People's Democratic Republic of Algeria

Ministry of Higher Education and Scientific Research

Ibn Khaldoun University of Tiaret

Faculty of Letters and Languages

Department of English

Exploring the Effectiveness of Language - Therapy Programmes for Linguistic Challenges in Autism

At EL Amel Association for Children with Autism and Trisomy, Bara Abdelkader and Khalifa Mohammed Primary Schools

A Dissertation Submitted in Partial Fulfilment of the Requirements for master's degree in Linguistics

Submitted by:

Miss. Noussaiba Allaoui

Miss. Bouchra Bakhtaoui

Supervised by:

Dr. Amina Abdelhadi

Board of Examiners

President	**Dr. Ghlamallah Hemaidia**	Ibn Khaldoun University of Tiaret
Supervisor	**Dr. Amina Abdelhadi**	Ibn Khaldoun University of Tiaret
Examiner	**Dr. Louiza Belaid**	Ibn Khaldoun University of Tiaret

Academic Year 2023-2024

Dedications

I dedicate this research work to:

To the dearest people in my heart, my family, especially my beloved father and the cherished memory of my mother, who is no longer with us but whose love and nurturing guidance continue to illuminate my path, I ask Allah the Almighty to grant her paradise.

To my two dear sisters and my beloved brothers, I am endlessly grateful for your love and support.

To everyone who shares in our joys and sorrows.

Noussaiba

Dedications

This research work is dedicated to:

The cherished memory of my late father, my loving mother, sister, and two brothers for their unwavering support throughout my academic journey,

My dear friends and those whom I hold dear,

My advisor, the Kafil Al Yatim Association of Tiaret, and all its members,

Bouchra

Acknowledgments

First and foremost, we thank Allah, the Most Merciful, the Most Compassionate.

We extend our deepest gratitude to our supervisor, **Dr. Amina Abdelhadi** for her invaluable guidance, patience, time devoted, insightful comments and encouragement throughout this research project. We are honored to have had the opportunity to work with you.

We express our sincere acknowledgment to the honorable members of the jury, **Dr. Ghlamallah Hemaidia** and **Dr. Louiza Belaid**, for their time devoted to read and evaluate our work besides their valuable comments, feedback, and suggestions.

Special thanks to the autistic children, their parents, teachers, and the speech language therapists who participated in this study. We have been deeply inspired by your strength, resilience, and patience.

We are deeply grateful to all those who contributed to our work in one way or another.

Abstract

The research at hand examines the linguistic challenges faced by autistic children and assesses the effectiveness of language-therapy programmes. A mixed-method approach is utilized, combining quantitative and qualitative methodologies. Data is collected via questionnaires for parents, interviews with speech-language therapists, and a quasi-experimental method using the "Phono Tales: Sounds and Stories" treatment, analysed through an independent samples t-test on autistic children. The sample includes six verbal autistic children (aged between seven to fourteen years old), eight speech language therapists, and thirty-four parents, selected from the Al-Amal Association for Children with Autism and Trisomy, Bara Abd-el-Kader Primary School, and Khalifa Mohammed Primary School in Tiaret. Findings indicate that the autistic children exhibit varied linguistic competencies and unique linguistic deficits, with significant improvements following appropriate language -therapy programmes. The study underscores the necessity of individualized linguistic interventions and on-going adjustments based on the child's progress. The unpaired samples t-test shows a significant difference in means between pre-and post-tests ($\alpha = 0.029$), supporting that tailored linguistic interventions enhance linguistic competence in verbal autistic children. While these findings are based on a purposive sampling, they offer a valuable foundation for further research and potential application in broader contexts.

Keywords: Autism, language impairment, linguistic challenges, therapy program, interventions.

List of Abbreviations and Acronyms

ABA: Applied Behaviour Analysis

ADHD: Attention-deficit hyperactivity Disorder.

APA: American Psychiatric Association.

ASD: Autism Spectrum Disorder.

CARS: Childhood Autism Rating Scale.

CDC: Childhood Disintegrative Disorder.

DSM 5: Diagnostic and Statistical Manual fifth edition.

DTT: Discrete-trial Training.

ICD: International Classification of Disease.

LAD: Language acquisition device.

PDD: Pervasive Developmental Disorder.

PECS: Picture exchange communication system

PROMPT: Prompts for Restructuring Oral Muscular Phonetic Targets

PRT: Pivotal Response Treatment

SLP: Speech language pathology.

SPSS: Statistical package for the social sciences.

TEAACH: Treatment and Education for Autistic Intervention

TOM: Theory of Mind

WHO: World health organization.

Liste of figures **Pages**

Figure I. 1: The ABC Principle. 30

Figure II.1: Research Design of the Present Study. 35

Figure II.2: Quasi Experimental Design 36

Figure II.3. : Mixed Method Design. 37

Figure II.4. : Experiment Steps. 46

Figure III.1: Parent's Gender. 50

Figure III.2: Parent's Gender Respondent's Distribution According to age. 51

Figure III. 03: Children's gender. 51

Figure III. 4: Children's Age 52

Figure III. 5: Childern's level of Autism. 52

Figure III. 6: Identification of Autism. 53

Figure III. 7: Identification of language challenges 54

Figure III. 8: Frequency of linguistic challenges in autism 55

Figure III.9: Importance of Language Therapy Programmes. 57

Figure III. 10: Effectiveness of Language Therapy Programmes. 58

Figure III.11: Evaluating the Effectiveness of Language Therapy Intervention. 59

Figure III.12: Improved Linguistic Skills. 60

Figure III.13: Customised Intervention. 61

Figure III.14: Comparing the Experimental Group's assessment aspects means. 78

Liste of Tables **Pages**

Table I.1: Different types of ASD (CDC, 2014). 08

Table III.1 : Parent's Gender. 50

Table III.2: Parent's Gender Respondent's Distribution According to age 51

Table III. 03: Children's gender 51

Table III. 4: Children's age 52

Table III. 5: Childern's level of Autism 52

Table III. 6: Identification of Autism. 53

Table III. 7: Identification of language challenges. 54

Table III. 8: Frequency of linguistic challenges in autism 55

Table III. 9: Evaluation of Therapy's Effectiveness. 56

Table III. 10: Importance of Language Therapy Programmes. 57

Table III.11: Therapeutic Factors. 57

Table III. 12: Effectiveness of Language Therapy Programmes 58

Table III. 13: Evaluating the Effectiveness of Language Therapy Intervention. 59

Table III.14: Improved linguistic skills 59

Table III.15:Customised Intervention. 60

SPSS Output.1: Pre-Test Sound Evaluation Performance. 72

SPSS Output.2: Pre-Test Linguistic Reasoning Performance. 72

SPSS Output.3: Pre-Test Signifier/Signified Dichotomy Performance. 73

SPSS Output.4: Pre-Test contextually Pragmatics Performance. 73

SPSS Output.5: Pre-Test Syntax Performance. 74

SPSS Output.6: Pre-Test Pronoun Reflexivity Performance. 74

SPSS Output.7: Post-Test Sound Evaluation Performance. 75

SPSS Output.8: Post-Test Linguistic Reasoning Performance. 75

SPSS Output.9: Post-Test Signifier/ Signified Dichotomy Performance. 76

SPSS Output.10: Post-Test Pragmatics Performance. 76

SPSS Output.11: Post-Test Syntax Performance. 77

SPSS Output.12: Post-Test Pronoun Reflexivity Performance. 78

Table . III .16. Comparing the Experimental Group’s assessment aspects means. 78

SPSS Output 13. Unpaired Samples T-Test 79

Table of Contents

Dedications I

Acknowledgments III

Abstract IV

List of Abbreviations and Acronyms V

General Introduction 1

1. Research Motivations ..... **Error! Bookmark not defined.**

2. Research Aims ..... **Error! Bookmark not defined.**

3. Research Significance ..... **Error! Bookmark not defined.**

4. Research Questions ..... **Error! Bookmark not defined.**

5. Research hypotheses ..... **Error! Bookmark not defined.**

6. Research Methodology ..... **Error! Bookmark not defined.**

7. Research Structure ..... **Error! Bookmark not defined.**

Chapter One Linguistic Challenges in Autism and Language- Therapy Programmes:

Introduction 6

I.1.Definition of Autism Spectrum Disorder 6

I.2. Types of Autism Spectrum Disorder 7

I.3.Causes of Autism Spectrum Disorder 8

I.3.1.Genetic factors 9

I.3.2.Envirenmental factors 9

I.4. Early Signs and Symptoms of Autism Spectrum Disorder 9

I.5.Diagnosis of Autism Spectrum Disorder 10

I.5.1.The Developmental Dimensional and Diagnostic Interview (3DI) 11

I.5.2.The Childhood Autism Rating Scale (CARS) 11

I.5.3.The Autism Spectrum Disorder-Observation for Children (ASD-OC) 11

I.5.4.The Autism Diagnostic Interview-Revised (ADI-R) 11

I.5.5.The Diagnostic Interview for Social and Communication Disorders (DISCO) 12

I.6.Language Acquisition in Autism 12

I.6.1.Typical Language Acquisition Milestones 12

I.6.1.1. Early Communicative Intent (The Pre Linguistic Stage) 12

I.6.2.Limitations in Early Communication in Autism 13

I.6.3.The Acquisition of Linguistic Structures 14

I.6.4.The Limitations of Language Acquisition in Autism 15

I.6.4.1.Use of Deictic Terms and Pronoun Reversals 15

I.6.4.2. Unconventional Word Use 16
I.6.4.3.Difficulty in Generalization 16
I.6.4.4.Preservative Conversational Topics 17
I.6.4.5.The Use of Unusual Vocal and Prosodic Features 17
I.7.Theoritical Perspectives on Language Challenges in Autism 17
I.7.1.Cognitive Theories 18
I.7.1.1. Theory of Mind (TOM) 18
I.7.1.2. Executive Functioning Language Processing 18
I.7.1.3.Central Coherence Theory 18
I.7.2.Socio –Communication Theories 19
I.7.2.1. Social Communication Theory 19
I.7.2.3.Joint Attention Theory 19
I.7.2.4. Social Learning Theory 19
I.7.3.Language Developmental Theories 20
I.7.3.1.Behaviourist Theory 20
I.7.3.2.Innateness Theory 20
I.7.3.3.Cognitive Theory 20
I.7.3.4. Sociocultural Theory 21
I.8.Characteristics of Language Impairments in Autism Spectrum Disorder 21
I.8.1. Semantic Language Disabilities in ASD 21
I.8.1.1.Vocabulary Development Deficits in ASD Individuals 21
I.8.1.2.Non Sensical Idiosyncratic Colloquialism in Autism 22
I.8.1.3.Challenges in Abstract Word Learning in Autism 22
I.8.1.4.Challenges in Morpheme Production and Comprehension in Autism 23
I.8.2.Pragmatic Language Disability in ASD 24
I.8.2.1.Echolalia in ASD 24
I.8.2.2.Misunderstanding of Figurative Language in Autism 25
I.8.3.Phonological Challenges in ASD's Language 25
I.8.3.1.Atypical Phonological Patterns in ASD 25
I.8.3.2.Phonological Processing in ASD 26
I.8.4.Morphosyntactic Challenges in ASD's Language 26
I.9.Categorization of Language Profiles in ASD 26
I.9.1.Importance of Language Profiles Categorization 27
I.9.2.Challenges in ASD Identification 27

I.9.3.Challenges and Consideration in Diagnosing Language Impairments 27
I.10.Speech and Language Therapy (SLP) Services 28
I.11. Prompts for Restructuring Oral Muscular Phonetic Targets (PROMPT) 28
I.12.Augmentative and Alternative Communication AAC Interventions 29
I.13.Applied Behaviour Analysis Interventions (ABA) 29
I.14.Pivotal Response Treatment Intervention 30
I.15.Picture Exchange Communication System (PECS) 30
I.16.Treatment and Education for Autistic Intervention (TEACCH) 31
I.17.Lovaas Method 32
I.18.Hanen Programme 32
Conclusion 32

Chapter Two Research Methodology and Fieldwork Approach

II. Introduction 34
II.2. Triangulation 38
II.3. Mixed Method: Qualitative vs. Quantitative approach 38
III.4- Setting, Population and Sampling of the Study 39
II.4.1- The Setting of the Study 39
II.4.2. The Sample Population 39
II.4.3. Purposive Sampling 40
II.4.3.1.Experimental Group: Autistic Learners 40
II.4.3.2. Parents 41
II.4.3.3. Experts 41
II.5. Data Collection Instruments 41
II.5.1. Description of the Questionnaire 41
II.5.2. Description of the Interviews 42
II.5.3. Pilot Study 42
II.5.4. Quasi-experiment 43
II.5.4.1. Writing Pre-test 43
II.5.4.2. Intervention (Treatment) 44
II.5.4.3. Writing Post-test 45
II.5.5. Methods of Analysis 46
II.5.5.1. Statistical Method: Means Calculation 47
II.5.5.2. Inferential Statistics 47

II.5.5.2.1. The Independent Sample T-test 47
Conclusion 48

Chapter Three Data Analysis and Interpretation

III.Introduction 50
III.1. Data Analysis and Discussion 50
III.1.1. Questionnaire Obtained Results Analysis 50
III.1.2. Interview Obtained Results Analysis 62
III.1.3. Interview Obtained Results Interpretation 70
III.1.4. Experiment Obtained Result 71
III.1.4.1. Pre-treatment Results 71
III.6.4.1.1. Pre-treatment Sound Evaluation Results 72
III.6.4.1.2. Pre-treatment Linguistic Reasoning Results 72
III.6.4.1.3. Pre-treatment Signifier/Signified Dichotomy Results 73
III.6.4.1.4. Pre-treatment Contextually Pragmatics Results 73
III.6.4.1.5. Pre-treatment Syntax Pragmatics Results 74
III.6.4.1.6. Pre-treatment Pronoun Reflexivity Results 75
III.1.4.2. Post -treatment Results 75
III.1.4.2.1. Post-treatment Sound Evaluation Results 75
III.6.4.2.2. Post-treatment Linguistic Reasoning Results 76
III.6.4.2.3. Post-treatment Linguistic Reasoning Results 76
III.6.4.2.4. Post-treatment Pragmatics Results 77
III.6.4.2.5. Post-treatment Syntax Results 77
III.6.4.2.5. Post-treatment Syntax Results 78
III.1.4.3. Comparing Means and Hypothesis Testing 78
III.6.4.3.1. Hypothesis Testing 80
III.2. Synthesis of the Findings 81
III.3. Recommendations 82
III.4. Limitations 84
Conclusion 85
General Conclusion 86
Bibliography 88
Appendices 95
Summary 147

General Introduction

General Introduction

It is commonly believed that individuals with autism spectrum disorder primarily struggle with psychological and social aspects. However, recent linguistic studies have broadened our understanding of autism, highlighting various linguistic and cognitive strengths and challenges within autistic individuals. This has redefined autism as a lifelong spectrum condition with diverse linguistic profiles, sometimes accompanied by extraordinary abilities such as those seen in savant syndrome and Asperger's autism. Autistic individuals often experience a typical language development and face unique challenges, including delayed speech, echolalia, and difficulties with pronoun use and social pragmatics. These impairments can affect their ability to interact and communicate effectively

The increase in autism occurrence has been steady, recent studies estimate that the global prevalence is approximately 1% of the population, Moreover the Algeria Service Press (2018) claimed that more than 4000 children are diagnosed with having autism. These rising rates emphasize the urgent need for language therapy programmes and tailored interventions that help improving autistic children's linguistic competence and their overall development. Investigating the integration and implementation of individualized tailored therapy programmes may lead to more targeted and effective interventions to better support the autistic children's linguistic and social competences.

Language therapy programmes designed for autism developed and evolved over the years, utilising diverse activities and approaches from traditional therapy like speech pathology and augmentative and alternative systems to innovative individualised methods with visual aids and technological devices. Despite this advancement, there remains a critical gap in identifying best therapeutic practices and find personalised tailored language rehabilitation programmes that have long-term effectiveness and adapt to the evolving needs and co-occurring conditions.

As students specializing in linguistics and fascinated by language and its diverse applications, our attention has been drawn to the landscape of linguistic challenges within autism spectrum disorder (ASD) due to having close family members diagnosed with ASD. Observing the linguistic challenges and strengths of these individuals serves as a motivating force to explore their communication challenges and identify the best language therapy programs that address their unique needs and support their overall language development.

The primary aim of the current research is to contribute to the ongoing conversation about descriptive inquiries concerning specific linguistic impairments (syntactic, phonological, and pragmatic skills) prevalent among autistic individuals. Furthermore, it examines and measures the effectiveness of a selected language therapy programme tailored to the needs of autistic individuals, providing valuable insights into the programme's impact on enhancing language abilities in autistic students. This study also seeks to identify and endorse the best strategies for language therapy in autism based on empirical evidence, alongside analysing how individualized customized interventions address the varied and unique needs of individuals on the spectrum.

This study is important in terms that it points to the fact that the diversity of linguistic challenges faced by autistic children provides a perfect platform for investigating the effectiveness of language therapy programmes, contributing to a deeper understanding of these impairments, aiding caregivers and therapists to provide better support to ASD child. Additionally, providing insightful data about the efficacy of language therapy programmes leads to identifying the most effective treatment, thereby enhancing the quality of support and care and maximise the benefits for individuals with autism.

In pursuit of the aims of this study, three research questions are examined:

1. What specific linguistic challenges are most prevalent among autistic children?

2. How effectively do language therapy programmes address the various dimensions of linguistic impairments encountered by autistic children?

3. To what extent can integrating the language therapy intervention *'Phono Tales: Sounds and Stories'* enhance the language abilities of autistic children, particularly in terms of conversational skills and social language use?

The following hypotheses are set as anticipated answers to the previously addressed research wh-questions:

a. Autistic children may show a higher prevalence of challenges related to pragmatic language use, non -literal meanings and abstract concepts, in addition to receptive and expressive skills and pronoun reflexivity.
b. Language therapy programmes designed for autistic children may demonstrate greater effectiveness in improving language skills.

c. The integration of the tailored language therapy intervention '*'Phono Tales: Sounds and Stories'* can significantly enhance conversational skills and social language use in autistic students.

To answer the research questions and test the validity of the hypotheses, this study employs a mixed-method approach that combines quantitative and qualitative methodologies. It involves distributing a questionnaire to thirty-four parents of verbal autistic children at AL-Amal Association for Children with Autism and Trisomy in Tiaret. Additionally, semi-structured interviews are conducted with eight speech language therapists at the same research setting. Simultaneously, a quasi-experimental approach is used, which includes an intervention named '*Phono Tales: Sounds and Stories,*' using an independent samples t-test on six targeted verbal autistic children at Bara Abd-el-Kader Primary School and Khalifa Mohammed Primary School in Tiaret. These children and their parents have already participated in language therapy programs and have encountered various linguistic impairments and challenges.

This dissertation is divided into three chapters. The first chapter presents a theoretical framework that emphasizes the key concepts central to the research and explores the problematic issues addressed in this study. It also examines the language challenges encountered by children with ASD and identifies effective language therapy programmes aimed at mitigating such difficulties. The second chapter outlines the methodological design, including the instruments used for data collection, the participants involved, and the study's setting. The third chapter is devoted to analyzing and interpreting the findings derived from both the mixed-method approach and the experiment. Following the interpretations of the findings, conclusions are drawn, interpretive discussions are conducted, limitations are identified, and recommendations and implications for future research are provided.

It is worth noting that the entire work adheres to the APA 6th edition style.

Chapter One:

Linguistic Challenges in Autism and Language -Therapy Programmes

Introduction

Children with autism spectrum disorder (ASD, henceforth) are not solely classified as having stereotypical social and psychological disabilities; however recent linguistic research has highlighted the wide variety of language impairments that impact language processes and developmental milestones of individuals on the spectrum. This chapter provides a theoretical framework that highlights the key concepts underlying the entire research and the problematic issue explored through this dissertation. This chapter's primary objective is to explore a review of the literature by different authors and scholars trying to investigate the language challenges faced by children with ASD and recognise the language therapy programmes that are found to be effective and assist with ameliorating such difficulties.

This review chapter opens with a brief overview of the context of autism spectrum disorder, its definitions, types, symptoms and diagnosis, highlighting the process of acquiring a language in typical developing children versus the deviant language development in ASD peers, in addition to classifying the diverse linguistic profiles presented in the spectrum into the several linguistic domains mainly pragmatics, semantics phonology and morpho syntax. In the second section we will acknowledge the importance of language therapy programmes that address the needs of ASD children.

I.1.Definition of Autism Spectrum Disorder

The prevalence of autism spectrum disorder (ASD, thereafter) has been steadily increasing over the past two decades, with current estimates indicating that it affects up to 1 in 36 children with boys being affected more than girls (centres for Disease Control and Prevention, 2018). Consequently, there are numerous definitions that seek to clarify its heterogeneity and complexity. We have chosen the following definitions due to their precision and applicability:

The federal definition of autism which preceded the fourth edition of the Diagnostic and Statistical Manual (DSM-IV), refers to the term " autism" as a spectrum of neurodevelopmental disorders characterised by mildly to severely impaired social skills and socialisation functioning in expressive and receptive communication and stereotypical behaviours and interests. Emphasizing the spectrum nature of autism , acknowledges the diversified symptoms among autistic individuals and explains the unconventional definitions of autism presented: Autism as a Communication Disorder, as Developmental Disorder and as a Spectrum of Abilities and Challenges.

a) Autism as a Communication Disorder: The term Autism was first coined from the Greek word "autos," which means "self" by the Swiss psychiatrist Eugen Bleuler in 1911 Given that people with autism disorder (ASD) frequently exhibit self-absorbed behaviour as well as challenges with social contact and communication. These difficulties often start early in life and can have an impact on language development, comprehension of verbal and nonverbal cues, and social interaction with peers.

b) Autism as a Developmental Disorder: Autism Spectrum Disorder is a heterogeneous neurodevelopmental disorder characterised by early deficits in social communication and restricted and repetitive patterns of behaviours. According to the latest conceptualization of ASD, these two behavioural dimensions serve as the core defining features of ASD, while associated dimensions such as intellectual and linguistic abilities help describing the ASD heterogeneity (American Psychiatric Association, 2018).

c) Autism as a Spectrum of Abilities and Challenges: It was in 1943 that Leo Kanner, a psychiatrist at John Hopkins University, created the diagnosis of autism that presented the classical form of it which involved the triple impairments: social interaction, language use and communication, and limited imagination, which manifest as constrained, repetitive, and stereotyped patterns of behaviours and activities. while ;The world health care community now uses the umbrella term “spectrum” that refers to the wide range of symptoms , skills and levels of impairments from mild to severe reflecting the heterogeneity observed across individuals with ASD , meaning even having the same diagnosis, autistic individuals behave extremely differently from one another and have distinct abilities depending on where these symptoms start ,how severe they are , the number of symptoms , support needs and whether other language challenges are present (Autism society, n .d.).

I.2. Types of Autism Spectrum Disorder

Scientists have divided autism into a number of subtypes, each distinguished by special traits and difficulties, such as Asperger's Syndrome, Pervasive Developmental Disorder (PDD)-Not Otherwise Specified, and Autistic Disorder, which are manifested in the table below:

Types	also termed as	Clinical features	Percentage affected
Autistic disorder	Classic Autism	Impairment in interactive, cognitive, communication and language skills Self-injurious and unusual behaviour	20% of the population
Asperger's syndrome	High functioning autism	Normal language and cognitive ability Unusual behaviour, social impairment	Majority of the population
Pervasive developmental disorder PDD -not otherwise specified	Atypical autism	Challenges in social interaction and communication	Below 5%–7% of the population

Table I. 1: Different types of ASD (CDC, 2014).

a) Apart from the three primary forms of autism listed in Table 1, there exist multiple other uncommon varieties known as pervasive developmental disorders: Regressive Autism Spectrum Disorder: characterised by a child's normalcy until 18–24 months, at which point they regress to autistic symptoms.

b) Childhood Disintegrative Disorder (CDD): an uncommon disorder impacting social, motor, and language skills (NIMH, 2014).

c) Rett Syndrome: a disorder associated with X-chromosome mutations that are typically observed in girls (Chahrour et al., 2008). However this syndrome is no longer included under ASD in DSM-5 but rather it is considered as a discrete neurological disorder.

I.3.Causes of Autism Spectrum Disorder

Autism has no unified known causes, scientists struggle identifying the exact factors contributing to its emergence. However, they suggested that the combination of genetic and environmental factors may contribute to its development.

I.3.1.Genetic factors

Studies have shown that autism tend to be hereditary, suggesting a genetic component. It is revealed that if one twin has autism, it is highly probable that the other twin is in the spectrum. Vanover (2016) suggests that some genetic mutations appear to be inherited at the same time others arise spontaneously, or may be associated with genetic conditions, such as advanced parental age, prescription medications or harmful contaminants taken during pregnancy and (Vanover, 2016 p, 34).

I.3.2.Envirenmental factors

Environmental factors play a vital role in contributing to the risk of developing autism, for instance, living in poverty, or maternal infections and autoimmune conditions during pregnancy alongside birth complications that result in oxygen deprivation to the baby's brain, or being born premature or with low birth weight, sometimes the exposure to certain drugs and chemicals besides abuse and other traumatic relatives. The more risk factors a child is exposed to, the more likely they are to experience some kind of delay.

I.4. Early Signs and Symptoms of Autism Spectrum Disorder

Individuals in the spectrum are different from one another in terms of the unique patterns of behaviours and the level of severity of each case ,in addition to the co-occurring problems that they may experience such as attention-deficit/hyperactivity disorder (ADHD), language impairments, intellectual challenges, and anxiety disorders (Kozawski & Mathon, 2011).

Despite the diverse range of symptoms and varying biomarkers that contribute to the heterogeneity of ASD presentations, the diagnostic and statistical manual of mental disorders (DSM-5, 2018) could identify the core signs and symptoms of the spectrum relying on the abnormal behaviours and delayed development that are first noticed by parents in the first two years of life, certain behaviours become more noticeable when comparing with children of the same age such as walking in tip toes, hand flapping ,rocking , flipping objects besides the strong attachment or preoccupation with unusual objects , obsession with particular subjects, as well as adherence to rigid routines or rituals(Lord et al., 2018). Strong reactions often one of acute anxiety, distress and/or as well as a strong adherence to rules (e.g., when playing games)and a preoccupation with lining up or sorting objects in a particular way, these repetitive behaviours frequently function as a coping strategy or a source of comfort, recent qualitative research with verbally fluent ASD individuals has found that these activities like

organising , systemizing and performing some systematic routine can help them manage and regulate their arousal levels as a response to increasing social demands (Lord et al., 2018)

According to (the world health organisation ,2019)in some cases autistic toddlers avoid or do not keep eye contact, they do not respond to their names being called and fail to engage in typical back-and-forth play and babbling with their parents ,do not speak or have delayed speech, or lose previous ability to say words or sentences, do not express emotions or feelings and appear unaware of others' feelings, repeat words or phrases verbatim, but do not understand how to use them, speak with an abnormal tone or rhythm and may use a singsong voice or robot-like speech, have difficulty recognizing nonverbal cues, such as interpreting other people's facial expressions, body postures or tone of voice and others . Taken together, these difficulties affect the ability of children to interact and communicate successfully with others especially, their peers. Research findings confirm the longitudinal association between joint attention abilities including gestures use, imitation , eye contact, visual interests and nonverbal cognitive ability with social skills later in life which are presented as agents to develop language skills and language acquisition abilities.(Charman & Shmueli-Goetz , 1998) .

According to the American Psychiatric Association (2013), individuals with ASD may encounter difficulties in initiating and sustaining conversations, recognising and interpreting social cues, and exhibiting suitable social interaction. According to Clark (2000) children with Autism Spectrum Disorder (ASD) may experience a variety of communication difficulties at any point in their lives with regard to pragmatics, grammar, semantics, syntax, phonology, and morphology in both spoken and written forms however many others in the spectrum show exceptional language abilities including creative language use, exceptional memory capabilities, remarkable vocabulary knowledge and deep understanding of specific subjects.

I.5.Diagnosis of Autism Spectrum Disorder

Diagnosing autism is a complex and challenging process due to the absence of reliable biomarkers or medical tests .Instead , this disorder is identified based on behavioural observations and comprehensive evaluation of the individual’s symptoms and behaviours , obtaining a proper diagnosis is crucial to address the needs of ASD individuals .

A collaborative approach guarantees a thorough comprehension of each case situation and facilitates the development of suitable interventions and ensure a thorough assessment

aligned with the guidelines of Diagnostic and Statistical Manual of Mental Disorders ,Fifth Edition (DSM-5 thereafter) which includes specific indicators related to social communication deficits , restricted and repetitive behaviours and the severity of symptoms or they refer to another classification system : the International Classification of Diseases, 11th Revision (ICD-11 thereafter) that provides codes and descriptions for ASD symptoms and diagnosis. These diagnostic instruments according to the (APA, 2013; WHO, 2019) consist of:

I.5.1.The Developmental Dimensional and Diagnostic Interview (3DI)

Is a computer- and investigator-based interview with parents/caregivers contains 740 measures in all; 183 measure baseline demographics, 266 measure symptoms of ASD, and 291 measure possible co-occurring diseases (Skuse et al., 2004). Responses range in score from"0" (no indication of impaired behaviour) to"2" (certain indication of such behaviour). The 3di can be used to diagnose people with ASD at any stage of life; assessments usually take 1.5 to 2 hours to complete.

I.5.2.The Childhood Autism Rating Scale (CARS)

A tool used to differentiate ASD in children from other developmental disorders. Based on a 15-item assessment of ASD symptoms, scores between 30-37 suggest mild to moderate ASD, and scores between 38-60 indicate severe ASD. (Schopler et al., 1980).

I.5.3.The Autism Spectrum Disorder-Observation for Children (ASD-OC)

A 45-item scale used to observe and rate core symptoms of autism, such as social impairment, communication deficits, and repetitive behaviours (Neal, Matson, & Hattier, 2012). In order to assign scores ranging from "0" (no impairment) to "2" (severe impairment), the behaviours of children with ASD are compared to those of typically developing children of the same age on the ASD-OC scale. Recent studies have confirmed the validity of ASD-OC in evaluating ASD symptoms in paediatric patients (3 to 15 years of age) (Sharma et al., 2018).

I.5.4.The Autism Diagnostic Interview-Revised (ADI-R)

An investigator-based interview intended for parents/caregivers of children and adults who may be suspected of having autism It consists of ninety-three items that assess a variety of behaviours at various age ranges, such as language and communication, reciprocal social interaction, stereotypical repetitive behaviours or interests, and age-of-onset criteria. It

normally scores between zero and three hours, indicating no evidence of impaired behaviour, and is only appropriate for children with mental age two or higher(Lord, Rutter, & Le Couteur, 1994).

I.5.5.The Diagnostic Interview for Social and Communication Disorders (DISCO)

A semi-structured interview called the DISCO is used to diagnose ASD individuals of all ages. It is intended for parents and caregivers. It takes two to three hours and assesses how social skills and communication abilities grow from childhood to maturity. The DISCO measures ASD's symptoms dimensionally, as opposed to strictly defining cut-off points, with the goal of comprehending long-term trends of social and communicative impairments in individuals who may be diagnosed with ASD. (Maljaars, Noens, Scholte, & van Berckelaer-Onnes, 2012).

I.6.Language Acquisition in Autism

Early speech delays or regressions are often the first signs that lead parents of autistic children to become concerned about their child's development (Short & Schopler, 1988). Achieving language and communication milestones is important at practically every developmental stage in understanding autism. In order to understand how autistic individuals are different we need to know how the normal acquisition of language looks like:

I.6.1.Typical Language Acquisition Milestones

The framework of language acquisition in ordinarily developing children must be taken into consideration when evaluating the linguistic and communication challenges linked to autism spectrum disorders.

I.6.1.1. Early Communicative Intent (The Pre Linguistic Stage)

Typically developing infants display a range of nonverbal communication behaviours during this stage, including eye synchronisation, identifying familiar voices, and preferring a certain speech style that is the motherese speech style (the style people use when talking to a baby) , and using gestures to indicate intentions such as rejecting actions or requesting objects (Bates, 1976). Infants start to comprehend words connected to familiar activities by the end of their first year, at this stage they show a gradual increase in both receptive and expressive vocabulary, moreover they start to actively respond to verbal cues in situations

they are familiar with at this level (Bats, 1976) focuses on the pragmatic nature of language and states that this phase is comprised of three basic stages of communication:

a) Perlocutionary Stage : in the first 8months of life children are in the pre-intentional developmental level were the infants do not have any intentions of their own they try to pursuit , they have no ideas or messages to convey but rather they express themselves reflexively for example they smile , look at people when they are talking to them ,cry when their stomach hurt or because they are hungry , they fuss when they are not comfortable; they can make sounds cooing and burping , these behaviours are treated by people as if the infant is communicating or engaging in social behaviours (Bats, 1976).

b) Illocutionary Stage: correspond to Piaget Sensory Motor stage 4 when babies extend 8_12 months of age they begin to actively express intentions and be able to hold goals in mind and pursuit through their actions; and during this stage children begin attempting to communicate with a variety of means , they are not yet using words but they do have some means like looking at things they are interested in , through gestures , pointing and using vocalization ; these intentions can be divided into two categories :Proto imperative intentions which form the basis for commands or request where the child tries to get people do things for him (e. g., reaching for something they want , clapping when they want to play). Proto declarative intentions which establish joint attention and lay the foundation for conversation and topic-comment structures of language their ways in which the child share things ; hold objects to people to see , by showing of or doing something cute (Bats, 1976).

c) Locutionary Stage: children enter the stage between 12 to 18 months of age when they begin expressing those same communicative intentions using words. In this phase they can combine words to get simple sentences, known as the telegraphic utterances (Bats, 1976).

I.6.2.Limitations in Early Communication in Autism

Whether verbal or nonverbal, children with autism encounter distinct challenges in the process of acquiring language and reaching early communication milestones.

a) Verbal children with autism spectrum disorder (ASD): vary greatly in how they acquire language. According to Le Couteur et al. (1989), the majority of children with autism start speaking later and at a slower rate than typical children for instance studies suggest that autistic children say their first words at the 38 months of age comparing to 12 months in typically developing children (Howlin, 2003) .

Children with autism seem to have a delayed or deviant development of vocal behaviours and are slower to develop sounds of language. Moreover they do not use babbling, they instead use trials, yelling or high pitched sounds. In comparison to typical development, autistic children have a depressed rate of preverbal communication, they show much reduced weigh of those proto imperative and proto declarative intentions even before language emerges, they may make requests or have ways of getting other people to do things for them but they use unusual gestures like hand over hand (taking the person's hand and guide him to the thing he wants without looking at his face). They also show reduction of other conventional gestures (delay in pointing development i.e. gestures are not in the conventional mode; restricted range of communication behaviours for instance they are less responsive to the speech of others (do not turn when their name are called, less to be attracted by the sounds of talking even the motherese speech style of talking, they also show less pretend play (since development of play is a symbolic behaviour and words are symbols as well) i.e. Limited ability to imagine symbols leads to delay in words and language acquisition. They have a limited ability to imitate orally, vocally and verbally compare to typically developing children (e.g., Bruner and Sherwood 1983; Watt et al. 2006).

b) Nonverbal children with autism: the minority of children with ASD do not develop spoken language as a primary means of communication; for instance they do not compensate with gestures or develop other means of communication, they may be able to echo what others say but do not produce spontaneous speech, they develop echolalia as a form of communication. Furthermore, maladaptive of behaviours may be used as communication attempts like self-injuries behaviours when they are upset or angry and have no other mean to express themselves.

I.6.3.The Acquisition of Linguistic Structures

During the preschool years 2to5 ages children's language develop rapidly from basic telegraphic utterances to more complex grammatical forms for instance they over generalize grammar rules such as " goed , comed , mouses" , these errors are taken as a proof that the infant is not only acquiring the language by imitating the sounds but rather they are indeed acquiring a rule governed system . As youngsters grow , they begin using various types of sentences like statements , questions and negations while also integrating complex sentences using embedded and conjoined clauses (Paul, Chapman, & Wanska, 1980). , they also learn to encode ideas grammatically and reduce dependence on non-linguistic context for interpretation .

Additionally, between 3 to 5 ages, children start including imaginary, non-interpretive and logical functions to their language (Dore, 1978). they can narrate events that did not happen in front of them as they develop also their ability maintaining topics during conversations , requesting clarification of misunderstood utterances , using polite language and adapting their speech style accordingly to the listener ‘s status (Bates, 1976).

Children's syntactic development continues as they enter school age, with a focus on employing syntactic signals to interpret semantic relations inside sentences. At this period, vocabulary continues to expand and new words are learned through reading and discussion, and semantic and conversational abilities continue to develop (Asher, 1978).

I.6.4.The Limitations of Language Acquisition in Autism

According to a number of retrospective studies utilizing parent reports and videotapes from infancy and toddlerhood suggest that by the second year of life, most communication patterns of autistic children differ from their typically developing peers (Dahlgren & Gillberg, 1989).From as early as one year old, autistic infants show responsiveness to their names being called, or lack interest or concentration when spoken to, even the sound of their mother’s voice (Klin, 1991).

Specifically, a study by Lord and his colleagues, 1996 has revealed that 2 year olds highly suspected of having autism had a mean expressive and receptive language skills for a nine months baby, this delay in their development and many other characteristics deviances show the difference from normally developing children of any stage and some of these differences include:

I.6.4.1.Use of Deictic Terms and Pronoun Reversals

Autistic children tend to say things like you want cookies when they mean I do , previous theories of pronominal reversal, such as those proposed by Kanner, Arieti, and Freud, associated autism with intense social disengagement (Arieti, 1964; Freud, 1914). Arieti proposed that because autistic do not want to include outside thoughts about themselves, they would say "you" rather than "I" (Arieti, 1964). Freud equated the pronoun "I" with the ego, reading the autistic child's inability to use it as a sign of self-denial or ignorance of one's own identity (Freud, 1914). It was believed that using "you" showed that one was conscious of one's own identity.

Freud saw the avoidance of "I" as a self-protective mechanism, arguing that an autistic kid

cannot be destroyed if they do not admit their presence ("I am") '*If I do not really exist, I cannot be destroyed'.*

I.6.4.2. Unconventional Word Use

ASD children may use words in an unconventional ways or create new words of their own by combining phonemes, bound morphemes (or free morphemes in the case of compound words)to create a novel words (neologisms) .The earliest accounts of autism include detailed descriptions of unconventional language use, including the tendency to repeat words and phrases, the use of invented words, unusual phrasing and "pedantic" language (Kanner, 1943. Asperger (1991). These language use patterns have been the subject of several studies; they are frequently important in clinical and educational contexts (Arora, 2012; Gladfelter & Vanzuiden, 2020). Some of these characteristics are also now part of the diagnostic criteria for ASD (APA, 2013). The majority of research on non-generative spoken language in autism has been done on unconventional language (APA, 2013). Nonetheless, generative unconventional language—in which people produce original linguistic expressions—has been observed since Kanner's groundbreaking study (Kanner, 1943). he reported on two instances of children utilising idiosyncratic words as known as neologisms. One child used "Peten" to mean "Peter, peter pumpkin eater and a another child describing paintings on a wall by using the word "near" instead of "on," arguing that their selection was accurate (Kanner, 1943. Asperger (1991) characterized children in his case studies as demonstrating a unique and creative approach to language, highlighting that instances of idiosyncratic language reflect linguistic productivity.

Idiosyncratic language is made up of words or phrases that are created by rearranging words or by mixing phonemes and morphemes (neologisms) in novel ways (Volden & Lord, 1991). Pedantic language, on the other hand, tends to sound extremely formal and uses formal and uncommon terms or phrases (Ghaziuddin & Gerstein, 1996). Pedantic speech was once thought to be a diagnostic sign of Asperger's syndrome prior to the DSM-5 (Wing, 1981).

I.6.4.3.Difficulty in Generalization

According to Plaisted (2001). Individuals with autism may have trouble applying what they learn to new contexts because of their enhanced capacity for discrimination. Applying knowledge from one context to another is known as generalisation. It is behaviourally defined

as the recurrence of relevant behaviour across diverse non-training conditions (Stokes & Baer, 1977) i.e., relating new stimuli to past experiences.

Children with autism spectrum disorder (ASD) have long been seen by clinicians to have difficulties with generalisation, or the capacity to connect novel stimuli to previously encountered events (Rimland 1964). Take a child, for instance, who learns a social script to reply to "hi," but who then forgets to use it when someone says "hey." Adapting a skill acquired during therapy to daily life is one of the biggest obstacles to treatment effectiveness. About half of ASD children who picked up new behaviours in a treatment session did not succeed in applying those skills in a different environment, according to an early study on this phenomena (Rincover & Koegel ,1975).

I.6.4.4.Preservative Conversational Topics

Children with autism spectrum disorder (ASD) frequently exhibit perseverative speech as a communication style. This tendency to repeatedly bring up or focus too much on a specific topic, idea, phrase, or question—often at the expense of other conversational cues or topics—is referred to. This repetitive behaviour can take many different forms, such asking the same question over and over again, chatting about a particular interest or topic regardless of the listener's interest or response, or focusing on a word or phrase endlessly. Perseverative discussion can affect social connections by making it harder to have meaningful dialogue and maintain reciprocal conversations with others (Tager-Flusberg, 2000).

I.6.4.5.The Use of Unusual Vocal and Prosodic Features

Early studies on social communication in autism spectrum disorder (ASD) focused on impairments in prosody, which includes speech characteristics such as intonation, pace, and rhythm i.e. the music that accompanied the language (Kanner, 1943); Asperger & Frith, 1991). These non-standard prosodic traits are easily identified in conversational exchanges: a mechanical tone of voice that is not musical or the exaggerated sing-songy intonation; inappropriate stress patterns; uneven modulation of volume (Baltaxe & Simmons, 1985; Fosnot & Jun, 1999, McCann & Peppé, 2003; Nadig & Shaw, 2012; Paul et al., 2005), these deficits cause attention for the speech of individual and make it harder for them to adapt socially.

I.7.Theoritical Perspectives on Language Challenges in Autism

Theoretical Perspectives on Language Challenge These theoretical perspectives are a group of theories that provide various frameworks to understand and interpret language as a field of study, and provide conceptual lenses that shape researchers' inquiries and hypothesises.

I.7.1.Cognitive Theories

Under the lens of cognition, cognitive theories are theoretical frameworks in psychology and linguistics, that shed light on explaining mental processes including perception, memory, learning and language. Cognitive perspectives propose that human behaviour and mental functions that can be intrigued through focussing on the underlying cognitive mechanisms. In the context of language, cognitive theories concentrate on how people learn, produce, and understand language, as well as how language interacts with cognitive functions. When language and cognition blend together the focus falls on the vital role of conceptual structures and cognitive processes.

I.7.1.1. Theory of Mind (TOM) Impact on Communication Skills

The theory of mind is the ability of identifying, understanding, and considering one's own and others' mental states and perspectives to foresee and clarify behaviours and intentions. It is commonly known that children with ASD have trouble with TOM, yet other findings point to the potential that children with DLD may face the same impairment.

I.7.1.2. Executive Functioning Language Processing

Executive functions are a group of brain processes that are charged with problem solving, planning, and goal-directed behaviour. Cognitive control has a crucial role in maintaining and coordinating other cognitive processes such as language processing through regulating linguistic expressions and taking into consideration internal goals such as choosing words according to the context of a conversation, using the right register, inhibiting irrelevant responses, organisational skills, attention, and working memory.

I.7.1.3.Central Coherence Theory

Frith's theory (1985) about central coherence in the context of autism disorder proposes that individuals differ in their capacity of processing information. According to this theory, persons with weak central coherence face troubles with language processing as they tend to

concentrate on details as an analytical process rather than processing holistically, which causes difficulties in interpreting the overall contextual meaning. Individuals who are weak in central coherence tend to have difficulty with contextual information and literal interpretation, which leads to a failure in pragmatic competence and detail-focused processing.

I.7.2.Socio –Communication Theories

Conceptual frameworks that investigate language and communication within social context with an emphasis on the role of cultural practices, interaction among individuals, and societal variables on communication outcomes and behaviours and address how language can be used to negotiate power dynamics, boost social interaction, and maintain social identities.

I.7.2.1. Social Communication Theory

Also known as communication accommodation theory developed by Giles (1970) and emphasises the role of social norms, context, culture, and identity in shaping communicative exchange. This theory unfolds a lot of accommodation strategies, like nonverbal behaviours, register choice, voice tone, to blend in with the interlocutors communication style, or using the total opposite behaviours to indicate a divergence in communication style. This theory considers contextual factors, including familiarity, cultural background, and power dynamics, and setting. These contextual cues to guide interlocutors accommodation decisions in conversation to achieve social goals effectively in diverse contexts.

I.7.2.3.Joint Attention Theory

Also known as shared attention theory, it posits that the capacity to coordinate attention with others towards a shared object or cognitive event is a developmental milestone and a cognitive achievement. It focuses on the importance of individuals synchronising and coordinating attention shifts. This crucial skill fosters social interaction and the development of social cognitive abilities. Multiple studies show that joint attention reflects mental and behavioural processes, and the frequency with which individuals engage in joint attention is linked with their language acquisition (Striano, et al, 2006) and the depth of their information processing.

I.7.2.4. Social Learning Theory

Social learning theory developed by the psychologist Bandura (1977). This theory sheds light on the importance of observational learning through imitation and modelling in acquiring attitudes, behaviours, and values. It asserts that people learn by keeping an eye on their peers and surroundings behaviours, and this can happen unconsciously without reinforcement. The observational learning happens for individuals with consistent observation of others 'actions and their results. That's what enables them to compose a model behaviour that is socially desirable.

I.7.3.Language Developmental Theories

Over the last century, many language theories have been put forward in order to solve the inquiry of how language is acquired and understood by children from an early age. Many researchers put much efforts in providing adequate explanation to our overall understanding of the process.

I.7.3.1.Behaviourist Theory

This theory is proposed by Skinner (1957) as an explanation for language acquisition in which he suggested that language is achieved through imitation, positive and negative reinforcement and conditioning. Skinner suggested that children imitate the language of their parents and careers, then they produce utterances that are either desirable or undesirable then they get reinforced positively or negatively.

I.7.3.2.Innateness Theory

This theory was proposed by Chomsky (1957). Chomsky suggested that humans have an inborn faculty for language acquisition that he named language acquisition device “LAD”. This innate capacity for language acquisition means humans are biologically predisposed to learn languages according to the underlying principles or structures that are proposed to exist because of Chomsky’s “Universal Grammar”.

I.7.3.3.Cognitive Theory

The Swiss psychologist Piaget (1930) argued that children are born with fundamental action schemas, that means children have to understand any concept before acquiring the language that expresses it. This process starts from sensory motor phase where they use action schemas to assimilate knowledge about their surroundings. Children develop language as they develop cognition.

I.7.3.4. Sociocultural Theory

Vygotsky (1962) argued that children learn language through interaction, which means that language is learned according to the social situation you are in in help of parents, siblings, and teachers. “The acquisition of language can provide a paradigm for the entire problem of the relation between learning and development.”(Vygotsky, 1962). Language development is facilitated by social interactions yet it acknowledges that this complex process is influenced by numerous factors.

I.8.Characteristics of Language Impairments in Autism Spectrum Disorder

Language abilities of autistic individuals vary across the different linguistic branches such as semantics, pragmatics phonology and morphology .This variations result in a spectrum of linguistic profiles , with some exhibiting exceptional skills like savant syndrome , while others have limitations in certain areas of language .

I.8.1. Semantic Language Disabilities in ASD

Semantics is the scientific study of how meaning is organised and conveyed through language, it is essential for mastering language skills .The limitations in understanding or using language in this areas are significant factors in language developmental disorder.

These disorders can take various forms, some of which are as follows:

I.8.1.1.Vocabulary Development Deficits in ASD Individuals

The study on lexical and semantic development in Autism Spectrum Disorder (ASD) reveals a complex picture. According to studies that examine the breadth of vocabulary produced by children with ASD using assessments such as Peabody Picture Vocabulary Test that involved a child listening to a word and selecting a picture which depicts the meaning of that word and to assess expressive vocabulary a child is shown a picture and must supply the word whose meaning corresponds (Gotham; Kenworthy et al., 2012), it's generally observed that ASD children have a similar functioning vocabulary compared to typically developing (TD) children of the same age ; they can learn words and sort objects into categories and

match words with pictures that correspond. Flusberg (1985) and Ungerer & Sigman (1987). ASD children first exhibit a noun bias in acquiring early vocabularies before learning adjectives or action verbs (Fein et al., 1996; Tager-Flusberg et al., 1990)., however as they grow older some of them face challenges in semantic use and higher –level lexical organisation leading to difficulties in word fluency and category extension as observed in studies by Dunn et al. (1996) and Kelley et al. (2006). This dichotomy in abilities, where they are able to identify and understand words, but struggle combining and putting them together or using them in sentences. Researchers are uncertain of these difficulties due to the unique way language develops in ASD.

I.8.1.2.Non Sensical Idiosyncratic Colloquialism in Autism

Idiosyncratic phrases are distinctive language patterns that are frequently seen in individuals on the autism spectrum. ASD children feature unusual word choices and combinations, they may use distinctive or incomprehensible colloquialisms; they may also name things improperly or abnormally and substitute nonsensical lexicon for familiar ones (Arnold, 2021).

Asperger (1991) and other researchers have emphasised the linguistic creativity of individuals with autism, highlighting their capacity to generate original phrases. These unusual expressions, meanwhile, do not always improve communication as they can be misinterpreted and block productive exchanges. According to Perkins et al. (2006), unusual word use, particularly with reference to space and time, may indicate a semantic rather than grammatical deficit. (Perkins et al., 2006). Comparably, perspective-taking issues can result in the improper use of deictics such as "here" and "this" (Hobson & Lee, 2010), which can impact word learning and extension, especially when it comes to polysemous words (Tovar et al., 2020). These results demonstrate the intricate relationship that exists between semantic comprehension and language processing variations in autistic people.

One explanation for the bizarre or nonsensical speech might be because individuals with ASD are either unable of cognitively representing the true message they wish to convey, or they may be uncertain of how to react. (Williams et al., 2008).

I.8.1.3.Challenges in Abstract Word Learning in Autism

According to Hale (1988), concrete entities exist independently in space – time, whereas abstract entities are dependent on human brains and language .Semantic understanding is based on this basic contrast between concreteness and abstractness, which shapes our perception of the world.

Word context may also be used to determine word meaning (for both physical and abstract terms); Firth (1957) argued that *"you can know a word by the company it keeps"*. Research have revealed that individuals with ASD may have trouble acquiring and understanding abstract words—words that relate to thoughts or concepts rather than physical objects. For example, research by Jones et al. (2018) and Smith et al. (2020) has revealed that children with ASD are less proficient than their normally developing peers in acquiring and utilising abstract vocabulary .This disability may show out as trouble understanding figurative language, processing complicated concepts, and interpreting metaphorical language. Furthermore, studies conducted by Anderson et al (2019). And Brown et al. (2021). Indicate that underlying cognitive and language processing impairments may be related to the deficit in abstract word acquisition observed in individuals with ASD. Among the difficulties in grasping abstract concepts and the terminology that goes along with them are difficulties in semantic classification, conceptual organisation, and inferential reasoning.

The researchers draw the conclusion that several processes contributing to the social and emotional challenges associated with ASD as well as the social communicative exchanges thought to be significant in abstract development may be the cause of these findings. Nevertheless, they cannot rule out the possibility that emotional bootstrapping is not the principal or dominant mechanism for the learning of abstract language based only on these results (Viglioco et al., 2018).

I.8.1.4. Challenges in Morpheme Production and Comprehension in Autism

For individuals with autism spectrum disorder (ASD), comprehension and production of morphemes — the smallest units of meaning in language—can be quite difficult. For those with ASD, these difficulties significantly affect their capacity for verbal and nonverbal communication. The differences in morpheme use among people with ASD represent one of the major obstacles for language impairment. The results of research suggest that morpheme generation can be inconsistent.

Verbs in the English language have aspectual meaning, which refers to discrete time periods. For example, the progressive inflection -ing conveys the impression that an event is continuous; it can be appended to verbs that describe actions without a clear finish (like play) or modify the meaning of verbs that do have a clear end (like build; Carr & Johnston, 2001). The contrasting suffix -ed refers to actions that have an inherent or observable endpoint (e.g., painted, washed) by expressing the aspectual sense of completion (Carroll & Johnston, 2001).

In English, aspect markers can be combined with tense. The progressive form can appear in either the present (she is picking the flowers) or past (she was picking the flowers) tense (Wagner, Swensen, & Naigles, 2009). The –ed/irregular past forms convey both past tense and perfective aspectual meaning.

It is commonly noted that children with ASD have difficulty producing English tense and aspect. They have difficulties understanding and using English verb tense and aspect markers. Research has indicated that children diagnosed with ASD have greater omission rates and slower development, and they also have issues accurately applying the progressive (-ing) and finished (-ed) inflections. Furthermore, it has been observed that individuals with high-functioning autism (HFA) employ fewer past tense forms than adults with Asperger's condition (Seung , 2007).

I.8.2.Pragmatic Language Disability in ASD

The term "pragmatic language impairment" describes the inability to use language appropriately in various social contexts, which can lead to issues in social interactions and even social anxiety. Research, including the review by (Mody & Belliveau, 2013) emphasises the intimate connection between linguistic and social issues in ASD by showing how children with ASD frequently exhibit incorrect language behaviour in social contexts , such as echolalia, pedantic speech, misunderstanding of figurative language and other language untypicalties .

I.8.2.1.Echolalia in ASD

The word echolalia or echophrasia is the repetition of utterances made by others and is a non-voluntary, automatic, and effortless pervasive behaviour (Schuler, 1979), Schuler speculated that echolalia is a normal finding during language development in toddlers who imitate to learn new vocabulary ; according to Tarplee & Barrow (1999) there are several social situations in which people echo language or borrow speech for instance we mimic, we do comedic impressions ,we act out dialogue in plays ,we frequently use literal and partial repetitions as turn-taking devices to maintain conversational discourse (Schuler, 1979).

As for children with ASD the quantity and quality of verbal repetition is beyond the ordinary and last longer, where they mimic words from their own speech, or audio devices repeatedly. It is possible to classify this behaviour as either immediate echolalia, which

happens within two conversational turns and closely resemble the original, or delayed echolalia which happens later and frequently has more elaborate language and for mitigated echolalia it is echoing as well as demonstrating cognitive-linguistic processes (Prizant & Rydell, 1984). In verbal exchanges an ASD child may utilise echolalia when they are unclear of how to respond and repeat what has been said in an attempt to grasp the meaning or choose how to react (Fay, 1967b; Prizant & Duchan, 1981).

I.8.2.2.Misunderstanding of Figurative Language in Autism

Children in the spectrum often face communication challenges due to the rigidity of interpreting others' words too literally. This can also extend to difficulties in storytelling and understanding metaphors and humorous language; jokes and sarcasm (Hinzen et al., 2015). Individuals with autism may just concentrate on understanding the literal meaning of the discourse, in contrast to typical communicators who take the speaker's intentions and thoughts into account. This method may be effective for simple assertions, but because it lacks the cognitive capacity to grasp subtle or loose language usage, it cannot support flexible language use (Happé & Tantam, 1991).

Happé (1993) examined how people with autism receive and comprehend nonliteral communication, such as metaphors, idioms, sarcasm, and humour, in her 1993 study on figurative language use in autism ,she found that figurative language comprehension in individuals with autism involve cognitive processes such as the theory of mind abilities and semantic processing (interpreting word meanings in context). She has highlighted specific areas of difficulty such as grasping nonliteral meaning, interpreting social cues conveyed through figurative language use based on context and speaker’s intentions and attitudes.

I.8.3.Phonological Challenges in ASD’s Language

Phonology is the study of sound structure in individual languages. It includes how sound differences are employed to distinguish between linguistic elements and how the sounds in an element's environment affect its sound structure.

I.8.3.1.Atypical Phonological Patterns in ASD

The study of phonology examines the distribution and use of sounds in specific languages. According to (Shriberg et al., 2011) ASD's Prevalence of Speech Sound Disorders (SSD) is a 15% to 20% prevalence of comorbidity between ASD and SSD.

ASD children have atypical features of speaking styles such as inconsistent word production, irregular application of phonological processes, restricted phonological contrasts, immature syllable structure, limited phonetic variety, and speech sound deformities are among the abnormal speech patterns observed in recent research on younger autistic children (Jacobs & Richdale, 2013).

I.8.3.2.Phonological Processing in ASD

In ASD, phonological processing refers to cognitive processes that are predicated on language's phonological features. It encompasses quick naming, phonological memory, and phonological awareness (Rapin & Dunn, 2003).

According to (Kjelgaard & Tager-Flusberg, 2001), phonological processing difficulties can persist in people with ASD who have high cognitive ability especially who exhibit syntactic and semantic impairments.

I.8.4.Morphosyntactic Challenges in ASD's Language

Morphosyntax is the study of two linguistic disciplines. Morphology is the scientific study of the form of words and phrases while syntax is the scientific study of the grammatical rules governing the arrangement of words in a sentence. The morphological components of language, such as verbal inflection, non-word repetition and reflexivity are particularly problematic for ASD children with language impairment. (Tager-Flusberg, 2006).

Robert et al, 2004 noted that ASD children who have language impairments struggle with tense inflection and omission of tense morphemes. In a related study Perovic et al (2013) observed in their inquiry that children aged 6to 18 years old have misinterpretations of reflexive pronouns and difficulties producing clitics linked to specific intonation patterns. Certain morpho syntactic mistakes may result from more general social problems and issues with speech understanding, morphology, syntax, prosody, and pragmatics interact intricately in language processing, which frequently presents these difficulties.

I.9.Categorization of Language Profiles in ASD

Grouping individuals based on linguistic theory and tasks that are informed by language can be a starting point towards categorising language profiles in autism. However, because language theory interacts with other cognitive domains such as Theory of Mind, executive

functions, nonverbal reasoning, and statistical learning, this process can be complicated, leading to a variety of profiles that show "peaks and valleys" in the abilities of people with ASD in different language and cognitive domains. Three primary categories are distinguished: (a) verbally autistic people without structural language impairment; (b) verbally autistic people with structural language impairment; and (c) minimally verbally autistic people each of these categories includes various sub – profiles . (National Research Council, 2001).

I.9.1.Importance of Language Profiles Categorization

The classification of language profiles plays a vital role in assisting more accurate differential diagnosis, directing educational planning, tailoring interventions that best address the specific needs for example; social communication interventions are provided for those who struggle with pragmatic language. It also helps the creation of specific language therapy programmes by language pathologists. All things considered, language profile classification greatly improves a number of areas related to autism knowledge and management (Vogindroukas et al., 2021)

I.9.2.Challenges in ASD Identification

Language pathologists face several challenges in identifying the right diagnosis of autism spectrum disorder because of the complex heterogeneity of ASD characteristics and symptoms with the absence of specific reliable biomarkers in addition to co-occurring conditions that is outlined with Matson et al (2008) shedding light on the importance of early diagnoses in infants who are highly suspected of having autism .In a more recent study Bölte et al. (2018) in their investigation of the disparities in European research prospects for early ASD detection, they highlighted the necessity of more financing for instrument development globally and ask for validation including careful evaluation, professional teamwork, and taking individual and cultural variances into account.

I.9.3.Challenges and Consideration in Diagnosing Language Impairments

As highlighted in the literature; diagnosing language impairments in children with significant deficits is a serious challenge. Bishop et al (1987) ; Camarata et al (2002) address the significance of differentiating between 4-year-olds' temporary and permanent language deficiencies underlining the necessity of measuring language and associated skills accurately in order to detect disorders such as language impairment and developmental disabilities which are difficult to diagnose, as demonstrated by the findings of De Thorne et al. (2007),

who discovered that language pathologists modify the linguistic complexity of their interactions with children who have language impairments. According to McDaniel & Schuele (2021) Speech-language pathologists have difficulty predicting when preverbal children with ASD will turn to spoken language as their main form of communication. However, assessing prelinguistic abilities like responding to shared attention and purposeful communication can be helpful in tracking progress and making decisions about interventions.

Section two Autism:" Language Therapy Programmes"

Language therapy programmes are essential for helping individuals with ASD improve their language and communication abilities, according to psycholinguistics research, particularly in speech and language pathology. These programmes work best when they are creatively customised to match each person's unique language demands according to their language functioning level.

I.10.Speech and Language Therapy (SLP) Services

Speech-language pathologists, who are highly trained clinician's, join forces with a multidisciplinary team such as physicians , occupational therapists, autistic experts, teachers , audiologists .Their collaborative efforts focus on identifying early signs and diagnoses , evaluating ,and addressing speech, language , communication disorders (Law J, et al; 2015).

This Field heavily relies on case report for evidence-based practices, that uses some strategies and tools help the patient build his/her delayed or disordered language. In addition, these strategies help the child improve his/ her language skills. (Law J, Garrett Z, and Nye C, 2004)

I.11. Prompts for Restructuring Oral Muscular Phonetic Targets (PROMPT)

Literally hands –on method of improving speech, where speech language pathologist uses touch cues to a child's articulators (jaw, tongue, lips) to manually guide them through a targeted word, phrase, or sentence. The therapist help the child produce the smallest unit of sound that is the phoneme) , as the child's speech improves, the reliance on tactile

kinaesthetic cues is reduced and the therapist will work on building vocabulary, and sentence structure, as well as conversation and social skills.(Prompt Speech Therapy for kids, 2023)

I.12.Augmentative and Alternative Communication AAC Interventions

Some autistic children may rely on augmentative and alternative communication (AAC) tools since spoken speech is not their primary mode of communication. AAC includes a variety of ways to communicate needs, wants, ideas, and thoughts using objects, signs, drawings, and written text, but not actual speech. It is split up into high-tech and low-tech gadgets. In contrast to low-tech AAC devices, such as graphic boards or communication books, high-tech devices employ electronic speech output and require a battery (Ganz, 2015). AAC device selection necessitates a thorough examination including the child , key persons in their life, occupational therapists, and speech and language therapists. Involving family members in the decision-making process and taking the child's preferences and surroundings into account are crucial. To guarantee on-going communication support, AAC must be customised to each child's skills and requirements, with both high-tech and low-tech choices accessible. AAC is becoming more and more recognised as a useful tool for children with autism, especially those who struggle with social communication and repetitive behaviours. Its techniques, which include speech-generating devices (SGD) and manual signals, greatly assist about 30% of children with autism who are non-verbal. The National Autism Centre (2009) in the US states that, despite its potential benefits, AAC's standing as the gold standard intervention for autism is still in the developing stage, necessitating more thorough study. In-depth analyses of AAC's function must integrate studies on autism and AAC, pointing out areas where social validity and generalisation are lacking. To properly prove AAC's effectiveness and include it into all-encompassing autism treatments programmes, more study is necessary. (Schlosser & Wendt, 2008).

I.13.Applied Behaviour Analysis Interventions (ABA)

"Applied Behaviour Analysis" often shortened to "ABA." This method can be applied at home, in clinics, or in educational settings. The study of language development has long been a part of behaviour analysis (Skinner, 1967). Known as one of the forerunners of contemporary behaviourism, B.F. Skinner authored a book devoted to the subject of "verbal behaviour," which generated intense discussions within the psychology community and remains a rich source of information for treating behavioural problems involving language. Because it aims to raise desired behaviour or reduce undesired behaviour through

reinforcement or punishment, respectively, ABA is regarded as a teaching tool for children with autism. Punishment is the antithesis of reinforcement, and there are two kinds of reinforcement: positive and negative. One therapist and one autistic child receive ABA therapy one-on-one nearly constantly. As a result, the child with autism can be taught a variety of abilities, including grammar, imitation, receptive language, and expressive language . (Smith ,2002).When a therapist does a hand clap and instructs a youngster to follow suit, the child may imitate that behaviour. Receptive language is another ability that ABA focuses on; for instance, the therapist could pick up a ball and say, "ball." ABA seeks to improve expressive language in addition to receptive language. For instance, a kid could answer with the right object's name when the therapist holds up an object. ABA aims to improve expressive language in addition to receptive language. For instance, a kid could answer with the right object's name when the therapist holds up an object. Expressive language is a crucial skill to introduce to autistic children, as the majority of them are non-verbal (Smith, 2002). It could happen with grammar, for instance, when the therapist corrects the autistic child's reflexive pronouns.

I.14.Pivotal Response Treatment Intervention

Pivotal Response Treatment (PRT) intervention that is rooted from the applied behaviour analysis of Skinner's behavioural theory has shown promise in treating autistic children by focusing on important areas including motivation and self-initiation (Koegel & Koegel, 2006, 2016). The goal of this child-led, semi-structured naturalistic developmental behavioural intervention is to enhance behaviour, communication, and social skills (Koegel & Koegel, 2019).A key component of PRT is motivation, and throughout training sessions, certain skills like expressive abilities are developed to improve motivation (Koegel, 2019; Koegel et al., 2001). For example: if the therapist is teaching the word 'car ' to the autistic child, then the therapist may play with a set of cars and gives the child a car to play with as a reward. This can motivate the autistic child to speak.

According to studies (Mohammad zaheri et al., 2014; Popovic et al., 2020). PRT is more adaptable, affordable, and promotes greater skill preservation and generalisation than inflexible ABA techniques like discrete-trial training (DTT).

I.15.Picture Exchange Communication System (PECS)

Picture Exchange Communication System is based on the principles of applied behavioural analysis , this intervention involves the use of visual aids in communication , exchanging picture cards or symbols for desired objects or activities , The intervention follows an operant model which asserts that actions are the product of external factors and their outcomes (Cagliani et al., 2017). According to this paradigm, children's actions are perceived as "operating" on their environment; that is, individuals do actions that have certain results, which in turn affect the likelihood that such actions will recur in the futureit is known as (ABA), Antecedent, Behaviour, and Consequence are referred to as the ABC principle(Cagliani et al., 2017). Something that occurs prior to a behaviour taking place is called an antecedent. In order to clarify more , A pathologist could, for example, ask a pupil to write his name on a sheet of paper (antecedent). The behaviour is what the learner does in reaction to the cue, such writing their name when asked to. What occurs right after the behaviour is called the consequence, and it might be something as simple as a teacher comment or a sticker that serves as positive reinforcement.

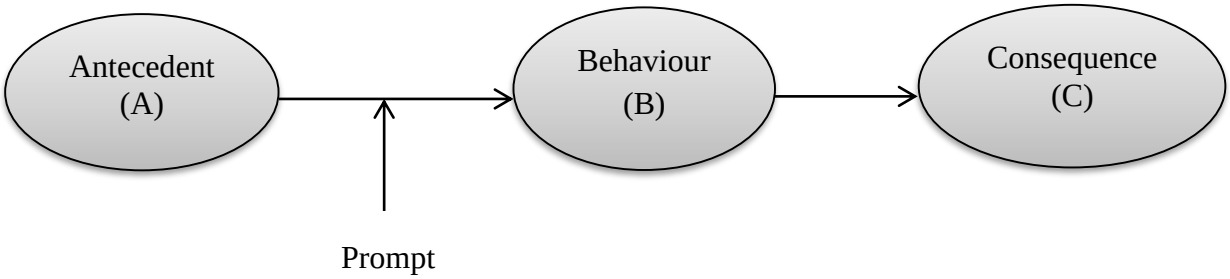


Figure I. 1. The ABC Principle.

I.16.Treatment and Education for Autistic Intervention (TEACCH)

The TEACCH method, which stands for the Treatment and Education of Autistic and Communication Handicapped Children method, which was created in the 1960s by Drs. Eric Schopler and Robert Reichler, is centred on assisting children with autism spectrum disorder (ASD) in becoming more independent and picking up new skills. It builds individualised programmes that take into account each person's cognitive talents and preferred learning style by integrating behavioural psychology and psycholinguistics. The approach places a strong emphasis on changing surroundings to support learning in a variety of contexts, including the workplace, school, and home. Assessments are the first step in order to comprehend the person's behaviour, interests, requirements, and abilities. After that, a customised programme is created, the success of which depends on the support of the family. To guarantee that the programme is implemented effectively, training for school teachers is also crucial. The

methodical teaching strategy divides work into manageable chunks with predetermined deadlines and visual aids to improve comprehension and concentration, it recommends four types of learning structure to develop ASD children's communication and behaviour: physical organization, visual schedules, task organization, and work/activity systems. These structures help reduce distractions, provide clear activity guidance, track progress, and promote meaningful engagement in productive activities. (TEAACH Five –day Webpage , n.d.)

I.17.Lovaas Method

For young children (ideally under 4 years old), the Lovaas method starts strict one-on-one treatment at home. This treatment lasts for 30 to 40 hours per week for two to three years. With the goal of integrating into mainstream classes with the least amount of assistance, it moves from one-on-one to small group to large group settings (Green, 1996; Harris & Weiss, 1998; Smith & Lovaas, 1998). The approach, which initially included punishment and aversive, has recently been abandoned in favour of positive reinforcement for improving language and behaviour (Smith & Lovaas, 1998).

I.18.Hanen Programme

A family –focused early language intervention that focuses on empowering parents and caregivers to support their children's linguistic development, particularly children with language deficits, using programmes like More "Than Words" and "It Takes Two to Talk". This programme train parents and care providers to use personalised strategies to maximise the benefits from early intervention by creating linguistic –rich environment at home during everyday activities, this approach shows its effectiveness in the frame work of autism where it help enhancing vocabulary , expressive language abilities , and overall social communication. This programme has also been investigated emphasising the importance of such programme in improving family dynamics and interactions. (It Takes Two to Talk- The Hanen Program for Parents: Early Language Intervention through Parent Training, 2004)

Conclusion

This literature review allows for the deduction and conclusion of many findings. Therefore typical developing children start showing social and communicative skills before they utter their first words, they do so by making eye contact, using gestures to express their needs that is linguistically known as proto imperative and proto declarative intentions, moreover they show their emotions regressively by crying when they are frustrated or

laughing and cooing and burping in joyful moments. As they grow older they learn to communicate and interact in a rigorous, intricate manner and develop their language independently. It has been interestingly examined that children with autism spectrum disorder struggle with these skills most frequently, that makes their parents and caregivers notice the deviant development and observe the symptoms to seeking accurate diagnosis and consulting experts for advice and searching for methods and strategies to improve the linguistic communicative and social behaviour impairments. Lastly, the second section was devoted for personalised language interventions that are customised to address the specific needs of this population. To measure to what extent do these interventions enhance the linguistic abilities of the ASD children and help classifying their linguistic profiles it will be investigated in the next chapter through the answers gathered from the data collection tools .

Chapter Two

Research Methodology and Fieldwork Approach

II. Introduction

In order to validate or reject the hypotheses of a research question, a scientific, systematic and structured process is employed with approaches, methodologies and studies forming the building blocks of this process. This chapter at hand highlights the methodological design and the instruments used to gather data, the participants and the setting where the study took place. It utilizes a mixed method approach with qualitative interviews administered to experts on the fields of language therapy interventions , quantitative questionnaire dedicated to the first care providers, the parents of the autistic children and a quasi-experimental design represented in a linguistic intervention designated for verbal autistic children with linguistic challenges , with the examination of a pilot study prior to the beginning of the main study , concluding with statistical tools used for computation.

II.1. Research Design

The scientific research design in psychology uses a variety of methods to evaluate the validity and applicability of hypotheses in the field of human sciences.

Miller (1974, p. 2) suggest that Psychological theories should be associated with behaviours that are seen in controlled environments. Whether the variables are dependent or independent, the methods employed to collect the data must be properly thought out in order to evaluate the connections between them. Leedy (1997) argues that research design is a plan for on-going inquiry that provides the overall framework to present the research problem or phenomenon, select and collect data and analyse the findings that are judged to be credible. The research design aims at bridging the gap between the research questions and the execution of the research strategy.

Accordingly, in the current study the experimental and descriptive research types were opted for qualitative and quantitative methodologies to explore the multifaceted linguistic challenges faced by Algerian autistic learners aiming to address the descriptive inquiries concerning specific linguistic difficulties. Simultaneously, a quasi-experimental research design will be utilized to measure the extent to which effective language therapy programmes assist with ameliorating these difficulties. According to (SAGE Handbook of Mixed Methods in Social &Behavioural Research, 2013) mixed method approach helps capturing the richness, depth, and context of social and behavioural phenomena, which may not be fully captured by quantitative or qualitative methods alone. As for the quasi experiment design, it is “the only research method in psychology that allows for systematically observing causal relationships

between variables." (Dumont, 2008, p. 17) . Particularly, this intervention aimed at exploring the effectiveness of the language therapy programmes on autistic children's linguistic performance. The details of the research design adopted in the present study are demonstrated in the figures 3,4,5 below:

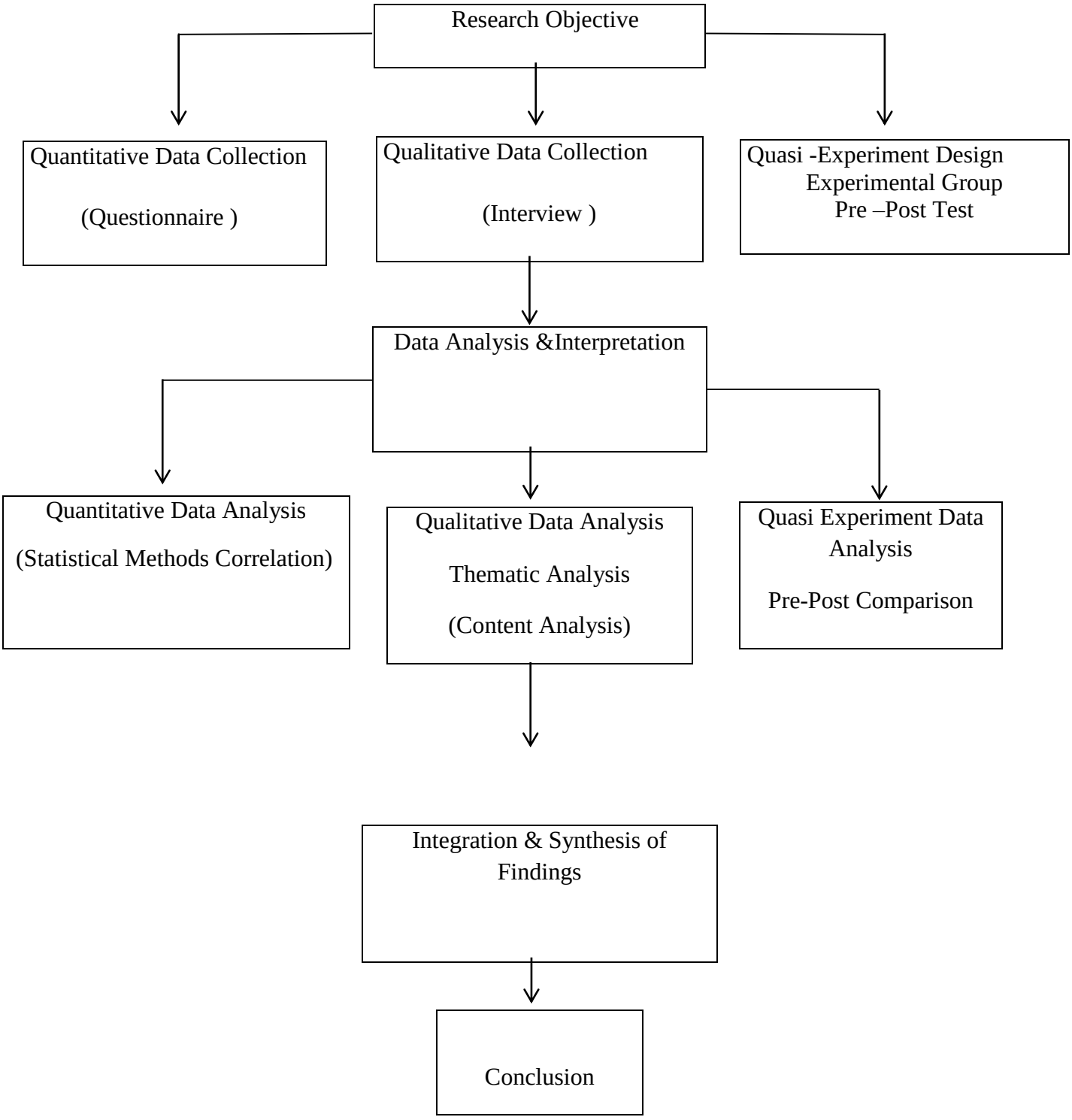


Figure II.1. : Research Design of the Present Study.

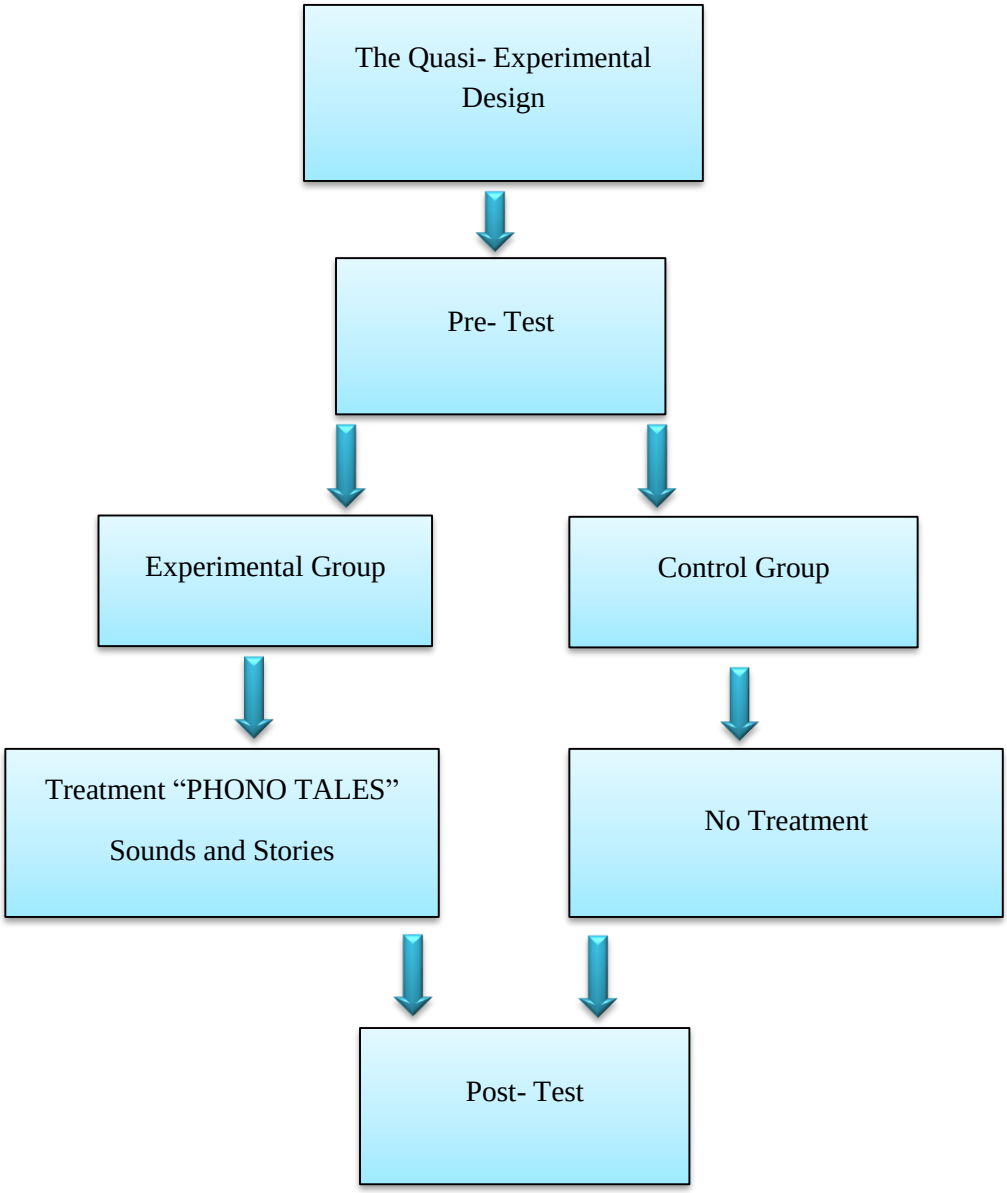


Figure II.2. : Quasi Experimental Design

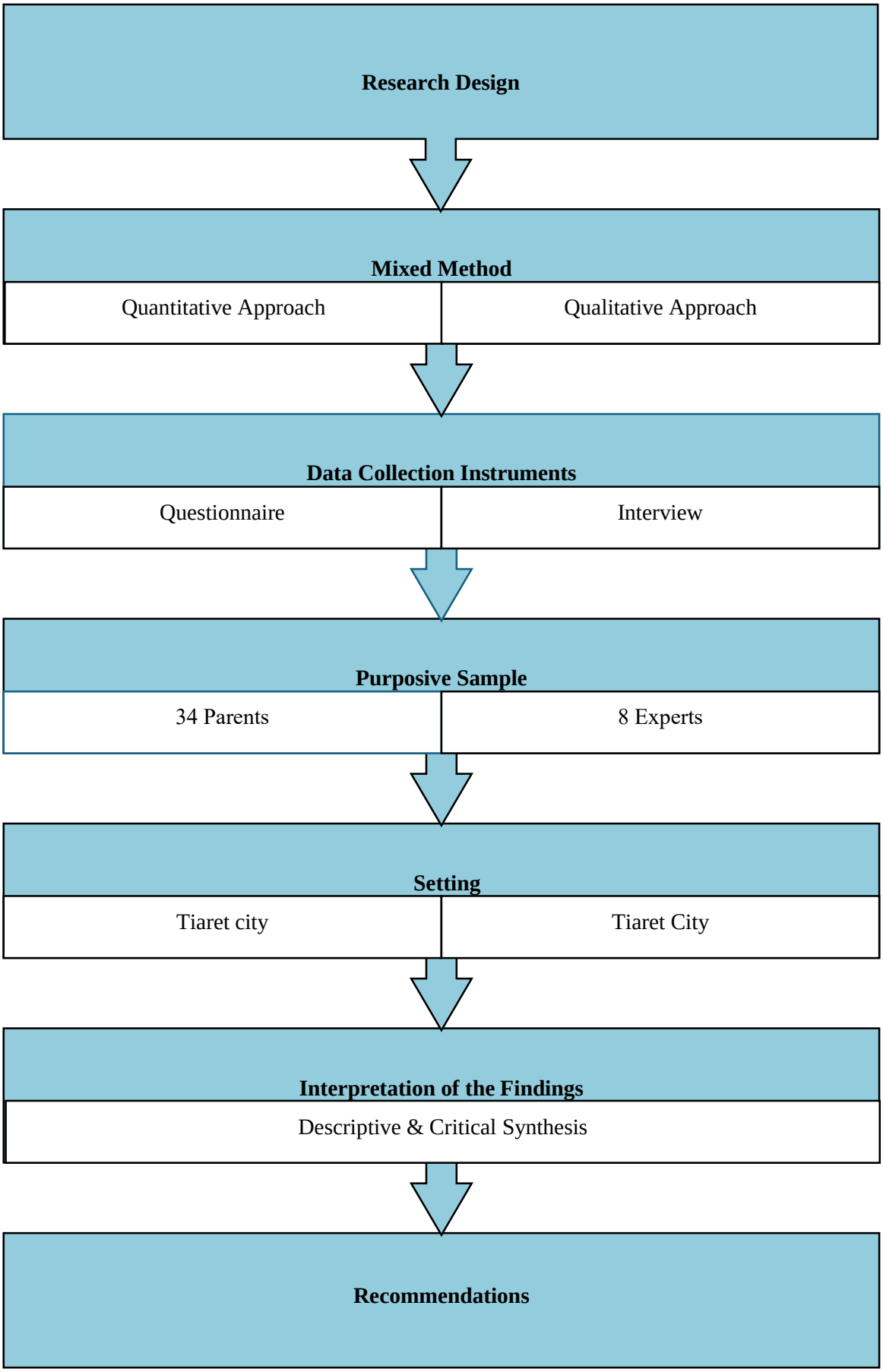


Figure II.3. : Mixed Method Design.

II.2. Triangulation

It is crucial to equip the research process with the right tools of gathering research data , to achieve the best insights from the population investigated , Mouton (2001, p. 133) in his turn argues "to satisfy the information needs of any study or research project, an appropriate methodology has to be selected ,and suitable tools for data collection and analysis have to be chosen". The researcher uses multiple research method to enhance the validity of the findings and have an overall view on the phenomenon from different angles. In this research, triangulation method involves employing a questionnaire administered to parents of autistic children, a semi structured interview with pathologists, and a tailored therapeutic intervention with verbal autistic children diagnosed with mild to moderate ASD.

II.3. Mixed Method: Qualitative vs. Quantitative approach

Mixed methods can be a more effective research approach than either quantitative-only or qualitative-only methods in the following situations: when one data source is insufficient to fully comprehend the topic; when results require further explanation; when generalizing exploratory findings is necessary; or when the intricacy of research objectives is best served by utilizing multiple phases or data types (Creswell and Plano Clark 2011). Both qualitative and quantitative components must follow their respective set standards in order for rigorous mixed methods approaches to be implemented. The nature of the study itself may need the employment of several different research instruments in order to fully comprehend it, provide answers to its questions, collect and analyse both quantitative (closed-ended) and qualitative(open-ended) data and facilitates the information analysis process. (Wisdom, Cavaleri Onwuegbuzie & Green 2012; Creswell & Plano Clark, 2011).

To illustrate, in this study, the quantitative analysis involves administering a questionnaire to parents of verbal autistic children at Al -Amal Association for Autism and Trisomy in Tiaret ,it is used to analyze the gathering numeric data. According to Patton (1987), the quantitative approach is of a great importance that it facilitates gathering high quality usable data ,achieve good reactions of great many people to a limited time and provide anonymity that encourage honest answers that reduce bias.

As for qualitative analysis, Cohen et al (2007) claims that using qualitative data collection tool allows for data enrichment analysis ,validating quantitative findings ,and assuring ethical research practices taking into consideration the participant's experience with the topic. The qualitative approach in this study represents an interview directed to pathologist

in Al Amal Association for children with Autism and Trisomy in Tiaret; it is employed to capture contextual information and prompting open dialogue to attain comprehensive insights from pathologist's perspectives, experiences, and interaction with their autistic patients.

III.4- Setting, Population and Sampling of the Study

The careful selection of setting, clear definition of the sample population and strategic sampling method represent the cornerstone of a successful research.

II.4.1- The Setting of the Study

The setting of a research study refers to the physical, social, or experimental context in which the research is conducted. The research at hand is done in different research settings in Algeria in the city of Tiaret in two primary schools , to locate 6 verbal autistic children and apply the quasi- experiment to them , at Bara Abd-el-Kader Primary School that is located in Zaaroura District and Khalifa Mohammed Primary School BP 303 District ,these institutions have specialised class for children diagnosed with mild or "high functioning" autism .In addition to Al-Amal Association for Children with Autism and Trisomy in Messri Al -Djilali District,Tiaret, to locate 8 therapists and 34 parent of autistic children who have experienced speech language therapy programmes. The head of the English Language Department at Ibn Khaldoun University Tiaret granted approval and permission for our field study at the center of Mentally Disabled Children named after the late Mujahid Madani Abdelkader, Tiaret, where the director in coordination with Social Services Directorate initially directed us to the primary schools where the research took place.

II.4.2. The Sample Population

The research population refers to the entire group or set of individuals, objects, or events that possess specific characteristics and are of interest to the researcher (Miller, 1975). It serves as a representative sample of the broader population. The definition of the research population depends on the goals of the study as well as the particular characteristics that are being examined.

For the specific needs of this study, a purposive sampling method was employed, to select participants who could provide insightful data into the research's focus. The sample includes 6 verbal autistic children aged between 7and 14years old, 8 language pathologists, and 34 parent of autistic children. The study aims to gather comprehensive and meaningful

information to address its research objectives by including a variety of autistic stakeholders participants. The selection of these participants was based on the specific verbal communication abilities and challenges within autistic children, the first hand experiences and perspectives of parents alongside the expertise of language pathologists.

II.4.3. Purposive Sampling

Purposive sampling also known as subjective, judgmental or selective sampling represents a group of different non- probability sampling techniques .It relies on the researcher's decisions concerning the (individuals, cases, organisations, events, pieces of data) that are being studied to be included in the sample or not .Usually, the selective sampling investigates a quiet small target especially when compared with probability sampling techniques. According to Adolph Jenson (1963) "a purposive selection denotes the method of selecting a number of groups of units in such a way that selected groups together yield as nearly as possible the same average or proportion as the totality with respect of those characteristics which are already a matter of statistical knowledge."

Myneni (2007) shows the main goal of purposive sampling is to focus on particular characteristics that are of special interest within a community in order to comprehensively target reliable answers to research questions. Instead of aiming for a representative sample, this strategy is preferred in qualitative or mixed methods research, where it is seen as a purposeful decision that is in line with the particular goals of the sampling methodology that is being used, rather than a disadvantage (Myneni, 2007).

Purposive sampling, in its simplest form, produces a non-representative subset that is specifically designed to satisfy certain research requirements or objectives.

II.4.3.1.Experimental Group: Autistic Learners

In the present study, for the quasi–experimental design, 6 verbal autistic children aged between 7 to 14 years old having mild to moderate autism were purposefully sampled 2girls and 4 boys , who were lately classified randomly into two groups; the control group typically receiving no intervention while experimental group participated our linguistic focused intervention . However this selective targeted representation of autistic children with varied abilities and deficits were selected from primary schools because of the presence of air conditioned classroom setting that enables us to notice the changes with the accompanied of one single expert ensuring consistent and controlled environment for our intervention to

minimize confrontations with agitated or aggressive behaviours leading to a thorough comprehension of their linguistic capabilities and obstacles.

II.4.3.2. Parents

For the questionnaire, a sample of thirty four (34) parent were selected purposefully from AL –Amal Association based on their familiarity with their children's challenges and needs and their experience with language therapy programmes , this sample size consisting of 21 female and 13 male among them five (5) parent of the same autistic children who participated in the quasi experiment. The sample size deemed to be sufficient for gathering a wide variety of perspectives and insightful data since they are actively involved in providing daily care and assistance for their children with autism.

II.4.3.3. Experts

For the semi structured interview, we intentionally selected eight (8) therapists -six females and two males-. These professionals have worked in the fields of language therapy, behavioural therapy, and education for children with special needs for two to ten years. Their areas of expertise include improving language rehabilitation and intervention, integrating children into social contexts through customized activities, and putting into practice effective strategies to improve language abilities. The aim of selecting this sample population was to gain deeper insights regarding successful language intervention strategies and obtaining suggestions for enhancing the programmes addressing autistic children's needs.

II.5. Data Collection Instruments

After planning the research, the researcher must choose the appropriate data tools that serve research requirements and provide enough testimony for the hypotheses. In this interest, the researchers used a triangulation of data collection tools that are: a questionnaire for parents, an interview with therapists, and a tailored experimental intervention with autistic children. These different tools have a crucial role in shaping the reliability of the research. Using multiple methods is important to provide adequate evidence, accuracy, and empirical validity for the findings.

II.5.1. Description of the Questionnaire

A questionnaire is a set of questions or statements designed to gather data from large numbers of respondents. The qualitative approach in our study is represented by the questionnaire that was directed to 34 parents of child with ASD. The questionnaire contains different types of questions that are: open and close-ended questions and multiple choice

questions. The questionnaire is divided to 5 sections, the first section revolves about background and demographic information about the participants and their autistic children ,the second section is about identifying and evaluating linguistic challenges, the third is about the significance of language therapy programmes ,while the fourth is about the effectiveness of these programmes and their impact on autistic children, and lastly the fifth section focuses on customizing and integrating language therapy programmes into educational syllabus. The aim of the questionnaire is about gathering general information about autistic children and the topic holistically in order to answer the research questions and testify the hypotheses after analysing the findings.

II.5.2. Description of the Interviews

Interviews can be defined as qualitative research methods that are about "conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation." (Boyce & Neale, 2006). In other words, it is a purposed conversation that aims to collect data about the informants' ideas. There are three kinds of interview: structured, unstructured, and finally the semi-structured one this research relies on. The interview was chosen as a second research tool to obtain detailed data that complements the questionnaire findings. The interview was guided by a series of predetermined questions, to discover more about autism spectrum disorder, the approaches used with autistic children and the challenges that the therapists face throughout the process of developing their linguistic and behavioural skills. These interviews were directed to 8 therapists with a total number of 10 questions.

II.5.3. Pilot Study

In order to assess the feasibility, practicality and efficiency of the designed linguistic focused intervention also to gather preliminary information about the linguistic performance of the autistic children in air conditioned environment and understand their most prevalent linguistic and communication challenges within the room setting, among their peers and their therapist ,we first carried out two field observations capturing their language behaviour and testing their receptive and expressive skills by engaging in short conversations and using visual aids , such as showing them pictures and ask them to describe what the picture represents . Their humble interaction helped much improve the pre –test's , treatment intervention's phase, and post-test's final structures . The pilot stage is also conducted with some parent of autistic children who participated in the quasi experiment and with their teachers who were originally specialized in language therapy and psychology, this help to evaluate the clarity and relevance of the proposed questions, decide whether these questions

accurately gather the intended information and correspond with the study's objectives and scope.

Pilot studies in this research are conducted for the following reasons:

1. Testing hypotheses.

2. Assessing feasibility.

3. Evaluating intervention acceptability.

4. Validating instruments and results.

5. Identifying challenges (unexpected biases, ambiguities in survey questions).

6. Confirm the results obtained from each instrument.

II.5.4. Quasi-experiment

The prefix quasi means "resembling", thus quasi experimental research resembles experimental research. It utilizes purposeful assignment of participants and manipulates the independent variable before measuring the dependent variable (Cook & Campbell, 1979). Quasi –experiment is typically conducted in real-world setting and is often used to assess treatment effectiveness and understand causal relationships. Although there are various types of quasi experiments , the present study opted for pre-test and post-test design involving an independent samples T-tests as a type of inferential statistics that is used to figure out if there is a notable difference between the pre –test and post-test mean scores of the six autistic children in the primary schools ,Tiaret(Algeria) ,who were divided into two equal groups :control and experimental group .

The phases and the procedures attempted for conducting the quasi-experiment are as follows:

II.5.4.1. Writing Pre-test

A test according to Brow (2001) is a method of measuring a person's ability, knowledge, or performance in a given domain .Said differently a test is "measure what is meant to measure" (Hughes, 1989, p. 22; Fulcher & Davidson, 2007, p. 4) and its suitability is anchored in three criteria: practicality, reliability and validity, it should be easy to manage, to score and to interpret.

In this study, a written pre-test was administered prior to the beginning of the intervention to the independent groups: the control and the experimental group for the purpose of confirming or disconfirming the first hypothesis of this research .Most specifically, to evaluate the autistic children's linguistic abilities before engaging in a the treatment. As such the pre-test composes of six different exercises each exercise is designed to assess particular aspects of linguistic. The first exercise is dedicated for identifying the right pronunciation of

the letter and writing the words that contain it, the second revolves around evaluating linguistic reasoning by completing the words by the missing letter while the third is about signifier \signified were the autistic children are asked to match the sentence with the picture that represents, the fourth task deals with evaluating contextual relevance were they are required to choose the suitable word for the context provided ,the fifth involves syntax evaluation the task is about reordering the words to obtain a correct and meaningful sentence . The sixth is about reflexivity, identifying the correspondent pronoun for the verb form.

The pre-test aims at:

1. Assessment of prior knowledge.
2. Identifying gaps.
3. Customizing the interventional phase based on the children's existing language skills and challenges.

II.5.4.2. Intervention (Treatment)

The treatment phase in a quasi-experiment denotes administering the treatment or the intervention to the experimental group. This stage plays a vital role in examining the impact of the intervention on the participants' performance (Cook & Campbell, 1979). For instance in the present study, the intervention is designed using a game based approach , its principle is based on the language therapy programme : Picture Exchange Communication System were it involves randomly selecting pictures from a box containing a variety of images such as a fish, fishing rod ,clock, whistle ,a book of Quran , cars , turtle ,seagull, and so on . The intervention is given the title: **Phono Tales "sounds and stories**, were an ASD child (we are referring to all the members of the experimental group) then picks a picture from that box and tries to find words within the semantic field of the one selected , ones the child succeeds in finding the word ,he writes it on the board .The process is reinforced with the applause or encouraging words .In contrast , if the child makes a mistake in articulation or spelling he is simply ignored, that is the application of what has been mentioned in the ABA method of Skinner's "reinforcement and punishment" principle . After successfully finding the words, the autistic child constructs sentences by combining the words he found and then enjoys the story he made, and so it goes , each time new words new stories till the end of the experiment that took ten (10) sessions and lasts 30 to 45 minutes with an average of two sessions per a week .

The treatment aimed at improving different linguistic skills by mainly focussing on differentiating between the letter [s] and the letter [s] in Arabic [س] and [ص] in articulation and spelling besides encouraging language creativity and critical thinking by allowing children to construct sentences and use them in the correct context, in addition, boosting their confidence by motivating them to actively participate and learn in a fun and enjoyable environment.

II.5.4.3. Writing Post-test

After the intervention period the post-test is administered to the independent groups with the same written material and the same scoring method ensuring the research objectivity, avoiding biases and enhancing the research validity. The post-test resembles the pre-test assessment of exercises objectives and design, with slight differences in visual and textual content. The post-test contains four tasks and each one has often multiple instructions. The first exercise is about evaluating sounds; the second revolves around linguistic reasoning and expressing what the pictures represent and evaluating contextual relevance, the third is about signifier /signified and the fourth one is about evaluating syntax and grammar by reordering the sentences. The post-test aims at:

1. Gathering the feedback from ASD participants regarding the treatment provided**.**
2. Comparing post and pre-test results to evaluate the effectiveness of the Phono Tales game play intervention in achieving its objectives.
3. Validating the Phono Tales intervention and determining whether it has been successful in reaching the intended objectives and outcomes or not.

The steps of the personalised intervention are presented in the figure. 6 below:

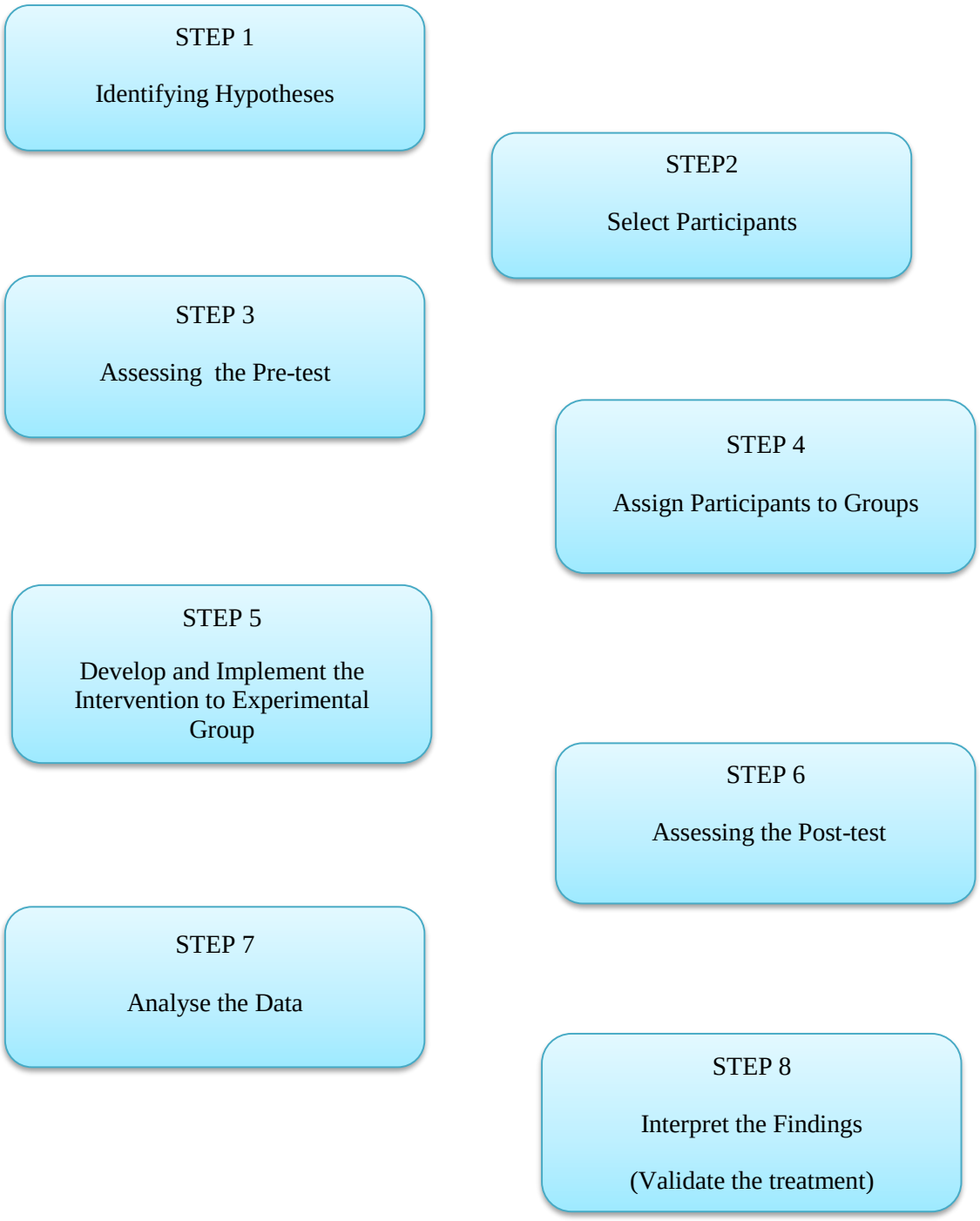


Figure II.4. : Experiment Steps.

II.5.5. Methods of Analysis

Statistical analysis plays a pivotal role in deriving meaningful interpretations from raw data, ensuring the credibility and robustness of our findings. This section delves into the utilization of descriptive statistics to summarize and characterize the collected data, as well as inferential statistics to predict broader conclusions and test research hypotheses.

II.5.5.1. Statistical Method: Means Calculation

In order to maintain reliability and scientific validity of our research findings, we opted for varied statistical analysis. First, we used descriptive statistics to portray and summarise the data we collected. Second, we employed inferential statistics that allows us to broaden our conclusions beyond the analysed data and reach research conclusions regarding the hypotheses we put forward.

The key concept in statistics is the Central Tendency by which the researcher grasps the central value in a set of data. Miller (1974) outlines two indicators: the mean and the mode.

1. **The Mean** is the average of the numbers; it is calculated by adding together every score and dividing the sum by the number of scores.
   The formula is: $\overline{X} = \frac{\sum X}{N}$ / N: The number of the students per group.

2. **The Mode** or the modal value of a data set, "it is the most frequently occurring value in a set of scores" (Miller ,1974).

3. **The Dispersion** is the spread of data points around the mean in statistics. It was indicated through the lowest and highest scores with their respective frequencies.

II.5.5.2. Inferential Statistics

Inferential data method allows researchers to generalize their findings from a sample to the entire population by means of hypotheses testing. Moreover, it facilitates determining whether the results align with the predicted outcomes regarding the independent variable (Miller, 1974, P.35). These processes involve transferring real-world samples into mathematical formulas within a mathematical framework and drawing inferences about the experiment.

II.5.5.2.1. The Independent Sample T-test

The independent sample T-test is a statistical procedure that is employed to compare the means between two independent groups. In conducting this analysis The SPSS programme version 27 is used to compute the observed T-value. This letter is derived from three key consideration: the type of hypothesis in this intervention is two tailed (H0: no effectiveness while H1: intervention is effective), in addition to the degree of freedom and the level of significance, in the study at hand the selected α level is 0.05 indicating the confidence level 95 % certain that the observed results were due to the treatment's efficacy while 5% of results due to chance factor.

To effectively analyse and interpret the obtained results from the Phono Tales intervention, the current study rely on the software program “SPSS” version 26, enabling to make inferences about ASD population for instance based on the three verbal autistic children who participated in the experiment, also drawing conclusions about the relationship between linguistic challenges in autism & language therapy programmes.

Conclusion

This chapter focused on the methodological approaches and the instruments used to gather information about the children’s linguistic abilities and impairments alongside the parents’ and the therapists’ observations, perspectives and expertise with autism spectrum disorder, it aimed also to assess the children’s linguistic performance and the effectiveness of our language intervention. The results of the treatment and the questionnaire with the interviews and their analysis are the main objectives of the next chapter.

Chapter Three

Data Analysis and Interpretation

III.Introduction

The present chapter aims at contributing actionable knowledge that can improve the quality of language therapy rehabilitation programmes for children on the autism spectrum disorder, ultimately enhancing their linguistic competence and communication skills and their overall quality of life, through discussing the analysis and interpretations of the findings gathered from questioning the parents , interviewing experts in the field and applying a tailored intervention on verbal autistic children having linguistic difficulties in order to describe the most prevalent linguistic impairments presented across the spectrum as well as measure the extent to which a customized linguistic programme can enhance the linguistic performance of this population ,ending with recommendations for further future investigations and pinpointing the limitations encountered during the research.

III.1. Data Analysis and Discussion

In this part we delve into a comprehensive analysis of the data obtained throughout the inquiry to draw conclusions about the research objectives, analysis is equipped with graphs to help elucidate the implications of the research outcomes.

III.1.1. Questionnaire Obtained Results Analysis

The results of the questionnaire are calculated manually using the formula mentioned previously.

Section One: Personal Demographics

Parent's Personal Information:

Genders	**N**	**%**
Males	13	38%
Females	21	62%

Table III.1 :Parent's Gender.

Figure III.1 :Parent's Gender.

Interpretation

As figure 01 indicates, the sample comprises 62% female participants and 38% % male participants of parents of the autistic children.

Parent's Gender

Age	Less than 40 years	40 years	More than 40 years
Respondents Number	10	5	19
Percentage	29%	15%	56%

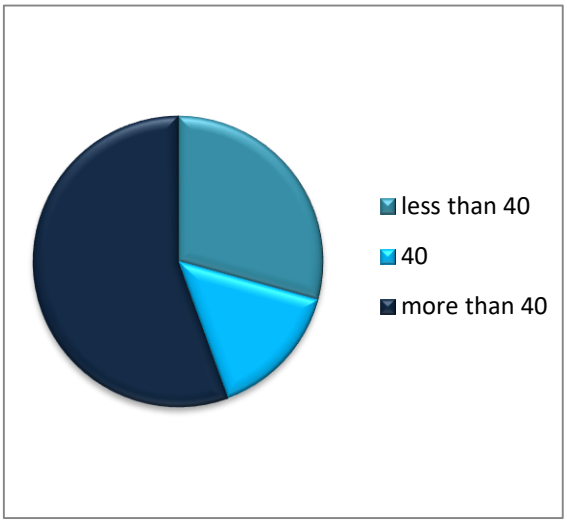


Table III.2: Parent's Distribution According to age. **Figure III.2** Parent's age

Interpretation

As shown in the table and the figure, the majority of the participants are aged more than 40 years which makes 56% of the population, supporting the notion that suggest that parents with advanced parental age can be a risk factor of having autism, though it is not the sole determinant since the other 29% is left for parents aged less than 40 years old.

Child's gender

Gender	Children Number	Percentage %
Male	23	68%
Female	11	32%

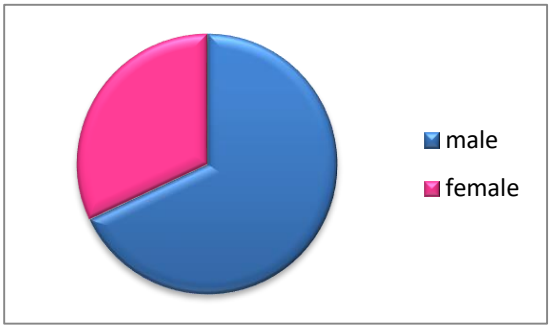


Table III. 03: Children's gender **Figure III. 03:** Children's gender

Interpretation

As shown in the table and the figure, the majority of the parents' children's gender is male with 68% and the rest 32% are females, this supports the notion that suggest that the prevalence of autism is higher in males than in females.

Age	5 Years	From 5 to12 years	More than12 years
ASD Children's Number	2	26	6
Percentage	6%	76%	18%

Table III. 4: Children's age

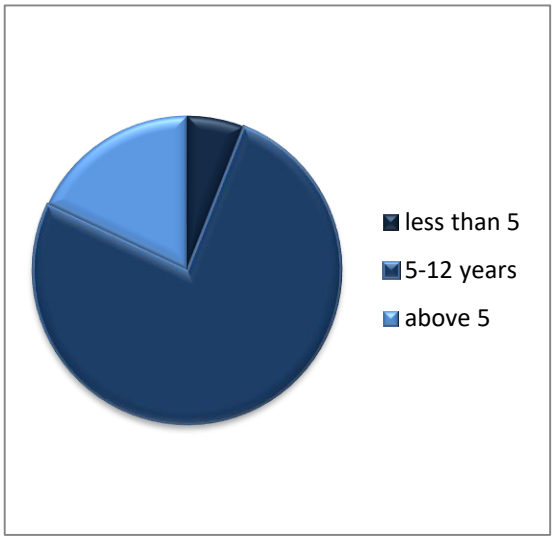


Figure **III. 4:** Children's Age

Interpretation

The largest group of autistic children falls within the 5 to 12 years age as shown in the table and figure which it comprises 76% of the sample size leaving 18% for 12 years and above and 6% under 5 years, this data indicate the critical phase in children's life for detecting autism and assessing accurate interventions.

Children's Level of Autism

Severity of ASD	Mild	Moderate	Severe
ASD children number	11	16	7
Percentage%	32%	47%	21%

Table III. 5: Childern's level of Autism.

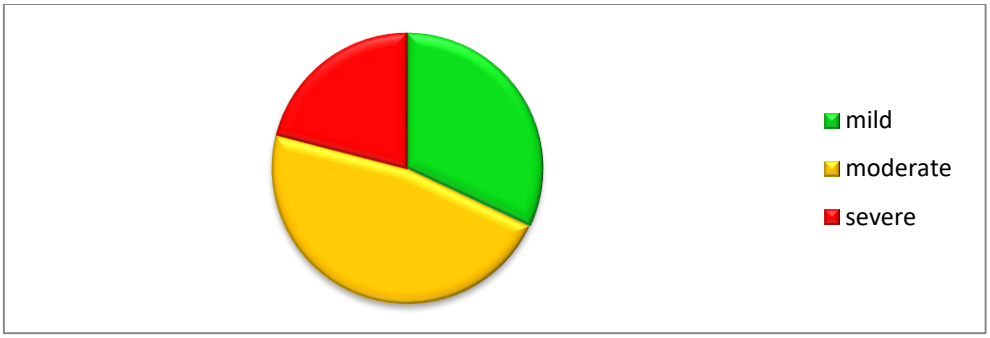


Figure III. 5: Childern's level of Autism.

Interpretation

The data shown in Table 04 and Figure 04 indicate the level of autism among the children of the participants of the study, with 47% representing the highest level being moderate, than 32% mild and 21% severe.

Section2: Identification and Evaluation of Language Challenges

1. When you first notice that your child had language challenges?

Identification of Autism	Responses	Percentage
Early toddlerhood, around 18 months	8	23.5%
When compared to peers, around the age three	23	67%
Noticed delay in speech milestones	2	5.9%
Became apparent during interactions with others	1	2.9%

Table III. 6: Identification of Autism.

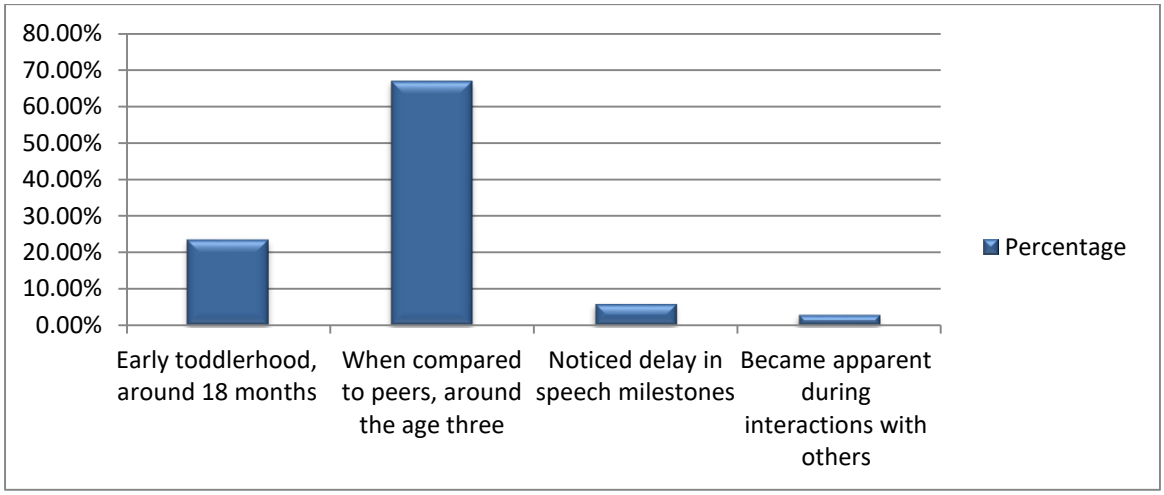


Figure III. 6 : Identification of Autism

Interpretation

The data indicates that the majority of participants identify autism around the age of three comprising (67%) from the sample population, when comparing the developmental milestones to that of typical peers. Also (23, 5%) identify autism early in toddlerhood. However just few reported the interactions with peers and delayed speech, emphasising the need for early identification and screening.

2. **What are the most significant linguistic challenges you have observed in your child's communication skills that you believed required an intervention from a speech pathologist?**

Linguistic Challenges	Responses	Percentages
Not responding to his name being called	22	24,44%
The inability to express emotions, needs through language	29	32,22%
Referring to himself in a third person	10	11,11%
When there was a delay in his ability to articulate words	29	32,22%

Table III. 7: Identification of language challenges

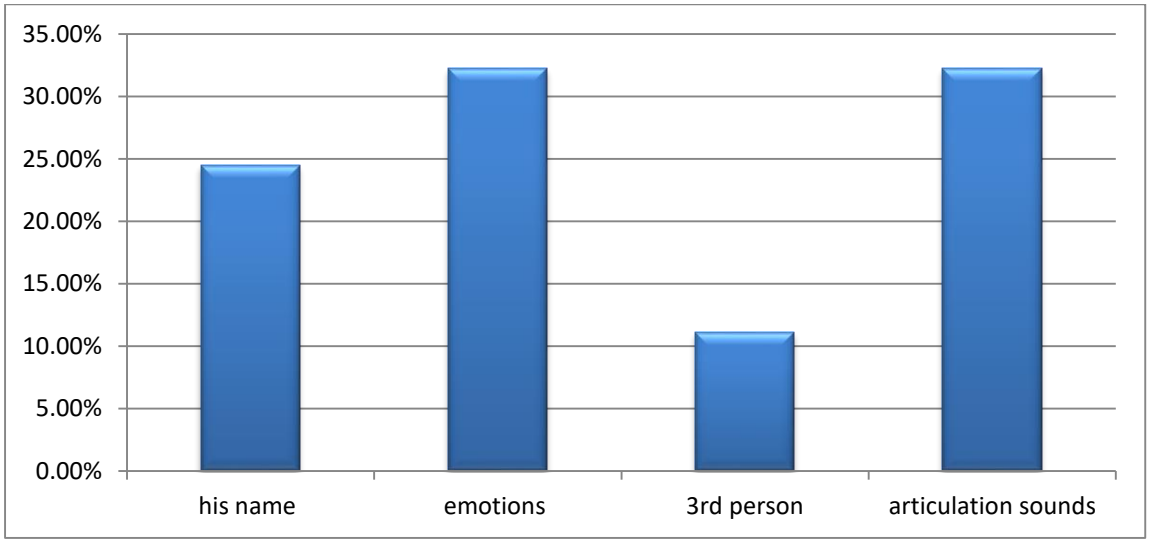


Figure III. 7: Identification of language challenges

Interpretation

This question aims at gathering significant data about the most challenging linguistic impairments presented across the spectrum that required speech and language pathologist's intervention, the statistics show that expressing emotions besides articulating words are the most prevalent linguistic challenges presented by autistic children in this study, comparing to lack of self-awareness referred to as not responding to one's name being called with referring to one's self in the third person singular. By addressing these difficulties the researcher highlight the individual differences and the need for early intervention and customised linguistic treatment.

2. **Please indicate your response to the following Likert items by selecting the frequency that you believe is most appropriate for each statement:**

Linguistic Challenges	**Never a challenge**	**Rarely a challenge**	**Often a challenge**	**Sometimes a challenge**	**Always a challenge**
Limited vocabulary	3,03%	18,18%	18,18%	24,24%	36;36%
Difficulty understanding and using figurative language	5,88%	2,94%	20,59%	23,53%	47,06%
Challenges in understanding and expressing emotions through language	2,94%	5,88%	35,29%	32,35%	23,53%
Struggling with reflexivity and the use of grammar rules	6,06%	0	21,21%	27,27%	45,45%
Struggling with pronouncing words appropriately	2,94%	2,94%	14,71%	38,24%	41,18%
Impaired communication and social interaction skills	11,76%	5,88%	23,53%	17,65%	41,18%

Table III. 8: Frequency of linguistic challenges in autism.

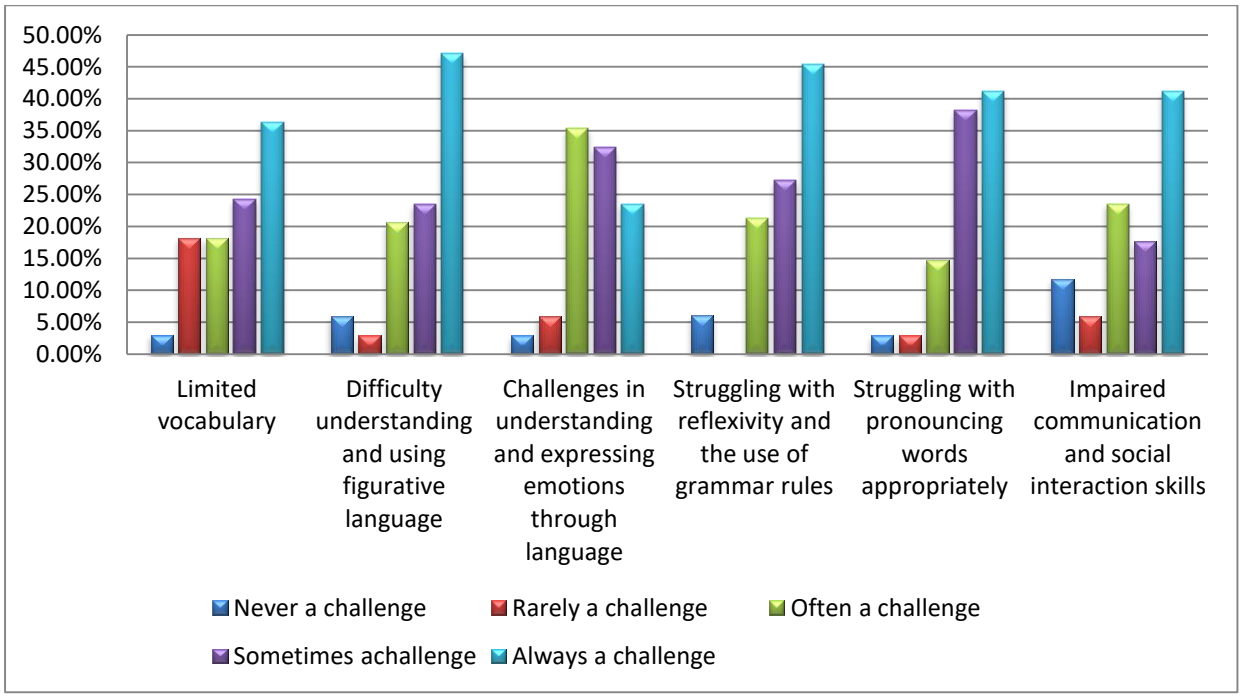


Figure III. 8: Frequency of linguistic challenges in autism

Interpretation

In this question the researcher aims at gathering considerable data concerning the different linguistic challenges in autism and the degrees of impact on the participants , with the majority of high scores shown in the degree of always a challenge ,especially in difficulty understanding and using figurative language which comprises 47,06% of this aspect raw percentage , followed by 45,5% in always a challenge for struggling with reflexivity and the use of grammar rules, moreover, both aspects of pronouncing words alongside communication and social interaction skills show respectively 41,18% of the raw percentages in always a challenge , followed by 36,36% always a challenge in limited vocabulary and finally , in understanding and expressing emotions through language it is revealed that the majority of participants choose it is sometimes a challenge for their ASD children. These results show varied linguistic challenges' effects on the ASD children with different degrees of seriousness.

Section 3: Importance of Language Therapy Programmes

4. How important do you think it is for language therapy programmes to address these challenges?

Evaluation of Therapy's Effectiveness	Responses	Percentage
Very important	30	88,23%
Somewhat important	3	8,83%
Moderately important	1	2,94%
Not important	0	0

Table III. 9: Evaluation of Therapy's Effectiveness.

Interpretation

The results clearly indicate that the majority of participants (88,23%) believe that language therapy programmes are crucial for addressing linguistic deficits , highlighting a strong consensus on the critical role for overcoming these difficulties, only 8,83% believe that it is somewhat important and only a tiny portion 2,94% think it is moderately important.

5. If important, would you please say why? Important because:

	Responses	Percentage
Language is a fundamental skill in daily life	17	50%
Communication difficulties can greatly impact individuals with autism	8	23,53%
Addressing linguistic challenges can lead to better social and educational outcomes	9	26,47%

Table III. 10: Importance of Language Therapy Programmes**.**

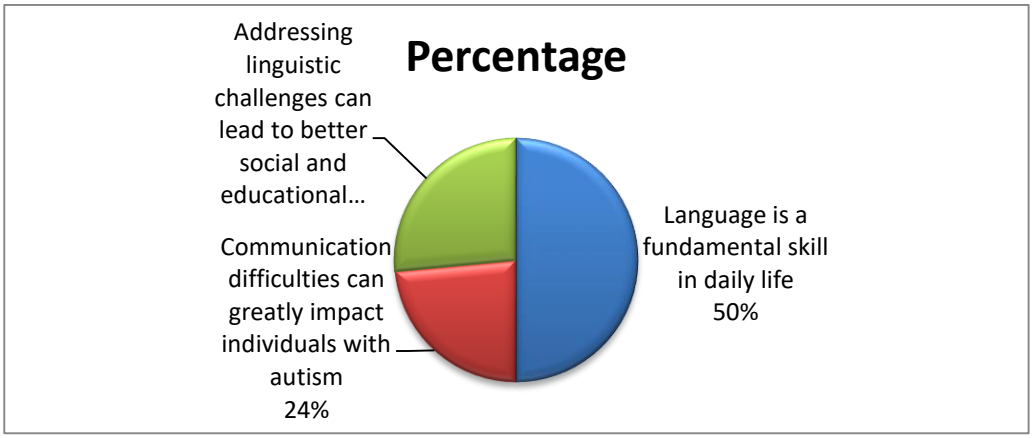


Figure III.9: Importance of Language Therapy Programmes.

Interpretation

The table and figure demonstrate the participants' opinions toward the importance of language therapy programmes, the majority of the respondents 50% view language as essential for daily life, 23,53% emphasise the impact of communication difficulties on ASD individuals , and the latest 26,47% believe that addressing linguistic challenges can lead to better social and educational outcomes.

6. What factors do you believe contribute to the success of a language therapy programme for your autistic child?

Factors contributing in enhancing linguistic abilities in ASD	Responses	Percentage
Type of therapy	22	64%
Experience of therapist	2	6%
Frequency of sessions	6	18%

Incorporating of functional and meaningful activities	4	12%

Table III.11: Therapeutic Factors.

Interpretation

The main aim of this question is to find out the main factors contributing in the success of language therapy programmes. The results of this question revealed that the dominant factor in the success of language treatment is the type of therapy provided, the other factors like sessions, therapist expertise and incorporation of meaningful activities also are of important role, though to a lesser extent, emphasising the belief in the efficacy of tailored and well-designed intervention.

Section 4: Effectiveness of Language Therapy Programmes

7. Have you observed any changes/differences in your child's communication skills following their participation in a language therapy programme?

Yes	No	Not sure
28	2	4
82%	6%	12%

Table III. 12: Effectiveness of Language of Language Therapy Programmes.

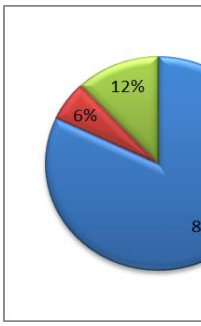


Figure III. 10: Effectiveness of Language Therapy Programmes.

Interpretation

The graph above indicates the effectiveness of language therapy programmes, with the majority of parents observing improvements in their autistic child's linguistic skills after participating in language therapy with a rate of 82% .However, the small percentage of 18% of uncertain and negative responses highlighting the need for further investigation into adopting and ameliorating customised and individualised linguistic programmes to address unique differences of ASD children.

8. If yes, kindly evaluate the effectiveness of these programmes in addressing your child's linguistic challenges?

Very Effective	**16**	**57,14%**
Moderately effective	**12**	**42,86%**
Not effective	**0**	**0**

Table III. 13: Evaluating the Effectiveness of Language Therapy Intervention**.**

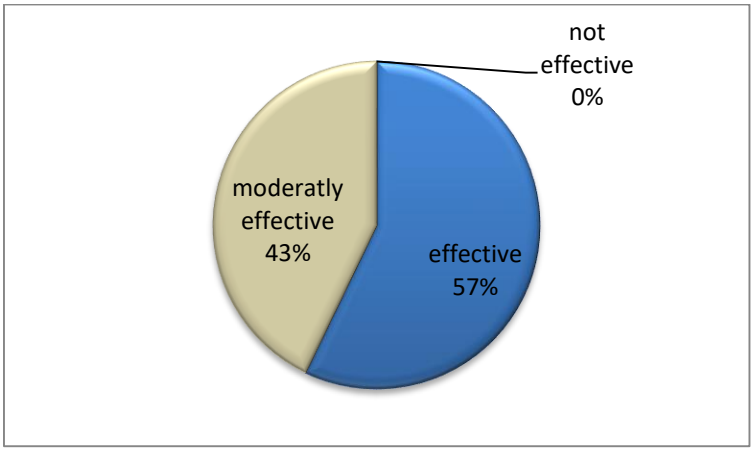


Figure III 11: Evaluating the Effectiveness of Language Therapy Intervention.

Interpretation

This question aims to investigate whether the language programmes enhance the linguistic and communication skills of autistic children to some extent or not, most of the parents who answered in the previous question that they have noticed improvements in their children 's language competence , were asked to evaluate the effectiveness of these interventions, the majority of the them answered that they are very effective which makes 57% of the population, and the 43% left argued that the programmes are moderately effective.

9. Based on your experience, which aspects of language have demonstrated the most significant changes as a result of these language therapy interventions?

Linguistic skills	Responses	Percentages
Understanding	21	61,76%
Expression	18	52,94%
Pragmatics	9	26,47%
Social communication	22	64,71%

Table III.14: Improved linguistic skills.

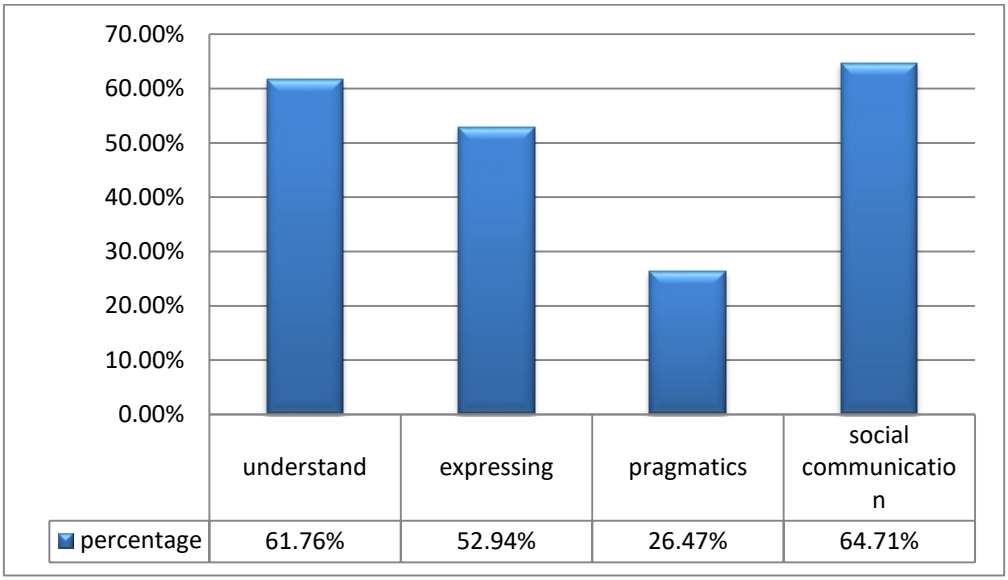


Figure III.12: Improved Linguistic Skills.

Interpretation

The question aims at evaluating the efficacy of language rehabilitation programmes and intervention in enhancing the different linguistic skills, where the data reveals that parents noticed a remarkable progress in their children's language competence mainly in social and communication skills 64,71% followed by a noteworthy improvement in understanding and cognition 61,76%.Expressive skills shows moderate progress with 52,94% while for pragmatics it is clearly the lowest with 26,47% highlighting the need for targeted support in pragmatic language skills to enhance the overall communication competence.

Section 5: Customization and Integration of Language Therapy Programmes in Educational Settings

10. Do you believe language therapy programmes can be tailored to better meet your child specific language and communication needs?

Tailored interventions	Responses	Percentages
Yes	**21**	**61,76%**
No	**2**	**5,88%**
Not sure	**11**	**32,35%**

Table III.15: Customised Intervention.

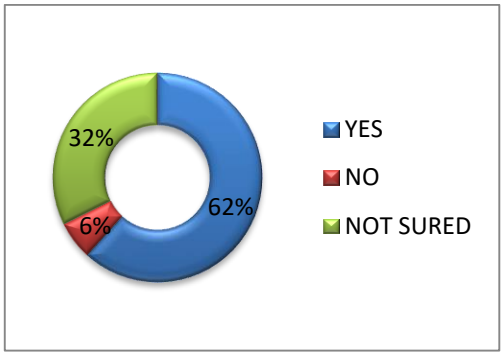


Figure III.13: Customised Intervention.

Interpretation

The question aims at gathering insightful data about parent's perspectives towards the possibility to create a tailored intervention that better meet their ASD child's specific and unique linguistic impairments, the majority of respondents 61,76% see that language therapies can be updated and personalised to better address each autistic case's unique impairments and adjusted as possible as needed , while a percentage of 32,35% are unsure ,and the 5,88% left do not believe in the efficacy of individualised and customised interventions, indicating an overall hopeful positive sentiment for tailored therapy, however , the negative opinions highlight the need for training and educating guardians and parents about autism and the varied symptoms across the spectrum in order to convince them about the efficacy of such targeted interventions.

11. If you answered yes, kindly specify which language skills you believe are most critical for language therapy programmes to target/ address?

The actual question is an open-ended question, where parents are not provided with any option to choose, rather, they are provided with a blank space to fill, the objective of this question is to gather insightful data from parents about which linguistic abilities they believe are most critical for linguistic pathologists to target and work on. A large number of parents believe that the language skills that pathologists should care much more about are mainly communication and social skills alongside cognitive, understanding abilities and expressive skills besides using language in the right context. Some of them suggest utilizing pictures to help children match the concept with its corresponding image in their minds, others agreed on the need to rehabilitate articulating sounds and train autistic children to construct words to form meaningful sentences in order to understand their needs and encourage them express their feelings. By asking this question we could understand parental perceptions and priorities,

enhancing the development of more customized and effective language rehabilitation interventions.

11. In your opinion, how do you think language therapy programmes could be modified to better support your child's language development and communication skills within a mainstream school environment?

The actual question is an open-ended question, where we seek to gather opinions of parents on how to develop language therapy programmes to better support the ASD child's language development and communication skills in order to integrate these programmes in mainstream schools, only some parents answer this question where their ideas were varied but rather specified, they suggest increased frequency of oral and written expression classes using visual aids like pictures and videos, moreover, they recommend establishing special schools dedicated to this population funded by the government while providing qualified specialists and teachers to treat ASD children's behaviours and improve their language skills, additionally, they have suggested focused individualised and customised school programmes specifically addressing children with autism since they see that the standard programme is intensive and does not meet the autistic child's needs. They emphasised the role of qualified multidisciplinary team working on evaluating children's linguistic and behavioural abilities through coordination with parents and caregivers and the pathologist, psychologist whoare is monitoring the child's condition.

III.1.2. Interview Obtained Results Analysis

The interview contained 10 questions and addressed to eight speech-language pathologists (therapists) two males and six females who provided detailed answers to all the asked questions. The interview's questions and answers are translated from Algerian modern standard Arabic to English.

Question 01: How many years of experience do you have providing speech and language therapy interventions and counselling to children with autism?

Therapist 01: Two years of experience.

Therapist 02: Four years of experience.

Therapist 03: Two years of experience**.**

Therapist 04: Five years of experience**.**

Therapist 05: Ten years of experience.

Therapist 06: Two years of experience**.**

Therapist 07: three years of experience**.**

Therapist 08: Five years of experience**.**

Comment 01: By exploring the expertise of the therapists with different levels of expertise and varied backgrounds, this question aims to extract insights into the factors contributing to successful language interventions for autistic children who suffer from language impairments and are already undergoing treatment.

Question 02: How certain are you in your competence to precisely diagnose autism spectrum disorder and identify its symptoms in your patients?

Therapist 01: I cannot diagnose autism by myself but I can deal with the child's linguistic and social challenges.

Therapist 02: Diagnosing children with autism can be challenging. An accurate diagnosis usually becomes possible around the age of eight, when the typical developing children have fully develop their cognitive abilities and social awareness; expert can only be sure that the child is highly suspected of having autism when they have these main symptoms like: echolalic speech, repetitive behaviours, social anxiety, robot like speech, delay language development, unusual naming of objects, avoidance of eye contact, not responding to his/her name being called.

Therapist 03: It is not the job of the speech language pathologist to diagnose the patients but rather he can decide upon the appropriate language rehabilitation strategies to be used in order to reduce the severity of the symptoms presented.

Therapist 04: Autism cannot be diagnosed at early ages because of the complexity of its symptoms and associative abnormalities, consequently many neurodevelopmental disorders are initially categorised as autism. I cannot be so sure to diagnose autism accurately due to the lack of available tests to measure the mental and developmental delays or social engagement challenges.

Therapist 05: children who are highly suspected of having autism, have some common noticeable signs that are observed in early ages and other symptoms can be noted when comparing them to the normal developing child, to diagnose children I personally evaluate the attention , memory and cognitive abilities before using the DSM5 test, CARS test and M Chat test . Normally the autism report should be done by a multidisciplinary team , typically comprising paediatrician , child psychologist / psychiatrist ,speech language pathologist , a neurologist , a special education specialist ,an autism specialist and an otolaryngologist (Ear, Nose, and Throat specialist). This collaboration guarantees a thorough comprehension of each case situation and facilitates the development of suitable interventions.

Therapist 06: The tests of autism are highly expensive**,** that not all the speech language pathologists can afford, subsequently they rely on the parents' observations from early ages mainly the first two years of life, and they will look for skills such as interactive play, joint attention , taking turns, and language acquisition milestones.

Therapist 07: I can say that I am able to diagnose autism, from observing the children's repetitive behaviours for instance hand flapping, hypersensitivities to lights or loud noises, stuttering; Echolalia, social avoidance, social anxiety, disfluency and other abnormal behaviours.

Therapist 08: Autism has many types, and its social and linguistic symptoms resemble other psychological disorders like Schizophrenia, Attention_ Deficit or Hyperactivity Disorder (ADHD) and Dysphasia, consequently diagnosing such heterogeneous disorder is a bit challenging, as a result, they are diagnosed through differential diagnosis and by skilled team. From my perspective speech language pathologists, can assist in recognising the symptoms of autism, with the collaboration of other experts like paediatricians and psychologists for a complete diagnosis.

Comment 02: This question aims to extract information about the therapist's readiness to effectively handle autistic cases and provide appropriate interventions that are specific to the diagnosis provided. Overall the therapists emphasised the need of a collaborative and multidisciplinary approach in providing the exact and accurate diagnosis for children on the spectrum, noting the most observable signs and symptoms, and the necessity of intervention from experts to ensure that early language rehabilitation strategies will prevent aggravation of symptoms.

Question 03: What are the most common speech and language impairments that children of autism seek therapy for?

They all agreed on the following answer: the most common speech and language impairments that children of autism seek therapy for are: Echolalia and repetitive speech, humming and making uncontrolled vocalisations in addition to delays in language acquisition, stuttering, dysphasia, uncommon use of language or unconventional naming of objects in addition to expressive language impairment.

Comment 03: The intention behind this question is to understand the most common language and communication challenges frequently presented with ASD children, and to draw conclusions lately about the therapeutic intervention required to meet the specific linguistic needs of this population.

Question 04: In your experience what does it mean to be on the spectrum, in other words does the concept of rainbow's variability affect your practice when treating your patients?

Therapist 01: No, I treat all my patients alike, there are conventional programmes to apply with ASD children.

Therapist 02: It depends on the severity of symptoms, however all the ASD children initially receive the same therapeutic treatment.

Therapist 03: I use the term spectrum **[** taif **]** in Arabic to refer to the mild level of autism.

Therapist 04: Each case is unique in terms of the symptoms presented, the abilities, and the adaptability with the therapy provided.

Therapist 05: The impact of what is known as symptom variation on the therapeutic approach is clear. Autism is not a disease but rather is a spectrum disorder because its symptoms are not consistent across all the patients. It is a rainbow like or a colour spectrum with all colours and shades. Each case represents itself and responds uniquely to therapy, falls into a specific type of autism, require a different approach beyond linguistic and behavioural therapy to cognitive or psychological approach. Autism is not only limited to difficulties; some ASD children have extraordinary skills like the savant syndrome; this concept of

complex heterogeneity and variation urging speech language pathologists to customise their programmes according to the particular case.

Therapist 06: I have no idea about the rainbow's variability or the meaning of spectrum.

Therapist 07: Yes, it affects my treatment approach. It is my role as a speech language pathologist to maximize an individual's communication to the highest potential.

Therapist 08: Autism classification, into mild, moderate or severe levels does not mean that it can be definitively cured or that severity levels can change over time. Autism is a condition that is managed and improved rather healed or cured. Its variability implies the use of personalised activities suits each individual in the spectrum.

Comment 04: The question seeks to understand how the experts understand and interpret the concept of being on the spectrum with the wild variety of symptoms presented within this population, whether the therapists take into consideration these differences. It prompts the language pathologists to reflect on the way they would customize the intervention addressing the needs of each case with autism they deal with.

Question 05: Which particular language therapy programmes have you discovered to be the most effective when dealing with your patients?

Therapist 01: I use the standard programme of first year primary school. And I found it effective.

Therapist 02: I use many effective language therapy programmes for example; PICS LOOVAS.

Therapist 03: I search in the internet interactive programmes and I try to apply their strategies.

Therapist 04: I use mainly three international programmes such as LOOVAS, TEACCH, PICS and others like music therapy, turn taking Games.

Therapist 05: The appropriate programme is selected based on the specific abilities that the ASD child presents. Initially, it is important to differentiate between clinical and educational care for instance clinicians or speech and language pathologists use international language rehabilitation programmes like LOVAAS, TEACCH, ABA, PICS, ACC that are one -on- one language therapy methods which use reinforcement principles, repetitions and aims to support

and encourage children to learn new skills or develop others, they closely and individually evaluate the children's progress. The individualized approach is more effective in adjusting the language and social interventions as needed, facilitates the parental communication with their children and collaborates with caregivers and other experts to ensure consistent continued support.

Therapist 06: The most effective programmes for me are PICS and LOOVAS.

Therapist 07: In the Algerian context there is no accurate diagnosis, so I cannot be so sure of the effectiveness of therapy programmes; however I can guarantee the positive outcomes observed after receiving PICS and TEACCH programmes.

Therapist 08: It is a misconception, to think that autism classification into mild, moderate or severe imply that the severity levels can change over time, or autism can be cured , linguistic challenges and exaggerated behaviours can be managed but not fully healed , that is to say autism is a condition that is managed rather than cured. It is like a syndrome that is lived with. For the programmes that have shown effectiveness on reducing language deficits are mainly PICS, LOOVAS, TEACCH, and ABA.

Comment 05: The question is asked to highlight the importance of selecting an appropriate language therapy programme that has found to be the most effective in treating each unique case of autism. The majority of participants report that selecting a suitable intervention is based on the abilities and the needs of the patient; they have mentioned the one –on –one method and programmes like PICS, LOVAAS, TEACCH and ABA. Overall, their answers suggest the need for understanding ASD children's challenges besides adjusting and customizing interventions to maximize the therapeutic benefits and language development of autistic children.

Question 06: What are the procedures you follow to measure progress or success in language therapy for children with ASD?

Therapist 01: I evaluate the progress of my patients gradually.

Therapist 02: There are no specific procedures; I can notice the overall development from their behaviours and language performance.

Therapist 03: I ask parents of my patients to report the changes noticed in their children.

Therapist 04: I evaluate the changes using a baseline assessment, referring to the beginning of language rehabilitation.

Therapist 05: from my perspective, it is not always easy to evaluate the progress just by observing. There are some useful tools to measure the development like Childhood Autism Rating Scale (CARS), or by periodically tracking the progress through activities, sometimes pathologists refer to parents or the child himself if he is aware of his disorder.

Therapist 06: I observe their improvement.

Therapist 07: I take the first therapy session as a reference point.

Therapist 08: To ensure that the child's language and social competence is improving I conduct three months reassessment and review to adjust the programme accordingly to the desired or specific needs that necessitate more support.

Comment 06: This question decides the procedures and the tools for measuring progress and assessing the effectiveness of language therapy programmes. Their answers refer to the importance of tracking back the children's linguistic improvement or regress in order to adjust and customise the methods and the programmes employed to align best with the children's needs.

Question07: How does parental **involvement and early intervention impact the development of linguistic and communicative skills of ASD children aiming for a level of fluency and proficiency similar to neurotypical peers?**

All the pathologists agreed on the following answer: parents who are actively and positively involved in their child's care are aware of early symptoms and signs, they seek early interventions leading to better effective results ,ensures consistent treatment, providing emotional support , creating language –rich environment at home. Early interventions provide structured and individualized supportive environment that can address each child's unique challenges, strengths and developmental goals by tailoring interventions to the specific needs of the child.

Comment 07: The question recognises the importance of parental involvement and early intervention aiming for a level of fluency similar to typical developing peers. The interviewee's responses were conventional. They agreed on the importance of early interventions and parental engagement in improving their children's linguistic and

communicative skills by creating interactive supportive environment at home that maximises the benefits from individualised programmes leading to better outcomes.

Question 08: How do you adapt the therapeutic programmes to address the different linguistic challenges with each conditional autistic case?

Therapist 01: I apply the same strategies or methods; however I focus on the challenges the child's struggle with either behaviours or communication.

Therapist 02: After evaluating the overall abilities of the patient, I can decide upon the method that suits the case.

Therapist 03: I adapt the programme each time after reassessment the child's progress or regress.

Therapist 04: I use the aforementioned international programmes and I develop its methods accordingly to the needs of the child**.**

Therapist 05: adapting the therapeutic programmes to address the needs of each conditional autistic case requires flexibility, parental involvement and continuous evaluation to ensure impactful individualised and personalised programmes supporting language and social development.

Therapist 06: adapting linguistic programmes like for example adapting first grade primary school to suit the intellectual level of each autistic case by managing the instrument of teaching through repetition and reinforcement until the child acquires the linguistic or behavioural skill, then moving to the next skill.

Therapist 07: simplifying vocabularies and instructions based on the child's level of autism and his specific linguistic needs through using visual aids embodying language through gestures and signs.

Therapist 08: Intensifying programmes that help develop sensory perception, behaviors, critical thinking and linguistic skills. Seeking assistance from other experts for instance following the progress

Comment 08: This question aims at addressing adoptive and customized programmes that particularly impact the needs of each autistic case. The interviewees' responses do in fact vary. Two of them highlight the need of collaborative work with other experts and parents, four others rely on the programmes mentioned in question 5 by adjusting and customizing them accordingly to the specific needs of each autistic case. The latter two prioritize the individualized care, simplifying the instructions using visual aids.

Question 09: Do you face any challenges when working with ASD children? If yes, what kind of challenges you face?

SIX Therapists answered yes, among the challenges they face: aggressive and agitated behaviours, frequent absences from rehabilitation sessions and sometimes lack of parental involvement that hinders and obstructs the therapeutic journey.

Comment 09: This question aims at exploring the challenges that obstruct the linguistic rehabilitation process and the answers help understanding the various factors that should be avoided in order to obtain better outcomes.

Question 10: Can you share any insights or lessons you acquired from working with such population that have influence your person and your approach to therapy?

Therapists answered similarly that the lessons acquired from working with this special population influence their approach to therapy by accepting the children's behaviours, their delayed and slow responses towards the therapy, accepting also the parent's resistance to acknowledge their children 's sufferance ,from their point of view their expertise in this domain teach them flexibility , tolerance and most importantly patience because they are motivated to improve their patients language and communication abilities.

Comment 10: The question seek to comprehensively understand the lessons acquired from working with autistic children in order to motivate care providers to inspire from language pathologists and try to resolve problems that prevent children from excelling academically or even join special classes with conditioned children. According to them the lessons learnt help developing their methods and approaches to align best with the patients' strengths, challenges, and overall language and behavioural improvement.

III.1.3. Interview Obtained Results Interpretation

Through interviewing speech language pathologists for autistic children engaged in linguistic rehabilitation, significant insights are gathered and analysed to reveal the efficacy of

language therapy programmes that address linguistic challenges within children of autism spectrum disorder. The findings denote the need of a collaborative and multi-disciplinary approach in providing the exact and accurate diagnosis for children to ensure that language rehabilitation strategies would prevent aggravation of symptoms emphasising the importance of parental active involvement and early intervention. Additionally the respondents clarify the misconception of the concept spectrum and redefine autism based on its meaning as a rainbow disorder with all colours and shades that portray the varied symptoms of autism that are not consistent across all the patients. The classification of ASD disorder into mild, moderate and sever levels imply that each case represents itself and requires an individualised and customised programme like PICS, LOOVAS and TEACCH. They emphasised the need for understanding each case's linguistic challenges and the importance of selecting appropriate language therapy programme that is addressed to its specific needs. Moreover, to maximise the therapeutic benefits and develop the linguistic and communication abilities of autistic children, therapists pinpoint the importance of tracking back the children's progress or regress and proactively address any negative factors that could obstruct the rehabilitation process.

III.1.4. Experiment Obtained Result

In this section, the results of the pre and post- test are presented and analysed using SPSS version 27. The focus is on the assessment aspects of the autistic participants' overall linguistic competence specifically, examining the variations in different linguistic aspects through a series of exercises including sound evaluation, linguistic reasoning, and signifier/ signified dichotomy, pragmatics, syntax and pronoun's reflexivity. Subsequently, the results of each test are compared for conducting the null hypothesis testing before and after the treatment.

III.1.4.1. Pre-treatment Results

The pre-test data are displayed and organized into different columns, including Mean, Mode, and Standard Deviation (SD). In order to assess independent groups' performance in different linguistic aspects, before receiving the Phono Tales game play intervention. The findings of the control and experimental groups are compared with respect to the effective articulation of sounds, the effective use of vocabulary, grammar;and ultimately, the efficiency of their overall linguistic competence, (the average score of each exercise is 5out of 5).

Pre- treatment	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation
Sound Evaluation	**Control group**	**1,33**	**1,5**	**0,28**
	Experimental Group	**1,66**	**1,5**	**0,28**

III.6.4.1.1. Pre-treatment Sound Evaluation Results

SPSS Output.1: Pre-Test Sound Evaluation Performance.

The results tabulated in SPSS Output.1.shows that the mean score of the overall performance of the participants in the experimental group is (1, 66), while that of the participants in the control group is (1, 33). As such, the experimental group seems to have the slightly better performance in sound evaluation. The mode indicates that the most frequent score is (1, 5) in both the independent groups. As for dispersion indicators, the groups are similar with (0, 28) which indicates relatively tight spread of data around the mean.

III.6.4.1.2. Pre-treatment Linguistic Reasoning Results

Pre- test	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation
Linguistic Reasoning	**Control group**	**1,5**	**1**	**0,5**
	Experimental Group	**2**	**2**	**0**

SPSS Output.2: Pre-Test Linguistic Reasoning Performance.

The results tabulated in SPSS Output.2: Pre-Test Linguistic Reasoning Performance show that : the control group has a mean score of (1.5) indicating the average performance level, with a mode of 1, which is the most frequently occurring score, and a standard deviation of 0.5, suggesting some variability around the mean. While , the experimental group shows a

higher mean score of 2, implying potentially better performance and a mode of 2, indicating a consistent concentration of scores at this level. The experimental group also has a standard deviation of 0 implying that the scores are clustered closely around the mean without much dispersion. These findings suggest that the experimental group may have performed significantly better in linguistic reasoning compared to the control group.

III.6.4.1.3. Pre-treatment Signifier/Signified Dichotomy Results

Pre- test	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
Signifier/Signified Dichotomy	**Control group**	**3,33**	**1**	**2,08**
	Experimental Group	**5**	**5**	**0**

SPSS Output.3: Pre-Test Signifier/Signified Dichotomy Performance.

The results tabulated in SPSS Output.3: Pre-Test Signifier/Signified Dichotomy Performance show that : the control group has a mean score of (3.33) indicating the average performance level, with a mode of 1, which is the most frequently occurring score, and a standard deviation of 2.08, signifies an average spread of data points around the mean . While the experimental group shows a higher mean score of 5 implying better performance and a mode of 5 indicating a higher occurring score. The experimental group also has a standard deviation of 0 implying that the scores are gathered closely around the mean without much dispersion. These findings suggest that the experimental group have better performance in Signifier/Signified Dichotomy compared to the control group.

III.6.4.1.4. Pre-treatment Contextually Pragmatics Results

Pre- treatment	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
Contextually Pragmatics	**Control group**	**2,5**	**2**	**0,5**
	Experimental Group	**3, 33**	**3**	**0,57**

SPSS Output.4: Pre-Test contextually Pragmatics Performance.

The results tabulated in SPSS Output.4: Pre-Test contextually Pragmatics Performance show that : the control group has a mean score of (2.5) indicating the average performance level, with a mode of 2, which is the most frequently occurring score, and a standard deviation of 0.5, signifies that the scores are closely gathered around the mean. While the experimental group shows a higher mean score of 3.33 implying better performance and a mode of 3. The experimental group also has a standard deviation of 0.57 implying that the scores are gathered closely around the mean without much dispersion. These findings suggest that the experimental group have slightly better performance in pragmatic performance compared to the control group.

III.6.4.1.5. Pre-treatment Syntax Pragmatics Results

Pre- treatment	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation
Syntax	Control group	2.5	3	0.86
	Experimental Group	2.83	1.5	1.26

SPSS Output.5: Pre-Test Syntax Performance.

The results tabulated in SPSS Output.5: Pre-Test Syntax Performance show that : the control group has a mean score of (2.5) indicating the average performance level, with a mode of 3, which is the most frequently occurring score, and a standard deviation of 0.86, signifies that the scores are closely gathered around the mean. While the experimental group shows proximity mean score of 2.83 implying better performance and a mode of 1.5 with standard deviation of 1.26 implying average variability. These findings suggest that the experimental and the control group have nearly the same level.

Pre- treatment	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation

Pronoun Reflexivity	**Control group**	**3,33**	**0**	**0.57**
	Experimental Group	**0**	**0**	**0**

III.6.4.1.6. Pre-treatment Pronoun Reflexivity Results

SPSS Output.6: Pre-Test Pronoun Reflexivity Performance.

The overall statistics presented in this table suggest that both groups have poor level in pronoun reflexivity. The control group exhibiting better scores with a mean of 0.33, and a mode of 0 still and a moderate standard deviation of 0.57 variability around the mean, demonstrating limited level yet better than the experimental group with a mean of 0 along with a mode with 0 and no deviation. These results portray a significant deficiency in pronoun reflexivity.

III.1.4.2. Post -treatment Results

The post test results are displayed to identify whether the performance of the selected sample has developed owing to the experimental treatment**.**

III.1.4.2.1. Post-treatment Sound Evaluation Results

Post-treatment	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
Sound Evaluation	**Control group**	**2.83**	**0.5**	**2.25**
	Experimental Group	**4.5**	**3**	**0.5**

SPSS Output.7: Post-Test Sound Evaluation Performance.

The analysis of the SPSS Output.7: Post-Test Sound Evaluation Performance reveals that both groups of participants achieved positive results. The control group exhibited a mean of 2.83, and a mode of 0.5 indicating shared common scores within the participants while for the deviation of 2.25 indicating average variability, pointing to a good performance yet not overwhelming high perception of phonetics like the experimental group who displayed potentially higher mean score of 4.5, the mode is 3 and low standard deviation of 0.5 indicate

a uniformed and good responses among participants who have received the experiment, signifying a positive perception of the treatment.

Post- treatment	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation
Linguistic Reasoning	**Control group**	**2.5**	**2**	**0.5**
	Experimental Group	**3.83**	**3.5**	**0.57**

III.6.4.2.2. Post-treatment Linguistic Reasoning Results

SPSS Output.8: Post-Test Linguistic Reasoning Performance.

The analysis of the SPSS Output.8: highlights an average linguistic reasoning score for both groups. The control group exhibited a mean score of 2.5, indicating a moderate common performance level among all the participants with a mode of 2 and a standard deviation of 0.5 pointing to limited variability. While the experimental group displayed a common yet higher performance with a mean of 3.83, a mode of 3.5 along with low variability with 0.57. The results suggest improvement in linguistic reasoning competence within the experimental group after receiving the intervention compared to the control group.

Post- treatment	Groups	The Mean ($\overline{X}$)	The Mode	Standard Deviation
Signifier/Signified Dichotomy	**Control group**	**4.33**	**5**	**1.15**
	Experimental Group	**4.66**	**5**	**0.5**

III.6.4.2.3. Post-treatment Linguistic Reasoning Results

SPSS Output.9: Post-Test Signifier/ Signified Dichotomy Performance.

The analysis of the statistics tabulated in SPSS Output .8 reveal that both the experimental and the control group have marked respectively a mean of 4.66 and 4.33.That is the participants in both groups have reported equivalent excellent levels in signifier / signified

dichotomy alongside the central tendencies around a mode of 5, however the standard deviation is varied for the experimental group they show tight gathered data around the mean with 0.5 while the control group show varied values from the mean with 1.15. The results suggest a positive impact of the intervention within the experimental group.

III.6.4.2.4. Post-treatment Pragmatics Results

Post-Treatment	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
contextually Pragmatics	Control group	1.83	0	1.75
	Experimental Group	3.5	3	0.76

SPSS Output.10: Post-Test Pragmatics Performance.

The represented data in SPSS Output.9 illustrates a remarkable difference within the context of pragmatics, between the control and the experimental group in terms of mean, mode and standard deviation. The control group displayed a lower mean of 1.83 with a mode of 0 indicating central tendencies around lower values, while showing a high standard deviation of 1. 75 that suggest wider dispersion from the mean. While, the experimental group exhibited higher mean score of 3.5 with a mode of 3, indicating a shift into higher values, accompanied with a small variability in values with 0.76.These findings suggest a more favorable response to the treatment, compared to the control group with no intervention.

III.6.4.2.5. Post-treatment Syntax Results

Post- treatment	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
Syntax	Control group	0.66	1	0.75
	Experimental Group	4.33	3.5	0.76

SPSS Output.11: Post-Test Syntax Performance.

The represented data in SPSS Output.10 illustrates a high remarkable difference within the context of Syntax, between the control and the experimental group in terms of mean,

mode and standard deviation. The control group displayed a poor mean score of 0.66 with a mode of 1 indicating central tendencies around lower values, while showing no significant values' variability with 0.75. While, the experimental group exhibited higher mean score of 4.33with a mode of 3.5 indicating a shift into higher values, accompanied with a small variability in values with 0.76.These findings suggest a more favorable response to the treatment within the participants of the experimental group, compared to the control group with no intervention.

III.6.4.2.5. Post-treatment Syntax Results

Post- treatment	Groups	The Mean $(\overline{X})$	The Mode	Standard Deviation
Pronoun Reflexivity	**Control group**	**0**	**0**	**0**
	Experimental Group	**0.33**	**0**	**0.28**

SPSS Output.12: Post-Test Pronoun Reflexivity Performance.

The analysis of pronoun reflexivity represented in SPSS Output.10, highlights that the control group displayed a mean, mode and a standard deviation of 0, indicating an absence use of reflexive pronouns. Conversely, the experimental group exhibited a slight increase with a mean of 0.33 and low significant variability with 0.28, and the mode remained at 0. The findings suggest that although both groups mostly avoided using reflexive pronouns, the slight increase in the experimental group's score might mean that the verbal autistic children start using them more.

III.1.4.3. Comparing Means and Hypothesis Testing

	Pre -test Means	Post -test Means
Sounds	1,66	4,5

Linguistics reasoning	2	3;83
Signifier/Signified	5	4,66
Pragmatics	3,33	3,5
Syntax	2,83	4,33
Pronoun reflexivity	0	0,33

Table . III .16. Comparing the Experimental Group's assessment aspects means.

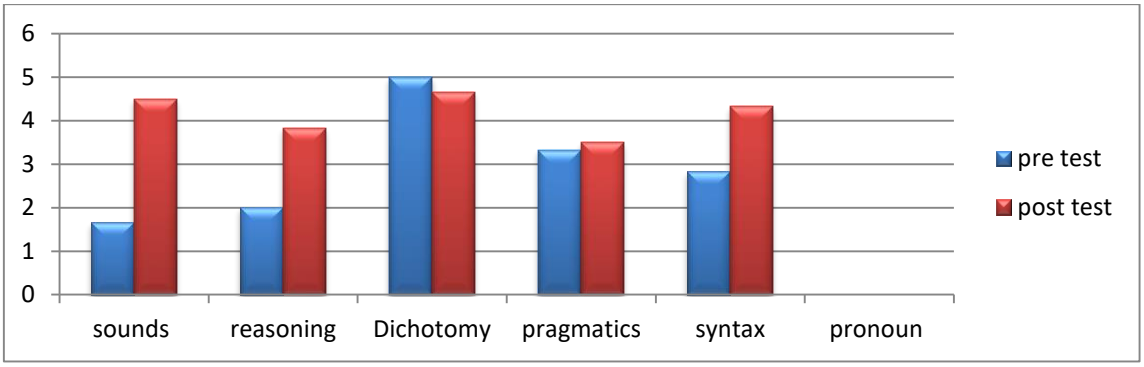


Figure. III.14: Comparing the Experimental Group's assessment aspects means.

Upon comparing the experimental group's pre-test and post-test means for each assessment aspect, as portrayed in Figure 7, it becomes apparent that the difference in the means is noteworthy across almost all six aspects. The findings reveal notable enhancement in several linguistic areas following the Phono Tales intervention .Specifically, the sounds aspect, and the syntax aspect with a mean score increasing from (1.66/2.83) in pre-test to (4.5/ 4, 33) after the intervention, followed by substantial improvement in reasoning aspect. Despite slight decrees in the dichotomy measured aspect from 5 to 4.66.The pragmatics aspect displayed a moderate enhancement. Finally, the pronoun reflexivity aspect showed a slight improvement starting from 0 and reaching 0,33in post -test. These results suggest positive impact of the intervention.

	Methods	Aspects	Mean (unpaired)	SD	Sigma P value
Post Test results	Experimental group with Phono Tales Intervention	6	3.5	0.56	0.029
	Control Group with no intervention	6	2	1	
	Means		1.5		

	differences					**SPS**

S Output 13. Unpaired Samples T-Test

In the SPSS Output 13, the column labelled 'Means difference' displays the difference between the post-test means (1.5). The standard deviation is observed to be low (0.56 /1) due to the clustering of all the six linguistic aspects' rating points around the mean value. Specifically, the post-test mean 3.5 for the experimental group is indicating that they performed better given the low standard deviation 0.56, while, the post-test mean for the control group is 2 with lower performance.

III.6.4.3.1. Hypothesis Testing

Hypothesis testing may be based on three main criteria: the nature of the hypothesis, the reset of significance level (α), and the P (value) represented.

Initially, the null hypothesis along with the alternative hypothesis are as follows:

Null Hypothesis (H0): *The "Phono Tales" Sound and Stories* intervention does not affect the linguistic abilities of autistic children.

Alternative hypothesis (H1): *The "Phono Tales" Sound and Stories* intervention positively impacts the linguistic abilities of autistic children.

The analysis provided indicates an unpaired samples t-test with an alpha level of 0.05 (5% the results may be due to chance). The results show that the difference between the posttest scores of the control group and the posttest scores of the experimental group is statistically significant at the 0.05 level ($p = 0.029$). Based on the provided analysis and assuming a two-tailed test, since the p-value (0.029) is less than the alpha level (0.05), we reject the null hypothesis that suggest that the intervention has no impact. Therefore, we can conclude that there is a statistically significant difference between the posttest scores of the control group and the posttest scores of the experimental group. This indicates that the tailored intervention Phono Tales Intervention contributes to the enhancement of verbal autistic children's overall linguistic competence specifically their phonetic and syntactic competence.

III.2. Synthesis of the Findings

This section provides a summary of the key findings and insights derived from this investigation. The aim of this synthesis is to interpret and explain the data gathered from the three instruments the questionnaire, interview and the tailored intervention.

a) Parental perspectives: the questionnaire results indicate that parents are aware of the linguistic challenges faced by their autistic children and that they observed significant improvement and development of their children's language and communication competence after engaging in linguistic rehabilitation programmes in certain aspects like vocabulary expansion, expressive language, sentence construction , however they emphasised the need for developing strategies to enhance pragmatic and social abilities that their children challenge with the most.

b) Therapists insights :interviewing speech therapists help us understand better the varied competences and unique deficits of each autistic case , they emphasised the role of appropriate diagnosis and accurate therapy that best suits the patient's needs ,they also shed light on the common linguistic challenges presented across the spectrum and the importance of individualised interventions and on-going adjustments of the treatment when necessary considering the progress or regress of the child's performance.

c) Quasi experiment outcomes: the quasi intervention shows an observable progress in certain linguistic aspects. The positive results after comparing the pre and post assessment scores has proven the possibility to design enjoyable therapeutic programmes or strategies to improve and develop language and communication skills of autistic children.

d) Interpretation: the feedback of parents and therapists and the positive results from the intervention indicate that tailored language therapy programmes can successfully address linguistic challenges presented within autism spectrum disorder, improved deficits indicate that targeted individualised programmes are crucial in developing the social communication and linguistic competence of autistic children taking into consideration the varied competencies and level of severity and type of therapy in the frame of autism spectrum disorder.

e) Furthermore, the study highlighted the importance of early intervention and the continuous assessment of therapy outcomes to make necessary adjustments and ensure sustained progress.

f) The findings also stress the importance of family involvement in therapy, with parents being active participants in reinforcing therapy goals at home and providing a supportive environment for their children.

g) Lastly, the study underscores the need for on-going research to refine and expand therapeutic approaches, ensuring they are culturally responsive and adaptable to the diverse needs of autistic children.

III.3. Recommendations

After analyzing the questionnaires and interviews data and based on the positive outcomes observed after the integration of the tailored Phono Tales Sounds and Stories' intervention, some provided recommendations would pave the way toward enhancing the linguistic and communication skills of children with autism spectrum disorder, and supporting their journey to success, these recommendations and suggestions are listed:

-Initially, the recommendations will encompass parents as first care givers who have first-hand information about their autistic children challenges; we would recommend parental training to enhance their awareness about autism spectrum disorder, behavioural management techniques and communication strategies to actively engage in their child's linguistic rehabilitation treatment and education.

-Establish support groups where parents can share experiences and strategies. These groups can provide emotional support, practical advice, and a sense of community, helping parents feel less isolated and more empowered to assist their children.

-Early childhood is a sensitive critical phase for brain development and learning, intervening early can stimulate responses to the treatment and prevent aggravation of symptoms and overall maximise the developmental process.

-An established factor in autism is the excessive attachment to digital screens, therefore parents and therapists should use this technology wisely to supplement traditional therapy by using virtual reality, communication apps, and augmentative communication devices.

-It is essential to balance screen time with other activities to prevent over-reliance on digital devices. Guidelines should be provided to parents on how to integrate digital tools effectively without disrupting the child's linguistic development.

-Increase community engagement and awareness programmes to educate the public about autism and the specific needs of ASD children. Awareness campaigns can reduce stigma and promote a more inclusive society where autistic individuals are understood and supported.

-Organize workshops and seminars for community members, educators, and healthcare providers to share knowledge about autism and effective support strategies.

-Establish support networks for families of children with autism to share resources, experiences, and strategies. These networks can provide emotional support and practical advice, making the journey easier for both parents and children. Regular meetings, online forums, and resource centres can be part of these networks.

-Provide respite care services to give families short-term relief. These services can help prevent caregiver burnout and ensure that families have the support they need.

-For the therapists, suggestions can be proposed to enhance their training with providing them with the requisite skills to empower language development of ASD children, within the framework of customised interventions.

- Develop and implement personalised tailored interventions that address varied linguistic impairment across all the autism spectrum diversity by taking into consideration age, level of severity and learning style of ASD children.

-Designing language therapy programmes considering cultural beliefs, linguistic diversity because ASD children's learning process is influenced by the specific environment in which the language is introduce to, to ensure treatments are culturally responsive and inclusive.

-Encourage collaborations of multidisciplinary team consists of healthcare providers, community organisation, educational institutions and agencies of government to increase public awareness about the varied challenges that children with autism are struggling with, including linguistic challenge.

- The research inform the need of development or adjustment of policies promoting early identification of linguistic challenges and promote inclusive education for children with Autism Spectrum Disorder ensuring that linguistic interventions are integrated into educational frame work.

-Government agencies should establish particular programmes for teaching autistic children or dedicate special public schools specifically for this population, that should support both school-based and clinical care, and create supportive environment that help them integrate effectively into society. School curriculum is not sufficient alone for their learning needs, even after integrating autistic children with moderate level or with savant syndrome into mainstream classes, they still need continuous psychological assistant accompaniment with consistent evaluation of their progress, since autism is like a syndrome is measured and not definitely cured. In other words any neglect in tracking back ASD children's progress leads to decline in his progress.

-Implement regular monitoring and evaluation protocols to track the progress of children with autism. This includes both qualitative and quantitative assessments to measure improvements in communication, social skills, and overall development.

-Establish feedback mechanisms to continuously improve intervention programs based on the experiences and outcomes of participants. This ensures that programs remain effective and responsive to the needs of children and their families.

- Future research should address this Phono Tales' tailored intervention to a larger and more diverse sample of children in order to enhance the generalizability of the findings.

- Conduct longitudinal studies to assess the long-term impact of the intervention on language development and overall well-being of ASD children. This can provide valuable insights into the sustainability and effectiveness of the therapy over time.

III.4. Limitations

This study has some limitations that could be addressed in future investigations. First of all we encountered plenty of challenges and limitations that affected primarily our data collection process. Firstly, we were unable to locate the suitable targeted sample of parents whose children are verbal autistic children and are engaged actively in linguistic rehabilitation programmes for several months or longer. Even after finding them, some parents refused to answer the questionnaires; others took the question sheets at home due to time constraints and commitments so we had to wait for them to bring the surveys' sheets the next day , some of them could not understand the questions properly resulting in biased and preservative answers that align with social desirability. In addition, during interviews with speech and language pathologists, some therapists criticized the questions arguing that we were outside

of their field and they did not answer until we convinced them with the relevance of their answers to our linguistic investigation, some others criticized the questions of autism contesting that the topic of autism is too difficult and too broad to give clear answers. Moreover, the third tool posed a major obstacle, we could locate the verbal autistic children after a delay following a meeting with the director of the psychological center and gaining approval from our university's administration mainly the head of the English department in order to apply the treatment in one primary school that had eventually only two autistic children, so we were obliged to search another school to find a larger sample, thus repeating the same procedures to gather the total six children for the study. Additionally, the other limitation we faced during the experiment was the interference and continuous interruption of their teachers and their didactic approach which does not encourage spontaneous communication and does not help in enhancing their critical thinking nor their expressive language; alongside some attitudes and agitated behaviours which hindered the intervention somehow.

Conclusion

The chapter at hand has been mainly concerned with analyzing and interpreting the findings of the qualitative and the quantitative data alongside the analysis and interpretation of the intervention's positive outcomes, that have provided a comprehensive overview of the analytical approach, primary conclusions, interpretive discussion and recommendations for practice and further research, as it shed light on the limitations encountered during conducting the study. Through this chapter, it is revealed that assessing a customized language therapy programme is essential for improving autistic children's linguistic competence.

General Conclusion

General Conclusion

Autism spectrum disorder is a one of the most prevalent complex neurodevelopmental disorders characterised by a range of social and communication deficits, linguistic impairments, and stereotypical behaviours. These impairments can be noticed by parents in the first 18 months of life, yet sometimes it is hard to be observed till comparing with children of the same age. It is important to denote that ASD has been steadily increasing with a global estimate of approximately 1 in 36 children is diagnosed of having autism in the United States of America, with a spectrum of abilities and deficits . This claim lead us to conduct this research which focuses on exploring the linguistic impairments that are encountered by ASD children, and assessing the effectiveness of language therapy programmes alongside emphasising the role of parents and therapists in the process of language rehabilitation.

This dissertation comprises three chapters where the first chapter is fully devoted for the theoretical part, it reviews studies about autism spectrum disorder's, definition, signs, types, and the linguistic challenges in phonology, semantics, pragmatics and syntax additionally it acknowledges the linguistic therapy programmes that are utilised to address these challenges. The second chapter is about describing research tools and the data collection process, with defining the target population participating in the study and the setting where it was conducted alongside the calculation equations and the analysing programmes description. Lastly, the third chapter elucidates the execution of the research methodology and provides data analysis and interpretation of the results obtained from the three scientific instruments .

This research opts for a mixed method approach employing qualitative interviews addressed to 8 pathologists and quantitative questionnaires administered to 34 parents of ASD children simultaneously with a quasi-experimental approach employing an independent samples t-test on 6 autistic children at Al-Amal Association of Autism and Trisomy, and at the level of two primary schools Bara Abdelkader and Khalifa Mohammed. In order to have a comprehensive understanding of the findings.

The results of this research revealed that there is varieties of linguistic challenges among autistic children, they mainly struggle utilising the appropriate pronoun , they show difficulties in in expressing their emotions and desires additionally they encounter deficits using words in the write contexts, due to the varieties of autistic children's linguistic profiles across the spectrum, and also the varieties of it is of a great importance to adapt tailored personalised therapeutic intervention addressing the unique needs of each autistic case. What

is worth mentioning is the fact that autism is a lifelong syndrome condition that cannot be definitely cured , neither the level of severity can change over rehabilitation process ,however adequate cooperation between parents and therapists with continuous evaluation and consistent therapy sessions would make a huge improvement in their linguistic competence and their development overall, in this regard, it is supposed that our hypotheses are confirmed to such an extent, that therapeutic linguistic programmes improve the language of children with autism to a significant noticeable level ,giving these children the opportunity to blend with atypical developing peers in mainstream schools and in their daily life practices.

Based on the findings of the study some recommendations are provided to develop autistic children's language and enhance their linguistic communication skills, such as rising ASD parents awareness and equip them with training to help them engage actively and positively in their child language rehabilitation journey, provide ongoing training for therapists to enhance the development of intervention strategies, incorporate education software that would make the intervention more engaging and help especially the nonverbal autistic children ,and invite policy makers to give more attention to this marginalised category and make the necessary rehabilitation services affordable and accessible for people from different economic classes.

Bibliography

Bibliography

1. **American Psychiatric Association,** ***Diagnostic and Statistical Manual of Mental Disorders***, American Psychiatric Association, Washington, DC: Author, USA, 4th edition, 2000.
2. **American Psychiatric Association. (August, 2018)** https://www.psychiatry.org/patients-families/autism/what-is-autism-spectrumdisorder.
3. **Arieti, S. (1959).** *Handbook of Psychiatry* (3rd ed.). New York, NY: Basic Books.
4. **Arnold, R. (2021).** Capturing unconventional language use over time in individuals on the autism spectrum: A preliminary study.
5. **Asher, S. R. (1978).**Referential communication. *In G. J. Whitehurst & B. J. Simmerman (Eds.), The functions of language and cognition. New York, NY: Academic Press*
6. **Asperger, H. (1991).** Autistic psychopathy in childhood (U. Frith, Trans.). In *Autism and Asperger Syndrome* (pp. 37–92). https://doi.org/10.1017/cbo9780511526770.002
7. **Autism Society. (2020),** Retrieved from**: https**://www.autism-society.org/what-is/.
8. **Baltaxe, C. A. , & Simmons, J. Q. I. (1985).** Prosodic development in normal and autistic children In *Communication problems in autism* (pp. 95–125). US: Springer.
9. **Balwin D.A, &Moses,L.J.(1998)**The ontogeny of social information gathering .*Child Development,67,1915_1939*
10. **Bandura, A. (1986).** Social foundations of thought and action: A social cognitive theory. In R. J. Sternberg & R. K. Wagner (Eds.), *Practical intelligence: Nature and origins of competence in the everyday world* (pp. 198-210). Cambridge University Press.
11. **Bates, E., & Wulfeck, B. (1989).** Comparative Aphasiology: *A cross-linguistic approach to language breakdown. Aphasiology, 3, 111-142 and 161-168*
12. **Bölte, S., Tomalski, P., Marschik, P. B., Berggren, S., Norberg, J., Falck-Ytter, T., Pokorska, O., Jones, E. J. H., Charman, T., Roeyers, H., & Kostrzewa, E. (2018).** Challenges and inequalities of opportunities in European psychiatry research: The example of psychodiagnostic tool availability in research on early autism identification.
13. **Bondy, A., Horton, C., & Frost, L. (2020).** Promoting functional communication within the home. *Behavior Analysis in Practice, 13*(2), 321–328.

14. **Brandwein, A. B., Foxe, J. J., Butler, J. S., Russo, N., Altschuler, T. S., Gomes, H., & Molholm, S.. (2013).** *The Development of Multisensory Integration in High-Functioning Autism: High-Density Electrical Mapping and Psychophysical Measures Reveal Impairments in the Processing of Audio-visual Inputs.23(6).*

15. **Cagliani, R. R., Ayres, K. M., Whiteside, E., & Ringdahl, J. E. (2017**). Picture Exchange Communication System.

16. Cagliani, R. R., Ayres, K. M., Whiteside, E., & Ringdahl, J. E. (2017). Picture Exchange Communication System and Delay to Reinforcement. *Journal of Developmental and Physical Disabilities, 29*(6), 925–939. https://doi.org/10.1007/s10882-017-9564-y

17. **Carpenter, M., Nagell, K., Tomasello, M., Butterworth, G., & Moore, C. (1998)**. Social cognition, joint attention and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development, 63(4), 1–166.*

18. **Centers for Disease Control and Prevention. (2018).Prevelance of autism spectrum disorder among children aged 8 years** _Autism and Development Disabilities Monitoring Network,United States, 2018.70(4),109-115.

19. Chahrour, M. H., Jung, S. Y., Shaw, C. A., Zhou, X., Wong, S. T. C., Qin, J., & Zoghbi, H. Y. (2008). MeCP2, a key contributor to neurological disease, activates and represses transcription. *Science*, *320*(5880).

20. **Charman ,T., &Goetz.(1998)**The relationship between theory of mind , language ability and narrative discourse: An experimental study . *Cahiers de psychology cognitive (Current Psychology of Cognition),17,245_271*

21. **Chomsky N**.(1957) *Syntactic structures.* The Hague: Mouton.

22. **Clark, M., & Adams, D.(2020).** *The self- identified positive attributes and favourite activities of children on the autism spectrum,72*

23. Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design & analysis issues in field settings.* Boston, MA: Houghton Mifflin.

24. **DeThorne, L. S., & Channell, R. W. (2007).** Clinician-child interactions: Adjustments in linguistic complexity. *American Journal of Speech-Language Pathology.*

25. **Dore, J. (1978).** Requestive Systems in Nursery School Conversations: Analysis of talk in its social context. In R. Campbell & P. Smith (Eds.), *Recent advances in the psychology of language (pp. 271–292). New York, NY: Plenum Press.*

26. **Early behavioral intervention for autism: What does research tell us? (1996).** In Behavioral Intervention for Young Children with Autism: A Manual for Parents and Professionals.
27. **Elsabbagh, M., Elsabbagh, M., Fernandes, J., Webb, S. J., Dawson, G., Charman, T., & Johnson, M. H.. (2013**).*Disengagement of Visual Attention in Infancy is Associated with Emerging Autism in Toddlerhood.74 (3).*
28. Erikson, E. H. (1950). *Childhood and society.* Norton.
29. Experimental and quasi-experimental designs for research. (1963, April 29). Experimental and Quasi-Experimental Designs for Research.
30. **Fay, W. (1967).** Mitigated echolalia of children. *Journal of Speech and Hearing Research,* 10, 305–310. **Fay, W. (1969).** On the basis of autistic echolalia. *Journal of Communication Disorders,* 2, 38–47Defining language phenotypes in autism.6,
31. **Frith, U. (2003).** Central coherence and theory of mind in autism: Reading homographs in context. In J. Russell (Ed.), *Autism as an executive disorder* (pp. 147-163). Oxford University Press.
32. **Ganz, J. (2015). AAC interventions for individuals with autism spectrum disorders:** State of the science and future research directions. *Augmentative and Alternative Communication, 31*(3), 203–214.
33. **Ghaziuddin M., Gerstein L. (1996**). Pedantic speaking style differentiates Asperger syndrome from high-functioning autism. *Journal of Autism and Developmental Disorders*, 26(6), 585–595. https://doi.org/10.1007/BF02172348
34. **Giles, H., Coupland, N., & Coupland, J. (1991).** Accommodation theory: Communication, context, and consequence. In H. Giles, J. Coupland, & N. Coupland (Eds.), *Contexts of accommodation: Developments in applied sociolinguistics* (pp. 1–68). Cambridge University Press; Editions de la Maison des Sciences de l'Homme. https://doi.org/10.1017/CBO9780511663673.001
35. **Hobson, R. P., García-Pérez, R. M., & Lee, A. (2010).** Person-centered (deictic) expressions and autism. *Journal of Autism and Developmental Disorders, 40*(4), 403–415. https://doi.org/10.1007/s10803-009-0882-5
36. It Takes Two to Talk — The Hanen Program for Parents: Early Language Intervention Through Parent Training. (2004, May 22). *Journal of Developmental and Behavioral Pediatrics.*
37. **Kanner, L.(1957).** *Child Psychiatry (2nd Ed.* Sprigfield, IL: Thomas.
38. **Kenworthy, L., Wallace, G., Powell, K., Anselmo, C., Martin, A., & Black, D. (2012).** Early language milestones predict later language, but not autism symptoms in higher functioning children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 6*, 1194–1202. https://doi.org/10.1016/j.rasd.2012.03.009
39. **Kugelmass, N. (1970).** *The Autistic Child (No. 1).* Springfield, IL: Charles C. Thomas. (Original work published by S. Freud)

40. Law, J., Garrett, Z., & Nye, C. (2003). Speech and language therapy interventions for children with primary speech and language delay or disorder (Review).
41. Legal Research Methodology. (2007, April 30). Allahabad Law Agency, Haryana.
42. **Lord, C., Rutter, M., & Le Couteur, A. (1994**). Autism diagnostic interview-revised: *A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. Journal of Autism and Developmental Disorders 24(5), 659–685.*
43. **Matson, J. L., & Kozlowski, A. M.. (2011).** *The increasing prevalence of autism spectrum disorder. 5 (1),418-425.*
44. **Matson, J. L., Wilkins, J., & González, M. L. (2008).** Early identification and diagnosis in autism spectrum disorders in young children and infants: How early is too early?
45. **McCann, J., & Peppé, S. (2003).** Prosody in autism spectrum disorders: a critical review. *International Journal of Language & Communication Disorders/Royal College of Speech & Language Therapists*
46. Mohammadzaheri, F., Koegel, L. K., Bakhshi, E., Khosrowabadi, R., & Soleymani, Z. (2021). The effect of teaching initiations on the communication of children with autism spectrum disorder: A randomized clinical trial. *Journal of Autism and Developmental Disorders*, *52*(6), 2598–2609. https://doi.org/10.1007/s10803-021-05153-y
47. **National Institute of Mental Health. (2014).** Autism spectrum disorder. Retrieved from http://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd/index.shtml
48. **National Research Council, C. on E. I. for C. with A.(2001).** Educating Children with Autism.
49. **Neal, D., Matson, J. L., & Hattier, M. A. (2012).** A comparison of diagnostic criteria on the Autism Spectrum Disorder Observation for Children (ASD-OC).*Developmental Neurorehabilitation 15(5), 329–335*
50. **Perkins, M. R., Dobbinson, S., Boucher, J., Bol, S., & Bloom, P. (2006).** Lexical knowledge and lexical use in autism. *Journal of Autism and Developmental Disorders*, *36*(6), 795–805. https://doi.org/10.1007/s10803-006-0120-3
51. **Plaisted, K. C. (2001).** Reduced generalization in autism: *An alternative to weak central coherence. In J. A. Burack, T.*
52. **Prizant B. M., Rydell P. J. (1993).** Assessment and intervention considerations for unconventional verbal behavior. *Communicative Alternatives to Challenging*

Behavior: Integrating Functional Assessment and Intervention Strategies, 3, 263–297.

53. **Prizant, B., Duchan, J.(1981).** *The functions of immediate echolalia in autism children. Journal of Speech and Hearing Disorder, 46: 241–249*
54. Prompt Speech Therapy for Kids. (2023, February 3).
55. Right from the start: Behavioral intervention for young children with autism. (1998, April 23). Bethesda, MD: Woodbine House.
56. **Rimland, B. (1964).** Infantile autism: *The syndrome and its implications for a neural theory of behavior*. New York: Appleton Century Crof.
57. Rincover, A., & Koegel, R. L. (1975). Setting generality and stimulus control in autistic children. *Journal of Applied Behavior Analysis, 8(3), 235–246*
58. Sage handbook of mixed methods in social & behavioral research. (2013, December 1). Sage handbook of mixed methods in social & behavioral research.
59. Schlosser RW, Wendt O. Effects of augmentative and alternative communication intervention on speech production in children with autism: a systematic review. Am J Speech Lang Pathology. 2008;17(3): 212–230
60. **Schopler, E., Reichler, R. J., De Vellis, R. F., & Daly, K. (1980).**Toward objective classification of childhood autism: *Childhood autism rating scale (CARS). Journal of Autism and Developmental Disorders 10(1), 91–103*.
61. **Schuler, A. (1979)**. Echolalia: Issues and clinical applications. *Journal of Speech and Hearing Disorders*, 44, 411–434
62. **Schwartz Offek, E., & Segal, O. (2022).** Comparing theory of mind development in children with autism spectrum disorder, developmental language disorder, and typical development. *Neuropsychiatric Disease and Treatment, 18,* 2349–2359. https://doi.org/10.2147/NDT.S331988
63. **Seung H. K. (2007).** Linguistic characteristics of individuals with high-functioning autism and Asperger syndrome. *Clinical Linguistics & Phonetics*, 21, 247–259.
64. Sharma, S. R., Gonda, X., & Tarazi, F. I.(2018).*Autism Spectrum Disorder:Classification, diagnosis and therapy.*
65. **Skuse, D., Warrington, R., Bishop, D., Chowdhury, U., Lau, J., Mandy, W., & Place, M. (2004).** The developmental, dimensional and diagnostic interview (3di): *A novel computerized assessment for autism spectrum disorders. Journal of the American Academy of Child and Adolescent Psychiatry 43(5), 548–558*
66. **Stokes, T. F., & Baer, D. M. (1977).** An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10(2), 349-367*

67. **Striano, T., Chen, X., Cleveland, A., & Bradshaw, S. (2006).** Joint attention social cues influence infant learning. *European Journal of Developmental Psychology, 3,* 289–299.
68. Tager-Flusberg H. (2000). The challenge of studying language development in autism. In Menn L. & Ratner N. B. (Eds.), *Methods for studying language production* (pp. 311–330). Mahwah, NJ: Erlbaum
69. **Tager-Flusberg, H. (2000).** Understanding the language and communicative impairments in autism. *International Review of Research in Mental Retardation, 23*, 185–205. https://doi.org/10.1016/s0074-7750(00)80011-7
70. Tager-Flusberg, H. (2006).219–224. https://doi.org/10.1016/j.cnr.2006.06.007
71. **Tarplee, C., & Barrow, E. (1999).** Delayed echoing as an interactional resource: A case study of a 3-year-old child on the autistic spectrum. *Clinical Linguistics & Phonetics*, 13, 449–482.
72. **TEACCH Five-Day Webpage. (n.d.).** TEACCH Five-Day Webpage. Retrieved April 23, 2024, from https://teacch.com/trainings/five-day-classroom-training/
73. Theories of language development: How languages came to be. (2020, December 18).
74. **Vigliocco, G., Ponari, M., & Norbury, C. (2018).** Learning and processing abstract words and concepts: Insights from typical and atypical development. *Topics in Cognitive Science, 10*, 533–549. https://doi.org/10.1111/tops.12347
75. **Vogindroukas, I., Stankova, M., Chelas, E.-N., & Proedrou, A.(2021).**Language and Speech Characteristics in Autism.
76. **Volden, J., & Lord, C. (1991).** Neologisms and idiosyncratic language in autistic speakers. *Journal of Autism and Developmental Disorders, 21*(2), 109–130. https://doi.org/10.1007/BF0228475
77. **Wagner L., Swensen L., & Naigles L. (2009). Children's** early productivity with verbal morphology. *Cognitive Development*, 24, 223–239
78. **Wing L. (1981).** Asperger's syndrome: A clinical account. *Psychological Medicine*, 11(1), 115–129. https://doi.org/10.1017/S0033291700053332

Appendices

Parents' Questionnaire

Dear Parents,

We kindly request your participation in filling out the following questionnaire that serves as data collection tool for our academic research titled '**Exploring the Effectiveness of Language Therapy Programmes for Linguistic Challenges in Autism"**. Your responses will be treated with utmost confidentiality and used exclusively for our research purposes. Your time and contribution are invaluable and highly appreciated.

Section One: Personal Demographics

Gender : Male ◯ Female ◯

Age : Less than 40 Above than 40

Child's Gender: Male ◯ Female ◯

Child's Age : 5 years ◯ 5-12years ◯ Above ◯

Child's spectrum level: Mild ◯ Moderate ◯ Sever ◯

Section2: Identification and Evaluation of Language Challenges

3. When you first notice that your child had language challenges?

a. Early toddlerhood, around 18 months◯
b. When compared to peers, around the age three ◯
c. Noticed delay in speech milestones ◯
d. Became apparent during interactions with others◯

4. What are the most significant linguistic challenges you have observed in your child's communication skills that you believed required an intervention from a speech pathologist?

a. Not responding to his name being called ◯
b. The inability to express emotions, needs through language ◯
c. Referring to himself in a third person ◯
d. When there was a delay in his ability to articulate words ◯

Other (please specify): _____

3. **Please indicate your response to the following Likert items by selecting the frequency that you believe is most appropriate for each statement:**

The linguistic challenges faced by the child / frequencies	**Never a challenge**	**Rarely a challenge**	**Often a challenge**	**Sometimes a challenge**	**Always a challenge**
Limited vocabulary					
Difficulty understanding and using figurative language					
Challenges in understanding and expressing emotions through language					
Struggling with reflexivity and the use of grammar rules					
Struggling with pronouncing words appropriately					
Impaired communication and social interaction skills					

Section 3: Importance of Language Therapy Programmes

4. How important do you think it is for language therapy programmes to address these challenges?

- **a.** Not important
- **b.** Somewhat important
- **c.** Moderately important
- **d.** Very important

5. If important, would you please say why? Important because:

a. Language is a fundamental skill in daily life ◯
b. Communication difficulties can greatly impact individuals with autism◯
c. Addressing linguistic challenges can lead to better social and educational outcomes ◯

Other (please specify): _____

6. What factors do you believe contribute to the success of a language therapy programme for your autistic child ?

a. Type of therapy ◯
b. Experience of therapist ◯
c. Frequency of sessions ◯
d. Incorporating of functional and meaningful activities ◯

Other (please specify): _____

Section 4: Effectiveness of Language Therapy Programmes

7. Have you observed any changes/differences in your child's communication skills following their participation in a language therapy programme?

Yes ◯ No ◯ Not sure

8. If yes, kindly evaluate the effectiveness of these programmes in addressing your child's linguistic challenges?

a. Ineffective
b. Somewhat effective
c. Very effective ◯

12. Based on your experience, which aspects of language have demonstrated the most significant changes as a result of these language therapy interventions?

a. Receptive skills ◯
b. Expressive skills ◯
c. Pragmatic skills ◯
d. social communicative skill ◯

Section 5: Customization and Integration of Language Therapy Programmes in Educational Settings

13. Do you believe language therapy programmes can be tailored to better meet your child specific language and communication needs?

Yes ◯ No ◯ Not sure

11. If you answered yes, kindly specify which language skills you believe are most critical for language therapy programmes to target/ address?

_____

12. In your opinion, how do you think language therapy programmes could be modified to better support your child's language development and communication skills within a mainstream school environment?

Thank you for your collaboration , time and efforts

Therapist's Interview

Thank you for agreeing to participate in this study and generously offering your time for today's interview .Our research aims to explore "**the Effectiveness of Language Therapy Programmes for Linguistic Challenges in Autism".** The interview will last approximately 20 minutes in which We hope to gain insight into multiple aspects of your practice as we explore your expertise and experience in providing speech and language therapy interventions and counseling to children with autism. Your responses will provide us with insights into your perspectives and approaches to supporting individuals on the autism spectrum.

1. How many years of experience do you have providing speech and language therapy interventions and counselling to children with autism ?

2. How certain are you in your competence to precisely diagnose and analyse autism spectrum disorder and identify its symptoms in your patients ?
3. Which speech and language impairments are the most common ones that children of autism seek therapy for ?

4. In your experience what does it mean to be on the spectrum?, does this concept of rainbow 's variability affect your practice when treating your patients ?

5. Which particular therapy programmes have you discovered to be the most effective when dealing with your patients ?

6. What are the procedures you follow to measure progress or success in therapy for children with ASD ?

7. How does parental involvement and early intervention impact the development of linguistic and communicative skills of ASD children aiming for a level of fluency and proficiency similar to neurotypical peers?

8. How do you adapt the therapeutic programmes to address the different linguistic challenges with each conditional autistic case?
9. Do you face any challenges when working with ASD children ? If yes , what kind of challenges you face ?
10. Can you share any insights or lessons you acquired from working with such population that have influence your person and your approach to therapy ?

Thank you

Pre – Test

Pre – Test Assessment: Evaluating linguistic Skills

Participant's Personal Information:

Age:

Sex:

Level of Autism:

Language Therapy Programmes undergone by the child's:

Instructions

This test aims to assess your cognitive skills in building your current vocabulary. Please read the questions carefully and choose the appropriate answer. Bear in mind that the test is not time-limited, so try to answer as many questions as possible.

- Sound Assessment: Let's pronounce the word that represents the picture; write down words that contain the letter (S)

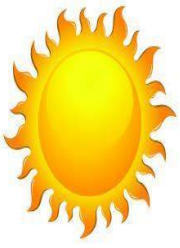



…….. ……. …… ……

- Linguistic Reasoning Assessment: Lets complete the words with the missing letter: R; B; Q; M; SH; N.







« …taa» «ar…ab» « saya…aa « Qala… » «…mess »

- Signifier/Signified Assessment: Let's match the sentence with its corresponding picture

Appendices

Reading a book

Sleeping in his bed

Eating with his right hand

Washing his hands

She plays with a doll

- Pragmatic Assessment: Let's choose the appropriate word for the context provided

The sun rises in the ……. Morning Evening Night

The bird has…… Feathers Skin Fur

I smell the scent of roses with my mouth Hand Nose

The boy drinks | Milk | bread | An Apple | for breakfast.

- Grammar and Syntactic Rules Assessment: let's arrange the cards with numbers to form a correct sentence , write the sentence obtained

Library	Reads	The boy	In	A book

…….

She	A doll	Plays	with

…….

- Reflexive Pronouns Assessment: Let's attribute the appropriate pronoun to each sentence.

- …….revise my lessons.
- …….goes to school.
- …….speak Arabic.
- …….say hello to your friends in the class.
- …….wash your hands before and after eating.

Thank you for your collaboration.

Post – Test Assessment: Evaluating linguistic Skills

Participant's Personal Information:

Age:

Sex:

Level of Autism:

Language Therapy Programmes undergone by the child's:

Instructions

This test aims to assess your cognitive skills in building your current vocabulary. Please read the questions carefully and choose the appropriate answer. Bear in mind that the test is not time-limited, so try to answer as many questions as possible.

- **Sound Assessment**: Let's identify the word presented in the picture and write the word.




…… …… …… ……..

Linguistic Reasoning Assessment: Let's describe the pictures using the letters "S" and "S".



…… …… ……

- **Signifier and the Signified Assessment:** Let's match the sentences with the pictures that represent them.

- The Capital of Palestine is Jerusalem.

- The sky is clear.

- How fast the red car is!

- Scissors are a sharp tool.

- The turtle is a slow animal.

- Syntax and Grammar Rules Assessment: let’s reorder the words to get a correct sentence.
  - ✓ The carpenter a box from made wood
    ……..
  - ✓ The mosque in The boy prayed
    ……..
  - ✓ The year the seasons are four
    ……..
  - ✓ Caught the fish the net the fisherman with
    ……..

إستبيان دراسة حول التحديات اللغوية الموجودة في اضطراب التوحد و تقييم فعالية برامج معالجة اللغة

أعزائي الأولياء :

نطلب فضلا مشاركتكم في ملء الإستبيان التالي الذي يعمل كأداة لجمع البيانات لبحثنا الأكاديمي بعنوان "استكشاف التحديات اللغوية الموجودة في اضطراب طيف التوحد وتقييم فعالية برامج العلاج اللغوي " ، نرجو منكم الإجابة عن جميع فقرات الإستبيان بدقة وموضوعية وذلك بوضع علامة مميزة في الدائرة التي توافق اختياركم ، نحيطكم علما أن إجاباتكم ستستخدم لأغراض علمية فقط .

القسم الأول : المعلومات الشخصية

الجنس : ذكر ○ أنثى ○

العمر : ○من 40 سنة ○ 40 سنة أكبر من 40 سنة ○

جنس طفلك : ذكر ○ أنثى ○

عمر طفلك : 5 سنوات ○ من 5 إلى 12 سنة ○ أكبر ○

مستوى طفلك في طيف التوحد: خفيف ○ متوسط ○ عميق ○

القسم الثاني : تحديد وتقييم التحديات اللغوية

1) **؟ متى لاحظت أول مرة أن طفلك يعاني من صعوبات لغوية**

أ-في سن الرضاعة ، تقريبا 18 شهر ○

ب-عند مقارنته بأقرانه ، تقريبا 3 سنوات ○

ج-لاحظت تأخرا في تطور لغته 5 سنوات ○

د-أصبح واضحا خلال التفاعل مع الأخرين ○

2 ماهي التحديات اللغوية الأكثر بروزا التي لاحظتها في مهارات تواصل طفلك والتي اعتقدت أنها تحتاج تدخلا من أخصائي النطق ؟

أ-عدم الإستجابة عند مناداته باسمه ○

ب-عدم القدرة على التعبير عن مشاعره واحتياجاته لغويا ○

ج -الإشارة إلى نفسه بصيغة الغائب ○

د-تأخره في قدرته على نطق الكلمات ○

ه-غير ذلك (يرجى التحديد)..... ○

3 يرجى تحديد اجابتك عن طريق الإشارة الى التكرار الذي تعتقد أنه الأكثر ملائمة لكل عبارة :

التحديات اللغوية التي يعاني منها الطفل / التكرار	لا يمثل تحديا	نادرا يمثل تحديا	غالبا يمثل تحديا	أحيانا يمثل تحديا	دائما يمثل تحديا
مفردات محدودة					
صعوبة في فهم وإستخدام اللغة المجازية					
صعوبات في التعبير عن المشاعر لغويا					
صعوبات في نسب الفعل لفاعله وكذا استخدام قواعد النحو					
صعوبات في نطق الكلمات بشكل صحيح					
ضعف مهارات التواصل والتفاعل الإجتماعي					

القسم الثالث : أهمية برامج معالجة اللغة

4 ما مدى أهمية برامج اللغة في معالجة هذه التحديات؟

أ- مهمة جدا ○

ب-مهمة إلى حد ما ○

ج-مهمة بشكل متوسط ○

د-غير مهمة ○

5إذا كانت ذات أهمية، هل يمكنكم التوضيح؟ مهمة :

أ-لأن اللغة مهارة أساسية في الحياة اليومية ○

ب-لأن الصعوبات التواصلية تأثر بشكل كبير على الأشخاص المصابين بمرض التوحد ○

ج- قد تؤدي معالجة التحديات اللغوية إلى تحقيق نتائج اجتماعية وتعليمية أفضل ○

د-غير ذلك(يرجى التحديد).....○

6 . في نظرك ، ما هي العوامل التي تساهم في إنجاح برامج المعالجة اللغوية لطفلك ذو التوحد ؟

أ- نوع العلاج ○

ب-خبرة المعالج اللغوي ○

ج-عدد الجلسات ○

د-تضمين الأنشطة التفاعلية و الوظيفية ○

ه-غير ذلك (يرجى التحديد)..... ○

القسم الرابع : فعالية برامج علاج اللغة

7 **هل لاحظت أي تغيرات / إختلافات في مهارات اللغة و التواصل لطفلك بعد مشاركته في برنامج معالجة لغوية ؟**

نعم ○ لا ○ لست متأكدا ○

8 **إذا كانت إجابتك نعم ، يرجى تقييم فعالية هذه البرامج في معالجة أو تحسين القدرات اللغوية و التواصلية التي يعاني منها طفلك :**

أ-غير فعالة ○

ب-فعالة إلى حد ما ○

ج-فعالة جدا ○

9 بناءا على تجربتك ماهي المهارات اللغوية لطفلك التي أظهرت تحسنا كبيرا كنتيجة لمشاركته في هذه البرامج التأهيلية؟

أ-مهارات الفهم ○

ب-مهارات التعبير ○

ج-مهارات الاستخدام اللغوي في السياق ○

د-المهارات الإجتماعية والتواصلية ○

القسم الخامس :تخصيص ودمج برامج علاج اللغة في المناهج التعليمية

9هل تعتقد أنه يمكن تخصيص برامج علاج لغوية مكيفة(خاصة بأطفال التوحد) في المناهج التعليمية تلبي احتياجات طفلك اللغوية والتواصلية ؟

نعم ○ لا ○ لست متأكد ○

10 إذا أجبت بنعم، يرجى تحديد أي المهارات اللغوية تعتقد أن على برامج اللغة استهدافها أكثر و العمل على معالجتها ؟

.....

.....

11 في رأيك كيف يمكن تعديل برامج علاج اللغة لدعم تطور لغة ومهارات التواصل لطفلك بشكل أفضل ضمن بيئة مدرسية عامة؟

.....

.....

لتعاونكم وجهودكم

مقابلة معالجي اللغة:

شكرا لموافقتكم على المشاركة في هذه الدراسة وتقديم وقتكم بسخاء لمقابلة اليوم . يهدف بحثنا إلى استكشاف التحديات اللغوية الموجودة في إضطراب طيف التوحد ، بالإضافة الى تقييم فعالية برامج العلاج اللغوي في مواجهة هذه التحديات مدة هذه المقابلة لايتجاوز العشرين دقيقة نأمل فيها مناقشة أرائكم حول الموضوع بينما نستكشف خبرتكم وتجربتكم في توفير تدخلات علاج النطق واللغة والمشورة للأطفال المصابين بالتوحد .

1) كم عدد سنوات الخبرة التي لديك في تقديم تدخلات علاج النطق واللغة وتقديم المشورة للأطفال المصابين بالتوحد؟

2) ما مدى تمكنك من تشخيص وتحليل اضطراب طيف التوحد بدقة وتحديد أعراضه لدى مرضاك؟

3)ماهي إعاقات النطق واللغة الأكثر شيوعا بين أطفال التوحد الذين يخضعون للعلاج في مركزكم التأهيلي ؟

4)من خلال تجربتك واعتمادا على خبراتك في التشخيص مالذي يعنيه أن تكون في الطيف ، هل يؤثر مفهوم التباين في أعراض الطيف على ممارستك لطريقة العلاج؟

5) من خلال تعاملك مع مختلف الحالات الطبية لمرضى التوحد ، ماهي البرامج المحددة التي وجدتها الأكثر فعالية في علاج الصعوبات اللغوية ؟

6) ماهي الإجراءات التي تتبعها في قياس فعالية ونجاح البرامج المطبقة للعلاج والتأهيل اللغوي لأطفال التوحد ؟

7) كيف تؤثر مشاركة الوالدين والتدخل المبكر على تنمية المهارات اللغوية والتواصلية لأطفال التوحد على الحد الذي يشابه الأطفال العاديين في الطلاقة و الكفاءة اللغويتين ؟

8) كيف يمكنك تكييف البرامج اللغوية العلاجية لتناسب كل حالات التوحد مهما كان تشخيصها ؟

9) هل تواجه أي تحديات عند العمل مع أطفال التوحد ؟ مانوع هذه التحديات ؟

10) هل يمكنك مشاركة أي رؤى أو دروس اكتسبتها من العمل مع هؤلاء السكان والتي تؤثر على شخصك ونهجك في العلاج ؟

شكرا

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر:

الجنس:

تشخيص حدة التوحد:

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط

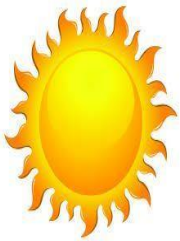
.....

.....

.....

.....

تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر– **ب – ق – م – ش – ن**



....مس .....طة أر.....ب سيا.....ة قل...

تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها

يقرأ كتابا

ينام في سريره

يأكل بيمينه

يغسل يديه

تلعب بالدمية

تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

تشرق الشمس في ..... | الصباح | المساء | الليل |

العصفور لديه ..... | ريش | فرو |

أشم رائحة الورود ب..... | يدي | فمي | أنفي |

شرب الولد | حليبا | خبزا | تفاحة | ..... في فطور الصباح

تقييم النحو والقواعد اللغويـة: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا
....	....	....	....	....

.....

تلعب	بالدمية	الفتاة
....	....	....

.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

اختبار ما بعد العلاج :تقييم مهارات اللغة

العمر:

الجنس:

تشخيص حدة التوحد

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة

....

تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي س أو ص

....

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها

Appendices

عاصمة فلسطين هي القدس

السماء صافية

ما أسرع السيارة الحمراء

المقص أداة حادة

السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة

النجار صندوقا من صنع الخشب

.....

المسجد في الولد صلى

.....

السنة فصول في أربعة

.....

إصطاد السمكة الشبكة الصياد ب

.....

Appendices

الجمهورية الجزائرية الديمقراطية الشعبية
People's Democratic Republic of Algeria

Minstery of Higher Education and Scientific Research	وزارة التعليم العالي والبحث العلمي
University of Ibn Khaldoun, Tiaret	جامعة ابن خلدون، تيارت
Faculty of Letters and Languages	كلية الآداب و اللغات
Department of English	قسم اللغة الإنجليزية

إلى السيد (ة): مدير المؤسسة التربوية- تيارت

الموضوع :طلب السماح للطلبة باجراء بحث علمي

بصفتي رئيس قسم اللغة الانجليزية بكلية الآداب واللغات بجامعة ابن خلدون تيارت. أتقدم إلى سيادتكم الموفرة بطلب السماح للطالبتين علاوي نسيبة و بختاوي بشرى المسجلتين بالسنة الثانية ماستر لسانيات اللغة الانجليزية بنفس القسم بإجراء بحث علمي لإعداد مذكرة التخرج.

وفي الأخير تقبلوا مني أسمى عبارات التقدير والاحترام.

حرر بتيارت في2024/3/10

رئيس القسم

فيلالي خالد
رئيس قسم اللغة الانجليزية
بكلية الآداب و اللغات

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر: ١١

الجنس: ذكر

تشخيص حدة التوحد: خفيف

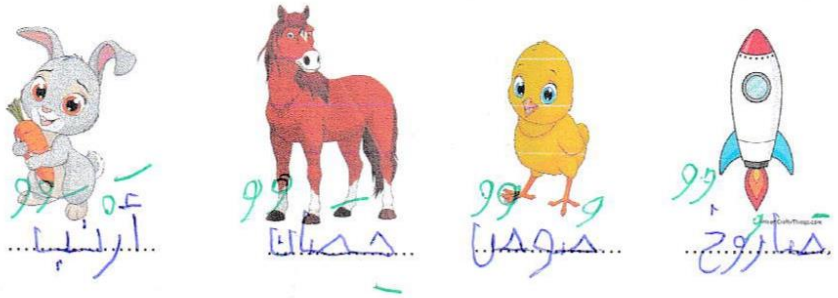
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

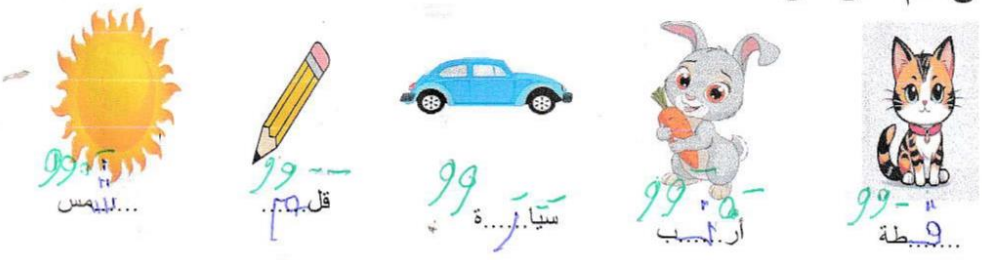
يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

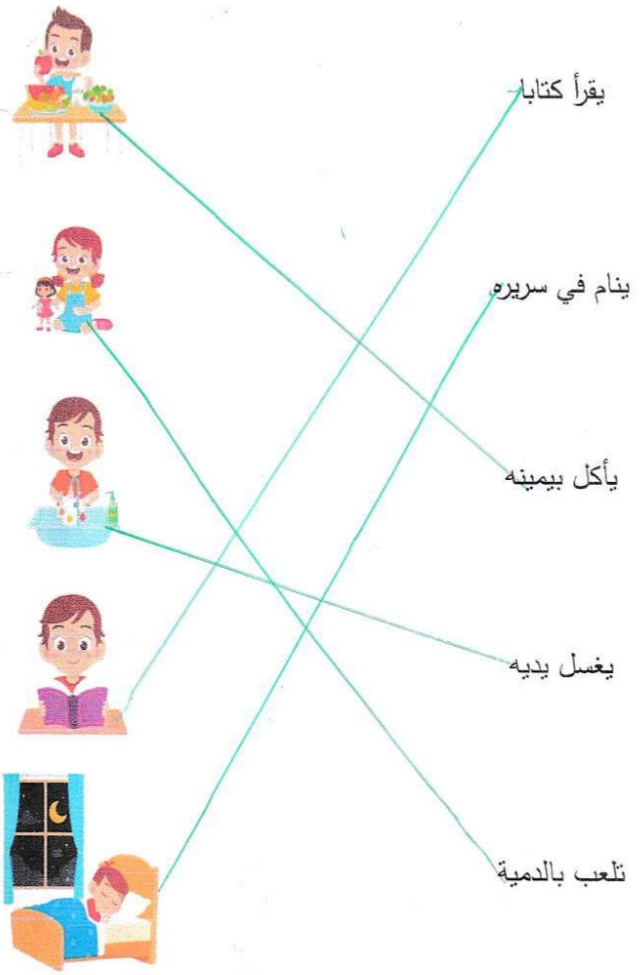
تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط



تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر – ب – ق – م – ش – ن



تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها



تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

الصباح	المساء	الليل
ريش	فرو	جلد
فمي	يدي	أنفي
تفاحة	خبزا	حليبا

تشرق الشمس في .الصباح.

العصفور لديه .الريش.....

أشم رائحة الورود بـ.أنفي.

شرب الولد .حليبا.. في فطور الصباح

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا

يقرأ الطفل في كتابا المكتبة .....

تلعب	بالدمية	الفتاة

تلعب الفتاة بالدمية .....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر: 11 سنة

الجنس: ذكر

تشخيص حدة التوحد : خفيفة

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة




مصحف .... سنجاب .... صقر .... سمكة ....

تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي **س** أو **ص**



يغسل صابون ولد يصطاد سمكة طفل صلو ....

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها

- عاصمة فلسطين هي القدس
- السماء صافية
- ما أسرع السيارة الحمراء
- المقص أداة حادة
- السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة.

النجار صندوقا من صنع الخشب

- صنع النجار صندوقا من الخشب

المسجد في الولد صلى

- صلى الولد في المسجد

السنة فصول في أربعة

- فصول السنة في أربعة

إصطاد السمكة الشبكة الصياد ب

- إصطاد الصياد السمكة بالشبكة

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك: إسلام - بارة

العمر: ١٢

الجنس: ذكر

تشخيص حدة التوحد:

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

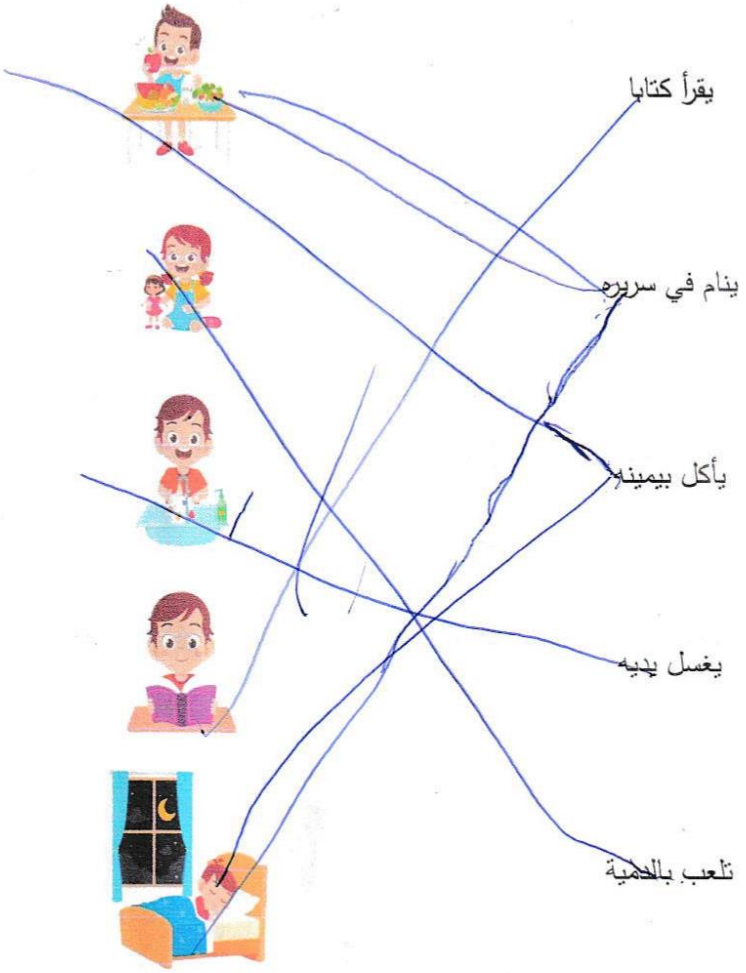
يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط

تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر- **ب – ق – م – ش – ن**

تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها



تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

تشرق الشمس في ..... (الليل / المساء / الصباح)

العصفور لديه ..... (جلد / فرو / ريش)

أشم رائحة الورود ب..... (أنفي / يدي / فمي)

شرب الولد ..... في فطور الصباح (حليبا / خبزا / تفاحة)

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا

المكتبة يقرأ الطفل في كتاب

.....

تلعب	بالدمية	الفتاة

الفتاة تلعب بالدمية

.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر: 18

الجنس: ذكر

تشخيص حدة التوحد

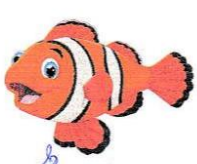
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة



تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي س أو ص

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها

عاصمة فلسطين هي القدس

السماء صافية

ما أسرع السيارة الحمراء

المقص أداة حادة

السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة

النجار صندوقا من صنع الخشب

المسجد في الولد صلى

السنة فصول في أربعة

إصطاد السمكة الشبكة الصياد ب

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر: 10 سنة

الجنس: ذكر

تشخيص حدة التوحد:

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط

تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر – ب – ق – م – ش – ن

تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها





يقرأ كتابا

ينام في سريره

يأكل بيمينه

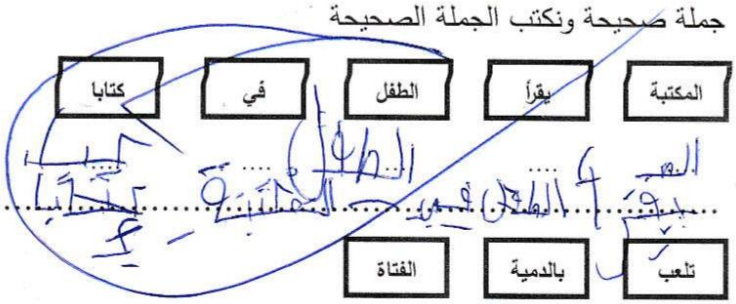
يغسل يديه

تلعب بالدمية

تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

الليل	المساء	الصباح	تشرق الشمس في ..الصباح..
جلد	فرو	ريش	العصفور لديه ..ريش..
أنفي	يدي	فمي	أشم رائحة الورود بـ..أنفي..
حليبا	خبزا	تفاحة	شرب الولد ..حليبا.. في فطور الصباح

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة



.....

.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر: ١٥ سنوات

الجنس: ذكر

تشخيص حدة التوحد : متوسط .

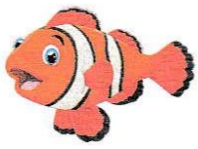
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة



سمك

طائر

تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي **س** أو **ص**

صلاة

صيد

صابون

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها

- عاصمة فلسطين هي القدس
- السماء صافية
- ما أسرع السيارة الحمراء
- المقص أداة حادة
- السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة.

- النجار صندوقا من صنع الخشب
  النجار صنع صندوقا من الخشب
- المسجد في الولد صلى
  الولد صلى في المسجد
- السنة فصول في أربعة
- إصطاد السمكة الشبكة الصياد ب

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر: 12 سنة

الجنس: ذكر

تشخيص حدة التوحد:

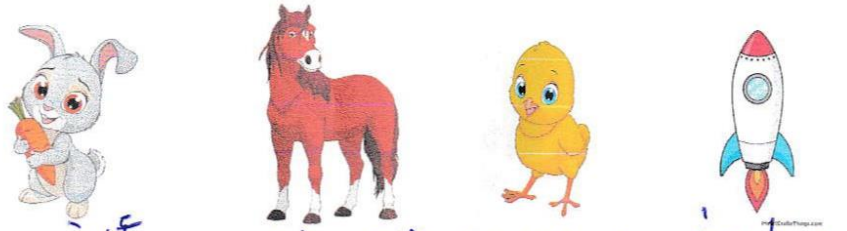
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

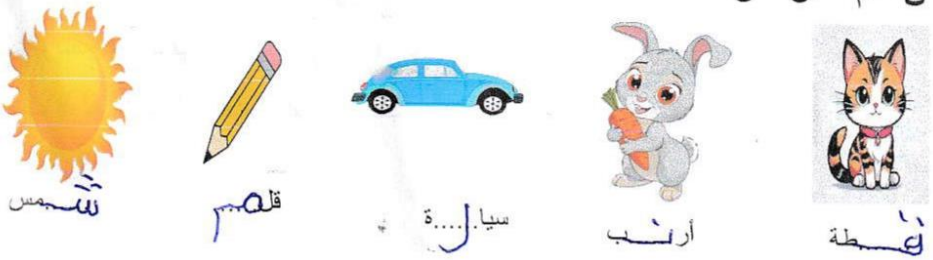
يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط



تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر- **ب – ق – م – ش – ن**



تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها

يقرأ كتابا

ينام في سريره

يأكل بيمينه

يغسل يديه

تلعب بالدمية

تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

الصباح	المساء	الليل
ريش	فرو	جلد
فمي	يدي	أنفي
تفاحة	خبزا	حليبا

تشرق الشمس في الصباح

العصفور لديه ريش

أشم رائحة الورود ب فمي

شرب الولد حليبا في فطور الصباح

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا

المكتبة يقرأ الطفل في كتابا

يقرأ الطفل كتابا في المكتبة.....

تلعب	بالدمية	الفتاة

تلعب بالدمية الفتاة

تلعب الفتاة بالدمية.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..أنا..... أراجع دروسي

..أنا..... ذهب الى المدرسة

..نحن..... نتكلم اللغة العربية

..أنت..... تقول مرحبا لأصدقائك في القسم

..أنت..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر:

الجنس: ذكر

تشخيص حدة التوحد : خفيف .

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

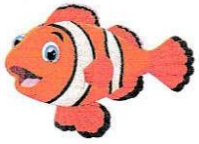
التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة



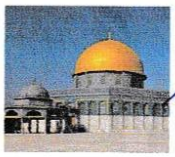
مصحف ستجابي صقر سمكة

تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي **س** أو **ص**



أغسل سمكة سطاد سجد يصل

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها



- عاصمة فلسطين هي القدس
- السماء صافية
- ما أسرع السيارة الحمراء
- المقص أداة حادة
- السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة.

النجار صندوقا من صنع الخشب

- النجار صندوقا من الخشب صنع

المسجد في الولد صلى

- المسجد في الولد صلى

السنة فصول في أربعة

- السنة فصول في أربعة

إصطاد السمكة الشبكة الصياد ب

- إصطاد السمكة الصياد ب الشبكة

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر: ١١

الجنس: أنثى

تشخيص حدة التوحد: خفيف

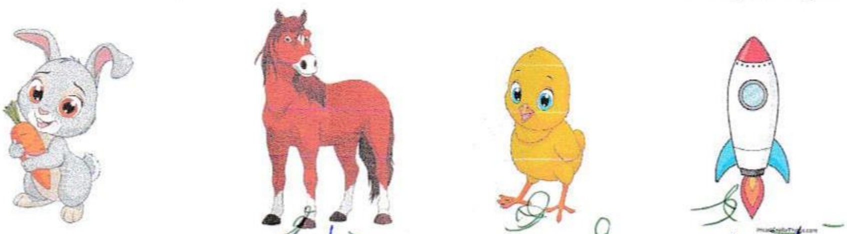
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط

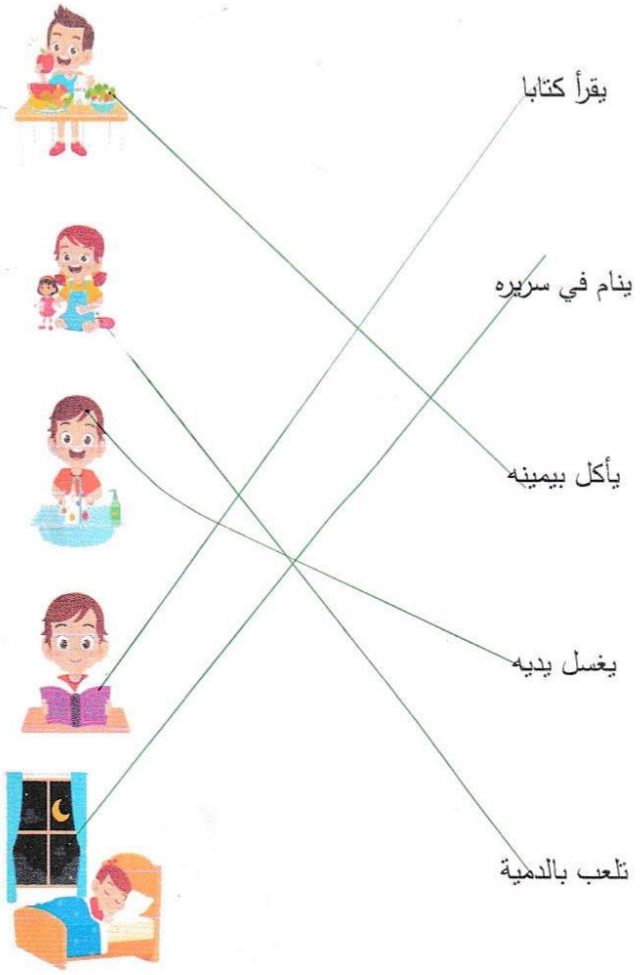


صاروخ .... صوص .... حصان ....

تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر – ب – ق – م – ش – ن

قطة .... أرنب .... سيارة .... قلم .... شمس

تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها



تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

الليل	المساء	الصباح
جلد	فرو	ريش
أنفي	يدي	فمي
حليبا	خبزا	تفاحة

تشرق الشمس في الصباح.

العصفور لديه ريش.....

أشم رائحة الورود ب أنفي.....

شرب الولد حليبا... في فطور الصباح

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا

يقرأ الطفل كتابا في المكتبة.....

تلعب	بالدمية	الفتاة

تلعب الفتاة بالدمية.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر: 11 سنة
الجنس: أنثى .
تشخيص حدة التوحد : خفيف .
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

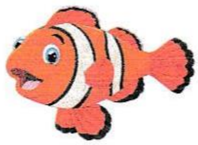
التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة



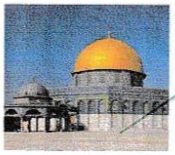
قرآن .... سنجاب .... صقر .... سمكة ....

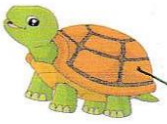
تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي **س** أو **ص**



غسل يدين .... يصطاد سمك .... مسجد يصلي ....

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها





- عاصمة فلسطين هي القدس
- السماء صافية
- ما أسرع السيارة الحمراء
- المقص أداة حادة
- السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة.

النجار صندوقا من صنع الخشب

- صنع النجار صندوقا من الخشب

المسجد في الولد صلى

- الولد صلى في المسجد

السنة فصول في أربعة

- فصول السنة في أربعة

إصطاد السمكة الشبكة الصياد ب

- إصطاد الصياد السمكة بالشبكة

اختبار ما قبل العلاج: تقييم مهارات اللغة

معلومات المشارك:

العمر: 9 سنوات

الجنس: أنثى

تشخيص حدة التوحد: خفيف

العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز):

التعليمات:

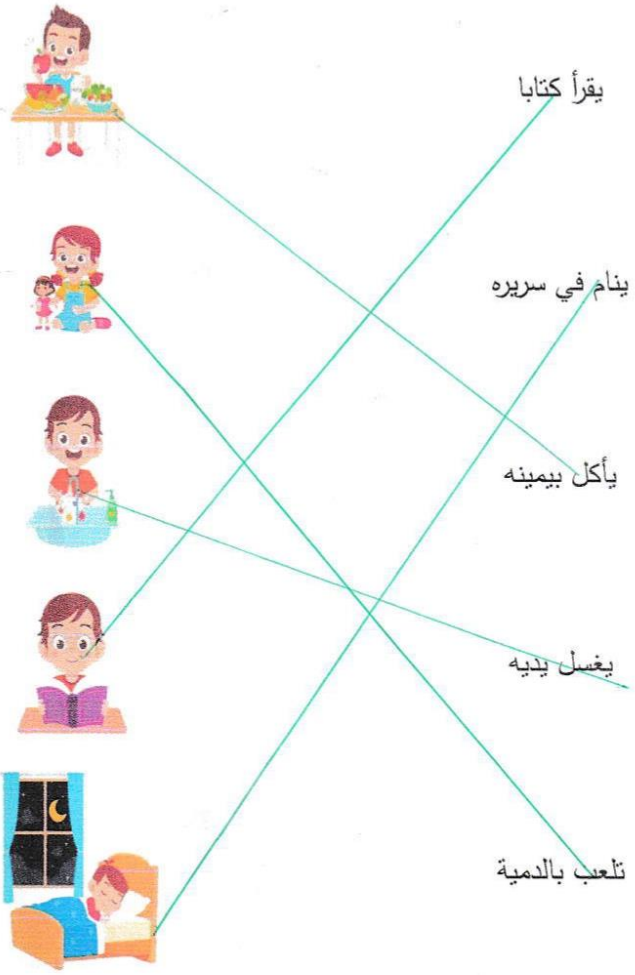
يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات الحالية لديك، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الأسئلة.

التقييم:

تقييم الأصوات: هيا يا صغاري ننطق الكلمة التي تمثل الصورة، ونكتب الكلمات التي تحتوي حرف ص فقط

تقييم الاستنتاج والتفكير اللغوي: هيا يا صغاري نكمل الكلمات بالحرف الناقص: ر- ب - ق - م - ش - ن

تقييم الدال والمدلول: هيا يا صغاري نربط الكلمة بالصورة المناسبة لها



تقييم السياقية: هيا يا صغاري نختار الكلمة المناسبة للجملة

الليل	المساء	الصباح	تشرق الشمس في ..الصباح..
جلد	فرو	ريش	العصفور لديه ..ريش.....
أنفي	يدي	فمي	أشم رائحة الورود بـ..أنفي...
حليبا	خبزا	تفاحة	شرب الولد تفاحة..... في فطور الصباح

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب البطاقات بوضع الأرقام لنتحصل على جملة صحيحة ونكتب الجملة الصحيحة

المكتبة	يقرأ	الطفل	في	كتابا
....	....	....	....	....

يقرأ الطفل كتابا في المكتبة.....

تلعب	بالدمية	الفتاة
....	....	....

تلعب الفتاة بالدمية.....

تقييم الانعكاسية: هيا يا صغاري ننسب الضمير المناسب لفاعله: هو – أنت – أنا – نحن

..... أراجع دروسي

..... ذهب الى المدرسة

..... نتكلم اللغة العربية

..... تقول مرحبا لأصدقائك في القسم

..... تغسل يديك قبل الأكل

شكـــرا

اختبار ما بعد العلاج: تقييم مهارات اللغة

العمر: 9 سنوات .
الجنس: أنثى .
تشخيص حدة التوحد : خفيف .
العلاجات اللغوية التي يخضع لها المشارك (تعبير موجز): خفيف .

التعليمات :

يهدف هذا الاختبار الى تقييم مهارات البناء المعرفي للمفردات بعد التدخل ، يرجى قراءة كل سؤال بعناية واختيار الاجابة الانسب هذا الاختبار غير محدود زمنيا حاول الاجابة على أكبر عدد ممكن من الاسئلة

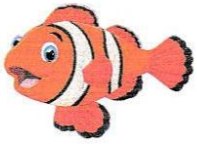
التقييم :

تقييم الاصوات : هيا يا صغاري نتعرف على الكلمة التي تمثلها الصورة ونكتب الكلمة


مصحف


سنجاب


صقر


سمكة

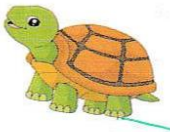
تقييم الاستنتاج والتفكير اللغوي : هيا يا صغاري نعبر عن الصور باستخدام حرفي **س** أو **ص**


يغسل اليدين


صياد


صلاة

تقييم الدال والمدلول : هيا يا صغاري نربط الجمل بالصورة التي تدل عليها



- عاصمة فلسطين هي القدس
- السماء صافية
- ما أسرع السيارة الحمراء
- المقص أداة حادة
- السلحفاة حيوان بطيء

تقييم النحو والقواعد اللغوية: هيا يا صغاري نرتب الكلمات لنتحصل على جملة صحيحة.

النجار صندوقا من صنع الخشب

- صنع النجار صندوقا من الخشب

المسجد في الولد صلى

- صلى الولد في المسجد

السنة فصول في أربعة

- فصول السنة في أربعة

إصطاد السمكة الشبكة الصياد ب

- إصطاد السمكة الصياد ب الشبكة

Summary

Autism Spectrum Disorder is a prevalent neurodevelopmental condition with varied linguistic and behavioural profiles. This research explores the linguistic challenges encountered by autistic children and assesses the effectiveness of language therapy programmes in addressing their needs. Opting for a combination of mixed method approach and a quasi-experimental approach, the study surveys purposefully 34 parents of autistic children and conducts semi structured interviews with 8 therapists at Al-Amal Association for Children with Autism and Trisomy, simultaneously employing independent samples t-test with 6 targeted verbal autistic children at Bara Abd-el-Kader and Khalifa Mohammed Primary Schools in Tiaret. The findings highlight varied linguistic competences and unique deficits across the spectrum and the significant variability in therapies' effectiveness, emphasising the need for individualised, tailored language intervention strategies to address the linguistic needs of autistic children.

Résumé

Le trouble du spectre de l'autisme est reconnu comme l'un des troubles neurodéveloppenteaux les plus répondus, marqué par une diversité de profiles linguistiques et comportementales.. Cette étude vise à explorer les déficits linguistiques rencontrés par les enfants autistes et évaluer l'efficacité des programmes thérapeutique du langage. La population cible concernée un échantillon délibéré d'enfants autistes verbaux, de parents d'enfants autistes ainsi de orthophonistes du langage, ils sont issus de l'Association Al-Amal pour les Enfants Autistes et Trisomiques, ainsi que des écoles primaires Bara Abd-el-Kader et Khalifa Mohammed à Tiaret. Cette étude opte pour une approche méthodologique mixte et quasi expérimentale. Cela implique utilisant respectivement un questionnaire quantitatif et structuré et une semi-interview qualitative, et des tests de comparaison de moyennes indépendantes (test-t). Les résultats mettent en lumière des compétences linguistiques variées et des déficits uniques observées chez les enfants autistes à travers le spectre. De plus, une variabilité significative dans l'efficacité des thérapies du langage, soulignant l'importance d'intégrer des programmes de langage personnaliser et individualisées et adaptées pour répondre effectivement aux besoins linguistiques des enfants autistes.

الملخص

يعد اضطراب طيف التوحد من أكثر الاضطرابات النمائية العصبية الأكثر شيوعا، والذي لم يعد مصنفا فقط ضمن الاضطرابات النفسية والاجتماعية ولكنه موسوم بمجموعة من التحديات اللغوية التي تميز الأشخاص المصابين بهذه المتلازمة. يهدف هذا البحث إلى استكشاف التحديات اللغوية التي تواجه الأطفال ذوي التوحد، و تقييم فعالية برامج العلاج اللغوي . تشمل العينة القصدية المستهدفة مجموعة من الأطفال ذوي التوحد اللفظي ، وأولياء الأمور لأطفال مصابين بالتوحد، بالإضافة إلى معالجين لغويين في جمعية الأمل للأطفال ذوي التوحد والتريزوميا ، إلى جانب المدرستين الابتدائيتين بارة عبد القادر و محمد خليفة بتيارت أين أجريت الدراسة. يعتمد جمع معلومات هذا البحث على الجمع بين منهجية الطريقة المختلطة بتطبيق وسيلتين احداهما كمية والأخرى كيفية من خلال توزيع الاستبيان، وإجراء مقابلات والمنهج الشبه تجريبي تمثل في اختبارات مقارنة المتوسطات المستقلة بين القياس القبلي والبعدي لأبعاد الاختبار (اختبار T).تشير النتائج الى تنوع القدرات والتحديات اللغوية لدى مرضى التوحد، وكذلك تسلط الضوء على التباين البارز في فعالية البرامج اللغوية، مما يستوجب ضرورة تصميم استراتيجيات وبرامج لغوية مكيفة تستهدف خصيصا الاحتياجات اللغوية النوعية لكل حالة من حالات الأطفال ذوي التوحد.