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DIAGNOSING APRAXIA OF SPEECH IN SLOW LEARNING PUPILS

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ABSTRACT

This research aimed to identify apraxia of speech for slow learning pupils, and to identify statistically significant differences in apraxia of speech, according to the gender variables (males, females), and grade (second, fourth) for slow-learning pupils. The researcher constructed the scale apraxia of speech after translating the standards set by the American Society for Speech, Language and Hearing into Arabic, and after presenting it to a group of experts, the scale would consist of (34) paragraphs in a final form. Then the researcher applied the scale on an intentionally selected sample, where the research community consisted of slow learning students who suffer from speech and language disorders in the primary schools of the Holy Karbala State Education Directorate, whose number is (n=170) and the number of males and females is (n=106) in the second grade and the number of males and females (n=64) are in fourth grade. The researcher used the descriptive correlational search method in collecting the data. The validity and reliability of the scale were verified and the appropriate statistical means were used, and it was extracted by means of the SPSS data package. The result in Table (1) indicates the existence of a statistically significant difference, as the calculated T value of the apraxia of Speech Scale reached (4,583) degrees, which is greater than the tabular value of (1,960) degrees. The result in Table (2) indicates there is no statistically significant difference in apraxia of speech according to the

gender variable, as the calculated mean value was (0.436), which is less than the tabular value (3.84), at a level of significance (0.05) and a degree of freedom (169), and this indicates that the male and female subjects of the research sample had the same level of apraxia of speech. There is a statistically significant difference in apraxia of speech according to the stage variable, as the calculated Fatal value (38.27) was greater than the tabular value (3.84) in favor of the second grade, as the arithmetic mean of their scores reached (79,257) degrees, which is greater than the arithmetic mean For the fourth-grade grades (67,26) marks. The research sample, who are slow learners, had high levels apraxia of speech. The results also indicated that apraxia of speech didn't make a difference in gender (males, females). The results also indicated that the severity apraxia of speech decreased as the student progressed through the other educational stages, due to the accumulation of educational experiences.

Introduction

Speech is the main means of communication through which the language stored in the specialized language regions of the brain is expressed. Apraxia Speech is one of the most common disorders that hinder language communication in children, and this was confirmed by (Shriberg& Campbell, 2012), who stated that (65%) From children with symptoms apraxia of speech; Which is represented in the inability to control the movements of the pronunciation members despite their integrity, and the difficulty of producing and retrieving words correctly, in addition to the deletion, addition or replacement of the sounds of a single word. Several studies and research, such as the study (Mesibov et al, 2004), have confirmed that a child suffering from apraxia of speech has difficulty with proper language communication. Whereas, the complete or partial disruption of the speech function means that the child loses the means by which he expresses what is inside him, his feelings, and his thoughts (Taha, 2017, p. 827).

Therefore, the researcher formulated the justifications for choosing the current topic of research in the following main question:

- What is the prevalence apraxia of speech, and is there a relationship between it and Attention Deficit and its negative effects on slow-learning students, and the following question is divided into:

1. Those who follow the field of special education will notice a clear lack of interest in the segment of slow-learning pupils, especially those with speech and speech disorder, and the apraxia of speech in children is considered one of the most important of these disorders.

2. The researcher believes that the possibility of the presence of speech CAS in pupils constitutes a very important risk to the language development of children at the most important stage of their development, especially if it coincides with another disorder such as learning difficulties.

3. Because of the scarcity of Arabic studies (to the best of the researcher's knowledge) that were subjected to early, accurate and diagnostic detection and help in alleviating

the severity apraxia of speech, all justifications increase the importance of choosing this research.

4. Are there appropriate and adequate treatment methods and programs for such a disorder?

5. The extent to which teachers working in the field of special education know this disorder and what are their special methods for it.

6. Is there apraxia of speech disorder in schools that incubate slow-learning pupils?

7. The extent of its impact on the process of language development among slow-learning students.

8. The category that will be covered by the research is from the categories of people with special needs who are slow-learning students who suffer from difficulties in speech and speech, being one of the most difficult developmental disorders for the student and for the parents and caregivers in the field of special education, as well as what this disorder needs in terms of continuous follow-up and accurate diagnosis. This requires the availability of therapeutic interventions and special educational methodologies based on the descriptive method of analysis.

The importance of the current research stems from the importance of the childhood stage, as the childhood stage has a special importance for society as the basic basis on which the following stages of development are built (Al-Sayed, 1975, p. 18). Our knowledge of how early experiences affect the personality of the individual makes us more interested in raising the child and overcoming many of the problems that he faces in society (Adas and Tawq, 1984, p. 66) and thus this upbringing aims to provide the appropriate environment for the child's growth and development from the psychological point of view, whether mentally, Emotional or social (El-Sayed, 1975, p. 19). All this highlights the need for modern education to pay attention to and care for the growth and maturity of the child on the one hand, and the medium in which he acquires his experiences on the other hand (Kattami, 1990, p. 12).

Therefore, the importance of the current research derives from the extent to which it is accurately diagnosed with all the details of Apraxia of speech and its justifications through research, investigation, interview and special tools for diagnosis, and treatment of the causes that lead to it with all that the time, effort and accurate information provides, and its role in the upbringing and preparation of children with apraxia of speech, to acquire learning skills The correct linguistic, and the importance is divided into theoretical and practical, as follows:

1. It is considered a starting point for the theoretical rooting of apraxia of speech disorder at the local and Arab levels.

2. The current research is the first study in Iraq and the Arab world (to the best of the researcher's knowledge) dealing with apraxia of speech.

3. The importance of early intervention to deal with mild cases of apraxia of speech and eliminate the causes.

4. The results of this research contribute to enriching theoretical literature and adding information and knowledge in the Arab countries in general and Iraq in particular, in

addition to translating and adapting a scale of apraxia of speech, it will be a theoretical addition to the measurement and diagnosis movement in the field of speech, speech and language disorder as a whole.

5. Attempting to shed light and enlightenment of teachers, psychologists and those in charge of the educational process by means of detection and diagnosis of pupils with apraxia of speech.

6. The relative recentness of the (apraxia of speech) variable despite the widespread interest in it in foreign research; This represents a new breakthrough for local and Arab research topics that may contribute to treating speech and speech disorder on a larger scale.

Aim to search:

1. Recognition of apraxia of speech in slow-learning students

2. Identify the statistically significant differences in apraxia of speech according to the sex variables (males, females) and grade (second, fourth) of slow-learning students.

Search limits:

1. **The human limit:** The research was limited to slow-learning pupils, who are diagnosed in schools covered by educational inclusion, in the second and fourth grades of primary.

2. **Limit Temporal:** second semester of the year (2020-2021).

3. **Spatial boundary:** the governmental elementary schools affiliated to the General Directorate of Education in the holy Karbala Governorate (the governorate center and some districts).

The World Health Organization (World Health Organization [WHO], 2019), in its book (ICD-11) in Chapter (6) entitled Neurodevelopmental Disorders, refers to speech reflexology, in childhood, symbolized by (6A01.0) and describes it as: Developmental speech sound disorder is characterised by difficulties in the acquisition, production and perception of speech that result in errors of pronunciation, either in number or types of speech errors made or the overall quality of speech production, that are outside the limits of normal variation expected for age and level of intellectual functioning and result in reduced intelligibility and significantly affect communication. The errors in pronunciation arise during the early developmental period and cannot be explained by social, cultural, and other environmental variations (e.g., regional dialects). The speech errors are not fully explained by a hearing impairment or a structural or neurological abnormality (WHO, 2019, p. 4).

Darley (1969) states that speech CAS is a speech disorder, as a result of brain damage, that leads to impairment in the ability to program the position of speech muscles and the sequence of muscle movements for the voluntary production of phonemes. It can occur without weakness, slowness, or inconsistency in reflexes and automatic actions (Darley, 1969).

After compiling a list of more than 50 definitions, the American Society for Speech, Language, and Hearing Apraxia in Children has proposed the following practical definition that continues to form the basis for designing a diagnosis and intervention over the past ten years, the committee proposes the following definition:

Childhood apraxia of speech (CAS) is a neurological childhood (pediatric) speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits (e.g., abnormal reflexes, abnormal tone). CAS may occur as a result of known neurological impairment, in association with complex neurobehavioral disorders of known or unknown origin, or as an idiopathic neurogenic speech sound disorder. The core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody. Review of the research literature indicates that, at present, there is no validated list of diagnostic features of CAS that differentiates this symptom complex from other types of childhood speech sound disorders, including those primarily due to phonological-level delay or neuromuscular disorder (dysarthria). Three segmental and suprasegmental features that are consistent with a deficit in the planning and programming of movements for speech have gained some consensus among investigators in apraxia of speech in children: (a) Inconsistent consonant and vowel defects in repeated syllable or word outputs, (b) lengthened and disrupted coarticulatory transitions between sounds and syllables, and (c) inappropriate prosody, especially in the realization of lexical or phrasal stress. Importantly, these features are not proposed to be the necessary and sufficient signs of CAS (ASHA, 2007, pp. 3-4).

Prevalence of speech apraxia in children:

As with several other complex neurobehavioral disorders (e.g., autism, attention deficit hyperactivity disorder), the prevalence of CAS has reportedly increased substantially during the past decade. For example, in a study of 12,000 to 15,000 estimated diagnostic outcomes for children referred with speech delay of unknown origin from 1998 to 2004, a staff of 15 speech-language pathologists in a large metropolitan hospital diagnosed 516 (3.4%–4.3%) of these children as having suspected CAS (Delaney & Kent, 2004).

One of the primary estimates based on clinical referral data indicated that speech CAS may occur in (1-2) children per (1000) children, indicating that it occurs less frequently than vocal disorders or special language difficulties (Shriberg et al., 1997a, p. 276)

One issue that is often mentioned among experts is the prevalence of children's speech apraxia by gender. Many studies describe that pediatric speech apraxia as a disorder is more present in the male population (Perkovic, 2018, p.10).

Characteristics Most Specific to apraxia of speech:

- **Inconsistent errors on consonants and vowels in repeated productions of syllables or words**

This feature refers to *token-to-token inconsistency*, which is variability in the way a specific word is produced across multiple attempts. For example, within the same

session, a child may produce *banana* as "babana," "bana," and "nana." In a three-year longitudinal study, (Marquardt et al., 2004) found high levels of token-to-token inconsistency in the connected speech of children with CAS (Fish, 2016, pp. 9-10)

- **Lengthened and disrupted coarticulatory transitions between sounds and syllables**

Children with CAS may demonstrate pauses (lengthened coarticulatory transitions) between sounds and syllables (that are not part of the natural rhythm of language), resulting from challenges making smooth transitions from phoneme-to-phoneme or syllable-to-syllable. The pauses and breaks between phonemes may give the child's speech a staccato quality, thus affecting prosody (Fish, 2016, p. 10)

- **Inappropriate prosody, especially in the realization of lexical or phrasal stress**

Children with CAS may exhibit a number of prosodic differences (Shriberg, et al., 1997b). The most notable is the use of excessive equal stress. Excessive equal stress occurs when the speaker uses emphatic stress on each syllable of a word or across all or most words of a sentence. Children who use excessive equal stress have a robotic quality to their speech both speech intelligibility and the listener's impression of the speech (Fish, 2016, pp. 10-11).

Characteristics Diagnostic Additional Associated with Apraxia of speech:

A large number of additional characteristics have been described in the speech and language literature as being observed in children with CAS (Davis et al., 1998; Davis &Velleman, 2000; Forrest, 2003; Hall et al., 1993; Rosenbek& Wertz, 1972; Shriberg et al., 1997a, 1997b). These characteristics are not necessarily seen in all children with CAS, and also may, in fact, be observed in children with other types of speech-sound disorders and language disorders. They are, however, observed frequently enough that clinicians and researchers often cite them when describing features of children with CAS. The speech and nonspeech characteristics that were described previously as being most sensitive and specific to CAS, as well as additional characteristics frequently cited in children with CAS (but not specific to CAS) are described in the following sections. They are divided into five areas: speech characteristics, nonspeech motor characteristics, suprasegmental characteristics, linguistic characteristics, and educational characteristics. These features also are included in the Checklist of Childhood Apraxia of Speech Characteristics.

Speech Characteristics

- Inconsistency/Variability:

1. Token-to-token inconsistency (variations in repeated productions of the same word)

2. Phoneme error variability (phonemes produced differently on different occasions, e.g., /s/ produced as /s, t, p, h/)

3. Positional variability (phonemes produced correctly only in certain positions of words)

- Contextual limitations (phonemes produced correctly only in certain words or in certain facilitating coarticulatory contexts)
- Atypical errors (phonetic and phonemic errors not commonly observed in children with articulation or phonological disorders)
- Syllable segregation (noticeable within-word gaps between syllables)
- Limited phonetic inventory of consonants and vowels
- Higher than expected incidence of vowel errors (distortions, substitutions, omissions)
- Predominant use of simple syllable shapes
- Increased errors as the complexity of the syllable shape increases
- Connected speech is more unintelligible than the child's phonetic inventory or results on a single-word articulation test suggest
- Limited vocalizations/babbling during infancy
- Limited diversity of babbled phonemes before the age of two
- Differences in performance of automatic versus volitional speech
- Groping/struggling to speak
- Atypical levels of regression (loss of sounds or words)
- Poor diadochokinesis (reduced rates and poor coordination)

Nonspeech Motor Characteristics

- Difficulty imitating and sequencing nonspeech oral movements
- Possible difficulty (or history of difficulty) with feeding
- Possible drooling
- Later attainment of motor milestones (e.g., crawling, walking)
- Poor fine and gross motor coordination

SuprasegmentalCharacteristics

- Prosodic disturbances (atypical lexical and phrasal stress, intonation, and/orrhythm of speech; excessive equal stress)
- Prolonged pauses or breaks between phonemes, syllables, and words
- Vocal pitch differences (lack of variation in vocal pitch)
- Rate differences (typically slower rate of speech, though rate may be rapid orfluctuating)
- Loudness differences (lack of variation in vocal loudness)
- Resonance differences (hypernasality, hyponasality, or fluctuating resonance)

Linguistic Characteristics

- Slow development of speech (late to produce first words)
- Receptive language (typically) exceeds expressive language, although receptivelanguage also may be delayed
- Morpho-syntactic difficulties (word order confusion, incorrect use or omissionof grammatical morphemes, telegraphic speech)
- Social/pragmatic language difficulties

Educational Characteristics

- Greater risk of literacy difficulties (reading, spelling, writing); delayedphonological awareness skills (Fish, 2016, p. 15-16).

Causes apraxia of speech:

The American Speech-Language-Hearing Association (2007) states:

Epilepsy

CAS has been noted as comorbid with or a sequela of several forms of epilepsy, including benign rolandic epilepsy and autosomal dominant rolandic epilepsy, the latter of which is a rare form associated with more severe and long-term communicative disorders. (Scheffer et al., 1995) provided interesting research hypotheses on the diagnostic significance of comorbid epilepsy and apraxia, again underscoring the value of studying apraxia in the context of well-characterized neurological and complex neurobehavioral disorders. (ASHA, 2007, p. 27).

Fragile X Syndrome

Fragile X syndrome is a genetically transmitted complex neurobehavioral disorder in which speech and prosody deficits are associated with reduced intelligibility (Roberts et al., 2003). Reports indicate that some of these deficits overlap with diagnostic criteria for CAS, but the measures used to assess the nature of speech and prosody involvement have typically not been well developed. At the time this report was in preparation at least one research study in process was attempting to replicate the (Spinelli et al., 1995) findings of apraxia of speech in 40% of a small sample of children with fragile X syndrome. (ASHA, 2007, p. 27).

Galactosemia

Some form of CAS reportedly also occurs in 40%–60% of children with one of the several genetic forms of the metabolic disorder, galactosemia (Elsas et al., 1995; Webb et al., 2003). At the time this report was in preparation, a study of CAS in galactosemia was in process using a relatively large sample of children with this disorder. (ASHA, 2007, p.27- 28).

Rett Syndrome

Rett Syndrome Research indicates and speech apraxia are reportedly part of the sequence of neurological dysfunctions that characterize the degenerative course of expression of Rett syndrome. Because the apraxic disorder is so profound that

children at this stage essentially do not speak (Bashina et al., 2002; Schanen et al., 2004), it is difficult to study speech apraxia in individuals with this neurobehavioral disorder. Study suggests (Wang et al.,2004) Genetic studies indicate that the molecular regions involved in Rett syndrome include susceptibility genes for a number of disorders reported to involve speech-language deficits (ASHA, 2007, p. 28).

Chromosome Translocations Involving Deletions and Duplications

The results indicate that a deficiency in the FOXP2 gene may adversely affect the development of neural networks involved in learning and / or planning and executing speech motor sequences (ASHA, 2007, p. 37-38).

Views that interpreted apraxia of speech:

Abnormalities in brain activity:

Clinical findings by (Liégeois et al., 2003) demonstrate that affected individuals of the KE family exhibit extremely abnormal fMRI brain activation when performing both overt and covert action formation tasks, as well as when word repetition so that the FOXP2 gene may have an important role in developing a network anterior is presumed involved in the learning and / or planning and execution of motor speech sequences, similar to those involved in other types of motor skills (ASHA, 2007, p. 49).

Bilateral abnormalities in gray matter:

Some neurological studies report bilateral abnormalities in gray matter were examined Three generations of family the K.E. Also, an increased density of gray matter in the brain structure was found. These changes in gray matter are associated by the authors with genetically conditioned neurodevelopmental processes (Lewis et al., 2004a). And he declared (Liégeoiset al., 2003,pp. 1230, 1234)Abnormally low levels of gray matter density have been found [in affected KE family members] in the inferior frontal gyrus, the head of the caudate nucleus, the precentral gyrus, the temporal pole, and the cerebellum, whereas abnormally high levels of gray matter density have been found in the posterior superior temporal gyrus (Wernicke's area), the angular gyrus, and the putamen. How these structural abnormalities affect brain function during language processing remains unclear. The aim of the present study was to determine the pattern of brain activation associated with the FOXP2 mutation in the KE family using functional magnetic resonance imaging (fMRI). We predicted that the regions that are morphologically abnormal bilaterally in the affected members would also be functionally abnormal, as evidenced by performance on language tasks (ASHA, 2007, p. 48).

Differences in white matter volume:

reported significant differences in white matter volumes bilaterally in affected compared to nonaffected KE family members and controls, with affected family members having both larger and smaller volumes at different neuroanatomic sites. These morphometric data underscore the complexity of the pathophysiology of CAS in these family members (Watkins et al., 2002). Although there may not be a clear understanding of the specific neuroanatomical site(s) impacting the motor planning

and/or programming difficulties observed in children with apraxia of speech (Rosenbek& Wertz, 1972). there is agreement in the research community that CAS is a neurologically based problem (ASHA, 2007). In essence, the neurological system (the brain) is not adequately directing the actions of the motor system (the muscles used for speech) (Fish, 2016, p. 4).

Cerebellar dysfunction:

The overlap of neural substrates that serve these systems (Jäncke et al., 2007; Kent, 2004; Leiner et al., 1991, 1994). For instance, cerebellar dysfunction could yield co-occurring speech, motor, and cognitive–linguistic deficits (BrackeTolkmitt et al., 1989; Leiner et al., 1991, 1994).

Left anterior posterior lobe damage:

due to damage to the posterior left frontal lobe, however, damage to the posterior left frontal lobe affects more than just the planning and programming of speech movements. the posterior left frontal lobe communicates with other areas of the brain to phonological (the sounds involved in speech) and semantic (the meaning of words) semantics and phonology may also be affected, due to the lack of communication between lobes (Gold & Buckner, 2002).

Weakness of brain sections:

Several patients were diagnosed with damage to the left side subcortical structures, islet regions, and Broca's area with apraxia of speech. It is usually caused by vascular disease, but apraxia of speech can also arise as a result of tumors and injuries(Ogar et al., 2005).

Anomalies in the development of neural mechanisms:

Data from some studies (Vargha-Khadem et al., 1998) indicate that the development of the neural mechanisms that mediate the acquisition of fine motor coordination (both vocal and non-vocal) and speech and language are interrelated, with abnormalities in one associated with a defect in the other (ASHA, 2007, p. 26).

Deficiencies in the relationship between cognition and some aspects of motor processing:

Several theoretical frameworks for CAS posit that core deficits are in the relationship between perception or sensory processing and some aspect of motor processing. (Maassen, 2002, p. 265), for example, proposed that deficient sensorimotor learning leads to weak prelinguistic articulatory–auditory mappings, which in turn fail to support full phoneme-specific mappings. He noted that higher-level knowledge. must be acquired by the child via the problematic speech production and perception skills (ASHA, 2007, p. 21).

Deficits in integration or coordination across different levels:

A further common theme in all such discussions is a deficit in integration or coordination across different levels proposed to be relevant to speech production (and, in some cases, speech perception as well). Such levels include syllabic, phonemic, or motor representations; motor plans and/or programs; and neuromotor

group networks. Thus, multiple levels of speech motor processing, and the relationships among them, have been implicated in processing perspectives on apraxia of speech (ASHA, 2007, p. 22).

Slow learning

1) The National Committee for Special Education in Iraq (1985): that they are normal children within their general framework, but they find it difficult for one reason or another to reach the educational level that their normal peers reach on average, and it is not classified among the mentally retarded (Ministry of Education, 1985, p. 5).

2) Albiyati (1977): The slow-learning pupil is the student who shows difficulty in adapting to the school curriculum due to his low intelligence or ability to learn, which requires an adjustment of what the school provides in the regular class to the maximum extent of his growth and development (Albiatti, 1977, p.12).

3) Mansi (1992): They are students who face great difficulty in the different regular school programs and suffer from academic retardation in one or more of the subjects they learn and their age level is greater than the level of their classmates in the same class and suffer more academic and behavioral problems in school and home than other ordinary students (Mansi, 1992, p. 27).

4) The medical concept: This type of definition describes the nature of cerebral defects or disturbances in central nervous system functions experienced by children with learning difficulties.And confirms that the main reason for those with learning difficulties is the Neurological dysfunction Including the definition of(Strasuss&Lehtinen 1974) “Children who have had a brain injury before, during or after birth and which resulted in disturbances in perception, thinking and emotional behavior. It is recommended that the use of Special learning programs to eliminate the disorders that they suffer from. (Al-Ithawi, 2011, p. 53).

5) The psychometric concept: This definition appeared to define mental disability as a result of the great development in the psychometric movement since the beginning of knowledge of this movement at the hand of (Binet) and then the emergence of multiple other measures and tests of mental ability, and IQ was adopted as a criterion in defining mental disability and slow learning. Individuals with an IQ of less than (91) were considered to have slow learning. (Al-Ithawi, 2011, p. 53).

6) The pedagogical concept: This definition focuses on the growth of mental abilities in an irregular manner and on the manifestations of the student’s academic deficit as indicated by (Kirk, 1963), which is represented in the inability to learn the language, reading, writing and spelling that are not due to mental or sensory reasons and focus on The discrepancy between academic achievement and the mental ability of the student (Al-Ithawi, 2011, p. 53)

7) The social concept: This definition emerged as a result of the many criticisms directed at intelligence measures and medical definitions, in particular intelligence tests, the extent of their validity, and their influence on cultural and social factors, which led to the emergence of basic social measures. This definition focuses on the extent of the student's success or failure to respond to the social requirements

expected of him. Compared with his peers from the same environment in which he lives (Al-Ithawi, 2011, p. 53).

Method:

Research methodology and procedures

In this chapter, the researcher seeks to define the research methodology, community and sample, and the steps followed in achieving the basic requirements, in building the scale of apraxia of speech, and extracting the appropriate psychometric properties of the scale, in addition to determining the appropriate statistical methods used in data analysis.

First: Research methodology

The methodology refers to the method used by the researcher in studying research problems in order to achieve the desired results (Abd al-Rahman and Adnan, 2008, p. 14).

Since the current research aims to identify the apraxia of speech and to find the relationship between speech apraxia and slow-learning students, the researcher has adopted the descriptive correlation approach, as it is one of the most appropriate approaches to the nature of the research and its objectives, especially since this approach works to study the phenomenon realistically, and is concerned with describing it. An accurate description, expressed in quantitative and qualitative terms, and a definition of the relationships between its elements, or between them and another phenomenon (Melhem, 2000, p. 324).

Second: the research community

The research community is defined as the total group with the elements that capture the researcher's interest, so it seeks to study them and generalize the results (Ghanayem, 2004, p.136), The research community is defined as the holistic group with the elements that capture the researcher's interest, so it seeks to study them and generalize the results (Ghanayem, 2004, p. 136), and accordingly, the research community has been identified with slow-learning students in the elementary stage, which are represented by the (second and fourth) grades of the morning study belonging to The Holy Karbala Education Directorate, for the academic year (2020-2021), and its number (1283) male and female students, of (616) male and (667) female students, and a table (1) showing the total research community, according to geographical location, gender and class.

Table (1) Research population distributed according to geographical location, gender and class

Geographical location	First grade		Second grade		Third grade		Fourth grade	
	Males	Fmales	Males	Females	Males	Females	Males	Females
City center	34	55	142	180	90	105	87	120
City Husseinieh	15	8	52	16	32	7	30	10
Cityalhuru	9	10	9	36	8	10	5	13

City alhindia	11	12	30	29	15	13	14	18
Cityalkhayrat	5	9	15	6	6	5	7	5
Total	74	94	248	267	151	140	143	166
total summation		1283						

Note: The numbers of school students and for the academic year (2020-2021) were obtained according to the mission facilitation letter to the Holy Karbala Education Directorate, Statistics Division

Third: the research sample

The sample represents that part of the variables of the subject of study, which are of the same value and level of the original community. Given that the study variables are not homogeneous, the researcher resorted to selecting his research sample from the second and fourth grades in a random way of proportional style (Atifa, 2012, p. 273), (170) male and female students from the research community were identified, at a rate of (13%). (105) male and (65) female students, and Table (2) shows the details of the basic research sample.

Table (2) The main research sample distributed according to geographical location, gender and class.

Geographical location	Second grade		Fourth grade		Total	
	Males	Females	Males	Females	Males	Females
City center	29	37	18	25	47	62
CityHusseinieh	11	3	6	2	17	5
Cityalhuru	2	8	1	2	3	10
Cityalhindia	6	6	3	4	9	10
Cityalkhayrat	3	1	2	1	5	2
Total	51	55	30	166	81	89
total summation	106		64		170	

Fourth: the search tool

In order for the researcher to achieve the goals of his current research, it required the availability of a tool to measure the research variable, and by reviewing the literature and previous studies related to the research variables, the researcher resorted to building the scale apraxia of speech in line with the objectives and requirements of the current research following:

Scale Apraxia of Speech:

1) Define theoretical concepts

After reviewing the psychological literature, theoretical frameworks, previous studies, and related scales, the researcher resorted to constructing the Scale Apraxia of Speech based on the definition of the American Society of Speech, Hearing and Language (ASHA, 2007, pp. 3-4).

2) Drafting the scale paragraphs and its alternatives

After determining the behavioral scope of the concept of speech apraxia and the theory adopted, the researcher resorted to formulating (34) paragraphs based on theoretical frameworks and previous studies. Clear and give a specific meaning and limited to one idea (Rabi, 2013, p. 200). All paragraphs were formulated in the form of statements of affirmation, and in front of each paragraph there are three alternatives (severe, medium, weak), the following weights depend (3, 2, 1), respectively**.**

3) The veracity and validity of paragraphs

Despite skepticism about the procedures for logical analysis of paragraphs, as it is considered misleading in most cases due to the adoption of the self-opinions of the arbitrators, but this is not considered a sufficient justification for not taking it into account. Rather, it is necessary to adopt it to reveal the extent to which the paragraph is related to the feature that it was prepared to measure, even outwardly (Al Kubaisi, 2001 P. 17).

In light of this, the researcher resorted to presenting the paragraphs of the scale to (26) a judge of specialists in education and psychology, after which all the opinions of the arbitrators who agreed and disagreed were subjected to an analysis of their opinions according to the percentage and the chi-square, and in light of this it became clear that all paragraphs of the scale apraxia of speech The words are acceptable with some modifications, and Table (3) shows the chi-square for the acceptability of each paragraph of the scale.

Table (3) Referees opinions on the validity of the paragraphs of the Scale apraxia of Speech

The paragraphs	**The Accepters**	**Non-conformists**	**percentage**	Chi-squared **value**	**Indication**
1, 2, 3, 4, 5, 6, 7, 10, 11, 13, 14, 15, 17, 18, 19, 20, 21, 22, 29, 31, 32, 33, 34	26	-	%100	26	Function
8, 9, 12, 16, 23	24	2	%92	18,615	Function
24, 30	23	3	%88	15,385	Function

4) Experience clarity of paragraphs and scale instructions

The psychometric literature has emphasized the importance of the research community (members of the sample) understanding the scale paragraphs and instructions, in order to avoid random answers that are inconsistent with the contents of the paragraphs (Farag, 1980, p. 16).

In light of this, the researcher was keen to set very clear instructions that are consistent with the progress of implementing the scale, and they included urging the sample members to answer accurately and honestly on all the scale paragraphs. In order to know the clarity of the paragraphs and the scale instructions and to know the time spent, the scale was applied to a random survey sample from the research community of (20) male and female students equally, and it was found that the paragraphs and instructions of the scale are clear to the members of the exploratory sample.The

average time taken to answer all paragraphs of the scale was extracted, which is (20) minutes.

5) Statistical analysis of the scale paragraphs

The logical validity of the paragraphs depends on the apparent formal match of the paragraph in measuring what it was prepared to measure, for this is the statistical analysis of the paragraphs of the basic requirements for building and adopting psychological measures, in order to reveal the discriminatory strength of the paragraphs and their validity factor, to select the appropriate paragraphs and exclude or amend the inappropriate paragraphs or amend them (Ghiselli et al., 1981, p. 421).

In order to reveal the relationship between what the paragraph measures and the responses of individuals to it. The researcher applied the scale to the statistical analysis sample of (130) male and female students, who were chosen by the equal method randomly, taking into account the gender and class. This sample size was based on the assertion of Nunnally (1981), in which it indicates that the ratio of the number of members of the statistical analysis sample is related to the number of the scale paragraphs, and it should not be less than five times the number of paragraphs, in order to reduce the impact of chance in the statistical analysis (Nunnally, 1981, p. 262) and after the questionnaires were collected and corrected, the following methods were calculated:

a. The style of the two terminal groups

This method represents a good indicator to know the difference between the sample members who obtained high scores and those with low scores in the trait, in other words, the ability of the paragraph to distinguish between those with higher levels and lower levels of respondents in relation to the trait that it measures (Al-Zahir, 1999, p. 129). Hence, there appears the necessity of keeping the paragraphs with discriminatory force in the final image of the test and excluding or modifying the unmarked paragraphs and trying them again. Accordingly, the discriminatory force was calculated according to the two terminal samples method, by adopting the following steps:

1. Calculating the total score for the responses of the sample members.

2. Arranging the forms in descending order according to the total score, from the highest degree to the lowest degree.

3. Selecting 27% of the answers that represent the highest grades of (35) forms, and the highest score and lowest score ranged between (93-81), and the same for the lower grades of (35) forms, and that the highest and lowest score ranged between (66- 38), and this ratio was adopted to identify two groups with the largest possible size and maximum variance to indicate their normal distribution (Allam, 2000, p. 284).

4. Calculating the application of the t-test for two independent samples, for each paragraph separately between the upper and lower groups, and the researcher adopted the tabular value (1.98) degrees, at a level of significance (0.05) and a degree of freedom (68) degrees, In keeping the paragraphs that have obtained the coefficient of discrimination or more, and Table (4) clarifies that.

Table (4) the discriminatory power of paragraphs of apraxia of speech by the method of two independent samples

Upper group		Lower group		Computed T value	The significance level is at 0.05
Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
2.685714	0.574279	1.972973	0.779759	4.311957	Function
2.685	0.574	1.972	-	-	-
2.771429	0.483187	1.810811	0.763763	5.688408	Function
2.742857	0.552545	1.72973	0.89365	5.22799	Function
2.742857	0.49816	1.648649	0.751028	6.579102	Function
2.657143	0.582745	1.486486	0.725952	6.806453	Function
2.657143	0.629869	1.648649	0.781736	5.443307	Function
2.257143	0.69046	1.513514	0.645497	4.508624	Function
2.514286	0.649018	1.459459	0.725952	5.856155	Function
2.571429	0.645234	1.702703	0.810331	4.736039	Function
2.542857	0.768779	1.513514	0.687184	5.576938	Function
2.457143	0.552545	1.594595	0.825893	4.755724	Function
2.314286	0.707972	1.540541	0.686623	4.488974	Function
2.4	0.595219	1.621622	0.825893	4.361038	Function
2.142857	0.722806	1.486486	0.645497	3.779781	Function
2.314286	0.707972	1.594595	0.858868	3.601419	Function
2.457143	0.69046	1.216216	0.460642	7.930413	Function
2.428571	0.688091	1.297297	0.568597	6.755357	Function
2.085714	0.806099	1.540541	0.686623	3.033993	Function
2.628571	0.539085	1.432432	0.643102	7.427903	Function
2.514286	0.603392	1.459459	0.643102	6.5373	Function
2.342857	0.673704	1.432432	0.682113	5.347965	Function
2.257143	0.839825	1.378378	0.678142	4.530156	Function
2.285714	0.699854	1.567568	0.829156	3.686279	Function
2.428571	0.688091	1.432432	0.595119	6.068826	Function
2.314286	0.74724	1.351351	0.666667	5.419577	Function
2.485714	0.649018	1.594595	0.761739	5.1597	Function
2.371429	0.679736	1.861111	0.844671	2.863572	Function
2.228571	0.795908	1.567568	0.724356	3.573627	Function
2.428571	0.688091	1.864865	0.821678	3.041337	Function
2.257143	0.805086	1.486486	0.724356	4.244138	Function
2.171429	0.696346	1.756757	0.682113	2.501916	Function
2.485714	0.603392	1.540541	0.726483	5.725365	Function
2.685714	0.574279	1.540541	0.726483	6.840275	Function
2.457143	0.69046	1.621622	0.721688	4.88639	Function

B. Style of internal consistency

This method works to find the correlation between the respondent's score on each of the scale paragraphs and their overall score obtained. Therefore, the paragraphs with the characteristic correlation coefficient are preserved (Allam, 2000, p. 279). In light of this, the Pearson correlation coefficient was used to calculate the correlation between the score of each of the scale paragraphs and the total score of (130) questionnaires, which are the same forms that were subjected to statistical analysis, and when compared to the tabular correlation value of (0.134) at a level of significance (0.05) and a degree of freedom (128), all paragraphs of the scale were statistically significant. Table (5) illustrates this.

Table (5) the values of the correlation coefficients between the paragraph score and the total degree of the Scale Apraxia of Speech

The paragraphs	Correlation coefficient	**The significance level is at 0.05**l	The paragraphs	Correlation coefficient	**The significance level is at 0.05**
1	0.314837	Function	18	0.475513	Function
2	0.431953	Function	19	0.53444	Function
3	0.336369	Function	20	0.633929	Function
4	0.493104	Function	21	0.620876	Function
5	0.418011	Function	22	0.619236	Function
6	0.419675	Function	23	0.480406	Function
7	0.367517	Function	24	0.691731	Function
8	0.509176	Function	25	0.563489	Function
9	0.382513	Function	26	0.619482	Function
10	0.435371	Function	27	0.445442	Function
11	0.528582	Function	28	0.511862	Function
12	0.545668	Function	29	0.49948	Function
13	0.487914	Function	30	0.555732	Function
14	0.49729	Function	31	0.47388	Function
15	0.453447	Function	32	0.653831	Function
16	0.51175	Function	33	0.49828	Function
17	0.692522	Function	34	0.425392	Function

C. Style degree paragraph score is related to the domain to which it belongs:

This method works to find the degree of correlation coefficient, the relationship between the degree of each paragraph and the degree of the field to which it belongs, and accordingly the researcher used the Pearson correlation coefficient, and it became clear that the values of the calculated correlation coefficient are statistically significant at the level of significance (0.05) and the degree of freedom (128) for all paragraphs As the tabular value of the correlation coefficient is (0,134), and thus all paragraphs are accepted according to Table (6), which shows the details of that.

Table (6) Correlation coefficients between the paragraph score and the overall score of the field to which it belongs for the Scale Apraxia of Speech

Domains	Speech and voice disorder	The significance level is at 0.05	Non-verbal disorders		The significance level is at 0.05
The paragraphs	Correlation coefficient		The paragraph	Correlation coefficient	
1	0.341591	Function	26	0.682039	Function
2	0.529773	Function	27	0.441635	Function
3	0.53157	Function	28	0.627411	Function
4	0.618112	Function	29	0.555516	Function
5	0.600451	Function	30	0.63312	Function
6	0.548636	Function	31	0.621125	Function
7	0.452806	Function	32	0.698361	Function
8	0.549508	Function	33	0.477148	Function
9	0.466682	Function	34	0.395686	Function
10	0.485412	Function			
11	0.541535	Function			
12	0.50352	Function			
13	0.523437	Function			
14	0.45421	Function			
15	0.40619	Function			
16	0.594024	Function			
17	0.604985	Function			
18	0.535115	Function			
19	0.675367	Function			
20	0.621472	Function			
21	0.595299	Function			
22	0.635721	Function			
23	0.53055	Function			
24	0.68607	Function			
25	0.681218	Function			

D. Domain degree correlation methodBy the total score of the scale

To calculate the correlation between the respondents' scores on each component and the total score, the researcher used the Pearson correlation coefficient, and it was found that the correlation coefficients calculated for each domain by the total score of its scale are statistically significant when compared to the tabular value (0,134) at the level of significance (0.05) and the degree of freedom (128) And as shown in Table (7).

Table (7) Correlation coefficients between the component score and the total score of the Scale Apraxia of Speech

the scale	Domains	Correlation coefficient	Significance

Apraxia of speech	Speech and voice disorder	0.7643344	Function
	Non-verbal disorders	0.78526	Function

6) The psychometric properties of the scale

In order to increase the accuracy of the scale, it must have some basic psychometric characteristics, in order for the tools to be appropriate and effective in measuring the psychological phenomenon and give a qualitative and quantitative description of that phenomenon, and the most important of these characteristics are the Validity and Reliability that was available in the research tool:

First: Validity

Validity is defined as the ability of the research tools to measure the characteristic or characteristic that was designed to measure it. The tools are honest in their estimation of the characteristic of individuals when the measurement process is free from the influence of the factors that make it distinct in that estimate (Omar et al., 2010, p. 189). To achieve this, the researcher used two types of honesty, namely:

1. Virtual honesty:

This truthfulness is defined to the extent of the relevance of the scale's paragraphs to the variable to be measured, meaning that it represents the outward image of the scale to see the extent of the paragraphs' clarity, objectivity, and suitability for the purpose for which they were set (Al-Zamili et al., 2009, p. 246).

The researcher achieved this type of validity for the scale apraxia of speech, by presenting it in its initial form to a group of refereed experts with specialization in education and psychology, to assess its validity and suitability for the scale's paragraphs, instructions and alternatives, as mentioned in the procedures for building the scale.

2. Validation of construction:

This type of truthfulness is considered to be the most representative of the concept of truthfulness, and for this it is called the sincerity of the concept or the sincerity of the hypothetical formation, and it is based on analyzing the degrees of the scale based on the psychological structure of the characteristic to be measured, or in light of a specific psychological concept (Rabi, 1994, p. 98).

The researcher verified the validity of the construction of the scale apraxia of speech, the extent of the ability of the paragraphs to distinguish between individuals who possess a feature, and those who do not possess it in the method of the two terminal groups, by finding differential coefficients for the scale paragraphs, and this is an indication of the validity of the construction, and verification by the method of internal homogeneity by finding the relationship The correlation between the degree of each paragraph of the scale with the total score.

Second: Reliability

The stability of the scale is intended to give the scale fixed measurements in which the individual maintains his position in his group when the test is repeated. There is more than one method for verifying the reliability of the test (Abu Zina, 1992, p. 69), and the reliability of the scale was extracted in two ways:

1. Alpha Cronbach equation:

Consistency in this way indicates the consistency of an individual's performance from one paragraph to another, and depends on the standard deviation of the scale and the standard deviation of the individual paragraphs; This is done by dividing the scale into as many parts as possible. And calculate the average factor of fractionation invariance. The coefficient of stability extracted in this way is called the coefficient of homogeneity (Thorndike &Heigen, 1989, p. 80), and to find stability in this way, the researcher pulled (130) forms randomly from the responses of individuals on the sample of statistical analysis. It turned out to be the reliability coefficient for the Scale Apraxia of Speech (0.895422), which means that the reliability index by the method of internal consistency of the scale is good.

2. Test - Retest method:

The stability coefficient according to this method is called the stability factor, as it depends in this method on re-applying the test on the same sample, and under the same conditions in which the test was previously performed. Then the coefficient of correlation between the two applications is calculated (Al-Zamili and others, 2009, p. 257) and on this basis the researcher applied the scale on a sample of (40) male and female students, randomly selected from Fatima Al-Soghra School, and Al-Nama School affiliated to the Karbala governorate center by 20 respondents Every school.

7) Statistical indicators:

The theoretical frameworks of psychometrics indicated that the statistical indicators that should be characterized by the scale are to identify the nature of the equilibrium distribution, the most important of which is the arithmetic mean, which represents the sum of the score values divided by their number. The second is the standard deviation that expresses the amount of the deviation of the degrees from the arithmetic mean, and the closer the degree of deviation to zero, indicates the existence of a convergence between the values of the degrees of the distribution (Al-Bayati& Athanasius, 1977: 167). In addition to both twisting and splaying, they are considered indicators of the equilibrium distribution, the first indicates the degree of concentration of the occurrences at the different values of the distribution, and the second indicates the extent of concentration of the occurrences in a region for the equilibrium distribution (Odeh& Al-Khalili, 1988: 81), and this is what prompted the researcher to calculate the statistical indicators, as shown In table (8)

Table (8) statistical indicators of the Scale Apraxia of Speech

indicators	Rate it
Arithmetic mean	69,68

Median	66,00
Mode	64,00
Standard deviation	14,51
Variance	210,58
Skewness	0,040-
Standard error of torsion	0,212
Kurtosis	0,97-
Standard error of kurtosis	0,420
Rang	55,00
less value	40,00
highest value	93,00

8) Description of scale

The scale apraxia of speech consists in its final form of (34) items distributed into two domains, the first domain includes speech and sound on (25) paragraphs, and the second domain is Non-verbal disorders and consists of (9) paragraphs, and in front of each paragraph there are three graded alternatives for the answer (Severe, medium, weak), when correcting grades (1-2-3), respectively, for paragraphs formulated in a positive direction, the correction is reversed for the paragraphs written in an opposite direction, so it is (1-2-3) respectively, and thus the highest possible overall score for the scale is (102) And the lowest score is (34), and in this way, the hypothetical average of the scale is (68) degrees, which includes the scale in its final form.

Final application of the search tool:

After a tool was built to diagnose apraxia of speech for the research, and to verify its psychometric properties, and in order to achieve the objectives of the current research, the researcher applied the tool in its final form to the basic research sample referred to in Table (1), which is 170 male and female students of the second and fourth grades, According to the procedures, for the period between (2021-2022).

Results

This chapter includes a presentation of the findings of the researcher in light of the objectives set for him, with finding the appropriate interpretation for each result according to the theoretical frameworks, and discussing them in light of the previous studies, and based on these results the researcher sets conclusions, and presents a set of recommendations and proposals, and accordingly this is reviewed. The separation is as follows:

Presentation, interpretation and discussion of results

The first the aim: To identify the apraxia of speech of slow-learning pupils

After applying the scale to the final sample of (170) male and female students, the researcher relied to achieve his goal on the calculation of the arithmetic mean, standard deviation, and hypothetical mean, for responses on the scale of speech reflexology, and the t-test was used for one sample to calculate the significance of

the difference between the two averages. The theoretical average is (68) degrees, and the calculated average is (72.75) with a standard deviation of (13.53). And by testing the difference between the two averages, it turns out that the calculated T value is equal to (4.58), with a degree of freedom (169) and a level of significance (0,05), and Table (9) illustrates this.

Table (9) The calculated and tabular T-value of the significance of the difference between the arithmetic mean and the hypothetical average of the scale apraxia of speech

Individuals of the research sample	Hypothesized mean	Arithmetic average	standard deviation	T-value		The significance level is at 0.05
				Calculated	Tabular	
170	68	72.75	13.53	4.58	1.960	Function

The result in Table (9) indicates the existence of a statistically significant difference, as the calculated T value of the Scale Apraxia of Speech reached (4,583) degrees, which is greater than the tabular value of (1,960) degrees, and this indicates that the research sample possesses the developmental disorder of apraxia of speech.

The second the aim:Identify the statistically significant differences in apraxia of speech, according to the sex variables (males, females) and grade (second, fourth) among slow-learning pupils

In order to find out the differences in apraxia of speech according to the sex and grade variables, and the effect resulting from the interaction between them, the researcher resorted to using binary variance analysis to test the significance of differences for unweighted mediums of the research sample responses, and Table (10) illustrates this.

Table (10) Analysis of binary variance to find out the significance of differences in apraxia of speech according to the sex variables (males, females) and grade (second, fourth).

The source of the contrast	Sum of squares	Degree of freedom	Average of squares	T-value		The significance is 0,05
				Calculated	Tabular	
Gender	65.537	1	65.537	0,436	3,84	Not a function
Class	5744.600	1	5744.600	38.27		Function
Gender * grade	1197.012	1	1197.012	7.97		Function
The error	24917.945	166	150.108			
Total correlation	930933.000	170				
total summation	30979.112	169				

The results of the binary variance analysis in Table (10) indicated the following:

1) There is no statistically significant difference in apraxia of speech according to the gender variable, as the calculated T value was (0.436), which is less than the tabular value (3.84), at the level of significance (0.05) and the degree of freedom (169), This indicates that male and female subjects have the same level of apraxia of speech disorder.
2) There is a statistically significant difference in Apraxia of speech according to the grade variable, as the calculated T value (38.27) was greater than the tabular value (3.84) in favor of the second grade, as the arithmetic mean of their scores reached (79,257) degrees, which is greater than The arithmetic average of the fourth grade grades (67.26).
3) There is the effect of the interaction between the two variables of sex (males, females) and grade (second, fourth), as the calculated T value was (7.97), which is greater than the tabular value (3.84). The significance and direction of the differences within the interaction, and Table (11) illustrates this.

Table (11) Scheiffe value for the lowest significant difference between the arithmetic mean of the interaction between sex and specialization in the scale of apraxia of speech.

N	Groups	The number	Arithmetic averages	The difference between the two averages	The critical Schiffe value	Significance
1	Malessecond	51	75,90	6.51	6.90	Not a function
	Malesfourth	30	69,35			
2	Femalessecond	55	82,63	6.75	6.60	Not a function
	Malessecond	51	75,88			
3	Malessecond	51	75,88	10.70	7.023	Function
	Femalesfourth	34	65,17			
4	Femalessecond	55	82,63	17.46	6.88	Function
	Femalesfourth	34	65,17			
5	Femalessecond	55	82,63	13.26	8.27	Function
	Malesfourth	30	69,36			
6	Malesfourth	30	69,36	4.19	7.17	Not a function
	Femalesfourth	34	65,17			

It is concluded from Table (11) that there are statistically significant differences in apraxia of speech according to the grade variable regardless of gender, and all of them go in favor of the second grade.

Discussing the results:

1) The result of the first objective indicates that the research sample suffers from the developmental of apraxia of speech, This result comes according to the theoretical framework, since most studies indicated the existence of a dysfunction of children with apraxia of speech, accompanied by repetition in their voices, movement difficulties of the speech organs, deficits in imitation of sounds and increased speech difficulty by increasing the length of speech in the sequence of sounds during speech. It is noteworthy that poor coordination between the speech muscles of children is one

of the most common problems in children with apraxia of speech, as these errors result from the inability of the child to perform the correct organization of movements between the speech organs required to produce speech fluently (Duffy, 2005, p. 78).

Perhaps the impairment of procedural learning ability, difficulty integrating sensory information, or reduced information - the ability to process. Therefore, the procedural learning deficit hypothesis was used to explain speech, language, and motor diseases associated with children with a specific linguistic impairment. The procedural learning system is the mechanism by which we learn patterns. For example, phonemic patterns, grammar without being explicitly taught practice and multiple repetitions help to store patterns in the procedural memory system and lead to automation, so that these patterns are produced faster and effortlessly over time. Thus, a lack of procedural learning can result Theoretically indicates impairment in cognitive-linguistic and motor domains, including comorbidities of attention Deficit, speech and language, and motor impairments as is common in at least a subset of affected children (Iuzzini-Seigel, 2019)

2) The second objective indicates that the male and female subjects of the research sample have the same level of disorder from apraxia of speech This result can be interpreted on the basis of the social context of the educational and educational environments, as it can be a decisive factor explaining the reduction of differences in the research sample.

The result of the second goal also showed that there are statistically significant differences in apraxia of speech according to the grade variable (second, fourth) and in favor of the second grade, on the grounds that they are the most sufferers of speech apraxia disorder, and this can be interpreted according to the theoretical framework of speech apraxia that it is affected by the age factor and educational level For students, with these factors the disorder of apraxia of speech gradually weakens. Barclay believes that during the child's developmental stage, the influence and control of the child's behavior is gradually shifted from external sources until it becomes increasingly fortified with internal laws and standards, which is what is meant by self-control.

Conclusions

In light of the results reached in this research, the following can be summarized and concluded:

1) Mostly slow-learning students suffer from apraxia of speech.
2) The social environment did not constitute a difference in sex, other than age, due to the accumulation of educational experiences, which plays an important role in the difference between second and fourth grade students and in favor of the second grade, Meaning there is a decrease in apraxia of speech among fourth grade students

Recommendations

Based on the findings of the research, the researcher recommends the following:

1) The need for male and female teachers, especially teachers of special education classes and educational counselors, to pay attention to students' problems, especially those related to abilities and skills.

2) Opening training courses that reduce apraxia of speech targeting teachers, special education teachers and educational counselors.
3) Highlighting the role of the educational counselor and the usefulness of the specialized counseling program to set up indicative treatments for the slow-learning group in order to raise their level of mental health and psychological and social compatibility.
4) The necessity of discovering children with apraxia of speech in primary schools.
5) The necessity to use modern techniques in treating apraxia of speech disorder, which leads to an increase in their level of verbal fluency.

The proposals

The researcher suggests conducting research and proposals, which are as follows:

1) Establishing a counseling program to reduce apraxia of speech among slow-learning students.
2) Conducting a study of the apraxia of speech variable and its relationship to other variables such as emotional or withdrawal behavior.
3) Conducting a study of the same variables for other age groups.
4) Conducting a study on a comprehensive evaluation of the phonemic awareness and language skills of children to detect any language or speech disorders.
5) Conduct a comprehensive examination of the non-kinetic symptoms of the disorder, and develop a theoretical point of view.

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