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CONSTRUCTING A TRAINING PROGRAM IN ENHANCING LANGUAGE AND SPEECH SKILLS AMONG DELAYED AND LANGUAGE DISORDERED CHILDREN IN A JORDANIAN SAMPLE

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ABSTRACT

The present study aims to Construct a training program in enhancing language and speech skills among delayed and language disordered children. The Study sample consists of eight children with language delay and disordered language with ranging age of (3 to 8) years. To verify the results of study, one single subject research design with pretest and posttest was applied, to achieve the Purpose of the study, a Measure of Language and Speech Capabilities Scale (LSCS) was constructed and applied, the scale consists of (125) item dived into five main skills. Since evidence of validity and reliability achieved. A training program was used to enhance language and speech skills among delayed and language disordered children, since evidence of validity for it was achieved. The researchers built an applied program for a period of twelve months (about 140 training session), the duration of each session (30) minutes.The results of study showed significant improvement in all skills related to language and speech on the eight children. The most important recommendation that resulted from this study is to applicate the training program on a larger sample, in addition to the need to conduct more studies about language acquisition in children and speech development.

KEYWORDS: Training Programe, Language Delay, Language Disorder, Perceptual Skills, Oral Rehabilitation.

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1. INTRODUCTION

1.1. Background of the Study

One of the problems that affect human life and limits their ability to live properly and healthily is related to interaction and communication. The individual must possess the ability to deliver information, experiences, and ideas to others. Allah Almighty has bestowed upon humanity the gift of reason, hearing, and sight, along with a unique ability that sets humans apart - language (Al-Doukhi and Al-Saqr, 2004; AbuEswailem and Jaradat, 2023). Humans possess a mental capacity that allows them to use various symbols with significance to communicate. They can establish fixed rules and generalize these rules to form language. Additionally, humans have a vocal apparatus enabling them to produce sounds in various ways. When these sounds are linked with the linguistic symbols originating from the brain, the result is a distinct ability known as talking (Jaradat and AbuEswailem, 2023).

Normal children are exposed to environmental sounds after birth and begin to understand their meanings through accidental acquisition, imitation, modeling, and trial and error. Consequently, the young child starts associating sound stimuli with sensory responses. The process of conditioning begins by connecting sounds, words, and sentences to their basic needs. As the child reaches an appropriate age, they become capable of spontaneous speech.

Initially, the child acquires language to express basic needs, seeking assistance from others in fulfilling them. Gradually, these symbols transform into a means of communicating desires with others. Language is broadly divided into two fundamental abilities: receptive language and expressive language. Receptive language enables humans to understand, analyze, and comprehend symbols, while expressive language empowers them to construct, connect, and produce these symbols. Both receptive and expressive language rely on specific rules used by both the sender and receiver of these symbols (Al-Ashawi, 2005; Al-Doukhi and Al-Saqr, 2004). Spoken language comprises five main components: Phonology, Syntax, Morphology, Semantics, and Pragmatics (Reed, 2011; Shipley and McAfee, 2025). Humans acquire these components through various developmental stages, with each stage having distinct requirements from these five components. A clear mismatch between a child's chronological age and their linguistic age indicates language delay. Such a delay may also impact on the child's social and academic abilities, as language is a prerequisite for skill development in these areas.

It's worth noting that the Arabic environment notably lacks comprehensive training programs encompassing all language components. Furthermore, there is a scarcity of standards for these programs. Current practices rely on therapists' direct observation of the child, drawing from accumulated experiences, and comparing the child's performance against the natural linguistic developmental scales of typical children. This results in significant variations in measurement, evaluation, and goals among different therapists.

Language delay or disorder encompasses a broad range of problems in the skills and abilities necessary for language acquisition. These challengapplicationslenging to address without a comprehensive reference for application when working with the child. Furthermore, a baseline is needed to measure the child's skill development during and after appropriate treatment.

Thus, the significance of educating children and providing them with the opportunity to acquire and utilize language correctly and effectively cannot be understated. Therefore, this study aims to develop a specialized training program for enhancing various language skills. Additionally, the study seeks to establish a scale that exhibits validity and acceptable stability, aiding in identifying strengths and weaknesses in these skills.

1.2. The Study Problem

Language delay is one of the most significant problems that has a general impact on an individual's life. When an individual experiences language delay, it reduces their opportunities for social interaction and communication with others. Consequently, there is an increased likelihood of the individual withdrawing from the social environment, which can negatively affect their psychological well-being. A strong connection exists between academic abilities, schooling, and language. A delay or deficit in language acquisition will inevitably result in weakened academic skills for the child, ultimately limiting their educational prospects and overall quality of life.

Based on the practical and scientific experiences of researchers in the field of special education, especially in the realm of speech and language assessment, it becomes evident that there is a lack of well-defined Arabic standards. These standards should demonstrate acceptable levels of validity and stability to support their utilization. Furthermore, researchers find that the currently available

programs fail to address the increasing prevalence of language delays and disorders adequately. These programs also lack comprehensive coverage of various language acquisition skills. Some programs may emphasize one aspect while neglecting others. Therapists often rely on their expertise to assess and evaluate children, resorting to foreign and translated standards and programs that do not align with the intricacies and rules of the Arabic language. This situation contributes to divergent viewpoints in similar cases due to the absence of a standardized and clear reference.

The problem of the study is to answer the following main question:

What is the effectiveness of a training program in developing language and speech skills for a Jordanian sample of delayed and/or language disordered children of the age group between (3-8) years?

This main question is divided into the following sub-questions:

1. Are there statistically significant differences at the level ($\alpha = 0.05$) in the pre and post-performance of the study sample members on the Language and Speech Capabilities Scale, (LSCS) due to the effect of the training program?
2. Are there statistically significant differences at the level ($\alpha = 0.05$) in the pre and post-performance of the study sample members on the Language and Speech Capabilities Scale, (LSCS) in the areas (auditory rehabilitation, cognitive skills, language, speech, muscular strength)?

The importance and objectives of the study

The importance of this study is underscored by the following factors:

From a theoretical standpoint, this study contributes to the existing literature on the subject by examining fundamental variables related to language delay. Notably, there is a notable dearth of studies exploring these variables within the Arabic library.

In terms of practical significance, the study's outcomes are evident in multiple ways. First, it results in the development of a scale and program tailored to children experiencing language delay and/or disorder. Second, it highlights the necessity for specialists to adopt training programs aimed at enhancing children's proficiency in both speech and language domains.

Furthermore, the study holds importance in equipping individuals with delayed and/or disordered language skills that are crucial for fostering appropriate language capabilities, subsequently influencing social, cognitive, and academic domains.

Given that speech and language constitute pivotal facets of the psychosocial realm, this program's implementation will lead to enhanced contentment among individuals and their families. This contentment stems from the evident improvements observed in children during and after program implementation.

2. THEORETICAL FRAMEWORK AND PREVIOUS STUDIES

2.1. Language And Speech

Language serves as one of the most crucial mediums for human communication, enabling the conveyance of information, ideas, and experiences from a sender to a receiver (Al-Ashawi, 2004). It is defined as a system of conventional, arbitrary, and shared symbols involving societal participation, utilized to transmit messages between senders and receivers (Reed, 2011). Spoken language, distinguished by its immediacy and speed, is the most effortless and rapid mode of language expression. It stands apart from other forms of communication in that it requires no external tools or mediums, such as paper and pen in the case of writing. Additionally, speech allows communication without reliance on gestures, as is the case with sign language. A distinctive trait of spoken language is its capacity for code exchange without necessitating direct visual contact between sender and receiver.

Humans articulate spoken symbols through diverse sounds produced within their speech system. This system encompasses a network of fixed and mobile organs, intricately interacting and configured in various ways to generate a wide array of sounds. When language is merged with speech, implying that each sound emitted by an individual carries' linguistic significance, this process is referred to as "talk."

2.2. Language Components

The language consists of five main components:

- Phonology: This system governs and describes the patterns and arrangement of phonemes in a language, as well as their potential combinations. Each language comprises a finite number of phoneme units, each devoid of individual meaning.
- Syntax: This system dictates the word order within sentences. For instance, in the Arabic language, a phrasal verb comprises a verb + subject + object sequence, while in English, the sentence begins with the subject followed by

the verb.

- Morphology: This system oversees the rules governing word derivation and the utilization of inflectional markers, encompassing plurals, dual forms, verb tenses, pronouns, subject nouns, object nouns, instrumental nouns, and more. Morphology consists of groupings of phonemic units with functional or meaningful roles, known as morphemes.
- Semantic: lso referred to as the linguistic inventory, semantics enhances linguistic output and facilitates the interpretation of utterances, encompassing vocabulary and sentence comprehension.

Pragmatic: This component empowers us to deploy language for social functions and ranks as the most pivotal element among language components. It serves as the driving force behind other components. The utilization of pragmatics varies based on social and cultural acceptability within a given environment. What may be deemed acceptable in one context might face rejection in another (Al-Dawayda and Khalil, 2011; Abu Nabaa, 2010; Zureikat, 2007; Reed, 2011; Robert & Owen, 2012; Gleason & Ratner, 2024; Abdullah, Dabney-Fekete & Ceglédi, 2024; Senft, 2016).

Stages of normal language development in children

The child unconsciously acquires language from their surrounding environment. From birth, the child starts to focus on auditory, visual, and tactile stimuli in their vicinity. The child's initial attempts are random and unintentional. Soon, behavior modification comes into play, directing the subject, and classic conditioning takes effect by associating sounds with needs or goals. This process enhances the child's likelihood of utilizing verbal communication to express their needs and desires (McLaughlin, 2010).

The child's language components develop in tandem with their motor skills and sensory inputs. Consequently, we can identify the skills expected to be attained by the child at each developmental stage. This aids specialists and parents in diagnosing, assessing, and treating the child's progress. Observation of children and comparing a child's capabilities with the typical growth of peers within the same age bracket allows for the identification of delays (Shaffer & Kipp, 2014)

The linguistic evolution in children encompasses several primary stages: cooing, jargon, meaningful sounds, single words, and sentences. These stages have been endorsed in greater detail by the American Hearing and Speech Association (ASHA) as follow:

Table 1: Stages of Normal Language Development in Children.

From birth to the third month	Hearing and understanding	- Startles at loud sounds. - Quiets or smiles when you talk. - Seems to recognize your voice. Quiet if crying.
	Talk	- Makes cooing sounds. - Cries change for different needs. - Smiles at people.
From the fourth month to the sixth month	Hearing and understanding	- Moves her eyes in the direction of sounds. - Responds to changes in your tone of voice. - Notices toy that make sounds. - Pay attention to music.
	Talk	- Coos and babbles when playing alone or with you. - Makes speech-like babbling sounds, like pa, ba, and mi. - Giggles and laughs. - Make sounds when happy or upset.
From the seventh month to the year	Hearing and understanding	- Turns and looks in the direction of sounds. - Look at when you point. - Turns when you call her name. - Understands words for common items and people—words like cup, truck, juice, and daddy. - Starts to respond to simple words and phrases, like "No," "Come here," and "Want more?" - Plays games with you, like peek-a-boo and pat-a-cake. - Listen to songs and stories for a short time.
	Talk	- Babbles long strings of sounds, like mimi upup babababa. - Uses sounds and gestures to get and keep attention. - Points to objects and shows them to others. - Uses gestures like waving bye, reaching for "up," and shaking his head no. - Imitate different speech sounds. - Says 1 or 2 words, like hi, dog, dada, mama, or uh-oh. This will happen around his first birthday, but sounds may not be clear.
From one to two years	Hearing and understanding	- Points to a few body parts when you ask. - Follows 1-part directions, like "Roll the ball" or "Kiss the baby." - Responds to simple questions, like "Who's that?" or "Where's your shoe?"

		- Listen to simple stories, songs, and rhymes. - Points to pictures in a book when you name them.
	Talk	- Uses a lot of new words. - Uses p, b, m, h, and w in words. - Start to name pictures in books. - Asks questions, like “What's that?”, “Who’s that?”, and “Where’s kitty?” - Put 2 words together, like "more apple," "no bed," and "mommy book."
From two to three years	Hearing and understanding	- Understands opposites, like go–stop, big–little, and up–down. - Follows 2-part directions, like "Get the spoon and put it on the table." - Understand new words quickly.
	Talk	- Has a word for almost everything. - Talks about things that are not in the room. - Uses k, g, f, t, d, and n in words. - Uses words like in, on, and under. - Uses two- or three- words to talk about and ask for things. - People who know your child can understand him. - Asks “Why?” - Put 3 words together to talk about things. May repeat some words and sounds.
From three to four years	Hearing and understanding	- Respond when you call from another room. - Understands words for some colors, like red, blue, and green. - Understands words for some shapes, like circle and square. - Understands words for family, like brother, grandmother, - and aunt.
	Talk	- Answer simple who, what, and where questions. - Says rhyming words, like hat–cat. - Uses pronouns, like I, you, me, we, and they. - Uses some plural words, like toys, birds, and buses. - Most people understand what your child says. - Asks when and how questions. - Put 4 words together. May make some mistakes, like “I goed to school.” - Talks about what happened during the day. Use about 4 sentences at a time.
From four to five years	Hearing and understanding	- Understand words for order, like first, next, and last. - Understand words for time, like yesterday, today, and tomorrow. - Follows longer directions, like “Put your pajamas on, brush your teeth, and then pick out a book.” - Follows classroom directions, like “Draw a circle on your paper around something you eat.” - Hears and understands most of what she hears at home and in school.
	Talk	- Says all speech sounds in words. May make mistakes on sounds that are harder to say, like l, s, r, v, z, ch, sh, and th. - Responds to “What did you say?” - Talks without repeating sounds or words most of the time. - Name letters and numbers. - Uses sentences that have more than 1 action word, like jump, play, and get. May make some mistakes, like “Zach gots 2 video games, but I got one.” - Tell a short story. - Keeps a conversation going. - Talks in different ways, depending on the listener and place. Your child may use short sentences with younger children. He may talk louder outside than inside.
Reference		https://www.asha.org/public/speech/development/chart/

Table 1: Shows The Normal Language Development In Children, Issued By The American Hearing And Speech Association (ASHA).

2.3. Language Delay and Language Disorder

A language disorder is defined as a heterogeneous group of developmental and/or acquired conditions, with or without delay, primarily characterized by deficiencies and/or immaturity in the use of spoken or written language. This disorder can impact various components of language, including phonology, syntax, morphology, semantics, and pragmatics (Owens, 2019).

Language delay is characterized by insufficient language development in a child relative to their chronological age, as per the stages of language development. This delay falls within the spectrum of language disorders, which in turn are categorized under communication disorders (McLaughlin, 2011). Detecting language delay is possible at an early stage by observing a child's language progress and comparing it with established benchmarks for typical language development in children.

Consequently, language delay refers to a lag in the linguistic skill development of children in relation to the normal language developmental milestones for their age. In a synchronized progression, children acquire the five language components (phonology,

syntax, morphology, semantics, and pragmatics). If an evaluation of a child's progress reveals that growth in the phonological component occurs in parallel with growth in syntax and morphology, and so forth, any delay across all components that corresponds with the child's chronological age indicates a language delay. However, if the delay in the components is non-parallel, such as when syntax lags behind morphology or phonology, this is characterized as a language disorder.

Mahfouz (2005) conducted a study with the aim of developing a training program to improve expressive language skills for children with expressive language disorders. The research sample consisted of (30) children of the age group (5-7) years. The study was applied in Jordan, and the researcher built a scale for diagnosing expressive language disorders and extracted validity and reliability indications for the scale. He also developed a training program to improve children's expressive language skills, and the results showed statistically significant differences in favor of the experimental group.

Al-Khatib (2008) conducted a study with the aim of preparing a model for early detection of developmental delay in the linguistic, cognitive, and social-emotional developmental dimensions. The research sample consisted of (170) children of the age group (3-8) years, and the researcher used a research method consisting of three Stages, (1) to make hypotheses about the general level of development of the child, (2) psychological and educational evaluation of the child's main developmental aspects, (3) making recommendations, and the results showed the presence of cutoff points and primary performance areas for both normal and developmentally delayed children on the study scales.

Al-Humaidan (2014) conducted a study with the aim of showing the effectiveness of a training program based on the behavioral theory in improving language skills. The study sample consisted of (10) children with autism spectrum disorder from the age group (4-10) years from Jordan, and the researcher used the study method (One Single Subject Design) with the pre- and post-test (ABA) to reach the results of the study, and the researcher built a training program that relied on methods of behavior modification to improve the language skills of the children of the research sample, and the results showed a clear and noticeable improvement in all dimensions of the scale.

Olimat & Al-Rousan (2016) also conducted a study with the aim of figuring out the effectiveness of the Jordanian Speech and Phonological Disorder Scale in diagnosing children with communication disorders. The study sample consisted of (1200) children, including (600) children with communication disorders and (600) normal children. The ages of the sample ranged from (2.6 - 8.11) years, and the researcher used the comparative study method to reach the results of the study, and the results showed that the scale was able to differentiate performance between children with communication disorders and normal children.

AbuEswailem and Al-Owaidy (2019) also conducted a study aimed at showing the effectiveness of a training program in light of behavioral theory in developing functional language skills for children with autism spectrum disorder. The study sample consisted of (9) children with autism spectrum disorder ranging in age from (4-8) in a center in Jordan, the One Single Subject Design approach was used, and the results of the study showed a remarkable improvement in all the linguistic skills under study (turn taking, maintain in topic, producing coherent and sequential sentences, maintain chronology, starting the conversation, eye contact, use of non-verbal aspects).

The present study aligns with certain prior research by employing a quasi-experimental methodology, utilizing a single-case design with pre-test and post-test assessments. Furthermore, it involves the development of a dedicated scale to gauge language skills, akin to certain previous studies. Additionally, it shares common ground with previous research in its focus on early childhood development.

What sets the current study apart is its comprehensive approach, addressing all language components, acquisition skills, and prerequisites. Notably, this study incorporates a linguistic scale in the Arabic language, which is seldom found within the Arab context.

3. METHOD AND PROCEDURES

The quasi-experimental single-case approach with pre- and post-measurements has been employed to align this methodology with the study's objectives. This approach is utilized in studies where it's feasible to control all variables, thereby ensuring minimal interference of one variable on another. This isolation permits focused investigation and examination of the effects between these two variables.

3.1. Participants

Selection of the sample: The research sample was selected from children enrolled in speech and

language centers in Amman. The sample was chosen through the available method, comprising participants who met the study's specific criteria. A series of tests were administered to the children, including the Language and Speech Capabilities Scale (LSCS), Amayreh (1994) Articulation Test, Behavioral Observation, and Oral Motor Assessment. The study focused on children between the ages of 3 and 8 years. Children with physical disabilities or injuries were excluded from the sample, as were those who had previously received training on any of the program's components and after applying the language and speech cababilities scale, (LSCS), a baseline (preliminary test results) was established.

3.2. Study Tools

To achieve the objectives of the study and answer its questions, the researcher used the following tools:

1. Language and Speech Capabilities Scale, (LSCS).
2. Building a program to develop language and speech skills.

First: The Language and Speech Capabilities Scale (LSCS), appendix no. (1).

3.2.1. Scale Description

The researchers prepared a test to measure language and speech abilities, and the scale consisted of (125) items divided into (5) domains: (1) auditory rehabilitation, (2) cognitive skills, (3) language, (4) speech, (5) muscular strengths, this scale is used by speech therapists in cooperation with parents and teachers of the child.

3.2.2. Scale Application

The assessor puts a sign (+) in the appropriate box that represents the child's ability to achieve the paragraph, which is divided into (3) levels, (1) the child's ability to do the skill, (2) the child's ability to do the skill with help, (3) the child's inability to do the skill.

3.2.3. Sample Description

Table 2: Description of the Survey Sample.

Domain	Number	Categories
Auditory rehabilitation	76	2
Cognitive skills	76	2
Language	78	2
Speech	78	2
Muscular strength	78	2
Total	78	2

The significance of the validity of the scale

- Content Validity

The scale was presented to a number of specialized arbitrators (n = 10) in the field of speech, language and special education from academics and workers in the field, for the purposes of reviewing the scale and expressing an opinion about the scale's suitability for what it was set for and to ensure the correctness of the linguistic formulation of the scale, and the paragraphs were approved which obtains (80%) of the agreement between the arbitrators or more, and the percentage of agreement between the arbitrators has reached (89%).

- The validity of the construction through correlation coefficients.

The correlation coefficients between the sub-dimensions of the scale were calculated, and the following tables detail the correlation coefficients of the dimensions in the Language and Speech Cababilities Scale with each other:

Table 3: Correlation Coefficients between the Main Dimensions of the Scale.

Domain	Results	Auditory rehabilitation	Cognitive skills	Language	Speech	Muscular strength	Total Results
Auditory rehabilitation	Pearson Connection	1					
	Indication						
	Number	75					
Cognitive skills	Pearson Connection	0.839	1				
	Indication	0.000					
	Number	75	75				
Language	Pearson Connection	0.787	0.944	1			
	Indication	0.000	0.000				
	Number	75	75	75			
Speech	Pearson Connection	0.725	0.860	0.920	1		
	Indication	0.000	0.000	0.000			
	Number	75	75	75	75		
Muscular strength	Pearson Connection	0.563	0.574	0.558	0.485	1	
	Indication	0.000	0.000	0.000	0.000		
	Number	75	75	75	75	75	
Total Results	Pearson Connection	0.870	0.979	0.981	0.903	0.625	1
	Indication	0.000	0.000	0.000	0.000	0.000	
	Number	75	75	75	75	75	75

Table 4: Correlation Coefficients of the Sub-Dimensions of the Language and Speech Csbabilities Scale (Auditory Rehabilitation) With Each Other.

Domain		Sound presence	Sound direction	Sound source	Environmental and linguistic sounds discrimination	Words discrimination and minimal pairs	Total Results
Sound presence	Pearson con. Indication Degree of freedom	1.000 - 0					
Sound direction	Pearson con. Indication Degree of freedom	0.355 0.002 72	1.000 - 0				
Sound source	Pearson con. Indication Degree of freedom	0.177 0.131 72	0.695 0.000 72	1.000 - 0			0.876 0.000 75
Environmental and linguistic sounds discrimination	Pearson con. Indication Degree of freedom	-0.596- 0.000 72	-0887- 0.000 72	-0.808- 0.000 72	1.000 - 0		
Words discrimination and minimal pairs	Pearson con. Indication Degree of freedom	-0.507- 0.000 72	-0.753- 0.000 72	-0.730- 0.000 72	0.745 0.000 72	1.000 - 0	
Total Results	Pearson con. Indication Number	0.876 0.000 75					1.000 0.000 76

Table 5: Correlation Coefficients Of The Sub-Dimensions Of The Language And Speech Cabalities Scale (Cognitive Skills) With Each Other.

Domain		Classification	Matching	Imitation	Memory	Total Results
Classification	Pearson con. Indication Degree of freedom	1.000 - 0				
Matching	Pearson con. Indication Degree of freedom	-0.224-	1.000 - 0			0.975 0.000 75
Imitation	Pearson con. Indication Degree of freedom	-0.611-	0.051	1.000 - 0		
Memory	Pearson con. Indication Degree of freedom	-0.421	-0.417	-0.279-	1.000 - 0	
Total Results	Pearson con. Indication Number	0.975 0.000 75				1.000 0.000 76

Table 6: Correlation Coefficients Of The Sub-Dimensions Of The Language And Speech Cabalities Scale (Language) With Each Other

Domain		Semantic	Syntax	Morphology	Phonology	Total Results
Semantic	Pearson con. Indication Degree of freedom	1.000 - 0				0.964 0.000 78
Syntax	Pearson con. Indication	0.072 0.540 72	1.000 - 0			

	Degree of freedom					
Morphology	Pearson con. Indication Degree of freedom	0.738 0.242 72	-0.171- 0.144 72	1.000 - 0		
Phonology	Pearson con. Indication Degree of freedom	0.926 0.000 72	0.091 0.440 72	0.170 0.147 72	1.000 - 0	
Total Results	Pearson con. Indication Number	0.964 0.000 78				1.000 0.000 78

Table 7: Correlation Coefficients Of The Sub-Dimensions Of The Language And Speech Cababilities Scale (Muscular Strength) With Each Other.

Domain		Sensation	Muscular strength	Range of motion	Total Results
Sensation	Pearson con. Indication Degree of freedom	1.000 - 0			
Muscular strength	Pearson con. Indication Degree of freedom	-0.940- 0.000 72	1.000 - 0		0.819 0.000 78
Range of motion	Pearson con. Indication Degree of freedom	-0.892- 0.000 72	0.684 0.000 72	1.000 - 0	
Total Results	Pearson con. Indication Number	0.819 0.000 78			1.000 0.000 78

3.3. Scale Stability Indications

The significance of the scale's stability was verified through internal consistency and stability through application and re-application. The following is an explanation of the results:

- Internal consistency

The stability of the scale was calculated by the method of internal consistency using (Cronbach's alpha) equation, according to the responses of the study members, where the scale was applied to an exploratory sample of normal children, children with autism spectrum disorder and children with language delay (n = 75) children, their ages ranged between (3 - 13) years, and Table (8) shows the values of stability coefficients computed by the internal consistency method.

Table 8: Stability Coefficients Computed By The Internal Consistency Method Using Cronbach's Alpha Equation For The Language And Speech Cababilities Scale.

No.	Scale domains	Internal consistency
1	Auditory rehabilitation domain	0.972
2	Cognitive skills domain	0.996
3	Language domain	0.857
4	Speech domain	0.864
5	Muscular strength domain	0.969
Total scale		0.996

- Scale stability by application and re-application.

The test was applied to a sample of children from outside the study members of the age group between (3 – 13) years of normal children, children with autism spectrum disorder and children with language delays (n = 75), and the test was re-applied to the same sample after two weeks, The correlation coefficient was calculated between the degrees of correlation in the two applications, and then the correlation coefficient between the two applications was calculated, and Table No. (9) shows a presentation of these results.

Table 9: The Stability Coefficients Calculated By The Application And Re-Application Method For The Language And Speech Cababilities Scale.

Domain	Results	Auditory rehabilitation	Cognitive skills	Language	Speech	Muscular strength	Total Results
Auditory rehabilitation	Pearson Connection	1.000					
	Indication	-					
	Number	6					
Cognitive skills	Pearson Connection	0.932	1.000				
	Indication	-	-				
	Number	6	6				
Language	Pearson Connection	0.905	0.982	1.000			
	Indication	-	-	-			
	Number	6	6	6			
Speech	Pearson Connection	0.848	0.938	0.928	1.000		
	Indication	-	-	-	-		
	Number	6	6	6	6		
Muscular strength	Pearson Connection	0.984	0.966	0.942	0.886	1.000	
	Indication	-	-	-	-	-	
	Number	6	6	6	6	6	
Total Results	Pearson Connection	0.948	0.994	0.991	0.931	0.975	1.000
	Indication	-	-	-	-	-	-
	Number	6	6	6	6	6	6

- Second: the training program, Appendix no (2) & (3).

The general objective of the training program.The training program aims to develop children's language and speech skills in the areas of (auditory rehabilitation, cognitive skills, language, speech, and muscular strength).

3.4. Objectives Of The Training Program Sessions

Since special education aims primarily to consider individual differences, the researchers have formulated all the training objectives that the trainer may need to apply to the child, so that the trainer will choose what is appropriate for the situation in terms of case objectives.

The significance of the validity of the program:

- Content Validity: The program was presented to a number of specialized arbitrators (n = 10) in Speech, language and special education, for the purposes of reviewing the program and expressing an opinion about the program's suitability for what it was designed for and to ensure the correctness of the wording and language of the program.

3.4.1. Program Activities And Parental Involvement

The training program was applied to eight children with language delays, aged 3-8, over approximately 48 weeks, comprising 140 sessions of 30 minutes each. The program's design was based on the milestones of normal language development and included a variety of activities aimed at enhancing different aspects of language and speech. A key component of the program's success was the active and mandatory involvement of parents and caregivers in every stage of the training.

- Detailed Program Activities

The program activities were structured to address the five main domains of the Language and Speech Capabilities Scale (LSCS):

1. Auditory Rehabilitation: Activities were designed to improve the child's ability to perceive, discriminate, and process sounds, which is fundamental to language development. This included exercises in sound identification, listening comprehension, and following auditory instructions.
2. Cognitive Skills: The program incorporated activities to enhance cognitive abilities that support language acquisition, such as memory, attention, problem-solving, and symbolic play.
3. Language: This domain included exercises to improve both receptive and expressive language skills. Activities focused on expanding vocabulary, building sentences, understanding grammatical structures, and comprehending the meaning of spoken language.

- Receptive Language Skills: Activities focused on improving a child's understanding of spoken language, including following instructions, identifying objects and pictures, and comprehending basic concepts (e.g., colors, shapes, sizes).
- Expressive Language Skills: This domain included activities to help children express themselves verbally, such as naming objects,

using simple sentences, and engaging in short conversations. Role-playing and story-telling were often used to practice these skills.

4. Speech and Articulation: Exercises were designed to improve a child's ability to produce clear speech sounds. These activities included drills for specific sounds, tongue and lip exercises, and practice with pronunciation of words.
5. Muscular Strength: Activities in this domain focused on developing the oral motor skills necessary for speech. Exercises were designed to strengthen the muscles of the lips, tongue, and jaw.
6. Social Communication Skills: The program included activities to help children use language in social contexts, such as greeting others, asking questions, and turn-taking in conversations.
7. Pragmatic Skills: This domain focused on the practical use of language, including understanding and using non-verbal cues, maintaining eye contact, and understanding social rules of communication.

3.5. Emphasis On Parental Role

The family is the primary nucleus in building societies, acting as the nurturing environment that prepares a child to learn the norms, values, habits, and culture of their society (Jaradat and AbuEswailem, 2025). A unique and critical element of this program was the active involvement of parents and family members. It was recognized that language development extends beyond the therapeutic setting and into the child's daily life, making the family's role essential. Therefore, parents were not just observers; they were active participants and co-therapists.

- In-Session Collaboration: Parents were present during most therapy sessions. The trainer demonstrated specific exercises and techniques, and parents were coached on how to apply them. This allowed parents to understand the rationale behind each activity and learn the correct methods for implementation.
- Homework Assignments: At the end of each session, the trainer provided parents with a set of exercises and activities to practice with the child at home. This practice reinforced the skills learned in the session and ensured consistent application in a familiar environment.
- Skill Generalization: The program explicitly included a phase for skill generalization. Family members, including siblings, were involved in activities to help the child use their newly acquired language skills in natural, everyday interactions. This was followed by encouraging the child to use these skills with people outside the immediate family circle, such as friends or extended relatives, to ensure the long-term maintenance and transfer of skills.

3.6. Study Procedures

To achieve the objectives of the study, the following were carried out:

- Determining the theoretical framework of the research: by reviewing the educational literature and previous studies and research related to the current research variables.
- Building the scale: After reviewing the scales used in evaluating and diagnosing children with language delays, and after reviewing a group of previous studies dealing with the sub-domains of the scale, the Language and Speech Capabilities Scale, (LSCS) scale was built and it contains (125) items, divided into (5) main domains, Appendix no. (1).
- Scale validity: The significance of the scale's validity (content validity) was reached by presenting the scale to a group of arbitrators with experience in speech, language and special education from university academics and from the field (n = 10), and the opinions of what was agreed upon (80%) were taken.
- Scale stability: Indicators of scale stability were found through Cronbach's alpha equation after applying the program to a sample of normal children and children with autism spectrum disorder (n = 75). Indications of scale stability were obtained using the application and re-application method.
- Selection of the sample: The research sample was selected from children enrolled in speech and language centers in Amman. The sample was chosen through the available method, comprising participants who met the study's specific criteria. A series of tests were administered to the children, including the Language and Speech Capabilities Scale (LSCS), Amayreh (1994) Articulation Test, Behavioral Observation, and Oral Motor Assessment. The study focused on children between the ages of 3 and 8 years. Children with physical disabilities or injuries were excluded from the sample, as were those who

had previously received training on any of the program's components and after applying the language and speech cababilities scale, (LSCS), a baseline (preliminary test results) was established.

- Building the training program: By reviewing the training programs offered to children with language delays, and by referring to the milestone of normal language development for children, the training program was built, Appendix no. (2) & (3).
- Validity of the program: The program was presented to a group of academic arbitrators and from the field to judge the validity of the content of the scale, and what was agreed upon by (90%) of the arbitrators was taken.
- Application of the scale: the scale was applied to the study members to obtain the results of preliminary tests and to determine the strengths and weaknesses of each child by the researchers.
- Program application: The training program was started for (8) children with language delays from speech centers located in Jordan, from the age group (3-8) years.
- The trainers: The training program was applied to the children by the researcher himself.
- Training duration: The implementation of the training program took approximately (48) weeks, with (140) training sessions for each child, the duration of the session (30) minutes, from (2/3/2024) to (11/3/2025).
- Final evaluation: the children were re-evaluated after the end of the training program to obtain the results of the post-performance of the study members.
- Statistical treatment: The necessary data was entered, and the appropriate statistical analysis was used, and the results of the study were obtained. Considering these results, they were discussed, and recommendations were made based on the findings.

4. RESULTS

The current study aimed to measure the effectiveness of a training program in developing language skills among delayed language children in a Jordanian sample. The study consisted of (8) children ranging in age from (3-8) years, suffering from language delay, by answering the main question:

What is the effect of the training program on developing language skills for a Jordanian sample of children with language delays?

In order to answer the study questions, the arithmetic means, medians, and standard deviations of the scores of children with language delay were calculated on the pre and post measurement of the Language and Speech Capabilities, (LSCS), and the Wilcoxon test for correlated samples was used to judge the significance of the differences between the degrees of pre- and post-measurement, and the following is a presentation of these results:

Table 10: Arithmetic Mean, Medians, And Standard Deviations Of Children With Language Delay In The Pre And Post Measurement Of The Language And Speech Capabilities, (LSCS).

Domain	Assessment						
	Pre – test				Post – test		
	Number	Median	Arithmetic mean	Standard deviation	Median	Arithmetic mean	Standard deviation
Auditory rehabilitation	8	28	27.38	8.21	40	39.125	1.80772
Cognitive skills	8	18.5	20.63	9.226	65.5	65.125	10.42576
Language	8	19.5	21.25	15.416	83.5	77.5	14.39246
Speech	8	1	1.63	0.916	5	4.875	0.64087
Muscular strength	8	22	17.50	6.279	22	22	0

Table 11: The Results Of The Wilcoxon Test For Correlated Samples Indicate The Differences Between The Pre- And Post Measurements Of The Language And Speech Capabilities Scale, (LSCS)

Domain		Number	Average rank	Total Rank	Z	Significance level
Auditory rehabilitation	Positive ranks	8	4			α=0.05
	Negative ranks					
	Total number			8	-2.371-	
Cognitive skills	Positive ranks	8	4.5			α=0.05
	Negative ranks					

	Total number			36	-2.524-	
Language	Positive ranks	8	4.5			α=0.05
	Negative ranks					
	Total number			36	-2.521-	
Speech	Positive ranks	8	4.5			α=0.05
	Negative ranks					
	Total number			36	-2.558-	
Muscular strength	Positive ranks	8	2			α=0.05
	Negative ranks					
	Total number			6	-1.633-	
Total	Positive ranks	8	4.5			α=0.05
	Negative ranks					
	Total number			36	-2.524-	

4.1. The First Child

Is a 3-year-old child. He is one of the children following treatment at speech center located in Jordan. He is the second child of a family consisting of (4) members, including the father, mother and one older male brother. The mother did not suffer from any Problems during pregnancy and delivery, and the baby's motor development was within the stages of normal growth, the parents noticed a problem with the child at the age of (2.8) years, as the parents noticed that the child does not express his needs, whether by sounds or by signs.

The child was enrolled in the speech center on 2/3/2024, and several measures have been applied to the child, including: Language and Speech Cababilities Scale (LSCS), Amayreh (1994) Articulation Test, Behavioral Observation, and Oral Motor Assessment. The tests showed that the child suffers from severe language delays, in addition to poor social communication skills.

The performance of the pre and post treatment was evaluated on the Language and Speech Capabilities Scale (LSCS), and Table (12) shows the performance of the first child on the scale.

Table 12: Scores Of The First Child On The Language And Speech Capabilities Scale, (LSCS).

Domain Score	Auditory rehabilitation	Cognitive skills	Language	Speech	Muscular strength	Total Results
Max degree	40	80	102	6	22	250
Initial performance	27	17	6	1	8	59
Post performance	40	68	85	5	22	220
Percentage of improvement	32.5%	63.75%	77.5%	66.6%	63.6%	64.4%
* Percentage of improvement = Score on post-performance - Score on pre-performance x 100% Maximum degree (field/scale						

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It is noted from Table No. (12) that the percentage of improvement for the child on the scale reached (64.4%), and that the highest percentage of improvement was in the language field, which amounted to (77.5%), followed by the improvement in the field of speech, which amounted to (66.6%). Then followed by the improvement in the field of muscular skills, at a rate of (63.75%), and the improvement by (66.6%) got the penultimate rank and was for muscle strength, while the lowest

percentage of improvement was in the field of auditory rehabilitation, which amounted to (32.5%), and the figure No. (1) shows the performance of the first child on all domains in the pre and post measurements on the Language and Speech Capabilities Scale (LSCS).

The performance of the first child on all domains in the pre and post measurements on the Language and Speech Capabilities Scale (Language and Speech Capabilities Scale, LSCS).

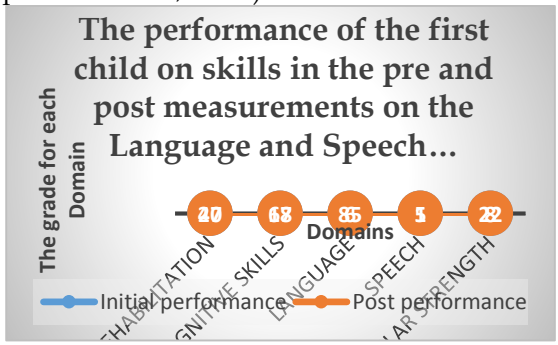

Figure 1: The Performance of the First Child on All Domains in the Pre- and Post-Measurements on the Language and Speech Capabilities Scale (LSCS)

It is noted from Figure No. (1) that the degree of performance on the pre-measurement of the field of auditory rahabilitation reached (27) degrees, and the degree of performance on the post-scale after the completion of the application of the program became (40) degrees, with a difference of (13) degrees, and in the field of cognitive skills, the Performance on the pre measurement was (17) degrees, while the degree of performance on the post-measurement after applying the program reached (68) degrees, with a difference of (51) degrees. In the language domain pre- measurement was (6) degrees and on the post measurement it reached (85) degrees, with a difference of (79) degrees, and in the field of speech, the progress was by a difference of (4) degrees. The pre- measurement in the field of muscular strength was (8) degrees, and on the posr-measurement, it reached (22) degrees, with a difference of (16) degrees in favor of the post measurement.

The implementation of the training program for the first child began on (2/3/2024), and the child's strengths and weaknesses in the field of speech and language were identified through the application of appropriate tests and based on the results of the Language and Speech Capabilities Scale, LSCS. Goals have been set for the child that are commensurate with his strengths and weaknesses. The child's goals have included all the language skills mentioned in the scale. Some important points have been noted for the child, including:

- The child does not respond to direct commands.
- The child has a linguistic score less than his chronological age.
- The child shows a clear weakness in the skill of eye contact.
- The child produces some random sounds.
- The child communicates with parents and others to express his needs through crying and screaming.
- The child has difficulty interacting with others other than the parents.
- The training with the child was completed on 11 March 2025, with (140) training sessions.

4.2. Second Child

Is a 6.3-year-old child. He is one of the children following treatment at speech center located in Jordan. He is the first child of a family consisting of (3) members, including the father and mother. The mother did not suffer from any problems during pregnancy and delivery. The child's motor development was within the stages of normal growth. The parents noticed that the child had a problem at the age of (4) years, and the parents were late in following up on treatment since there were cases of family history that were delayed in speech and language.

The child was enrolled in the speech center on 2/3/2024, and several measures have been applied to the child, including: Language and Speech Cabalities Scale (LSCS), Amayreh (1994) Articulation Test, Behavioral Observation, and Oral Motor Assessment. The tests showed that the child suffers from language delay of medium degree, in addition to weak social communication skills. The performance of the pre and post child was evaluated on the Language and Speech Capabilities Scale (LSCS), and Table (11) shows the performance of the second child on the scale.

Table 13: Scores Of The First Child On The Language And Speech Capabilities Scale, (LSCS).

Domain Score	Auditory rehabilitation	Cognitive skills	Language	Speech	Muscular strength	Total Results
Max degree	40	80	102	6	22	250

Initial performance	23	20	25	2	11	81
Post performance	40	80	95	6	22	243
Percentage of improvement	%42.5	%75	%68.6	%66.6	%50	%64.8

It is noted from Table No. (13) that the percentage of improvement for the child on the scale has reached (64.8%), and that the highest percentage of improvement was in the field of cognitive skills, reaching (75%), followed by improvement in the field of language, which reached (68.6%). then followed by the improvement in the field of speech at a rate of (66.6%), and the improvement by (50%) occurred on the penultimate rank and was for muscle strength, while the lowest percentage of improvement in the field of auditory rehabilitation reached (42.5%), and the figure No. (2) shows The performance of the second child on all domains in the pre and post measurements on the Language and Speech Capabilities Scale (LSCS).

measurement.

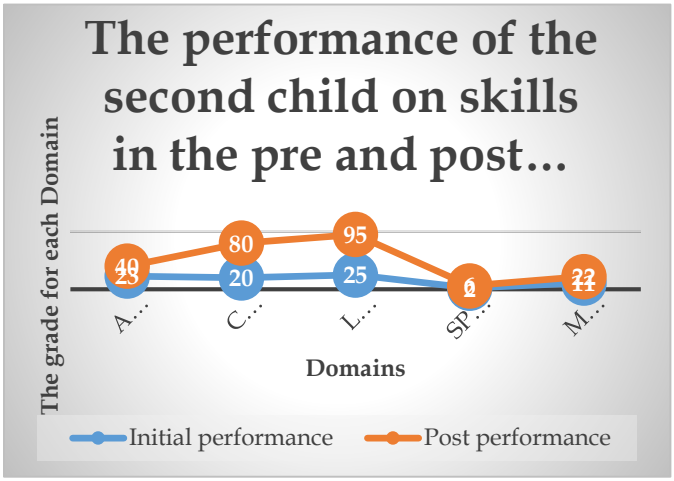

Figure 2: The Performance Of The Second Child On All Domains In The Pre And Post Measurements On The Linguistic And Verbal Abilities Scale.

It is noted from Figure No. (2) that the degree of performance on the pre-measurement of the field of auditory rahabilitation reached (23) degrees, and the degree of performance on the post-scale after the completion of the application of the program became (40) degrees, with a difference of (17) degrees, and in the field of perceptual skills, the performance on the pre measurement was (20) degrees, while the degree of performance on the post-measurement after applying the program reached (80) degrees, with a difference of (60) degrees. In the language domain the pre- measurement was (25) degrees and on the post measurement it reached (95) degrees, with a difference of (60) degrees, and in the field of speech, the progression was by a difference of (4) degrees. The tribal measurement in the field of muscular strength was (11) degrees, and on the post measurement it reached (22) degrees, with a difference of (11) degrees in favor of the post

The application of the training program for the second child began on (5/8/2022), and the child's strengths and weaknesses in the field of speech and language were identified, based on the results of the Language and Speech Capabilities Scale, LSCS, and based on the results of the initial impression. For the evaluation session, goals were set for the child in proportion to his strengths and weaknesses. The child's goals included all language and pronunciation skills. Some important points were noted for the child, including:

- The child shows a good response to the presence of sound stimuli around him, but he does not understand the names and vocabulary around him in a way that is appropriate for the chronological age of the child.
- The child shows a good level of cognitive skills, except for the memory skill, where it is difficult to measure this skill in such abilities.
- The child points and produces a very limited number of words and vocabulary.
- The child can produce different forms of sounds and syllables.
- The child expresses his needs using single words and simple two-word sentences.
- The child shows symptoms of slight weakness in the muscular strength and the sensory abilities of the speech organs.

The training with the child was completed on 11 March 2024, with (140) training sessions. The overall results of the sample members The following is a presentation of the total results of the sample members on the Language and Speech Capabilities Scale (Language and Speech Capabilities Scale, LSCS).

Table 14: The Performance Of The Study Members On The Language And Speech Capabilities Scale, LSCS, On The Five Domains In The Pre And Post Measurements.

Child No.	Auditory rehabilitation Total score = 40		Cognitive skills Total score = 80		Language Total score = 102		Speech Total score = 6		Muscular strength Total score = 22		Total Total score = 250	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	29	35	9	54	14	58	1	4	11	22	64	173
2	32	38	37	59	20	66	1	4	22	22	112	189
3	32	40	29	67	56	85	3	5	22	22	142	219
4	40	40	25	78	9	90	3	5	22	22	99	235
5	27	40	17	68	6	85	1	5	8	22	59	220
6	12	40	13	64	21	82	1	5	22	22	69	213
7	23	40	20	80	25	95	2	6	11	22	81	243
8	24	40	15	51	19	59	1	5	22	22	81	177

Table (14) shows that there are differences between the averages of performance on the pre- and post-measurement for all study members, where the largest difference in the performance of the child no. (7), where the total sum of the pre-performance was (81) and the total sum of performance on the post-measurement was (243) With a difference of (162) degrees, the least difference in performance between the pre- and post- measurements of the two children (2) and (3) was a difference of (77) degrees between the two performers, where the total degree of performance on the pre- measurement of the child (2) reached (112) degrees , while the total score on the post-measurement reached (189) degrees, and the total score for performance on the pre- measurement of the child (3) reached (142) degrees, while the total score on the post-measurement reached (219) degrees, and the total score for performance on the pre- measurement of the child (1) (64) degrees, while the total score on the post-measurement reached (173) degrees, with a difference of (109) degrees, and the total score of performance on the pre-measurement of the child (4) reached (99) degrees, while the total score on the post-measurement reached (235) with a difference degree of (136) degrees, and the total score for the performance on the pre- measurement of the child (6) reached (69) degrees, while the degree of a the post measurement reached (213) degrees with a difference of 144 degrees, and the total score for performance on the pre- measurement of the child (5) reached (59) degrees, while the total degree on the post measurement reached (220) degrees with a difference of (161) degrees, and the total score of the performance on the pre-measurement of the child (8) reached (81) degrees, while the total score on the post-measurement reached (177) degrees, with a difference of (96) degrees.

5. DISCUSS RESULTS AND RECOMMENDATIONS

The current study aimed to measure the effectiveness of a training program in developing language and speech skills for children with delay and disorder language in a Jordanian sample. In order to answer the main question of the study, the results were presented from the performance of the study members, which consisted of (8) children with delays or language disorders who followed training in speech centers located in Jordan, whose ages ranged between (3 – 8) years, and in light of the discussion of the results that were reached in the current study, a number of recommendations were presented.

5.1. Discussing The Results Of The First Child

The results showed an improvement in the first child in the results of the post-measurement, where the percentage of improvement was (64.4%) in all areas of language and speech used in this study, and this improvement may explain the effectiveness of the training program in developing language and speech skills of the child, and the results of the study indicate the percentage of improvement in the language field has reached (77.5%), which is the highest improvement rate for this child, and this can be explained by the child's interaction with the training program and his acceptance of the researcher. While the percentage of improvement in the field of auditory rehabilitation (32.5%), which is the least improvement rate for this child, and this

percentage explains that the child had some skills in this area before starting the training, and this improvement may explain that this area is a prerequisite for acquiring the language it must not be fully developed and improved to show the results of the subsequent fields, in addition to the seriousness and commitment of the researchers in applying the program. The results of the study also showed an improvement in performance (63.75%) in the field of perceptual skills. which may not be directly related to the ability to speak, but rather it is a prerequisite for speech, and the percentage improvement in the field of speech reached (66.6%), which is the highest percentage that a child can obtain as he produces all sounds appropriate for his chronological age, and the percentage improvement has reached also in the field of muscular strength (63.6%), which is the highest percentage that a child can obtain. Figure (1) shows the performance of the first child on the domains in the pre and post measurements on the Language and Speech Capabilities Scale, LSCS.

5.2. Discussing The Results Of The Second Child

The results showed an improvement in the second child in the results of the post-measurement, where the percentage of improvement was (64.8%) in all areas of the language used in this study, and this improvement may explain the effectiveness of the training program in developing language and speech skills, and the results of the study indicate that the percentage of improvement in performance in the field of perceptual skills was (75%), which is the highest percentage of improvement achieved by the child. The explanation for this improvement may be due to the importance of learning these skills as a prerequisite for language acquisition. As for language, the percentage improvement percentage was (68.6%). This improvement is explained by the importance of language components in terms of communicating with others and the child's need to acquire these skills. While the percentage improvement in the field of speech was (66.6%), which is the highest degree a child can obtain as he produced all sounds appropriate for the chronological age, and this can be explained by the lack of the presence of problems in the child that lead to weak production of sounds with the exception of language problems, which were previously trained in the previous field, which also explains the percentage improvement of (50%) in the child in the field of muscular strength, which is the highest percentage that the child can obtain as well.

5.3. Recommendations

Based on the findings of this study, the following recommendations are made:

- Educational recommendations

1. Adoption of the Proposed Program: We recommend adopting the proposed training program for developing language skills in children with language delays.
2. Parental Involvement: Emphasize the need to involve parents in their children's programs. This highlights the importance of using language in both social and home environments, not just in educational settings.

- Research recommendations

1. Use of a Control Group: Future research should include a control group to strengthen the causal claims of the program's effectiveness. This would help confirm that the observed improvements are directly attributable to the training program.
2. Larger-Scale Study and Scale Codification: Conduct a study on a larger sample size using the Language and Speech Capabilities Scale (LSCS), with a focus on standardizing and codifying the scale for wider use.

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Declarations: Ethics approval and consent to participate: The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee for Scientific Research (ECSR) at Zarqa University, (1/3/2024). Informed written consent was obtained from the parents of all the subjects involved in the study to detail the purpose of the research and ensure the confidentiality of their information, and no personal data were obtained from the participants or their parents. A consent form to participate in the research was signed by the parents of the participants before the child's initial assessment.

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