GARMAN MODEL FOR LANGUAGE PROCESSING IN CHILDREN WITH ORAL LANGUAGE DISORDERS

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ABSTRACT

The children need Behaviors Better in doing all their phonological functions, as well as those Behaviors related to the semantics and structure of the different words and phrases. So, they learn to express their emotions as they get older, and their speech abilities improve.

The purpose of the study is to investigate the efficiency of the Garman model for language processing in children with oral language disorders. Fifteen children had been identified as a final sample from 60 children in many schools with a 6.7 average age using the standard and validated scales. The quasi-experimental method revealed that after applying 26 sessions, there are statistically significant differences between the pre-and post-tests in favor of the post-test, as well as the continuity of the efficiency of the program after the follow-up term. The study suggested the significance of applying for the Garman Program at home and acquainting the program to assist the most conceivable number of kids.

Keywords: Garman model, Language processing, Oral language disabilities, Learning difficulties.

INTRODUCTION

A specific learning disorder is a neurodevelopment disorder that begins at school, although it may not be recognized until adulthood. It affects education issues in one of three fields, reading, writing, and mathematics, which are important for learning (Peterson *et al.*, 2021). Oral language stood for the contemporary definitions of learning difficulties that focus on the aspects of linguistic defects (Seçkin, 2021). Learning Disabilities Association of Canada (2012) Cited that Learning disabilities (LD) are disorders that affect the acquisition, organization, retention, understanding, or use of verbal or nonverbal information (Ugwuanyi *et al.*, 2021).

The performance of children with specific learning disorders is lower than their normal peers at a group of phonological tasks and the tasks related to the semantic meaning of different words and phrases that have to do with language structures and communication (Abdullah, 2008; Abdulazeem, 2011; Hashim, 2011). It was also noticed that the difficulties related to oral language make up about 90% of the difficulties that children with learning difficulties suffer from (Ibrahim, 2010).

Oral expression is important for children, in either research or documents of policies all over the world (Cregan, 2012). the job of oral expression as a basic starting point for education (Snowling & Hulme, 2021) This is because the production of language requires forming a

group of sentences connected to carry a meaningful message that usually targets other people via conversation, therefore, a group of language reactions occurs to allow the exchange of information which leads to more understanding (Nugues, 2006; Al-Nubi, 2011).

The current study highlighted the importance of oral language disabilities because of their impact on learning, psychological, and behavioral problems (Al-Khawaldah *et al.*, 2017). So, when this problem is not treated, this leads to the spread of dropping from school and the increase in illiteracy and delay in school progress, which results in wasting the abilities (Andrews *et al.*, 2001; Ibrahim, 2010; Fricke *et al.*, 2013).

The acquisition of spoken language is widely regarded as the most remarkable achievement of childhood. Despite decades of research, engineers have yet to create a machine that can learn to recognize speech with the ease and acuity of a typical developing five-year-old. This process begins with the word – the fundamental unit of meaning – and progresses by paying increasingly close attention to word-internal structure and improving combinatorial agility, (Velanitta, 2020).

According to Garman Model for language process (Garman, 1990), message decoding is done in two ways: the dictionary, whose role is concluded in preparing to extract the form and meaning from the flowing information which is represented in components expressed in words.

The second way is the use of the system and surface structure of words and what they include of semantic issues extracted in the light of the meaning of words and the connection between these words to use them in a perfect synthesis that helps produce them again, whether in the form of recognition or recalling (Garman, 1990; Suleiman, 1996). So, the researcher designed a group of training sessions in the light of the Garman Model for language preparation (Garman, 1990).

Objective and Purpose of the Study

The goal of the study is to answer the following questions:

- Are there statistically significant differences between the average scores of the experimental group in the pre and post-test on the oral language scale in favor of the post-test?

- Are there statistically significant differences between the average scores of the experimental group in the post-test and follow-up tests on the oral language scale?

Literature Review

Learning Disabilities

In 1990, the American government adopted a definition for learning difficulties as: "A deficiency in one or more of the basic psychological processes which are used in the understanding or production of spoken language, which might appear in thinking, listening, speaking, reading, or spelling disorder, as well as arithmetic operations. It includes the cases that are transferred as perceptional disabilities, brain accidents, mild functional problems, or dyslexia. It does not include the learning difficulties resulting from visual or audio disabilities, mental retardation, pronunciation problems, response deficiencies, social deprivation, or other cultural factors (Awadallah, 2017; Fletcher *et al.*, 2018).

Some examples of oral language in the classroom include asking the students to share stories, repeat answers, answer questions about stories read for them to check their understanding, present a conclusion, express their opinions, recognize what the story is about themain idea in its correct consequence (beginning, middle, end), summarize what is read, ask during the reading, explain as they read, and reconsider the anticipations during the reading (Magnera, 2010).

Many studies have shown that several students with learning disabilities have language and speaking disorders, especially oral ones, as well as the formation of sentences, and, generally, language efficiency, which was carried out in an Egyptian environment, shows that the percentage of students with learning disabilities in linguistic achievement and the expression of suitable events was 68.16 percent (Abdullah, 2008).

Oral Language

Oral language is a term used to describe the process of naturally and subconsciously acquiring language ability. There is the best time for children to acquire language in language acquisition. The time is referred to as the critical period. When the critical period for children without language contact has passed, the main issue is the disabilities in oral language appear before any other disorder because the child speaks before learning to write and the difficulty in uttering some phonemes and in the repetition of some words (Velanitta, 2020). so, he/she has some difficulty in understanding the oral language, which leads to a low level of achievement and a feeling of embarrassment and disappointment because language is a vital tool for successful adaptation to the school environment and an important element of assessment (Al-Zayyat, 2008; Ibrahim, 2010).

The study of (Ράλλη *et al.*, 2021) added to provide the most detailed description of oral skills (phonology, semantics, morphology, morphology, and narrative discourse) and psychosocial adaptation (social, behavioral school, emotional, and school problems), as well as to investigate the interaction of the above skills in children with and without language deficits. Thirty-six 6-year-old children took part in the study. Children with DLD made up half of the participants, while typically developing children made up the other half. The findings revealed statistically significant differences in oral language and psychosocial skills within groups. Furthermore, there were significant correlations between language performance and psychosocial skills in DLD children.

It is known that every language consists of a common social code, i.e., it is a social fabric for representing concepts with a group of spontaneous symbols and different connections of these symbols, controlled by specific rules. It is classified into receptive language, which refers to the listener's behavior or his/her skills for understanding what is heard. In addition, Expressive/oral language refers to the expression of ideas where the individuals produce specific sounds in a specific order to be able to form words and then, arrange them to make sentences and phrases (Al-Nubi, 2011; Awadallah, 2017).

The study (Seçkin, 2021) aimed to compare the language skills of Turkish-speaking primary school students with learning disabilities (LD) and their peers with typical development (TD) by assessing these skills in the context of narration. According to the findings of the study, students with LD performed worse in language than their peers with TD in both narrative tell

and narrative retell contexts, while both groups performed better in language elements in the narrative retell context.

The researcher found that most of the problems faced by children with learning disabilities are more in the oral expressive language than in the receptive language project (Goodrich *et al.*, 2014; Cohler, 2016)

It was found that there are several mistakes made by children with oral expression disabilities in the following: Structure and grammar, Omission and addition of some words, the correct order of the sentence, building a meaningful sentence on correct grammatical rules, hesitate and turn around the idea when they speak, they might suffer from stammering or slowness in oral expression, Describing things, images, or experience (Al-Qibali, 2003; Awadallah, 2017). Many children quickly show a knowledge of the words through learning the common verbal symbols, but the use of the language indicates the child's ability to use the symbols and content of a language, as the use of a language is an indicator of the meanings flow into the core of the language to serve the speaker's needs and goals (Ibrahim, 2005; Al-Zayyat, 2008; Awadallah, 2017; Adlof & Hogan, 2019).

Garman Model for Language Processing

It is supposed that the process of lexical preparation occurs simultaneously with the semantic and syntactic ones. This is because the structure of a text affects the meaning, which is considered the base of this structure that decides its limits: beginning, and end (Nittrouer, 2021). The preparation of a text also depends on the process of orthographic, phonetic, and semantic encoding (Suleiman, 2010). The letters' sequences are analyzed and synthesized consciously in an integrated system with their phonological and semantic codes to form a general form of these sequences.

These letters' sequences are lexically tested and verified by the functioning memory (Edwards *et al.*, 1999). In the light of the total meaning of the context, the structure in which these words are recognized, an indication of these semantic relations of the structures together, the producer reaches the final decision in the end (Suleiman, 1996).

MATERIALS AND METHODS

Participant

The sample of the study consists of those with oral language disabilities of an average age of 6.7 and a standard deviation of 0.26. The characteristic of the study sample of the sample was taken into consideration concerning age, IQ, and oral language **(Table 1)** (The Characteristic of the study).

Instruments

In this study, the Myklebust Scale (Mykelbust, 1968) which is consists of a group of items, which express the observable behavioral features that are divided into five verbal and non-verbal aspects. The scale targets the age category of 5.5-14 and is applied to everyone separately. The duration of its application is 45 minutes and 30 for its marking. He also tested the psychometric features of the scale including the validity and reliability of the original environment and found a high sign percentage. (Al-Shareef, 2007) also tested the validity and

reliability of the scale after its standardization against the Kuwaiti environment and got an indication percentage of (0.01).

OWLS Oral Expression Scale: (Carrow-Woolfolk, 1995). This scale is used for the measurement of oral language by designing some phrases that are considered tasks to test the subtypes of language including lexical, syntactic, supra-linguistic, and pragmatic expressive language. It gives a facilitated detailed description of the language skills. The final form consists of 96 items, the current study referred to the curriculum of Arabic Language of the Ministry of Education for the children of the sample to match the indicative expressions with the four dimensions of the scale.

The researcher consulted ten psychology experts about the scale to check its Arabic formation. He also sent a copy of it to seven teachers in Rafha to evaluate their understanding of the used terminology to make sure it suits the Saudi environment. There were some changes in the structure of its Arabic expressions after the review and analysis of its content.

Using Cronbach's alpha method on a sample of 20 students, the ratio of the questionnaire's reliability was calculated, where the reliability reached (0.761). The reliability was also calculated using the split-half reliability method and it reached 0.87, and then through the Test-Retest method after a period and it reached (0.67) to (0.75). It was found that all the values of reliability factors are statistically significant at the significance level of 0.01, which makes the test reliable.

Raven's IQ Test: This is one of the progressive matrices prepared by psychologist John Raven in 1938. It is considered a test of non-verbal intelligence, which is unaffected by any culture and depends on group application, but it also can be applied individually. It consists of three sections: A, AB, and B, each one of which includes 12 items. It was prepared with theformula of the details of mental processes for children aged five years and a half to eleven. Each item of the matrix consists of a basic shape with a part that has been cut off it, with six parts below, of which the subject must choose the one that completes the shape. It is also considered a test of high reliability and validity.

The Program: The aim of the current program is the development the oral expression based on the Garman program by applying 26 training session activities in lexical, syntactic, supra-linguistic, and pragmatic expressive language processes. The sessions were divided into three levels: the first level continued for 10 training sessions, the second continued for 10 training sessions, and the third, continued for 6 training sessions. The procedures for evaluating the program included a pretest to determine the targeted sample of students, a formative assessment during the application of the program where the performance in the training is evaluated after each session, and a final assessment after completing the application of the training program's sessions, and then a follow-up test a month after finishing the training program.

Procedure

The researcher obtained the agreement of the guardians of each child in the sample to perform the sessions of the program, as well as the agreement with the teachers about their roles after

the researcher had sessions with the teachers to discuss their views and the objectives of the program. It was found, according to the categorization of the Ministry of Education and the children's files, that they have learning disabilities.

The study applied the Myklebust Scale after meeting its psychometric features for the selection of a primary sample of 60 students, and then the final one consisted of 15 students with an average age of 6.7. The presence of oral language disability was checked, as the average final score of the experimental group was 32.7 and the standard deviation was 2.6. The researcher investigates the consistency of the sample in the variables of age, IQ, and oral language disabilities **(Table 1)**.

The research was performed during the second term of the year 2018-2019, where the students were divided into 3 groups, each including 5 students, to be trained on the skills and directly evaluated at the end of the session. The participants were evaluated 3 times: in the pretest before the sessions of the program, in the posttest to check the efficiency after the sessions, which continued for 6 weeks, and in the follow-up, test a month and a half after the post-test, also to check the efficiency of the program.

RESULTS AND DISCUSSION

Characteristics of the Study Sample

The characteristics of the experimental group (N=15) are outlined in **Table 1**. No significant differences between the experimental groups were found in terms of age, intelligence, and a score above the 15thpercentile score on oral expression disabilities.

Table 1. Characteristics of the Study Sample

	Mean	Std. Deviation	Chi-Square
Age	6.7333	0.25542	5.6
Intelligence	96.9333	4.28397	6.8
Oral disabilities	32.7333	2.65832	2.6

Table 1 shows that the calculated Chi-Square reached (5.6) is less than the tabulated value of 12.59, which indicates that there are no statistically significant differences between the experimental group in thevariable of age, **Table 1**. also shows that the calculated Chi-Square reached 6.8 is less than the tabulated value 14.07, which shows that there are no statistically significant differences between the experimental group in thevariable of IQ. Also, **Table 1** shows that the calculated Chi-Square reached 2.6 is less than the tabulated value of 14.07, which shows that there are no statistically significant differences between the experimental group in thevariable of oral disabilities.

Posttest Results

In the study, the Wilcoxon Non-Parametric Test was used to investigate the Pre-post test results which show that the calculated value of Z reached 3.41 higher than the Borderline value of 2.58. So, this shows that there are statistically significant differences at the significance level

(0.01) between the scores of the experimental group in the pretest and post-test for the total scores of the oral expression scales in favor of the post-test, which means the rise in the scores of the experimental group, and therefore, their improvement after exposing them to the program **(Table 2)**.

Post-Follow-Up Test Results

Also, Table 2 shows that the calculated Z value for the total scores of the oral expression scale is1.60, which is less than the borderline value of 1.96. This indicates that there are no statistically significant differences between the average scores of the experimental group in the post-test and follow-up test, which means the progress in the students' performance improved up until the follow-up time.

Table 2. The significance of the differences between the marks of the experimental group students in the pre and post, post, and follow-up of the total degree on the oral expression scale (n=15)

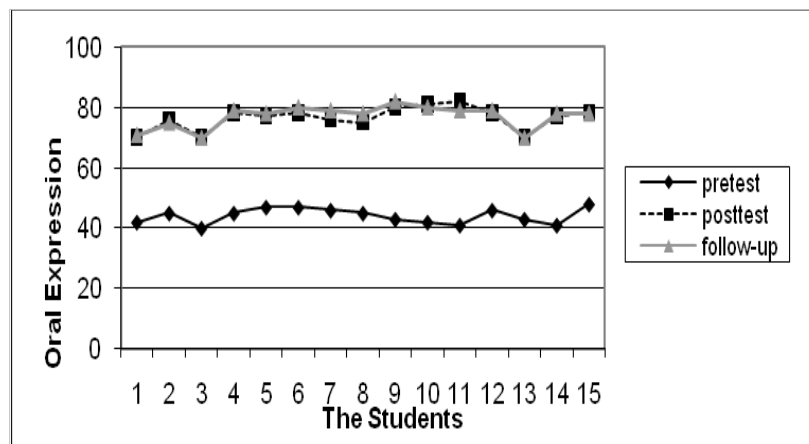|	Orientation of the differences	N	Mean Rank	Sum of Ranks	Value
Pre & post	Negative	0			
	Positive	15	0.00	0.00	3.41
	equality	0	8.00	120.0	
	total	15			
Post & follow-up	Negative	0			
	Positive	15	6.33	19.00	1.60
	equality	0	6.56	59.00	
	total	15			

Descriptive Analyses

Figure 1. The difference in the results of the pre, post, and follow-up tests of the experimental group

Figure 1. Illustrate the extent of the difference in the results of the pre, post, and follow-up tests of the experimental group, where there is an enhancement in the performance of the

experimental group between the pretest and post-test. It also shows the reliability of the learning outcome by the similarity of the performance of the experimental group a month and a half after the applying for the training program.

The results of the current research assure the efficiency of a proposed program based on the Garman Model of linguistic treatment in reducing oral language disabilities. There was an obvious positive response from the sample children during the sessions. The efficiency of the program can be explained as a result of its including methods, techniques, and procedures that stimulate the child's various abilities to complete the required tasks. The researcher observed that each child has reinforcements that are different from the others, so, there was a list of the best reinforcements for each one. When a child receives the required reinforcement, this promotes his/her motivation. The researcher also used the technique of modeling which helped with the acquisition of desired behavior and copying it to other situations. There was a model performance of the tasks in front of the child and then he/she was asked to do the same task gradually. Also, the technique of homework helped with checking the efficiency of the program.

The careful preparation of the educational environment for the program's sessions and supplying various audio and visual stimulants helped the children have the right response. Moreover, the efficiency of the program can be attributed to the division of the program's sessions into three gradual difficulty levels, so, the program's activities suited each child in the program's sample.

As assured by most of the studies and theoretical frameworks such as (Sinka *et al.*, 2000; Cain & Oakhil, 2008), most of the problems of children with learning disabilities are more centered on oral expressive language than receptive language. Many research studies involved them seriously through the assurance of their different manifestations, such as (Al-Zaq & Al-Suwairi, 2010; Hashim, 2011; Cohler, 2016; Tosto et al., 2017).

It was also assured by (Suleiman, 1996; Edward *et al.*, 2000; 2010; Tarvainen *et al.*, 2020) that the lexical process is occurring simultaneously with the semantic and syntactic processes. This led to designing various activities aiming to develop the sub-processes of oral expression through training on the use and recognition of different vocabulary items, correct word formation, understanding the supra linguistic processes, and the connotation of the language to suit the speaker's needs and aims. The current study agreed with what was found by the previous studies about the efficiency of the program in the mitigation of oral expression disabilities, such as (Hafez, 2006; AbouShaaban, 2010; Abdul-Azim, 2011; Goodrich *et al.*, 2014; Ali & Al-Anazi, 2016; Seçkin, 2021; Ugwuanyi *et al.*, 2021).

This study also recommended the importance of applying the Garman Program of linguistic treatment at home and Introducing the program to the decision-makers for the benefit of the most possible number of children.

CONCLUSION

The current program, based on theGarman Model of linguistic treatment, contributes to the reduction of some oral expression disabilities for a sample of children with learning disabilities. That is done through introducing various linguistic tasks that contributed to the facilitation of extracting the form and meaning of words, in addition to the facilitation of using structures of

multiple shared meanings and relations, which helps produce a linguistic signal that shows a proper response in a situation.

ETHICS STATEMENT: The study was performed by the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards; I prove that an independent ethics committee approved the doubtful aspects of the study.

Informed consent was taken to take part in the program, students were asked to bring formal permission from their Guardians.

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