the achievement of a thorough and cohesive data collection.

This research is primarily segmented into three interrelated chapters. The first chapter focused on existing literature concerning the concept of language, its components, followed by an exploration on language development in typical children. It further examined the various theories of language development, such as nativism, social interactionism, and cognitivism. Furthermore, this chapter reviewed the historical background of Down syndrome, covering its causes, characteristics, and symptoms. It also presented an overview on language development in children with DS, then the semantic obstacles faced by these individuals, with a specific focus on their receptive vocabulary. Finally, it highlighted the importance of specialized interventions and strategies to overcome these challenges. The second chapter outlined the methodological framework of the study. It sought to provide a comprehensive overview of the methodology used for data collection. It consisted of five subtitles including, research context and method, the setting, sample population, sampling techniques, and research instruments. The last chapter is concerned with the analysis and interpretation of the findings to evaluate the study's hypotheses, along with practical recommendations to promote language development for DS children.

# **Chapter One**

## **Literature Review**

|  |    |
|--|----|
| Chapter One: Literature Review                             | 5  |
| 1.1 Introduction   | 6  |
| 1.2 Language:  | 6  |
| 1.3 Language Components:                                   | 7  |
| 1.3.1 Language Content:                                    | 7  |
| 1.3.2 Language Form:                                       | 8  |
| 1.3.3 Language Use:  | 9  |
| 1.4 Language Development in Normal Children:               | 10 |
| 1.4.1 Milestones of Language Development:                  | 11 |
| 1.4.2 Theories of Language Development:                    | 14 |
| 1.4.2.1 Behaviorism Theory:                                | 14 |
| 1.4.2.2 Innateness Theory:                                 | 15 |
| 1.4.2.3 Cognitive Theory                                   | 15 |
| 1.4.2.4 Social Interaction Theory                          | 16 |
| 1.5 Down Syndrome  | 16 |
| 1.5.1 History  | 16 |
| 1.5.2 Genetic Basis and Aetiology                          | 17 |
| 1.5.3 Types of Down Syndrome:                              | 18 |
| 1.5.4 Symptoms of Down Syndrome:                           | 19 |
| 1.5.5 Language Development in Children with Down Syndrome: | 20 |
| 1.5.6 Semantic Deficiency:                                 | 22 |
| 1.5.7 Interventions and Strategies:                        | 24 |
| 1.6 Conclusion:  | 25 |

## **1.1 Introduction**

The observed language problems in the case of Down syndrome, which is the focus of the current study, seem to be caused by an extra copy of chromosome 21 that affects approximately one in every 700 births worldwide (Centre for Arab Genomic Studies, 2013). Thus, the written work and comprehension of these individuals, along with their language deficit, were captured (Chapman, 1997; Buckley, 1993; Ronald & Comblain, 1996). Nevertheless, most studies on language disorders in people with Down syndrome have momentarily focused on western languages. Therefore, it is essential to investigate this issue from an Arabic-language standpoint, as is the case in the present study. Accordingly, this chapter aims to impart a theoretical overview of the concept of language and then goes through language development in normal children, in reference to preceding studies. Furthermore, it reviews the history of Down syndrome, its causes, characteristics, and symptoms. Later, it discusses the language development of these children. Besides, this chapter comprises an overview of the semantic challenges of these individuals, with a particular emphasis on their receptive vocabulary. Finally, it emphasized the importance of specialized interventions to enhance language learning skills.

## **1.2 Language:**

Fundamentally, language can be defined as a system of communication that conveys meaning using sounds, gestures, or symbols. According to the linguist Ferdinand de Saussure, language is “a system of signs that express ideas.” Each language has its own set of phonemes (sounds), morphemes (meaningful units), syntax (sentence structure), and semantics (meaning) (Saussure, 1916). Moreover, Saussure introduced key dichotomies of language, which are 'langue' (an abstract linguistic system shared across members) and 'parole' (an individual act or expression). This theory suggests that language exists both as a social product and a personal expression (Culler, 1976).

The American Linguistic Society defines language more broadly: “Language is a systematic means of communicating ideas or feelings by the use of conversationalized signs, sounds, gestures, or marks.” Accordingly, language is customer and requires speakers to have a mutual understanding.

Furthermore, Bloch, B. and Trager, G. (1942) consider language as “a system of arbitrary symbols by means of which a social group cooperates.”. Additionally, according to the Cambridge International Dictionary of English (1995), “language is a system of communication consisting of a set of small parts and a set of rules that decide the ways in which these parts can be combined to produce messages that have meaning.”

Moreover, as evidenced by studies in psycholinguistics, language influences cognitive functions, impacting how we perceive and interact with the world (Sapir-Whorf hypothesis). Thus, thorough understanding of language encompasses linguistic structures, cultural implications, and cognitive influences, making it an essential area of study in Languages and Cultures.

### **1.3 Language Components:**

The predominant theoretical framework concerning language models is based on Bloom and Lahey’s (1978) philosophy, which identifies three main parts of language: content, form, and use. These parts are further broken down into phonology, morphology, syntax, semantics, and pragmatics. In other words, language is made up of certain aspects of content or meaning that are expressed or coded by linguistic form for specific uses or purposes (Halliday, 1978). Although each of these linguistic features can be distinguished independently, they are all inherently related components of communication (Bloom & Lahey, 1978).

#### **1.3.1 Language Content:**

Language content refers to the way meaning is conveyed through linguistic elements like words, idioms, and sentences. When people speak, they describe things, actions, and relationships, including notions such as possession or cause and effect, through

the use of words and phrases. Occasionally, a single word can convey the complete meaning. At other times, these meanings are expressed by a set of words. This linguistic representation of things, concepts, emotions, and events as well as the connections among them is called semantics (Gillam, Bedore, and David, 2002, p. 32).

The relationship between words and their referents is both arbitrary and symbolic, meaning that words do not provide the language learner any clues or hints about the object being labeled. Therefore, understanding word meanings requires understanding how a specific language community labels content in the world, a process that can be challenging. (Brandone, Salkind, Golinkoff, & Hirsh-Pasek, 2006, p. 499).

### **1.3.2 Language Form:**

The concept of form in the context of language pertains to the structured system of rules that individuals utilize to construct language, encompassing elements from phonemes to complete sentences. “It involves three linguistic systems: phonology, morphology, and syntax (Bloom, 1980:117). Phonology tends to study the combination of sound patterns in each language. For instance, it would explain why the plural [s] sound in English is produced differently: as /s/ in ‘cats,’ /z/ in ‘dogs,’ and /ɪz/ in ‘horses. Morphology has to do with the internal structure of words. A morpheme is the smallest grammatical unit that carries a meaning. It is categorized into two types: free morphemes (words that may stand alone with a specific meaning) and bound morphemes (words that must be attached to another morpheme because they have no meaning alone). Syntax is the last linguistic structure, which refers to the study of the formation of sentences and the relationship of their component parts; syntax is grammar’s formal term. For instance, in English, we say ‘red pen;’ in Arabic, it is reversed to be ‘ha:itun ʔaħmar.’ The meaning remains the same, but the rules governing the word order are distinctive for the two languages (Carnie, 2021).

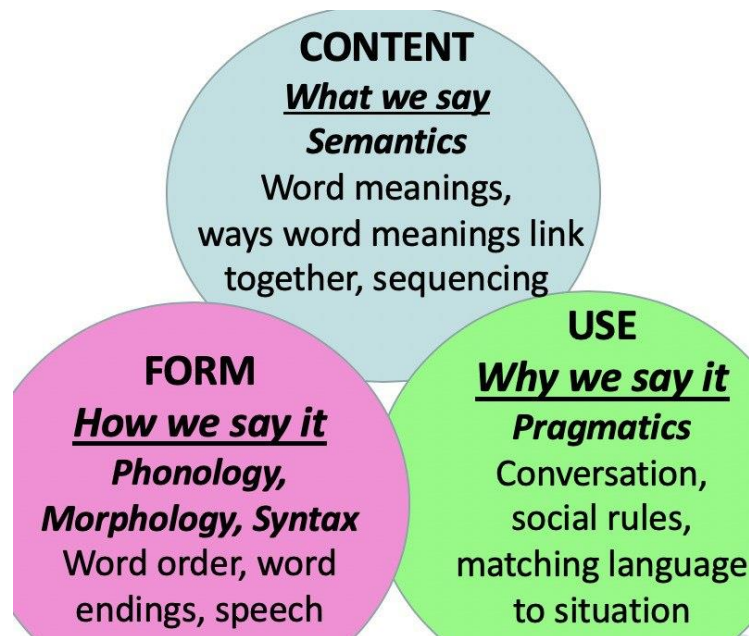
### **1.3.3 Language Use:**

Sentences are made up of words that express complicated concepts. Language use refers to the purposes of language and the methods by which we choose between different words and sentence combinations. There are sociolinguistic conventions, called pragmatics, that assist us in determining what to say, to whom, how to say it, and when to say it (Gillam, Bedore, and David, 2002, p.33). Infants are born with innate behaviors that enable the communication of the basic needs. By their first year, they can further express their intentions to others through eye contact, vocalization, and gestures (e.g., Harding & Golinkoff, 1979). Although infants are initially ignorant of these prelinguistic activities, the consistent and contingent reactions of caregivers during early proto-conversational interactions help them recognize the communicative aspects of language (Sacks, 2001).

To sum up, language competence requires a combination of content (semantics), form (phonology, morphology, and syntax), and use (pragmatics). Although conversation may seem straightforward, it is, in reality, a complex process that requires the integration of multiple linguistic components alongside sociocultural knowledge. Therefore, when speaking, individuals must consider what they want to say and the best words to use (content), then arrange those words into sentences (form) that address their purpose (use) (Gillam, Bedore, and David, 2002, p.34).

Figure 1.1

*The Intersection of Language Components*



#### 1.4 Language Development in Normal Children:

Language development is the process by which children start to communicate during their early childhood. This process is universal among human beings. According to age and pace, children’s language development greatly differs from one another (Hojabrzare, 2018). Early in life, this process begins when a person learns the language by speech and imitation (Thompson-S chill SL et al., 2009; Ramscar & Gitcho, 2007). As the kid’s language evolved, it changed from simple to complex. Moreover, the developmental process of language is the gradual and progressive integration of content, form, and use. The chronological development of children’s receptive and expressive language skills develops at a very rapid pace, with research showing that girls develop their language more quickly than boys (Huttenlocher et al., 1991). As a result, language development has been referred to as “mysterious (Gleitman & Wanner, 1982) and “magic” (Bloom, 1983).

### 1.4.1 Milestones of Language Development:

All children can learn at least one language system and typically go through numerous phases when learning their native language. The first stage involves cooing, during which all babies produce similar sounds, regardless of their native language or location. In the second stage, infants start to produce distinctive coos, incorporating the vowel sound of their native language. Over time, they begin to make sounds and eventually learn to speak (Fitch, 2011). When they are ready to form full words, they start by producing single-word utterances, primarily nouns that refer to objects in their surroundings. The child then advances to two-word sentences, which typically consist of a noun-verb combination. As their language skills continue to develop, children form longer sentences, incorporating additional elements such as adjectives and adverbs (Richardson & Price, 2009).

**Table 1.1**

*Milestones Related to Speech and Language*

|                          |  |
|--------------------------|--|
| <b>Birth to 5 months</b> | <ul style="list-style-type: none"> <li>• Coos</li> <li>• Vocalizes pleasure and displeasure sounds differently (laughs, giggles, cries, or fusses)</li> <li>• Makes noise when talked to</li> </ul>  |
| <b>6 to 11 months</b>    | <ul style="list-style-type: none"> <li>• Understands "no-no"</li> <li>• Babbles (says "ba-ba-ba")</li> <li>• Says "ma-ma" or "da-da" without meaning</li> <li>• Tries to communicate by actions or gestures</li> <li>• Tries to repeat your sounds</li> <li>• Says first word</li> </ul> |
| <b>12 to 17 months</b>   | <ul style="list-style-type: none"> <li>• Answers simple questions nonverbally</li> <li>• Says 2 to 3 words to label a person or object (pronunciation may not be clear)</li> <li>• Tries to imitate simple words</li> </ul>  |

|                        |   |
|------------------------|---|
|                        | <ul style="list-style-type: none"> <li>• Vocabulary of four to 6 words</li> </ul>   |
| <b>18 to 23 months</b> | <ul style="list-style-type: none"> <li>• Vocabulary of 50 words, pronunciation is often unclear</li> <li>• Asks for common foods by name</li> <li>• Makes animal sounds, such as "moo"</li> <li>• Starting to combine words, such as "more milk"</li> <li>• Begins to use pronouns, such as "mine"</li> <li>• Uses 2-word phrases</li> </ul>  |
| <b>2 to 3 years</b>    | <ul style="list-style-type: none"> <li>• Knows some spatial concepts, such as "in" or "on"</li> <li>• Knows pronouns, such as "you," "me" or "her"</li> <li>• Knows descriptive words, such as "big" or "happy"</li> <li>• Uses 3-word sentences</li> <li>• Speech is becoming more accurate, but may still leave off ending sounds. Strangers may not be able to understand much of what is said.</li> <li>• Answers simple questions</li> <li>• Begins to use more pronouns, such as "you" or "I"</li> <li>• Uses question inflection to ask for something, such as "my ball?"</li> <li>• Begins to use plurals, such as "shoes" or "socks" and regular past tense verbs, such as "jumped"</li> </ul> |
| <b>3 to 4 years</b>    | <ul style="list-style-type: none"> <li>• Groups objects, such as foods or clothes</li> <li>• Identifies colors</li> <li>• Uses most speech sounds, but may distort some of the more difficult sounds, such as <i>l</i>, <i>r</i>, <i>s</i>, <i>sh</i>, <i>ch</i>, <i>y</i>, <i>v</i>, <i>z</i>, <i>th</i>. These sounds may not be fully mastered until age 7 or 8.</li> <li>• Uses consonants in the beginning, middle, and ends of words. Some of the more difficult consonants may be distorted, but attempts to say them</li> <li>• Strangers are able to understand much of what is said</li> <li>• Able to describe the use of objects, such as "fork" or "car"</li> </ul>                        |

|                     |  |
|---------------------|--|
|                     | <ul style="list-style-type: none"> <li>• Has fun with language; enjoys poems and recognizes language absurdities, such as, "Is that an elephant on your head?"</li> <li>• Expresses ideas and feelings rather than just talking about the world around him or her</li> <li>• Uses verbs that end in "ing," such as "walking" or "talking"</li> <li>• Answers simple questions, such as "What do you do when you are hungry?"</li> <li>• Repeats sentences</li> </ul>   |
| <b>4 to 5 years</b> | <ul style="list-style-type: none"> <li>• Understands spatial concepts, such as "behind" or "next to"</li> <li>• Understands complex questions</li> <li>• Speech is understandable, but makes mistakes pronouncing long, difficult, or complex words, such as "hippopotamus"</li> <li>• Uses some irregular past tense verbs, such as "ran" or "fell"</li> <li>• Describes how to do things, such as painting a picture</li> <li>• Lists items that belong in a category, such as animals or vehicles</li> <li>• Answers "why" questions</li> </ul> |
| <b>5 years</b>      | <ul style="list-style-type: none"> <li>• Understands time sequences (for example, what happened first, second, or third)</li> <li>• Carries out a series of 3 directions</li> <li>• Understands rhyming</li> <li>• Engages in conversation</li> <li>• Sentences can be 8 or more words in length</li> <li>• Uses compound and complex sentences</li> <li>• Describes objects</li> <li>• Uses imagination to create stories</li> </ul>  |

*Note.* Adapted from "Age-Appropriate Speech and Language Milestones," by Stanford Medicine Children's Health, n.d.

(<https://www.stanfordchildrens.org/en/topic/default?id=age-appropriate-speech-and-language-milestones-90-P02170>). Copyright Stanford Medicine Children's Health.

## **1.4.2 Theories of Language Development:**

The phenomenon of language development is a complex process that has intrigued intellectuals for numerous centuries. It has been analyzed from different perspectives. The predominant theoretical frameworks, which serve as a guiding paradigm in the course of language development, include behaviorism, innateness theory, cognitive theory, and interaction/input theory.

### **1.4.2.1 Behaviorism Theory:**

The behaviorist theory, chiefly linked to the work of B.F. Skinner, asserts that the acquisition of language is a process of habit formation. Behaviorist psychologists used to conduct their theories through experiments with animals, such as rats and birds, demonstrating that these creatures could learn tasks through habit formation. The researcher gave rewards for good behaviors using positive reinforcement, while negative reinforcement occurs when undesirable behavior is punished or simply not rewarded (Skinner, 1957).

B.F. Skinner later proposed this theory as an explanation for humans' language acquisition. In *Verbal Behavior* (1957), he stated:

"The basic processes and relations that give verbal behavior its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance has been carried out on other species, but the results have proved to be surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behavior without serious modifications." ( p. 68).

According to Skinner, children imitate their parents' or caregivers' language. When a child produces a correct word that an adult recognizes, he is praised or given what is requested, reinforcing the successful use of language, while incorrect attempts are not reinforced (Skinner, 1957).

### **1.4.2.2 Innateness Theory:**

Noam Chomsky released a criticism of the behaviorist theory in 1957. Accordingly, all children possess an intrinsic language acquisition device (LAD), which is a device that allows people to learn and acquire a new language without having previous knowledge. This device enables children to understand linguistic input and form new sentences with minimal external exposure and limited experience. However, because of this innate mechanism, children are, in fact, able to acquire language even in the face of incomplete information from their surroundings. This capacity is further explained by the theory of Universal Grammar (UG), which suggests that a certain set of structural norms is innate to humans and unaffected by sensory experience. As a result, when children learn grammar, they are directed by this intrinsic understanding of universal grammar, which allows them to instantly understand the basic structure of their language, typically their native tongue (Chomsky, 1986).

### **1.4.2.3 Cognitive Theory**

Jean Piaget, a Swiss psychologist, placed language learning in relation to a child's mental or cognitive development. He maintained that understanding a concept is a prerequisite for learning the language associated with it. For example, in the case of seriation, a child's ability to compare objects based on size will come at a certain phase of their intellectual development. This implies that children could arrange the sticks in order of length before grasping and using comparative terms like 'bigger' or 'smaller.'

Another feature is object permanence, which describes a child's comprehension that objects continue to exist even when out of view. In the first year, children usually lack this awareness, but by around 18 months (about 1 and a half years), they recognize that things exist regardless of how they are perceived. Piaget suggested a connection between object permanence and object naming by associating this cognitive milestone with a notable expansion in infants' vocabulary (Piaget, 1923/1959).

#### **1.4.2.4 Social Interaction Theory**

Accordingly, language fundamentally exists for the purpose of communication and can only be effectively acquired through engagement with others who want to communicate with you. Interactionists such as Jerome Bruner argue that adults' language use when speaking to children (commonly known as child-directed speech 'CDS') is specially adapted to aid in facilitating the learning process. This kind of assistance is often referred to as scaffolding for the child's language learning. Bruner also introduced the term Language Acquisition Supported System or LASS, in reaction to Chomsky's LAD, highlighting the role of social and environmental factors in supporting language development (Bruner, 1985).

### **1.5 Down Syndrome**

Down syndrome (DS) represent the most common chromosomal abnormality in humans, affecting approximately 1 in 400 to 1 in 1,500 live births, with prevalence influence by maternal age and prenatal screening practices (Asim et al., 2015; Antonarakis et al., 2004). This disorder arises from the presence of an extra copy of chromosome 21 (trisomy 21), leads to a variety of developmental, cognitive, and physical characteristics.

#### **1.5.1 History**

Down syndrome was first documented in the medical literature by John Langdon Down in 1866. During this time, individuals with cognitive disability (i.e., mental retardation) were often labeled "idiots" and "imbeciles" and divided into subgroups based on differential diagnoses. Using a hierarchical racial classification system that was common at the time, Down observed that people with Down syndrome and people of Mongolian heritage shared facial features (Down, 1866; Volpe, 1986). He also noted that unrelated people with Down syndrome share certain phenotypic traits and a distinctive facial appearance: "[...] when placed side by side, it is difficult to believe that the specimens compared are not children of the same parents" (Down 1866:260). Considering these observations, Down concluded that DS individuals

were distinct from other categories of people with cognitive impairment and referred to them as “Mongolian idiots” or “mongoloids” (Down, 1866: 260-261).

Critically, although other authors (such as Esquirol and Seguin as cited in Stratford 1996: 3-4) may have described people with Down syndrome prior to Down’s publication in (1866), Down is recognized for being the first to group individuals with the condition based on their phenotypic similarities in order to define a subcategory of people with cognitive impairment (Megarbane et al., 2009; Startford, 1996; Pueschel, 2000).

In 1959, French geneticist Jérôme Lejeune made the link between Down syndrome and chromosomal abnormalities. He discovered that individuals with Down syndrome usually have an extra copy of chromosome 21, which is why the disorder is called Trisomy 21. This finding was essential to comprehending the syndrome’s genetic foundation.

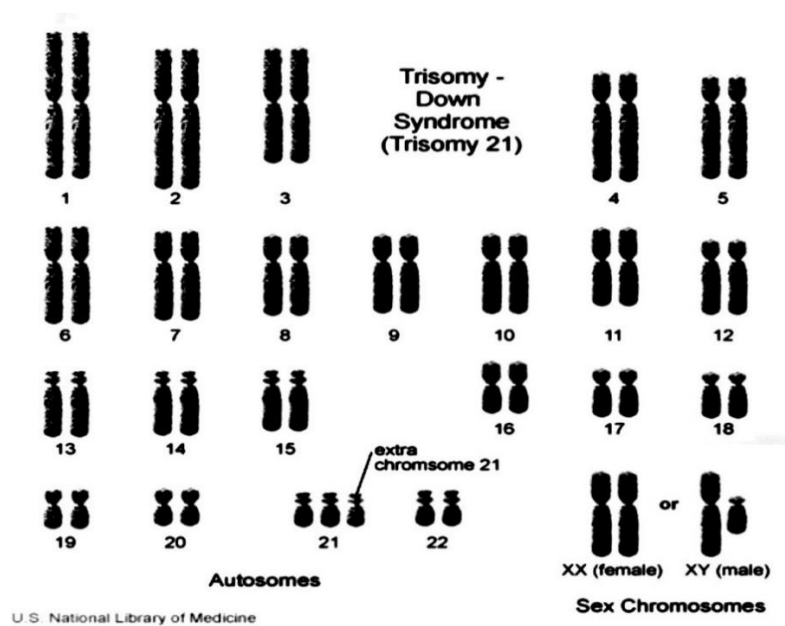
### **1.5.2 Genetic Basis and Aetiology**

Chromosomes are considered a home to genes. Human cells have 26 chromosomes, organized into 23 homologous pairs, with 23 chromosomes inherited from each parent, in addition to the 23 egg and sperm cells. These chromosomes consist of 22 pairs of autosomes (non-sex chromosomes) and one pair of sex chromosomes (XX or XY), numbered from 1 to 22 based on their size. Chromosome segregation problems during meiosis can lead to improper chromosome separation, known as non-disjunction. Gametes having 22 or 24 chromosomes could be the result of this. When an abnormal gamete merges with a normal one, the resulting embryo may have 47 chromosomes rather than 46. For example, trisomy 21 causes Down syndrome when an individual has three copies of chromosome 21 in all body cells. The three main stages of meiosis are chromosomal segregation, genetic recombination, and pairing. Genetic recombination is the process by which paired chromosomes exchange genetic material. Homologous chromosomes separate during segregation, producing gametes with 23 chromosomes. Trisomy 21-related developmental and medical

disorders can arise from errors in segregation during this process, which can lead to an additional chromosome in the fertilized egg (Wajuihian, 2016).

**Figure 1.2**

*Karyotype for trisomy Down syndrome: Notice the three copies chromosome 21*



### 1.5.3 Types of Down Syndrome:

Down syndrome is characterized by some degree of genetic variability. According to the Centers for Disease Control and Prevention (2022), this condition can take three distinct types. The most common type, trisomy 21, constitutes 95% of cases. This occurs when there are three distinct copies of chromosome 21 rather than the usual two. The second kind, referred to as translocation Down syndrome, affects just a tiny percentage of people (3%). This latter happens when an additional portion of chromosome 21 is attached to another chromosome instead of staying as a separate third copy. Approximately 2% of people with DS fall into the final form, known as mosaic Down syndrome. In this form, some cells have three copies of chromosome 21, whereas others have two normal copies. People with this type of DS share similar physical traits with others who have the condition but often experience fewer health issues. (Center for Disease Control and Prevention, 2022).

#### **1.5.4 Symptoms of Down Syndrome:**

Individuals with DS typically have similar physical traits due to their genetic anomaly, making them easily recognizable. According to the National Down Syndrome Society (NDSS, 2023), the most common physical characteristics include small ears, a short neck, a flat face (particularly around the nasal bridge), and short height. They may also have small hands and feet with a wide gap between the first and the second toes, a single crease across the palm of the hand curving around the thumb, a large tongue protruding from the mouth, slanting up almond-shaped eyes with a tiny white mark on the iris, poor muscle tones, and loose joints. These features are attributed to genetic abnormalities that shape the body's structure, organs, and functions (Fisher & Vernes, 2015; Sabatini, 2016). Additionally, DS patients are at higher risk of developing several health issues, including heart defects, Alzheimer's disease, and leukemia, along with vision and hearing impairments (Lawler, 2023).

Moreover, cognitive impairments in DS individuals hinder typical language development. As DS is commonly associated with intellectual disabilities (Hodapp & Zigler, 1990), individuals with this condition frequently experience cognitive deficits that impact verbal short-term memory. According to Costa, Purser, and Passolunghi (2015), these challenges influence everyday tasks like learning, reading, writing, language processing, and imagination. Deficits in comprehension and a decrease in speech length were also seen (Laws, 2014). Furthermore, long-term memory problems may hinder the capacity to retrieve stored information (Florez, 1999, cited in Campana, 2012). Research has indicated that verbal long-term memory in people with DS is more impaired than in everyday memory. Verbal memory tasks entailed recalling irrelevant concepts, whereas everyday memory focused on retaining daily activities and personal events (Yang, Himmelberger, Robinson, Davis, Conners, & Merrill, 2021). Therefore, these memory impairments may stem from aberrant synaptic activity linked to genetic mutations. Also, working memory irregularities can result in a malfunctioning phonological loop, which is necessary for processing sounds, repeating them, and associating words with their meanings (Backley & Le Prévost, 2002; Baddeley, 2007). These issues suggested that children

with language difficulties, including those with DS, must make more efforts to process language than their typically developing peers (Gopnik, 1997). Overall, non-linguistic cognition may have considerable influence on language development, as evidenced by the cognitive deficiencies of people with DS.

### **1.5.5 Language Development in Children with Down Syndrome:**

Children with DS experience a range of language challenges that affect various aspects of language development, although the degree of impact varies across these aspects (McDuffie et al., 2008; Loveall et al., 2016). Among these challenges is the gap between expressive and receptive language skills, with expressive language delay evident from infancy, even before the emergence of formal vocal speech (Chapman, 1997; Andreou & Katsarou, 2016).

Furthermore, the development of the articulatory skills in children with Down syndrome tends to take time and effort (Rondal, 1995, p. 6). Accordingly, Rondal (1985, pp. 15-36) proposed several common phonological deficits in children with DS, including articulatory defects, crucial stuttering, delayed acquisition of certain phonemes, and a slow speech rhythm. Moreover, according to Shriberg and Widder (1990), children with DS often experience speech intelligibility challenges that may last a lifetime. These challenges may result from the reduction or omission of morphosyntactic elements or other factors, such as variations in speech patterns or voice quality (Stoel-Gammon, 1997). Additionally, Timmins, Hardcastle, Wood, and Cleland (2009) found that people with DS struggle with producing fricative sounds.

Besides, research indicates that children with DS frequently face delays in language acquisition, especially in vocabulary and comprehension; for instance, they typically need to reach a lexical repertoire of around 100 single words in order to move on the construction of two-word phrases (Roberts et al.; 2007, p. 28; Buckley, 1993, pp. 5-6). Additionally, a study published in “Development Neuropsychology” shows that these children often have a smaller vocabulary size and struggle with semantic processing, relying more on contexts to decipher meaning (Fowler, 1990). Further

description of the semantic issues in DS children will be discussed in the following section.

Moreover, for people with Down syndrome, syntax is a particular linguistic challenge, as it is more affected than vocabulary in both expressive and receptive domains (Abbeduto et al., 2003; Berglund & Eriksson, 2000; Chapman et al., 1991; Laws & Bishop, 2003; Berglund et al., 2001). Syntax comprehension abilities of children, adolescents, and young adults with Down syndrome are often lower than expected given nonverbal cognitive ability (Abbeduto et al., 2003; Caselli et al., 2008; Chapman et al., 1991; Joffe & Varlokosta, 2007; Laws & Bishop, 2003; Price et al., 2007; Rosin, Swift, Bless, & Vetter, 1988). According to Price and colleagues (2007), 45 boys with Down syndrome performed worse in understanding grammatical morphology (such as prepositions and bound morphemes) and syntax (e.g., active or passive voice, direct or indirect objects). Also, syntax comprehension may experience slower progress or decline in late adolescence and early adulthood (Chapman et al., 2002; Laws & Gunn, 2004). As well as there is convincing evidence that these individuals have productive syntactic deficits beyond cognitive level. According to Rondal (2009, pp. 75-76), children with DS usually start moving from one-word to two- or three-word utterances around the age of 3, with grammatical challenges becoming more pronounced throughout this stage. Between the ages of 5 and 20, language production is often evaluated using the mean length of utterance (MLU), which serves as a standard measure for evaluating linguistic development. Notably, unlike syntax comprehension, MLU and syntax complexity in DS patients may continue to develop throughout late adolescence and young adulthood. This makes expressive syntax a promising area for intervention (Chapman et al., 2002; Thordardottir, Chapman, & Wagner, 2002).

In addition, compared to syntax and morphology, pragmatics is a strength for children with DS, though some difficulties persist (Robert et al., 2007). They can perform various routine communication tasks, including making requests, affirming, rejecting, or giving orders (Rosenberg & Abbeduto, 1980). However, making a request is considered a challenging task (Beeghly, Weiss-Perry, & Cicchetti, 1990).

In this regard, Beeghly and colleagues (1990, p. 344) reported in their study that 17 boys and 11 girls with DS used a lower frequency of requests but were able to maintain topics and engage in other communicative tasks like responding, making comments, and protesting. According to Abbeduto and Murphy (2004) and Abbeduto et al. (2004), individuals with DS can repair communication problems but are less likely to do so unless explicitly encouraged.

### **1.5.6 Semantic Deficiency:**

Receptive language or comprehension in individuals with DS has been widely studied in relation to expressive vocabulary. Research indicates that comprehension skills are more developed than expressive production across all age groups up to adolescence (Chapman, Schwartz & Kay-Raining Bird, 1991; Chapman, 2006; Facon, Facon-Bollengier & Grubar, 2002). However, evidence suggests that language comprehension may decline as people with Down syndrome reach adulthood (Chapman, Hesketh & Kistler, 2002), which may be associated with deficits in auditory short-term memory or long-term memory. Regardless, comprehension appears to improve when aided by visual or auditory information (Toms, Morris & Foley, 1994). Moreover, children with DS frequently experience delays in expressive language, even when they demonstrate strengths in comprehension. These delays can lead to frustration, particularly when they struggle to speak clear words. To address this, many children between the ages of 2 and 4 benefit from learning signs, which allow them to successfully express their needs even in situations where speaking is difficult (Buckley, 1999). However, research indicates that problems with word production, especially verbs, still exist, as shown in studies utilizing fast mapping techniques, i.e., a cognitive mechanism that allows children to generate as many words as they can from a certain grammatical category (Nash & Snowling, 2008).

Early language development in children with DS follows typical patterns, where nouns dominate the first words learned. The Natural Partitions Hypothesis suggests that nouns are easy for children to acquire because they represent concrete, easily recognizable items (Gentner, 1982; Tomasello, 2003). Studies indicate that up to 60%

of children's early vocabularies are composed of nouns or single words that are frequently used in their surroundings (Brent & Siskind, 2001). However, compared to concrete words like "book" or "pen," children with DS face greater difficulty with abstract words such as "friendship" or "happiness" (Lorusso et al., 2017).

Lexical development in children with Down syndrome is closely related to other developmental areas, such as cognition, memory, attention, adaptive level of functioning, and socio-emotional skills (Coppini & Gatt, 2015). However, challenges like poor concentration, distractibility, and weak inhibitory control are crucial factors contributing to language and vocabulary difficulties in DS (Cornish & Wilding, 2010). In fact, Cornish et al. (2012) indeed found that early inattention and hyperactivity are linked to lower levels of receptive vocabulary.

These vocabulary challenges can be examined through the dimension of breadth and depth. Vocabulary breadth encompasses the number of words a child can comprehend and utilize. Research suggests that children diagnosed with DS frequently exhibit a more restricted lexicon compared to their typically developing peers (e.g., Berglund et al., 2001; Miller & Leddy 1998; Oliver & Buckley, 1994). For instance, a study by McCathren et al. (2004) found that children with DS may only acquire 50-100 words, whereas typically developing children often reach around 300 words in the same period. Nevertheless, some research has revealed that DS children exhibit better performance in vocabulary reception in relation to developmental expectations (Michael et al., 2012; Loveall et al., 2016; Chapman et al., 1991). For example, Lazaro et al. (2013) found that while children with DS had lower scores in vocabulary reception compared to their chronological age group, they performed better relative to their typically developing (TD) peers of the same mental age.

On the other hand, vocabulary depth, which includes the grasp of meanings, synonyms, antonyms, and contextual applications. According to a study by Laws and his colleagues (2015), DS children exhibited a relative strength in word recognition (receptive vocabulary breadth) compared to semantic associations (semantic depth), indicating a disassociation between word-picture matching vocabulary and depth of

semantic knowledge. Nevertheless, research demonstrates that with rich linguistic exposure and focused interventions, these children can effectively improve their comprehension and application of vocabulary.

### **1.5.7 Interventions and Strategies:**

The advancement of language development in children with Down syndrome can be greatly improved through targeted interventions and methods. These interventions often include:

#### **a) Early Intervention Programs:**

The earlier the intervention, the better the outcomes for children with DS. Early intervention programs, typically commencing during infancy or early childhood, focus on boosting communication skills through play-oriented activities and social engagement. As reported by the National Down Syndrome Society, engaging children in early speech therapy has demonstrated a significant improvement in their communication abilities by leveraging the natural learning processes that are activated during early developmental stages. For instance, Fidler et al. (2020) found that children who participated in early intervention programs exhibited better language outcomes by the age of six compared to those who did not benefit from such support.

#### **b) Shared Book Reading (SBR):**

SBR is an effective intervention for fostering language development in children with DS. This approach encompasses interactive reading sessions between parents and children, which may help in improving language and communication skills. Research indicates that SBR enhances parental sensitivity and encourages the sustained application of language-promoting strategies following the intervention. However, the current corpus of evidence is limited and primarily consists of single case studies (Jeremić et al., 2023).

**c) Use of Augmentative and Alternative Communication (AAC):**

AAC serves as an essential instrument for children with Down syndrome, especially for those facing profound speech production challenges. Techniques such as picture exchange communication systems (PECS), or speech-generating devices can help enhance communicative interactions. According to Holyfield et al. (2022), children who utilized AAC systems exhibited improvements not only in their communication capacities but also in their comprehensive language development over a sustained period.

**d) Signs and Gestures:**

Research by Miller et al. (1999) highlights the significance of imparting sign language to children with Down syndrome in order to mitigate the negative effects of speech production delays, to sustain an accelerated rate of vocabulary comprehension, and to foster the capacity to symbolize. This intervention is particularly valuable for individuals with DS who experience auditory impairments. Nonetheless, it is also important to promote the production of a diverse array of sounds by children and encourage them to practice their oral-motor skills. This can be effectively executed in fun ways, including auditory games and nursery rhymes. Additionally, the establishment of good feeding and chewing habits, as well as encouraging nose rather than mouth breathing, may enhance voice quality and speech clarity (Buckley, 1993).

**1.6 Conclusion:**

This chapter has laid a foundational comprehension of language development, with a particular concern on children with Down syndrome. The researcher initiated by exploring the essential aspects of language, encompassing its definition, components, and the typical stages of language development. Subsequently, various theories of language development, such as nativism, social interactionism, and cognitivism, were explored. Additionally, the chapter provided a thorough overview of Down syndrome, addressing its history, genetic basis, types, and symptoms. Special

attention was placed on the language development challenges faced by individuals with Down syndrome, particularly their semantic difficulties, which may hinder both comprehension and production. This emphasized the need for tailored interventions and strategies. As a result, the next chapter will present a situational analysis and a detailed description of data collection methods.

# **Chapter Two**

## **Research Design and Methods**

|  |    |
|--|----|
| Chapter Two: Research Design and Methods | 26 |
| 2.1 Introduction                         | 28 |
| 2.2 Research Context and Methodology     | 28 |
| 2.3 Research Setting                     | 29 |
| 2.4 2.4 Sample Population                | 30 |
| 2.5 Research Sampling Techniques         | 31 |
| 2.6 Research Instruments                 | 32 |
| 2.6.1 Teachers Interview                 | 33 |
| 2.6.2 Classroom observation              | 33 |
| 2.6.3 Tests                              | 34 |
| 2.7 Conclusion                           | 35 |

## **2.1 Introduction**

The following chapter deals with the practical side of the research, in which it describes the methodological framework that guides the investigation into receptive vocabulary comprehension among children with Down syndrome. The researcher used a deductive approach to evaluate existing studies regarding receptive vocabulary comprehension among children with Down syndrome. Through an exploratory descriptive, single instrumental, and holistic case study design, complemented with a mixed-methods approach, the researcher aimed to accomplish the research objectives and address research questions. The sample population was selected through snowball, purposive sampling, along with expert sampling with secondary participants. Furthermore, the data collection phase involved the utilization of three research instruments, including semi-structured interview with teachers, non-participant classroom observation, and standardized tests, which provided extra in-depth information into the phenomenon.

## **2.2 Research Context and Methodology**

Effective academic study requires a systematic and solid methodology that leads to the applicability and validity of the findings. Herrman (2009) defines methodology as a (usually) conceptual structure that, both because coherent and internally consistent, and because comprised of a template of putative and/or accepted principle, is employed to analyze and/or organize data from which to discern or reasonably impute a common core principle within the analysis and that may enable either the development or logical validation of theoretical postulates (P.13).

Accordingly, methodology serves as a framework for structuring techniques that enhance the process of inquiry, ensuring accuracy, consistency, and the capacity to extract meaning from complex realities (Herrman, 2009). Therefore, it is important to choose the correct research methodology that fits the nature of the topic, research objectives, and research questions to determine the success and overall quality of the research study.

In this study, the researcher employed a deductive approach to evaluate existing theories concerning receptive vocabulary among children with Down syndrome, aiming to derive results from these examinations. Additionally, the intention to investigate and provide detailed, contextualized descriptions into how DS children develop their understanding of words in their daily classroom routines, along with the strategies used to enhance this process, leads to the adoption of an exploratory descriptive, single instrumental, and holistic case study design. This approach utilized a mixed-methods approach, which helps in enhancing the reliability and richness of the research findings. By combining both quantitative and qualitative paradigms, the study generates numerical data for statistical analysis and textual data for thematic analysis. Subsequently, this diverse methodology captures the intricacy and multidimensional aspects of the research at hand.

### **2.3 Research Setting**

The present study was carried out as part of a master's degree in Language Sciences at the University of Tlemcen during the academic year 2024-2025. The research journey began at the English department of Tlemcen with the thesis supervisor in order to discuss the initial steps. Accordingly, the first phase involved getting authorization to access Down syndrome children's schools. To achieve this, the researcher visited the AWIT association for DS children, where the researcher met with the association's responsible party, presented a document confirming her status as a student (see appendix A), and explained the objectives of the study, which led to a productive dialogue regarding the criteria essential for selecting appropriate participants among the DS children to ensure the sample's homogeneity. Subsequently, the responsible agreed to facilitate access to Khalil Abdeslam Primary School, which accommodates two classrooms of DS children. However, he advised the researcher to first submit a formal request letter to the Director of Education for Tlemcen Province and contact him once receiving the authorization letter in order to inform the school's director and teachers about the impending visit.

Following this guidance, the researcher prepared and submitted a formal request letter to the Director of Education for Tlemcen Province. After a waiting period of three weeks, the authorization was granted, permitting access to the school from 10 February to 25 May (see appendix B). Ergo, a formal visit was made to the school where the researcher met the director, who was already expecting the visit and showed him the aforementioned authorization. The access was granted to the researcher, who proceeded directly to the classrooms and was warmly welcomed by the teachers. It was at this stage where the data collection phase commenced.

#### **2.4 2.4 Sample Population**

The sample population for this study included 21 pupils diagnosed with DS, divided into two classrooms according to their academic level and age range. Additionally, five teachers who worked closely with them also participated in the research as secondary informants. The first classroom consisted of 10 pupils (8 girls and 2 boys) at the 2nd-year level, with an approximate age range of 10 years. This classroom was supported by two teachers. The first one held a master's degree in Arabic and was responsible for teaching both Arabic and Islamic studies. With an experience of over 15 years working with DS children, including 5 years with this class. The second teacher, who teaches mathematics, holds two master's degrees in both educational psychology and clinical psychology. She had approximately 13 years of experience with DS individuals, including 4 years specifically with this group.

The second classroom covers 11 pupils (10 girls and 1 boy) between the ages of 14 and 18, studying in the 5th year with three teachers. The first teacher is a French language teacher with 3 years of experience working with these pupils. She holds a Master's degree in French language. The second one is responsible for teaching both Arabic and English languages and has also been working with this group for 3 years. She possesses an English Master degree in Translation. The last teacher, mathematics teacher, had an extensive background of 21 years working with DS children in general, including 6 years at this school. She holds a Master degree in educational psychology.

The teachers in both classrooms served as key informants due to their extensive experience and expertise. The researcher greatly benefited from their insights and knowledge. Furthermore, the teachers provided the researcher with the weekly schedule for each class (see appendix C), which facilitated the planning of the data collection process.

## **2.5 Research Sampling Techniques**

A key challenge in research involves ensuring that the sample is representative and capable of yielding valuable insights. To address this, the current work utilizes snowball sampling. Given that the target group represents a minority within society and is hard to access, the process of reaching these individuals relies on a visit to the AWIT association. During this visit, the responsible recommended working with Khalil Abdeslam Primary School, which has two classes of DS children. This recommendation was made based on specific criteria provided by the researcher in order to ensure homogeneity of the sample. As a result, another sampling technique—purposive sampling—was used to align with the study’s objectives. For example, in a study titled *Receptive Vocabulary Analysis in Down Syndrome*, Loveall et al. (2016) conducted purposive sampling to select participants with Down syndrome (DS), intellectual disabilities (ID), and typical development (TD) according to pre-defined criteria. Participants were recruited from universities, agencies, and schools, with strict selection criteria, such as the absence of autism spectrum disorder, the use of speech as a primary communication mode, and adequate hearing and motor skills, to ensure homogeneity within each group.

Therefore, for the present study, eligibility criteria included that the participants should be aged between 10 and 17 years with a confirmed DS diagnosis because children under 10 would not provide convenient data since they are still in the early stages of learning and ensure the exclusion of children with severe hearing impairment or other comorbidities that could confound language development.

Additionally, teachers are considered secondary participants because they act as “experts” due to their experience working with Down syndrome children, in which

they can provide valuable perspectives into the children's receptive vocabulary development based on their daily interactions and observations. As a result, a third sampling technique, expert sampling, was also used to further refine the selection process.

**Table 2.1**

*Sample Population Characteristics*

| Classroom | Pupils (n) | Gender (F/M) | Age Range | Academic Level | Teachers (n) | Teacher Specialization                         | Experience (Years)                     | Highest Qualification  |
|-----------|------------|--------------|-----------|----------------|--------------|--|--|--|
| 1         | 10         | 8F / 2M      | ~10       | 2nd year       | 2            | - Arabic & Islamic Studies<br>- Mathematics    | 15 (5 with group)<br>13 (4 with group) | MD (Arabic)<br>MD(Educational & Clinical Psychology)         |
| 2         | 11         | 10F / 1M     | 14–18     | 5th year       | 3            | - French<br>- Arabic & English<br>-Mathematics | 3<br>21 (6 with group)                 | MD (French)<br>MD(Translation)<br>MD(Educational Psychology) |

This table provides a structured overview of the study's participants, including pupils with Down syndrome (DS) and their teachers, categorized by classroom.

## 2.6 Research Instruments

The investigation of receptive vocabulary in children with developmental disabilities, particularly DS children, has evolved significantly over the years. Early studies utilized various instruments, including naturalistic observation, standardized tests, parents or teachers' reports (e.g., questionnaires or interviews), etc. Building on these foundations, the current research adopted a triangulation approach incorporating three research instruments: teacher interviews, a classroom observation, and standardized tests tailored for pupils with DS. This methodological triangulation

ensured a comprehensive and in-depth exploration of the receptive vocabulary of these individuals. Thus, the data collected will be analyzed using both qualitative and quantitative methods, allowing for a comprehensive examination of the research questions and a nuanced discussion of the findings.

### **2.6.1 Teachers Interview**

The first research instrument utilized for this study is a semi-structured interview with the teachers. This tool was employed in order to delve into the studied issue through the valuable insights of teachers, in which it helped to explore how teachers assess the practices involved with fostering receptive vocabulary among their pupils and identify the challenges they face in this context. The interview protocol included 6 main questions, along with their sub-questions, to ensure comprehensiveness and depth. These questions were also efficient in the construction of the observational grid used later in the study and extracting themes that are analyzed later. According to Gill et al. (2008), semi-structured interviews are particularly advantageous in educational research as they allow the researchers flexibility to elaborate or modify questions based on their interlocutors' responses. Moreover, Conti-Ramsden and Botting (1999) argued that teachers often have valuable insights in assessing children's receptive vocabulary due to their sustained interaction with them in academic settings.

### **2.6.2 Classroom observation**

The researcher selected an overt, semi-structured, and non-participant observation as a second research tool. In this approach, researchers prepare an observational guide with predefined questions or topics, but they remain open to adapting and investigating beyond this framework as observations progress (Hammersley & Atkinson, 2007). This method facilitates the collection of richer insights, which are crucial in understanding complex social phenomena. According to a survey published in the "International Journal of Qualitative Methods," approximately 37% of qualitative researchers prefer semi-structured observation due to its adaptability and capacity to generate in-depth data (Creswell, 2015). Therefore, the choice of

this method was driven by the need to triangulate and validate the data obtained from teachers' responses and to investigate receptive vocabulary of these pupils from the researcher's perspective. Additionally, given that individuals with DS face problems with attention, the researcher adopted a non-participant approach to avoid interaction during lectures to minimize potential disruption and maintain their focus.

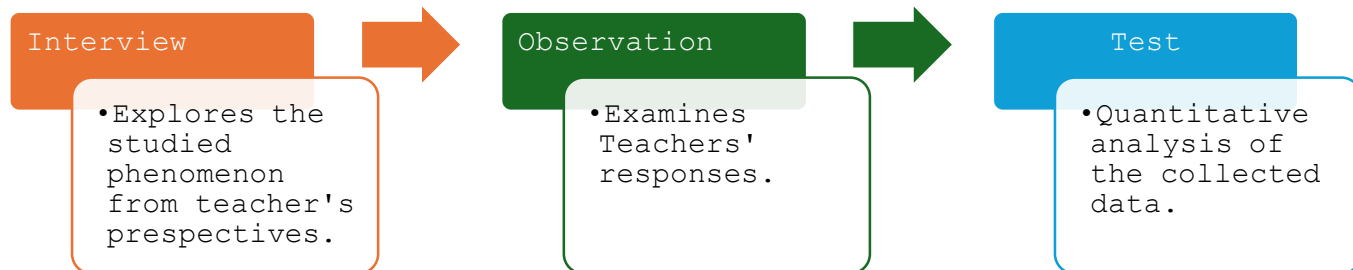
### **2.6.3 Tests**

In the context of research, a test is a systematic procedure used to evaluate knowledge, behavior, skills, or other attributes. It can be applied both quantitatively and qualitatively to measure characteristics associated with specific constructs. According to Bachman and Palmer (1996), "a test is a method of assessing individuals' performances in a given domain through a collection of tasks." This definition is crucial because it highlights the essence of test design, emphasizing that the tasks should be relevant and aligned with the research objectives. Furthermore, McNamara and Roever (2006) state that "testing is a fundamental process in the assessment of language proficiency and the exploration of cultural competencies." Tests can also be analyzed statistically to derive conclusions or inferences about a larger population (Cohen et al., 2013). Therefore, researchers and educators must carefully approach test design, ensure its validity and reliability and minimize potential biases.

The research at hand focused on two key constructs, receptive vocabulary and semantic knowledge in children with DS. To measure these, the researcher utilized two tests: The Arabic version of one-word picture vocabulary test. The test follows the general structure of receptive vocabulary tools such as the PPVT (Peabody Picture Vocabulary Test), but was independently designed in Arabic, using original vocabulary and visuals appropriate to the participants' age range and developmental levels. In addition to the Baby and Baby Bottle Test (adapted from the Camel and Cactus Test) to evaluate the understanding of word associations.

**Figure 2.1**

*Justification for The Selection of Research Instruments*



This figure illustrates a triangulated methodological approach designed to investigate receptive vocabulary comprehension among DS pupils. By incorporating multiple data sources, this systematic approach increases the reliability and comprehensiveness of the research, thereby reducing bias and strengthening the validity of findings.

## 2.7 Conclusion

In this section, the researcher provided a description of the methodology used to design this research. The study incorporated a deductive approach in order to check with previous research. The researcher also utilized an exploratory descriptive, single instrumental, and holistic case study design, supported by a mixed-methods approach that blended both qualitative and quantitative methods. Additionally, the sample population was selected through snowball, purposive sampling, as the participants represent a minority group within society. Specific inclusion criteria were defined by the researcher to ensure relevance and appropriateness of the participants. In addition to the expert sampling with secondary participants who have specialized knowledge with the participants. Furthermore, the data collection phase incorporated the utilization of three research instruments, including semi-structured interview with teachers, non-participant classroom observation, and standardize tests. This

triangulation of tools enabled the researcher to gather relevant data and facilitated a comprehensive analysis.

**Chapter Three**  
**Data Analysis,**  
**Interpretation and**  
**Recommendations**

|  |    |
|--|----|
| Chapter Three: Data Analysis, Interpretation and Recommendations             | 36 |
| 3.1 Introduction   | 38 |
| 3.2 Teachers Interview Analysis  | 38 |
| 3.2.1 Second-year level teachers   | 39 |
| 3.2.2 Fifth-Year Level Teachers  | 42 |
| 3.3 Classroom Observation Analysis   | 46 |
| 3.3.1 Language Comprehension   | 47 |
| 3.3.2 Comprehension Deficits   | 47 |
| 3.3.3 Engagement and Attention   | 48 |
| 3.3.4 Teachers' Communication Style  | 49 |
| 3.4 Tests Analysis   | 49 |
| 3.4.1 Receptive Vocabulary Test Analysis                                     | 50 |
| 3.4.2 Baby and Baby Bottle Test Analysis                                     | 51 |
| 3.4.3 Receptive Vocabulary and baby and The Bottle Tests Comparison Analysis | 52 |
| 3.5 Discussion of The Key Findings   | 53 |
| 3.6 Limitation of The Study  | 55 |
| 3.7 Recommendations  | 56 |
| 3.8 Conclusion   | 57 |

### **3.1 Introduction**

The present section aims to present, analyze, and interpret the data collected using the previously aforementioned instruments. Consequently, the data is analyzed using a mixed-methods approach, integrating both quantitative and qualitative analyses. Thematic analysis is employed for qualitative data, specifically two main themes were coded from teachers' interviews, and four rubrics were coded from classroom observation. For the quantitative data, statistical analysis is conducted on the numerical data collected from standardized tests used to measure receptive vocabulary and semantic knowledge of DS pupils. This dual approach guarantees a thorough and detailed understanding of the research problem.

### **3.2 Teachers Interview Analysis**

The researcher employed a semi-structured interview with the teachers as a primary research instrument. The central theme of the interview was to examine the perspectives and experiences of the instructors regarding the practice of receptive vocabulary among their pupils. As mentioned earlier, the interview consisted of 6 main questions with their sub-questions, incorporating a combination of open-ended, closed-ended, and multiple-choice formats. The interview was conducted in Arabic, as the participants were not proficient in English. The data were analyzed and classified based on the teachers' responses. The interviewees were teachers of DS pupils, comprising a total of 5 participants across two classes. The first class covered 2 teachers from the second-year level, while the second class involved 3 teachers from the fifth-year level.

**3.2.1 Second-year level teachers**

**Q.1 How long have you been teaching children with Down syndrome, what is the subject matter you teach, and your academic degree?**

**Table 3.1**

*Teaching Experience with Down Syndrome Pupils*

| <b>Teachers</b> | <b>Years of Experience</b> | <b>Subject Matter Taught</b>            | <b>Academic Degree</b>   |
|-----------------|----------------------------|---|--|
| <b>1</b>        | 13 years                   | Elementary basic Mathematics            | Master's degrees in educational psychology and clinical psychology |
| <b>2</b>        | 17 years                   | Arabic and Islamic elementary education | Master's degree in educational psychology                          |

The table reveals that both instructors have considerable knowledge and experience with intellectual disability children among which Down syndrome children. The first teacher has 13 years of experience dealing with intellectual disability children. She teaches elementary basic mathematics and possesses dual Master's degree in educational psychology and clinical psychology. In contrast, the second teacher brings 17 years of experience and teaches Arabic and Islamic elementary education. She holds a Master's degree in educational psychology. This displays a remarkable level of competencies and understanding among the participants.

**Q.2 How do you assess your pupils' receptive vocabulary? And what are the signs that indicate that a learner has comprehended a word or an instruction?**

Teacher 1 stated that the receptive vocabulary levels of her pupils greatly vary from one another. Accordingly, approximately 80% of the pupils have a good comprehension of words, while the remaining 40% struggle with word understanding. In contrast, the second teacher argued that her pupils have a wide and

adequate vocabulary range. Both teachers agreed that key markers of receptive vocabulary comprehension include correct responses, active participation during lessons, and engagement in dialogue.

**Q.3 What challenges do your learners face while developing their receptive vocabulary? Are there any specific words or concepts that they find difficult to realize? Can you provide examples of terms or concepts that they grasp easily?**

Concerning the obstacles that the learners face while developing their receptive vocabulary, both teachers agreed on the point that the learners struggle in understanding specific words due to their mental retardation as well as short-term memory deficits, which hinder their ability to retrieve previous information. Moreover, teacher 1 highlighted that the learners have difficulties in understanding concepts that extend beyond logical reasoning, such as abstract words and geometric shapes. On the other hand, teacher 2 argued that the learners face difficulties in comprehending unfamiliar words that are not commonly used in everyday contexts. Additionally, both teachers expounded that their learners exhibit a strong ability in grasping words related to self-expression and concrete nouns such as "book" or "pen," which are more tangible.

**Q.4 What strategies do you use to teach new vocabulary? Do you use visual aids and flashcards to enhance vocabulary learning? Additionally, how effective are signs, gestures, or other non-verbal cues in improving comprehension?**

The first teacher emphasized the use of certain strategies to enhance vocabulary comprehension, including visual aids, such as pictures, gestures, and videos, as well as real-life examples. For instance, linking mathematical concepts like addition to terms such as "buy," "give," and "increase", while associating subtraction with terms like "eat." She also stressed that "it is important not to use new keywords in order not to distract them." In contrast, the second teacher highlighted the use of two distinct types of strategies. The first, referred to as pedagogical strategies, involves activities recommended by the ministry, such as repetition, the use of pictures, and educational videos like teaching pupils how to brush their teeth. Additionally, she mentioned an

important method called “substitution”, where roles are reversed: instead of always being the teacher who asks questions, roles are switched so that the pupil becomes the questioner, and the teacher responds. This helps in developing pupils’ critical thinking. The second type, known as educational strategies, focuses on adapting the role of parents using order, termination, etc. Furthermore, both teachers underscored the crucial role of pointing and gestures in their teaching methods, in which they use consistent codes for each word, ensuring these codes remain unchanged to avoid confusion.

**Q.5 How do you reinforce new vocabulary in your class? Do you use repetition? If yes, how often do you do it?**

In order to ensure a new vocabulary reinforcement, both teachers emphasized the use of repetition as a key strategy, highlighting its effectiveness in enhancing comprehension. They noted that the application of repetition relies on the lesson’s nature and the extent of the learners’ comprehension. For instance, lessons that might require only a single session for typical learners could extend two weeks for DS learners.

**Q.6 How do you accommodate individual differences in vocabulary acquisition among your learners? Can you describe a case where a learner made significant progress in understanding spoken language?**

Concerning the issue of addressing individual differences, both teachers stated that pupils are treated and taught according to their level of intelligence and extent of realization. If a pupil demonstrates slower understanding, he will receive additional and individualized support. For example, the first teacher shared a case of a learner who initially was not able to count numbers; over time he became able to count from 10 to 60 and solve basic addition and subtraction problems. The second teacher noted that some pupils exhibit an “absorption and discharge” pattern where they discharge collected information all at once, while others show gradual and progressive development over time.

### 3.2.2 Fifth-Year Level Teachers

**Q.1 How long have you been teaching children with Down syndrome, what is the subject matter you teach, and your academic degree?**

**Table 3.2**

*Teaching Experience with Down Syndrome Pupils*

| Teacher | Years of Experience | Subject Matter Taught        | Academic Degree                           |
|---------|---------------------|------------------------------|---|
| 1       | 3 years             | French language              | Master's degree in French                 |
| 2       | 3 years             | Arabic and English languages | English master's degree in Translation    |
| 3       | 21years             | Elementary basic mathematics | Master's degree in educational psychology |

The table presents an overview of professional experiences of three teachers of the fifth-year level pupils, detailing their years of experience, subject matter taught, and their academic degree. Teacher one has 3 years of experience in teaching DS children French language, and holds a Master's degree in the language. The second teacher also has 3 years of experience and teaches both Arabic and English languages and possesses an English Master's degree in Translation. Teacher three is notable for having 21 years of experience with Intellectual disability children among which those with DS. She teaches elementary basic mathematics, supported by a Master's degree in educational psychology.

**Q.2 How do you assess your pupils' receptive vocabulary? And what are the signs that indicate that a learner has comprehended a word or an instruction?**

The first teacher mentioned that the receptive vocabulary levels of her pupils differ significantly. She estimated that about 50% are good, 30% demonstrate an average, and the remaining 20% have a poor comprehensive of words. The second teacher said that *“the learners in general have an average realization in which they do not*

*grasp all the information provided to them.*” Moreover, the third teacher claimed that “70% of my learners have a good understanding.” She added that this variation relies on their cognitive capacity and the home environment, including whether they receive support from their families or are neglected. Concerning the indicators that show learners’ comprehension. They all agreed on learners’ participation during the lesson and the correct responses to the activities.

**Q.3 What challenges do your learners face while developing their receptive vocabulary? Are there any specific words or concepts that they find difficult to realize? Can you provide examples of terms or concepts that they grasp easily?**

Teacher 1 stated that her pupils do not face significant challenges in learning because she follows a structured program that corresponds to their cognitive level. In contrast, teacher 2 revealed that her pupils indeed struggle with word comprehension due to their mental retardation and cognitive deficits, which limit their creativity and productivity. She explained, “*They wait for someone to provide them with ideas and information.*” She added that they frequently struggle with understanding abstract terms, although some concepts, such as friendship are easier to be explained and grasped. However, religious, and spiritual concepts remain challenging for them to comprehend. On the other hand, teacher 3 pointed out that certain lessons go beyond their comprehension abilities, such as division or calculating the perimeter of a square. Regarding words that are easier to comprehend, all teachers agreed that familiar words and everyday vocabulary related to their daily activities, such as “la table” (table) or “la brosse” (the brush), are more readily grasped by the pupils.

**Q.4 What strategies do you use to teach new vocabulary? Do you use visual aids and flashcards to enhance vocabulary learning? Additionally, how effective are signs, gestures, or other non-verbal cues in improving comprehension?**

All teachers emphasized the use of specific strategies to consolidate information. Teacher 1 highlighted the application of visual aids, including large, colorful pictures, videos, and flashcards, as well as real-life examples. For instance, she uses their friend “Djaber” to represent the word “masculine” and “Dua” for “feminine.”

Furthermore, teacher 2 noted that she employs strategies such as repetition, memorization, and scaffolding to ensure comprehension. However, she mentioned that she no longer uses visual aids at this age, as they were primarily utilized during the early developmental stages. Additionally, teacher 3 estimated she incorporates role-playing games, tangible tools, pictures, and stories to facilitate understanding. For example, during the addition lesson, the teacher groups two or more pupils together to visually illustrate the concept of addition. She also uses real-life examples, such as telling them that the teacher divides a pizza into 8 parts; this represents the fraction  $1/8$ . She stated, *"They lack the ability to imagine, so they need to see a concrete example in order to understand the concept."* Also, she added that *"they like food-related examples."* Furthermore, all teachers underscored the essential role of pointing and gestures in enhancing learners' comprehension, emphasizing that these methods cannot be replaced. For example, teacher 2 insisted on the use of gestures, especially during dictation lessons, such as the use of an accusative sign with hands above their heads and the nominative sign by moving their hands in a round shape next to their mouths.

**Q.5 How do you reinforce new vocabulary in your class? Do you use repetition? If yes, how often do you do it?**

All teachers' responses emphasized the significant role of repetition in reinforcing new concepts. They explained that a single lesson may require multiple sessions to ensure comprehension, and they only move to the next lesson once the pupils demonstrate a solid understanding.

**Q.6 How do you accommodate individual differences in vocabulary acquisition among your learners? Can you describe a case where a learner made significant progress in understanding spoken language?**

To accommodate individual differences, all teachers illustrated that they treat their pupils depending on their cognitive abilities and level of intelligence. They explained that pupils with strong comprehension skills receive standard instruction, whereas those with weaker abilities are only taught basic things. Regarding pupils'

progression, teacher 1 stated that *"No student has achieved excellence; the good ones remain good, and the weak ones stay weak despite attempts to develop their skills and competencies."* Similarly, teacher 2 noted that *"if a student is weak, they do not excel despite attempts, either because of the severity of the disability or due to family neglect."* On the other hand, teacher 3 said that *"the student's progress depends on the lesson or subject being taught. There are topics they do not engage with and make no progress in."*

**Table 3.3**

*Summary of Challenges and Teaching Strategies for Pupils with Down Syndrome*

| <b>Category</b>                 | <b>Details</b>  |
|---------------------------------|---|
| <b>Challenges</b>               |   |
| Lack of Receptive comprehension | Intellectual disabilities and short-term memory deficits which hinder previous information retrieval and comprehension. |
| Abstract Concepts               | Difficulty in comprehending abstract words, geometric shapes, and spiritual/religious concepts.                         |
| Unfamiliar Words                | Struggles with words not usually used in everyday life.   |
| Complex Lessons                 | Challenges in understanding advanced topics like division or calculating the perimeter of a square.                     |
| Limited Imagination             | Difficulty imaging abstract ideas, reliance on tangible examples for comprehension.                                     |
| Family neglect                  | Lack of family supports can limit progress and skill development.   |
| Semantic Associations           | Struggle with recognizing or producing meaningful connections between words and concepts.                               |
| <b>Teaching Strategies</b>      |   |
| Visual aids                     | Use of large, colorful pictures, educational videos, tangible tools, and flashcards.                                    |
| Gestures & Pointing             | Using consistent gestures and signs to reinforce meaning.   |

|                         |  |
|-------------------------|--|
| Repetition              | Consolidating concepts through repeated exposure and practice.   |
| Role-Playing Games      | Incorporating role-playing games to demonstrate concepts.  |
| Real-Life Examples      | Linking lessons to everyday activities.  |
| Narrates Stories        | Helps in breaking down abstract concepts into understandable scenarios.                                |
| Scaffolding             | Dividing lessons or tasks into smaller, manageable steps.  |
| Individualized Supports | Tailored for pupils with weak cognitive abilities.   |
| Substitution Methods    | Switching roles so pupils ask questions and teacher responds which helps developing critical thinking. |

This table illustrates the challenges faced by Down syndrome pupils which hinder their receptive vocabulary comprehension, as well as the strategies used by their teachers to overcome this problem.

### **3.3 Classroom Observation Analysis**

As stated above, the observation was based on the teachers' interview in order to move from teachers' perspectives to researcher's perspectives. This was essential to cross-validate the information provided by the teachers.

After taking five sessions of classroom observation, each lasting 90 minutes(1h30) or more across both classrooms (second-year level and fifth-year level) the researcher gathered valuable data on the receptive vocabulary of DS pupils. Data was collected using a structured observational grid (see appendix E). The classroom observation was guided by five rubrics: language comprehension, comprehension deficits, engagement and attention, and teachers' communication style. The following paragraphs detail the finding observed during the classroom observation, aligning with each rubric in the grid.

### **3.3.1 Language Comprehension**

Through classroom observation, the researcher noted that Down syndrome pupils demonstrated a notable ability to comprehend direct verbal instructions. For example, when they are asked to complete a task or open their books in a specific page, they all followed the instructions with ease except one “special case”. Moreover, they exhibited a strong grasp of common classroom vocabulary, including objects and actions.

During a reading session with second-year level, pupils listened attentively to the teacher, and easily inferred the context of the story, particularly when supported by the teacher’s use of gestures. They were effectively able to answer questions related to the story. For example, when reading a text titled “My Health Relies on My Diet”, the pupils successfully answered a question that was about suggesting some suitable food items for lunch, demonstrating their understanding of the text’s ideas and contextual cues. However, a minority of pupils with serious intellectual disabilities did not participate in this activity. They also exhibited sensitivity to their teacher tone of voice while reading the text, displaying empathy for the girl in the story who had a stomachache.

Additionally, DS children showed a strong capacity in interpreting and imitating the teachers’ gestures, using similar non-verbal cues when delivering their own ideas. This indicates their ability in processing and employing non-verbal communication (see appendix E).

### **3.3.2 Comprehension Deficits**

As previously mentioned, mental retardation is one of the most serious challenges for DS children. This delay profoundly affects their ability to realize word meanings and their referents (semantic depth). For example, during a reading session with second-year level pupils, they demonstrated difficulty in identifying the synonym of the verb "يتناول" (consumes) with "يأكل" (eats). Additionally, these children experience short-term memory deficits. This was evident during a mathematics revision lesson with fifth-year level pupils, where they found difficulties in recalling previous information

and required extended time to refresh their memory. Also, they indicated challenges in understanding task instructions. So, the teacher repeated it until they fully grasped the purpose behind it. Moreover, another challenge observed is difficulty in distinguishing between numbers. A specific case was observed: when a large number such as “7945730” contains the same digit more than once, the student does not write the repeated digit twice because, according to her understanding, she has already written it, and there is no need to write it again. Furthermore, DS learners have problems in using rules since they memorize with no real understanding, i.e., they memorize the rule automatically, but they do not know how or when to apply it.

### **3.3.3 Engagement and Attention**

The majority of the learners expressed feelings of happiness and excitement toward the researcher. Over time, strong friendship developed between them. They frequently shared their handwriting and completed exercises. The interaction often included warm hugs and cheerful conversations about their recent activities and personal interests.

Concerning their behavior during the class, most of them showed interest and motivation, particularly those who exhibited both intellectual and social competencies. These learners actively participated by raising their hands to answer questions, approaching the board to solve exercises, and helping their peers to answer correctly. They frequently repeated what their teacher said and imitated their gestures. Additionally, positive reinforcement, such as verbal praise, made them happy and enthusiastic. However, individual differences were apparent. For instance, there was a case of a fifth-year level learner who knew the answers but was hesitant to respond due to a lack of social intelligence. Furthermore, they demonstrated perseverance, continuing their efforts even after initial misunderstandings or difficulties. They also engaged in cooperative activities. For example, they collaboratively prepared a dance performance for a school party before the holidays. Nonetheless, challenges with sustained attention were observed. These learners were easily distracted and lost focus due to minor noises, requiring frequent reminders to stay on task.

### 3.3.4 Teachers' Communication Style

The pedagogical approaches observed among all teachers consistently demonstrated their use of a clear and simple language tailored to the learners' cognitive levels. They also employed a strategic combination of Standard Arabic for formal instruction and dialectal Arabic for further illustration. To enhance their pupils' understanding, they relied on using familiar words and real-life examples, as exemplified when the second-year level Arabic instructor utilized both dialect and examples to explain the abstract linguistic concept "synonym." She described it as "الكلمة وأختها" ("the word and its sister"). Furthermore, the fifth-year level mathematics teacher provided her pupils with a practical strategy to differentiate between the place value of ones and tens. She used gestural modeling (right-to-left hand motions) while saying, "نمشيو و" ("we go and come back"). Additionally, among the most frequently used techniques are repetition and pointing, such as the use of an accusative sign with hands above their heads and the nominative sign by moving their hands in a round shape next to their mouths, which help in reinforcing the new concepts. As well as teachers incorporated colorful board pens and tangible things and pictures to grab learners' attention and maintain their focus.

### 3.4 Tests Analysis

As mentioned earlier, the researcher developed two assessment tools aimed at investigating word comprehension and semantic association among DS learners. Due to frequent absences among the pupils, only 15 out of the initial 21 learners completed the full set of assessment process. The first tool was an Arabic version of a Receptive Vocabulary Test. It was independently designed by the researcher, incorporating original vocabulary and visual stimuli appropriate to the learners' capacities. This test consisted of 10 items, requiring the participants to select a picture from a set of three options that corresponded to a spoken word. On the other hand, the second test known as the Baby and the Bottle Test (adapted from the Camel and Cactus test). It is also comprised 10 items, where the learners were asked to select a picture semantically related to a target picture (e.g., baby → baby bottle).

### 3.4.1 Receptive Vocabulary Test Analysis

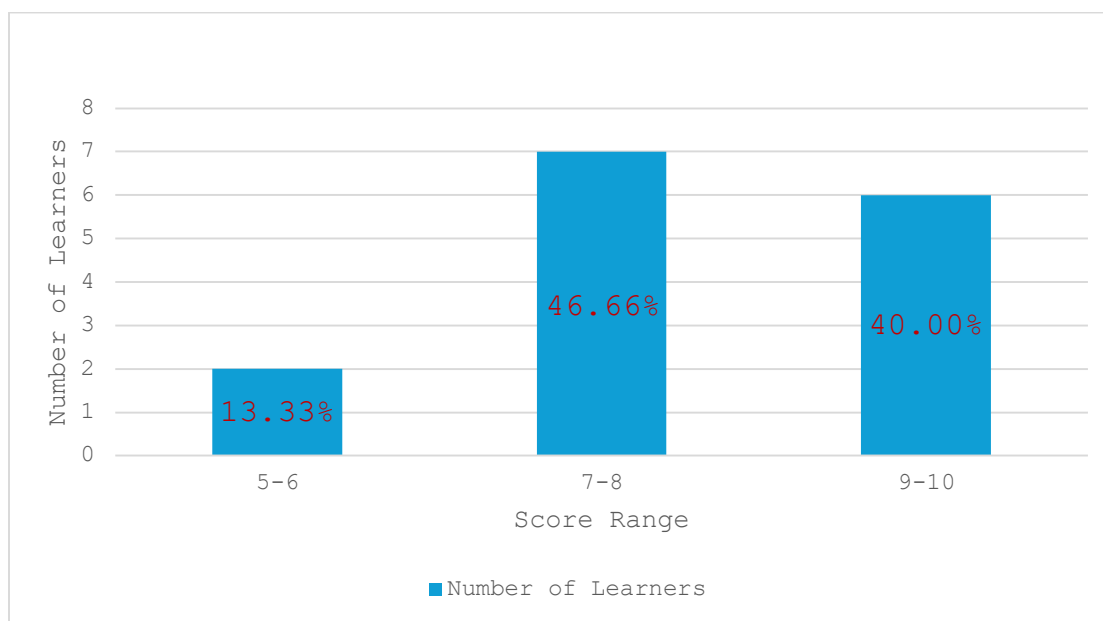
The data analysis revealed that the majority of participants (86.7%) demonstrated a well-developed receptive vocabulary, reflecting a robust lexical knowledge base (see table 3.4). Notably, 46.66% of the pupils scored within the 9-10 range, suggesting a high level of vocabulary proficiency and overall task success. Furthermore, 40.00% of learners achieved scores within the mid-range of 7-8, indicating an adequate level of receptive vocabulary competence among a significant portion of the group. In contrast, only 13.33% of pupils were classified as underperformers, demonstrating that small subset of participants may exhibit limited receptive vocabulary skills and may require additional linguistic supports.

The item-level analysis highlighted that the most significant challenges were encountered with the second and tenth test items (see appendix G). The second term, *متلجات* (ice cream), was a challenge for about eight participants, while the tenth term, *بطريق* (penguin), was not recognized by around ten pupils. These issues could be resulted from the learners' limited familiarity with these lexical terms in their everyday lives or educational contexts.

**Table3.4**

*Frequency Distribution of Receptive Vocabulary Scores (N=15)*

| <b>Score Range (10)</b> | <b>Number of Learners</b> | <b>Percentage</b> |
|-------------------------|---------------------------|-------------------|
| 5-6                     | 2                         | 13.33%            |
| 7-8                     | 7                         | 46.66%            |
| 9-10                    | 6                         | 40.00%            |

**Graph 3.1***Frequency Distribution of Receptive Vocabulary Test Scores***3.4.2 Baby and Baby Bottle Test Analysis**

The data presented in the table (see table 3.5) illustrated a positively skewed distribution, indicating a tendency towards higher performance in semantic association capacities, with 53.33% of learners attaining scores of 9 or 10. These findings implied that over half the participants can effectively recognize semantic relationships. Moreover, 26.67% of the learners achieved moderate scores, reflecting a functional but not a solid grasp of semantic associations. Conversely, the presence of 20% of learners in the lower scoring range suggests that a portion of the participants may require extra instructional support to improve their semantic knowledge.

Additionally, the data analysis highlighted that the fourth and the sixth items were particularly problematic for the pupils. The semantic association in item four, "car with the wheel" (السيارة مع العجلة), demonstrated a challenge for approximately 6 learners, whereas item six, "chicken with the egg" (الدجاجة مع البيض), proved difficult for around 4 participants.

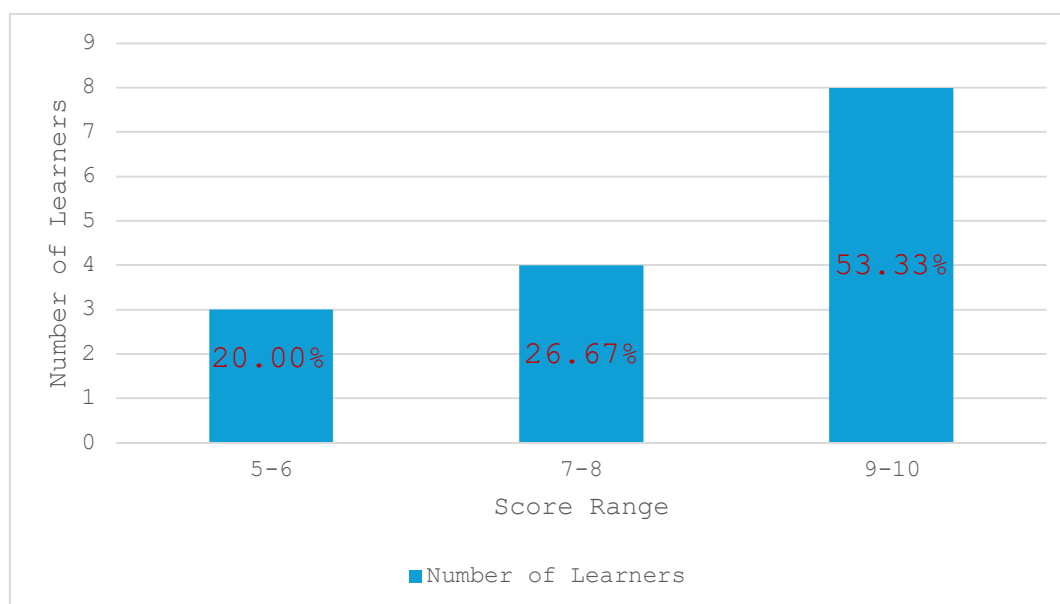
**Table 3.5**

*Frequency Distribution of Baby and Baby Bottle Test Scores (N=15)*

| Score Range (10) | Number of Learners | Percentage |
|------------------|--------------------|------------|
| 5-6              | 3                  | 20.00%     |
| 7-8              | 4                  | 26.67%     |
| 9-10             | 8                  | 53.33%     |

**Graph 3.2**

*Frequency Distribution of Baby and Baby Bottle Test Scores*



### 3.4.3 Receptive Vocabulary and baby and The Bottle Tests Comparison Analysis

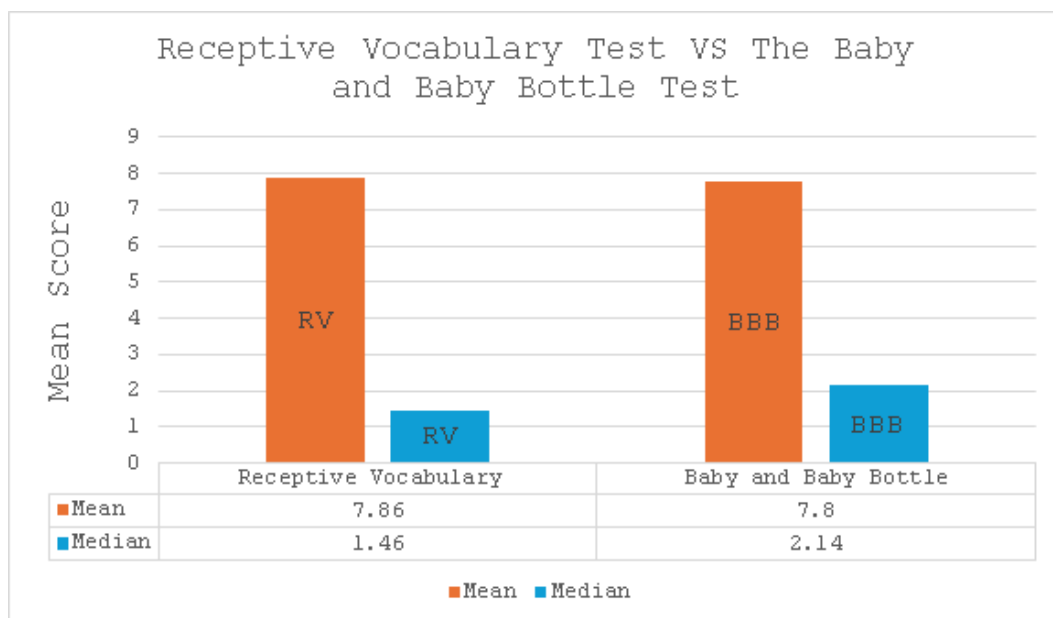
The statistics indicated a satisfactory performance across both tests (see graph 3.3). The Receptive Vocabulary Test yielded a mean score of 7.86 out of 10, similarly the Baby and Baby Bottle Test produced a mean of 7.8. However, the median scores are quite different: 1.46 for the RV Test and 2.14 for the BBB Test. This reveals that although the average performance looks similar, the distribution of scores is not. The higher median in the BBB Test suggests that more learners scored closer to the top,

while the lower median in the RV Test indicates that many learners struggled more with that test.

The reason likely lies in the design of the tests: the BBB Test is completely picture-based, which makes it easier for children with Down Syndrome to understand without needing strong verbal skills. In contrast, the RV Test requires more linguistic processing, hearing a word, understanding it, and matching it to its meaning so it was more challenging for many participants

### Graph3.3

*Receptive Vocabulary Test VS The Baby and Baby Bottle Test*



### 3.5 Discussion of The Key Findings

This study's methodological triangulation provided robust insights into receptive vocabulary (RV) comprehension among children with Down syndrome (DS), as well as revealed many interesting results that allowed the researcher either to support or reject the research hypothesis. Through the use of a sequential mixed-methods design, the investigation proceeded in three distinct phases: (1) semi-structured interview with DS teachers to examine pedagogical beliefs regarding vocabulary instruction,

(2) classroom observations to capture actual instructional practices and learners' behaviors, and (3) experimental administration of two tests designed by the researcher (Receptive Vocabulary and The Baby and Baby Bottle Tests) to empirically validate qualitative findings.

Concerning the first hypothesis, which demonstrates that children with DS exhibit lower standard levels of receptive vocabulary compared to age-matched typically developing peers. The final results suggested that the commonality of deficits in children with Down syndrome does exist, but their receptive language skills vary widely from close to normal intelligence depending on the severity of intellectual disability and the advancement of their social competencies (see section 3.2.1.2 and 3.2.2.2). For instance, in the (RV) Test, approximately 86.7% of participants had a well-developed receptive vocabulary, which revealed the distinct levels of the participants (see section 3.4.1). Moreover, their comprehension relies on the nature of the vocabulary presented. Words that are familiar, tangible, associated with self-expression, or part of everyday vocabulary tend to be more easily grasped by them (see section 3.2.1.2 & 3.2.2.2). Additionally, their receptive capabilities extend beyond individual words, rather they can understand direct verbal instructions, the context of a story, solve simple mathematics problems, distinguish their teachers' tone of voice such as recognizing feeling of anger, empathy (see section 3.3.1). In contrast, they often encounter challenges with comprehending unfamiliar, abstract, religious concepts, as well as complex lessons, task instructions, and the relationships between words and their referents (see table 2.3 & section 3.3.2).

Regarding the second hypothesis, which suggests that vocabulary depth (understanding word meanings) is more impaired than breadth (recognizing words) due to hippocampal deficits, it appeared to be inaccurate. This conclusion was supported by the tests' results; the Receptive Vocabulary (RV) Test and the Baby and Baby Bottle (BBB) Test displayed for DS learners. The findings were surprising since the participants found the BBB Test easier than the RV Test. The results demonstrated that approximately 53.33% of the learners scored between 9 and 10 on the BBB Test, while only 40.00% of them achieved around 9 and 10 on the RV Test (see table 3.4

and 3.5). Also, Although the average scores in both tests were similar, the higher median in the Baby and Baby Bottle Test shows it was easier for most students, likely because it relied more on visual cues than language processing (see graph 3.3). This discrepancy may stem from the nature of these tests. The BBB is entirely picture-based, enabling participants to succeed without needing to reproduce item names. In contrast, the RV Test requires the learners attend the word, then integrate the phonological representation with its meaning, indicating that it demands a wide lexical repertoire from the learners.

The analysis of teachers' interview as well as classroom observations strongly confirmed the last hypothesis, which posits that children with Down Syndrome who receive additional communication aids will demonstrate significantly higher levels of receptive vocabulary compared to those who do not use such support. The findings underscored the effectiveness of visual aids in enhancing learning for children with intellectual disabilities. Visual supports such as gestures, large colorful pictures, tangible tools, and educational videos were observed to play an essential role in facilitating the comprehension of new concepts. These tools help break down abstract or complex terms, making them easier to process and internalize. Moreover, it was found that these visual supports indeed increase learners' engagement, motivation, and participation during lessons. In addition to visual aids, teachers stated that they use other critical instructional strategies, including repetition, real-life examples, Arabic dialect, role-playing games, storytelling, scaffolding. These tools were described as not only beneficial, but rather indispensable (see section 3.3.4 and table 3.3).

### **3.6 Limitation of The Study**

The researcher faced several noteworthy limitations during this study. Firstly, acquiring authorization from Tlemcen Academy to access the schools was a considerable obstacle, as the process was both time-consuming and effort taking. Moreover, the generalizability of the findings is constrained by the small sample size. Initially, the study included 21 participants, however, this number decreased to 15

during the testing period due to repeated absences. This reduction in sample size may have negatively affected the reliability and applicability of the findings. Additionally, the study depended on self-reported measures regarding the receptive vocabulary comprehension of DS children, as provided by teachers and researcher, which may introduce some biases or inaccuracies. Finally, it is important to note that it was the researcher's first time conducting and writing an academic article independently. Therefore, the scope and depth of the analysis were limited in many ways compared to those produced by more experienced researchers.

### **3.7 Recommendations**

In this concluding section of the current investigation, several recommendations have been outlined to help children with Down syndrome in enhancing their language comprehension. Initially, considering the identified correlation between **short-term memory** and **vocabulary acquisition**, it is suggested that future studies concentrate on **developing** and **evaluating interventions** that seek to **improve memory functions** in **individuals with Down syndrome**. This may incorporate **rehearsal techniques, memory games, and digital tools**. Moreover, it is important for **parents** to engage in training programs that promote receptive vocabulary skills using strategies such as, **joint attention, repetition, and visual aids at home**, as well as utilizing **technology-enhanced learning resources**.

Additionally, it is vital to prioritize the **advancement on semantic knowledge**, which encompasses **the depth of word understanding, categorization, relational meanings**, which is crucial for effective meaningful language comprehension. **Interventions** comprising **semantic mapping, word association, and thematic vocabulary instruction** could be especially beneficial for learners to improve their capacity to generalize vocabulary across academic and real-life settings. Importantly, there should be a stronger focus in **increasing involvement from Arab researchers**, mainly those based in Algeria, **to address the lack of localized studies in this topic**. Investigating the impact of language, culture, and educational methodologies in

Algerian schools affect language comprehension whether it is receptive or expressive in learners with Down syndrome.

Such research would yield culturally relevant insights and facilitate the formulation of more effective, context-specific educational methods.

### **3.8 Conclusion**

In this chapter, the researcher primarily focused on the empirical dimension of the research work by integrating both quantitative and qualitative methodologies. The analysis of teachers' interview, employed as the first research instruments, provided valuable insights regarding receptive vocabulary comprehension of their pupils. The teachers' answers varied based on their teaching subject, and levels of experience, providing a rich and nuanced understanding of the instructional strategies used to enhance receptive vocabulary skills. In addition, classroom observation that was systematically analyzed under five rubrics including, language comprehension, comprehension deficits, engagement and attention, and teachers' communication style. This analysis facilitated the identification of both strengths and weaknesses areas of these pupils, revealing their behaviors, peer interaction, as well as teachers' strategies to address the facing obstacles. Furthermore, the data collected from the Receptive Vocabulary Test and The Baby and Baby Bottle Test underwent a rigorous analytical process, wherein each test was individually examined, ensuring accuracy and reliability in interpreting the results. The chapter also presented a discussion of the key finding and checked the hypotheses related to the aforementioned research questions, confirming the first hypothesis which suggests that DS children have a weak receptive vocabulary in comparison to their typically-developing peers, however it is lowered depends on the severity of intellectual disability. While the findings rejected the second hypothesis, indicating that word comprehension is robust then semantic knowledge. The results also confirmed the third hypothesis regarding the beneficial role of visual aids in developing receptive vocabulary skills. Finally, the researcher concluded the chapter with some practical recommendations that can be adapted to enhance language development for DS children.

# **General Conclusion**

## **General Conclusion**

Genetic disorders can profoundly affect an individual's quality of life, as they may impede their ability to function relative to their typically developing peers. Research indicates that genetic disorders, including Down syndrome, are associated with impairments across all aspects of language development (Abbeduto et al., 2007). Therefore, the present study focuses specifically on receptive vocabulary comprehension among Down syndrome children, examining both its breadth (word comprehension) and depth (semantic knowledge). As well as, the study seeks to identify the strengths and weaknesses of these individuals and further investigate strategies used to promote their language skills.

This work comprised three main chapters. The initial chapter delved into the theoretical foundations, providing a comprehensive exploration of the various dimensions and factors associated with the topic. As for the second chapter, it included a description of the methodology, the setting, the sample population, the sample techniques, and the instruments utilized for the data collection phase. The final chapter presented an analysis of the data gathered from the teachers' interview, classroom observation, and tests, followed by an interpretation and a discussion of the main findings. The study came up with interesting results, which revealed that receptive vocabulary comprehension in DS children is indeed impaired in relation to age-matched peers (the first hypothesis is confirmed). Additionally, the evidence refused the assumption that *vocabulary depth* (word meanings) is more compromised than *breadth* (word recognition), as the tests' analysis demonstrated that DS learners achieved better in picture-based semantic association tasks in comparison to auditory word recognition tasks (the second hypothesis is rejected). Furthermore, the findings underscored the essential role that communication supports, including visual aids, gestures, and concrete, real-life examples, play in facilitating language comprehension among DS children (the third hypothesis is confirmed).

Based on the findings of this research, several targeted recommendations are proposed to enhance receptive vocabulary comprehension among children with

Down syndrome. Firstly, it is essential to design activities that support the development of short-term memory, such as memory games and digital tools, as memory impairments were found to be a key factor affecting language processing. Secondly, active parental involvement should be encouraged through joint attention strategies, repetition, and the use of visual aids at home. Integrating technology-enhanced learning resources can further reinforce language skills in familiar environments. Moreover, educational practices should move beyond simple vocabulary list memorization and instead emphasize semantic learning, which fosters deeper word understanding and meaningful language use. Finally, to ensure that interventions are contextually appropriate and effective, promoting local research in Algeria is crucial. This would help develop inclusive educational strategies that reflect the real needs of children with Down syndrome and support their integration within the school system and broader society.

In conclusion, this research has explored the receptive vocabulary comprehension among children with Down syndrome, accentuating both the challenges they encounter and the potential for linguistic advancement. The findings highlighted the criticality of early language interventions, as well as the necessity for educational approaches that address individual variances in cognitive, auditory, and social development. Future research should persist in longitudinally exploring these predictors, examining how these language competencies evolve over time and how critical domains such as attention and social interaction influence communication development. To effectively cater to the communication developmental delays faced by DS individuals, a thorough, well-planned intervention will be imperative to overcome these challenges.

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# Appendices

Appendix « A »:

Certificate of Master Dissertation Supervision

Abou Bekr Belkaid University – Tlemcen  
Faculty of Letters and Languages



Department of English

Certificate of Master's Dissertation Supervision  
2024/2025

Student's Name: *A. mtki Wissam*

Date of birth: [Redacted]

Specialty: *Language Sciences*

Research topic:  
*Language development in children with Down Syndrome*

Supervisor's Name: *AMIN BELMEKKI*

| Signature and stamp of the supervisor   | Signature of the student | Signature and stamp of the Head of the Department/ President of the Scientific Committee |
|---|--------------------------|--|
| <p><i>Prof. Aminc BELMEKKI</i><br/>Professeur à l'Université<br/>Applied linguistics &amp; TEFL<br/>Université de Tlemcen<br/>Département d'Anglais</p> |                          | <p><i>فريد داودي</i><br/>رئيس قسم<br/>اللغة الإنجليزية</p>                               |

## Appendix « B »:

## Authorization Letters

الجمهورية الجزائرية الديمقراطية الشعبية  
وزارة التربية الوطنية

مديرية التربية لولاية تلمسان  
مصلحة التكوين والتفتيش  
الرقم 10/م.ت.ت/2025

تلمسان في 10 05 2025

مدير التربية

إلى

الطالب(ة): عميري وسام  
جامعة أبو بكر بلقايد- تلمسان  
كلية الآداب واللغات الأجنبية  
قسم اللغة الإنجليزية

الموضوع: ب/خ القيام بدراسة ميدانية.

المرجع: مراسلة جامعة أبو بكر بلقايد- تلمسان قسم اللغة الفرنسية المؤرخة في 2025/02/09.

بناء على الطلب المذكور في المرجع أعلاه، وفي ظل احترام النظام الداخلي للمؤسسات التربوية  
نعلمكم بموافقتنا وبترخيصنا لكم للقيام بهذه الدراسة الميدانية على مستوى:  
-إبتدائية خليل عبد السلام- تلمسان

وذلك خلال الفترة الممتدة من : 2025/02/10 إلى : 2025/05/25.

و عليه المطلوب منكم الاتصال بمدير المؤسسة المعنية والتنسيق معه لإجراء هذه الدراسة.  
ملاحظة: تعتبر هذه المراسلة بمثابة ترخيص للدخول إلى المؤسسة المذكورة أعلاه.

مدير التربية

عن مدير التربية وتفويض منه  
رئيس مصلحة  
التكوين والتفتيش  
معاليم عبد القادر

مديرية التربية لولاية تلمسان - مصلحة التكوين والتفتيش

البريد الإلكتروني: Serviceformation13000@gmail.com

رقم الهاتف /الفاكس 043418908

## Appendix « C »:

Time Table of 2<sup>nd</sup> Year and 5<sup>th</sup> Year Levels

استعمال الزم للسنه الخامسة .

| الثلاثاء        | الأحد                    | الاثنين    | الثلاثاء | الأربعاء           | الخميس              |
|-----------------|--------------------------|------------|----------|--------------------|---------------------|
|                 | لغة عربية<br>فهم المنطوق | رياضيات    |          | لغة عربية<br>قواعد | رياضيات             |
|                 | رياضيات                  | لغة فرنسية |          | رياضيات            | لغة عربية           |
| الفترة المسائية |                          |            |          |                    |                     |
|                 | ت. إسلامية<br>أو مدنية   | حزاس القسم |          | لغة فرنسية         | تاريخ و جغرافيه     |
|                 | انجليزية<br>علمية        |            |          | حزاس القسم         | نشاطات<br>"Loisirs" |
|                 |                          |            |          |                    |                     |

! معلمه المرحسى دة  
المعلمه استررف بقرة

المدرسة، خليل عبد السلام  
القسم، السنة الخامسة (4)

| الفترة المسائية    |                        |        | الفترة الصباحية    |               |               | الأيام             |
|--------------------|------------------------|--------|--------------------|---------------|---------------|--------------------|
| من 00:13 إلى 00:15 |                        |        | من 09:45 إلى 11:15 |               |               | من 08:00 إلى 09:30 |
| كتابة              | تمارين اللغة و رياضيات | تمارين | رياضيات            | اللغة العربية | اللغة العربية | الأحد              |
| رياضيات            |                        | تمارين |                    |               | رياضيات       | الاثنين            |
|                    |                        |        |                    |               | رياضيات       | الثلاثاء           |
| كتابة              | تمارين اللغة و رياضيات | تمارين | رياضيات            | اللغة العربية | اللغة العربية | الأربعاء           |
| رياضيات            |                        | تمارين | رياضيات            | اللغة العربية | اللغة العربية | الخميس             |

**Appendix « D »:**

**Interview Guide**

- 1) How long have you been teaching children with Down syndrome?
  - What is the age group of learners you currently teach?
  - What subject matter do you teach?
  - what is your degree?
- 2) How do you assess your pupils' receptive vocabulary?
  - What are the signs indicate that a learner has comprehend a word or an instruction?
- 3) What challenges do your learners face while developing their receptive vocabulary?
  - Are there any specific words or concepts that they find difficult to realize?
  - Can you provide examples of terms or concepts that they grasp easily
- 4) What strategies do you use to teach new vocabulary?
  - Do you use visual aids and flashcards to enhance vocabulary learning?
  - How effective are signs, gestures, or other non-verbal cues in improving comprehension
- 5) How do you reinforce new vocabulary in your class?
  - Do you use repetition, if yes, how often do you do it?
- 6) How do you accommodate individual differences vocabulary acquisition among your learners?
  - Can you describe a case where a learner made significant progress in understanding spoken language?

دليل المقابلة:

- (1) ما هي الفئة العمرية التي تقوم بتدريسها حالياً؟  
ما هي المادة التي تقوم بتدريسها؟
- (2) كيف تقيّم المفردات الاستقبالية لطلابك؟  
ما هي العلامات التي تدل على أن المتعلم من ذوي متلازمة داون يفهم كلمة أو تعليمات معينة؟
- (3) ما هي التحديات التي تواجه متعلميك في تطوير المفردات الاستقبالية؟  
هل هناك كلمات أو مفاهيم معينة تجد صعوبة في فهمها بشكل خاص؟  
هل يمكنك إعطاء أمثلة على الكلمات أو المفاهيم التي يفهمونها بسرعة؟
- (4) ما هي الاستراتيجيات التي تستخدمها لتعليم المفردات الجديدة؟  
هل تستخدم الوسائل البصرية مثل الصور والبطاقات التعليمية لدعم تعلم المفردات؟  
ما مدى فعالية الإشارات غير اللفظية مثل الإيماءات والإشارات في مساعدة المتعلمين على فهم الكلمات؟
- (5) كيف تدعم المفردات الجديدة في صفك الدراسي؟  
هل تستخدم التكرار، وإذا كان الأمر كذلك، فكم مرة تقوم بذلك؟
- (6) كيف تتعامل مع الفروق الفردية في تطوير المفردات بين متعلميك؟  
هل يمكنك وصف تلميذ أحرز تقدماً ملحوظاً في مهارات اللغة الاستقبالية؟

Appendix « E » :

Observation Grid

| Skill Category                                  | Observable Behaviors  | Rating Scale (1–5) | Notes/Examples   |
|---|---|--------------------|--|
| <b>1. Following instructions</b>                | - Respond to multi-step instructions.<br>-Demonstrate the ability to follow directives with or without visual aids                    | 1 2 3 4 5          | - Follow their teachers' instructions (e.g., opening books in a specific page, or raise your finger "lever le doigt").   |
| <b>2. Understanding Vocabulary</b>              | - Recognize common classroom vocabulary.  | 1 2 3 4 5          | -Understanding concrete nouns like "book."<br>-Understand familiar words even French words like "merci".   |
| <b>3. Comprehension of Stories/Text</b>         | - Listen attentively during storytelling.<br>- Answer simple questions about a story.   | 1 2 3 4 5          | -Pointe to pictures when asked about characters.<br>-They easily understand the context of the story.  |
| <b>4. Non-Verbal Cues &amp; Visual supports</b> | - Respond to gestures/facial expressions (e.g., teacher pointing, smiling).<br>- Recognize tone of voice (e.g., excited vs. serious). | 1 2 3 4 5          | Imitate the teacher's gesture.<br>-Exhibit understanding of gestures or visual promotes.<br>- Exhibit sensitivity to their teacher tone of voice (e.g., they stop making noise when the teacher scream.<br>-Use pointing while delivering an idea. |
| <b>5. Comprehension Deficits</b>                | Struggle with abstract terms.   | 1 2 3 4 5          | -These terms include spiritual, religious words, or geometric shapes<br>-Problems in semantic association (e.g., "depth vocabulary").  |
| <b>6. Engagement &amp; Attention</b>            | - Respond appropriately to peers' verbal/non-verbal cue.  | 1 2 3 4 5          | - Show shy enthusiasm toward researchers.<br>-Wait for turn when a peer gestured.  |

|  |   |                  |  |
|--|---|------------------|--|
|  | <ul style="list-style-type: none"> <li>- Maintain eye contact/focus during instruction.</li> <li>- Participate in group activities.</li> </ul>                                      |                  | <ul style="list-style-type: none"> <li>- Distracted by noise but refocuses when name was addressed.</li> <li>- Show some interest and motivation during the class (e.g., they raise their hands to answer question “eagerness to participate”).</li> <li>- Actively participate in a dance performance.</li> <li>- Express appreciation to their friends when borrowing something, like a pen, by politely saying words such as “thank you” or “merci.”</li> </ul> |
| <p><b>7. Teachers’ communication style</b></p> | <ul style="list-style-type: none"> <li>- Use clear, simple, repetitive language.</li> <li>- Combine visual aids/gestures alongside verbal instructions like scaffolding.</li> </ul> | <p>1 2 3 4 5</p> | <ul style="list-style-type: none"> <li>- Use Standard Arabic while delivering the lesson and dialect for more illustration.</li> <li>- Utilize familiar words and real-life examples.</li> <li>- Use gestures, especially in dictation lesson, such as the use of an accusative sign with hands above their heads and the nominative sign by moving their hands in a round shape next to their mouths.</li> </ul>  |
| <p><b>8. Classroom environment</b></p>         |   | <p>1 2 3 4 5</p> | <p>The classrooms were decorated with vibrant images of alphabets, days of the week, numbers, seasons, and grammar rules. In addition, the spaces contained various items like a mirror, a printer, a microwave, and a refrigerator.</p>   |

Note. Adapted from *Early Communication Skills for Children with Down Syndrome: A Guide for Parents and Professionals* (p. [page number if applicable]), by M. Guiberson, 2013, *Research and Practice for Persons with Severe Disabilities*, 38(3), 214–216. <https://doi.org/10.2511/027494813807714519>

**Appendix « F »:**

**A Pupil's Use of a Symbolic Representation for The Digit Six**

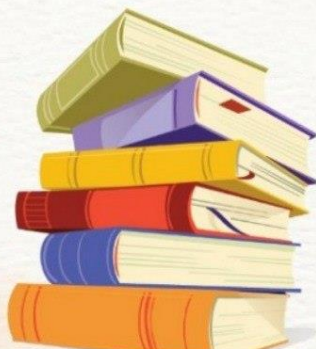


Appendix « G »:

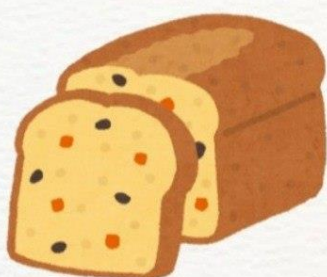
Receptive Vocabulary Test



# جَزْرَة



# مُتَلَجَّات



مِظَلَّة



يَطْرُق



# حَاسُوب



# يَقْفِرُ



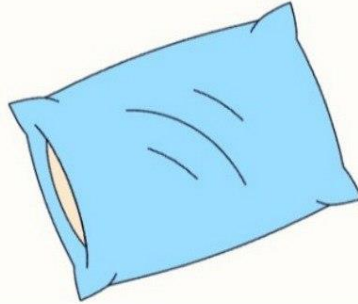
عِنَاق



مُنْدِهَش



# جَوَارِب



# بِطْرِيْق

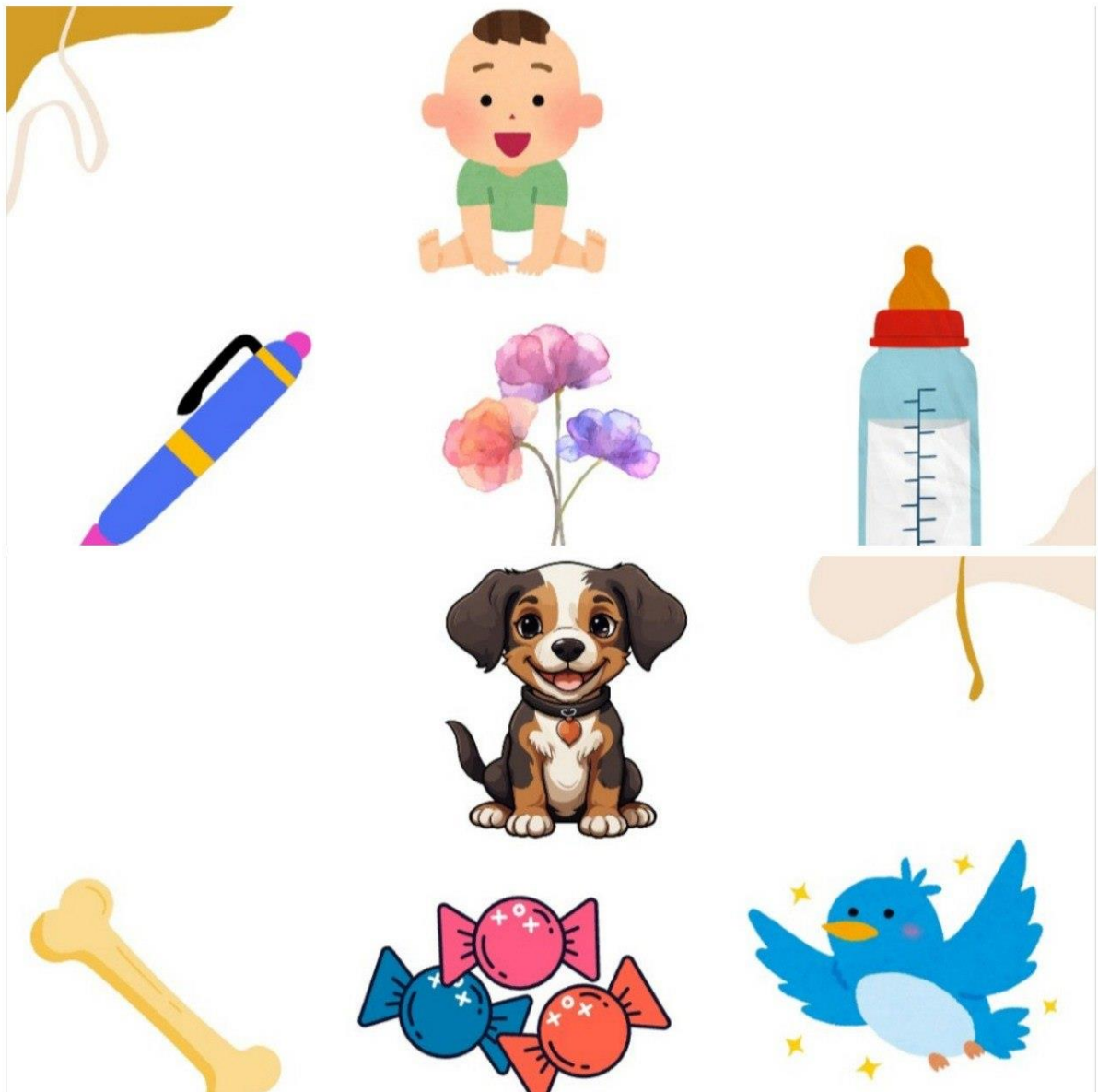


Appendix « H »:

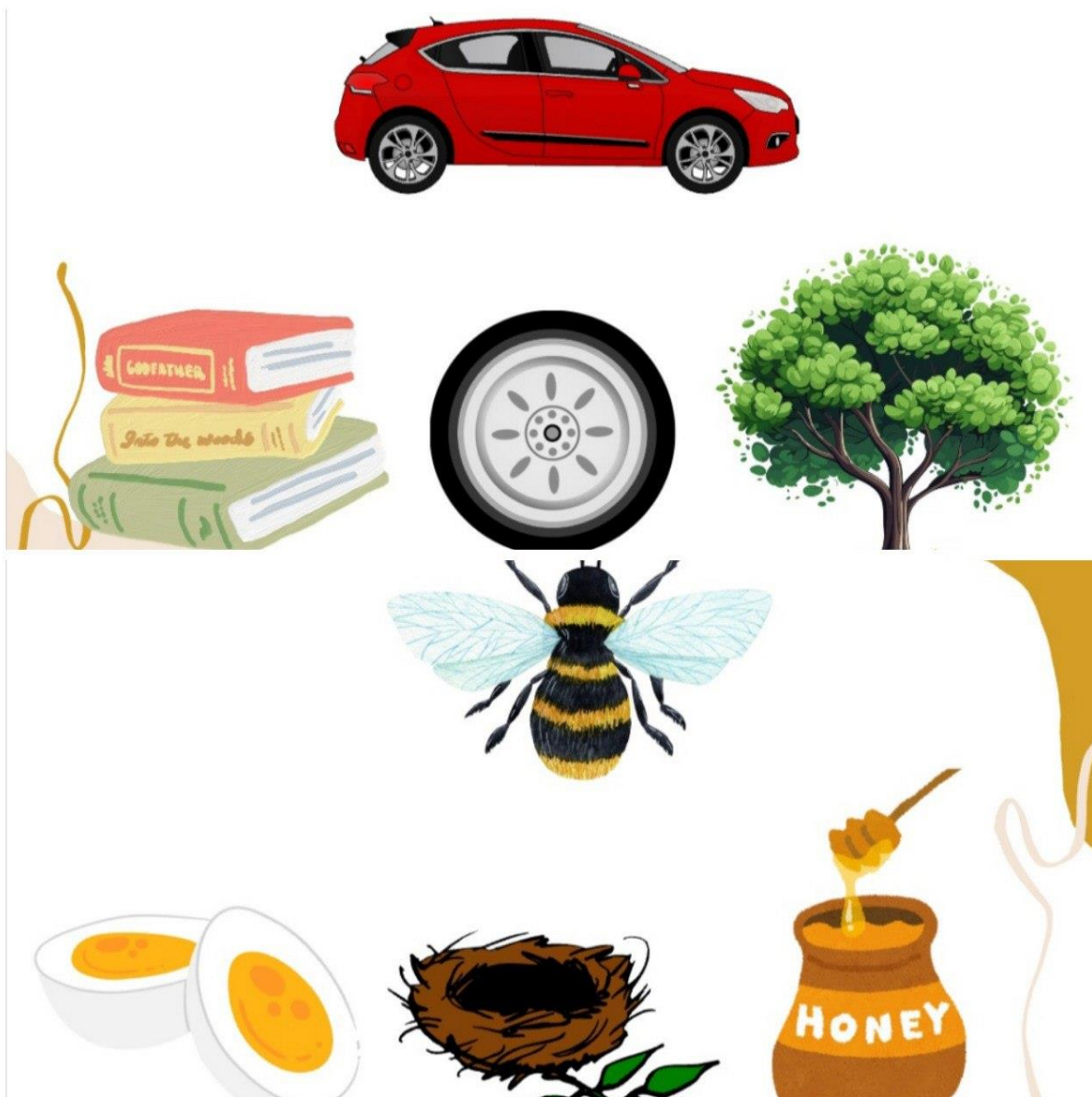
The Baby and Baby Bottle Test

Baby and Baby  
Bottle Test

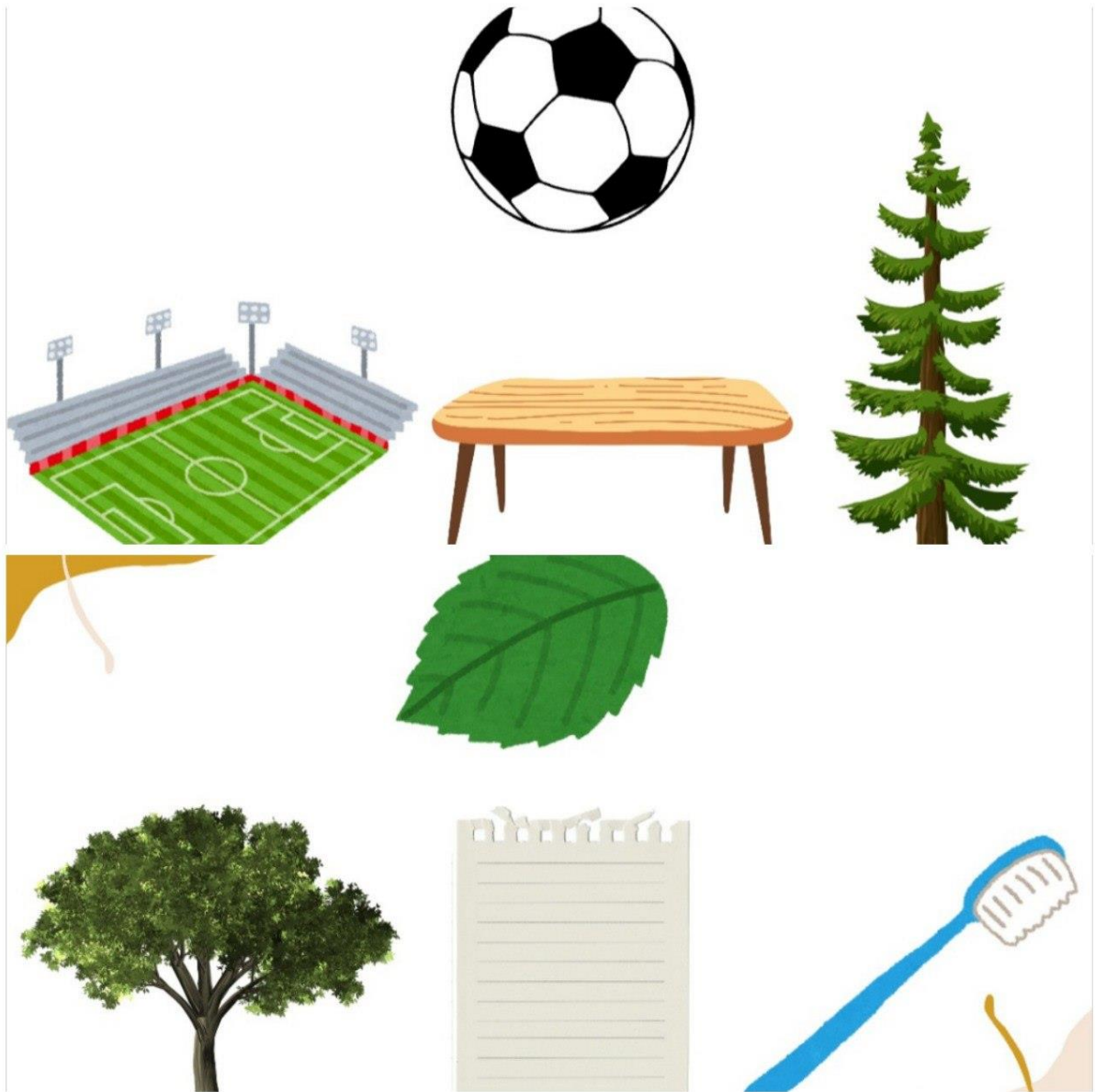
أشير إلى الشيء الذي  
يتوافق مع هذه الصورة











### ملخص

في عالم اليوم، أصبح دعم الأفراد ذوي الاحتياجات الخاصة قضية عالمية بالغة الأهمية، لأنه يتطلب خدمات واسعة النطاق لضمان اندماجهم في الحياة اليومية. ومن بين هؤلاء الأفراد، الأطفال الذين تم تشخيص إصابتهم بمتلازمة داون والذين يظهرون سمات تنموية مميزة تجذب انتباه علماء النفس والمعلمين وأخصائيي أمراض النطق واللغة. ويشكل تطوير اللغة، على وجه الخصوص، مجالاً للتحديات التي يواجهها هؤلاء الأطفال. في حين ركزت العديد من الأبحاث على اللغة التعبيرية، إلا أن هناك وعياً كبيراً بالحاجة إلى فهم أفضل لقدرات المفردات الاستقبالية، وتحديدًا كيفية فهم أطفال متلازمة داون للغة المنطوقة ومعالجتها. تميل هذه الأطروحة إلى دراسة فهم المفردات الاستقبالية داخل هذه المجموعة، وإلقاء الضوء على العوامل التي تؤثر عليها وتقديم رؤى لتعزيز التدخلات اللغوية والدعم التعليمي. استخدم هذا البحث إطاراً استدلاليًا استنتاجيًا، مستخدمًا منهج دراسة الحالة الاستكشافي والأداتي والشامل مع تصميم طريقة مختلطة. تم إجراء البحث في محافظة تلمسان، وشمل أطفال متلازمة داون ومعلميهم. وتضمن جمع البيانات مقابلات شبه منظمة مع خمسة معلمين عبر فصلين دراسيين، إلى جانب ملاحظة غير مشاركة في الفصل الدراسي، بالإضافة إلى اختبارين موحدين تم إجراؤهما على 15 تلميذًا. تشير النتائج إلى أن تحديات المفردات الاستقبالية لدى الأطفال المصابين بمتلازمة داون تختلف اعتمادًا على شدة الإعاقة الذهنية وتطور المهارات الاجتماعية. كما أن وجود التثلث الصبغي 21 يضعف بالفعل الذاكرة والمناطق المرتبطة باللغة لدى هؤلاء الأفراد. فيما يتعلق باتساع المفردات وعمقها، يبدو أن عمق المفردات (معنى الكلمة) ليس أكثر ضعفًا بشكل ملحوظ من اتساع المفردات (التعرف على الكلمات). بالإضافة إلى ذلك، تسلط النتائج الضوء على أهمية دعم التواصل في تسهيل فهم اللغة.

### Résumé

Les enfants diagnostiqués avec le syndrome de Down présentent des traits de développement particuliers qui attirent l'attention des psychologues, des éducateurs et des orthophonistes. Le développement du langage, en particulier, constitue un défi pour ces enfants. Cette thèse vise à examiner la compréhension du vocabulaire réceptif au sein de ce groupe, à mettre en lumière les facteurs qui l'influencent et à fournir des idées pour promouvoir les interventions linguistiques et le soutien éducatif. Cette recherche a utilisé un cadre de raisonnement déductif, en utilisant une approche exploratoire, instrumentale unique et holistique d'étude de cas avec une conception de méthode mixte. La recherche a été menée dans la province de Tlemcen, auprès d'enfants atteints du syndrome de Down et de leurs enseignants. La collecte des données a consisté en des entretiens semi-structurés avec cinq enseignants dans deux classes, ainsi qu'en une observation non participante de la classe, complétée par deux tests standardisés administrés à 15 élèves. Les résultats indiquent que les difficultés de vocabulaire réceptif chez les enfants atteints du syndrome de Down varient en fonction de la gravité de la maladie.

### Summary

The support of individuals with special needs, particularly children diagnosed with Down syndrome (DS), is a significant global problem that requires comprehensive services. Although expressive language has been widely explored, it remains important to understand receptive language. Therefore, the present research tends to examine receptive vocabulary comprehension in DS children, identifying factors that influence this comprehension to guide interventions strategies. This research employed a deductive reasoning framework, utilizing an exploratory, single instrumental, and holistic case study approach with a mixed-methods design. The research was conducted in Tlemcen province, including Down syndrome children and their teachers. Data collection involved semi-structured interviews non-participant classroom observation, complemented by two standardized tests. The results revealed that receptive vocabulary challenges vary with intellectual disability severity and social skills development. Trisomy 21 impairs memory and language-related areas, though vocabulary depth (word meaning) is not significantly more impacted than breadth (word recognition). The study highlighted the necessity of providing tailored communication supports for language comprehension.