

## **Brain Gym as a Strategy for Developing Some Psycho-Linguistic Skills among Kindergarten Children Prone to Learning Difficulties in English Language**

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### **Abstract:**

The research aimed to measure the effectiveness of the brain gym strategy in developing some psycho-linguistic skills among gifted kindergarten children prone to difficulties in learning English language. The research followed the Quasi-Experimental Approach in the one-group method. The research tools were given in a pre-post gauge of psycholinguistic skills (prepared by the researcher), and a training program to develop some psycholinguistic skills among gifted kindergarten children prone to learning difficulties in English language (prepared by the researcher) on a sample of children (15 male and female children) at kindergarten, second level,

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gifted children prone to learning difficulties in English language. Battery diagnostic measures for the difficulties of "social and emotional" behavior (Prepared by: Fathi El Zayat). The findings of the research reached the effectiveness of brain gym in developing some psycholinguistic skills (reception skills - correlation skills - expression skills) among gifted kindergarten children prone to difficulties in Learning English.

### **Research Terminology:**

- Brain Gym.
- Psycholinguistic Skills.
- Gifted children prone to learning difficulties in English Language.

### **Introduction:**

The early childhood stage is one of the most important stages in which the human race goes through; therefore, preparing the child at this stage to face the future life has become an urgent requirement. Hence, such a stage is attracting care and attention of contemporary educational scholars and sociologists to form a healthy society that can face all problems.

With the increasing number of the population, the number of groups with special needs who need special care and attention with their teaching-learning methods increased. Among these groups is the gifted group prone to learning difficulties.

Since the gifted group who are prone to learning difficulties is one of the most important groups with special needs, caring for them and their innovative capabilities and heading such capabilities to the right direction has become a necessity in developed countries, as these countries are interested in caring for their talented and gifted children, offering them various programs and modern techniques that help them to continue their superiority to optimally invest them, especially in the fields of science, arts and language. Developed countries also provides them with tangible and intangible incentives to push them to continue their perseverance and achieve more advancement and progress for their societies.

In this regard, developed countries have paid attention to studying and developing psycho-linguistic skills as significant skills for gifted children prone to learning difficulties. There is no doubt that developing or

amending these skills is a vital factor for gifted children prone to learning difficulties, especially in early childhood (Saqr, 2008, 11).

One of the most important aspects of interest in these skills is to shed light on the mental and cognitive processes that take place at that stage and the mechanisms of the child's use of these modern processes and programs and various techniques, and their development, and to study the relationship between those processes and their functions in the brain. This is to improve those mental processes and effective functions that are the main driver of all activities existing in the work of the brain, as psycho-linguistic skills are one of the cognitive mental processes responsible for the issuance of language in the gifted child prone to learning difficulties (Abdel Ghaffar, Al-Sayed, Ghoneim, 2017, 353) .

Therefore, in the recent period, the field of the gifted who are prone to learning difficulties at the global and Arab level has witnessed a tremendous development in the use of different instructional and educational applications, strategies and methods so as to teach this group and train them on various skills and abilities to advance them and ensure their progress in their lives, and

achieve the desired instructional and educational goals (Al Hateila, 2020, 79).

In this regard, the strategy of brain sport appeared, including various movements that activate the brain, which enhances the formation of a group of neurotic patterns that, in turn, positively affect the learning process. It is a therapeutic strategy that seeks to improve or restore the child's skills in the areas of attention, remembering, organizing, reasoning and understanding, problem-solving, decision-making, and high-level cognitive abilities. Such skills are all interrelated with each other.

Brain Gym is a fast and enjoyable series of effective activities that help gifted children prone to learning difficulties to gain proficiency and mastery of psycholinguistic skills, as these skills are taught within the context of balanced work to achieve the desired goals to make them easier and more coordinated. Psycholinguistic skills promoted by brain sport are seen as an integral part of a comprehensive program of self-development that works to harmoniously balance movement and learning and helps to challenge and overcome any difficulty in learning, better reflected

towards the desired goal, i.e. the development of some psycho-linguistic skills (Al-Sharifain & Farah, 2011).

In the context of the current research and discussion about brain gym as a strategy that has great importance in the field of education for gifted children prone to learning difficulties, the findings of the Baqbas' study (2017) indicated the effectiveness of the brain gym strategy in improving some academic and social skills of kindergarten children with Attention Deficit and Hyperactivity Disorder (ADHD). Its findings recommended that teachers of kindergarten children with ADHD should focus on using the brain gym strategy when preparing and implementing lessons and in teaching such children different behaviors.

The findings of Abd Al-Rahman's study (2020) showed the effectiveness of brain gym activities in reducing the manifestations of Attention Deficit of pre-school children with developmental learning difficulties.

Al Hateila (2020) demonstrated the effect of brain gym strategy in improving mathematics skills among students with learning difficulties.

Based on the importance of psycho-linguistic skills, many studies have dealt with them according to multiple topics and recommended to pay attention and employ them, e.g. Saqr's study (2017) that sought to improve psycholinguistic abilities using the multi-sensory strategy, El-Sayed's study (2018) that used a therapeutic program based on play in developing psycholinguistic skills, and the study of Abu Rayyah, Hegazy and Abdel Rahman (2011), which aimed to develop some psycholinguistic skills.

As far as the researcher knows, there is a dearth of studies that have dealt with the effect of using brain gym strategy on developing psycho-linguistic skills. Due to the importance of brain gym, the current research seeks to use it to find out its impact on the development of psycholinguistic skills among gifted kindergarten children prone to difficulties in learning English.

### **The Research Problem:**

The development of psycho-linguistic skills is an integral part of the cognitive revolution that emerged in the beginning of the 1950's against the behavioral school. The pioneers of cognitive theories believe that the

behavioral approach cannot be used in explaining some complex phenomena, including linguistic activities (Moore, 2015).

Based on this trend, and from the researcher's experience with the reality of kindergarten during her work as a kindergarten instructor and direct contact with children, and also on the basis of the importance of psycholinguistic skills and abilities in English language as one of the necessary requirements for children's adaptation to modern progress in education, and in light of some previous Arabic literature that emphasized the effectiveness of the early intervention in the development of the child's psycho-linguistic skills, and the effectiveness of the programs provided to improve these skills, the importance of psycholinguistic skills for kindergarten children in general and those who are prone to learning difficulties in particular has been evident.

Therefore, the researcher sought to study the strengths and weaknesses of the cognitive channels of gifted kindergarten children who predicted difficulties in learning the English language, with the aim of diagnosing those points and seeking to improve and develop weaknesses by setting up and designing a program to

treat deficiencies in psycholinguistic skills in the research sample.

The researcher conducted open interviews with some kindergarten teachers and mothers of children. The interviews were conducted with the aim of getting acquainted with the views of both the teacher and the mother towards the skills that the child is missing and that limit creativity among the children who are prone to learning difficulties with the teacher and peers. Through these interviews, it was revealed that the child's ability and level of psycho-linguistic skills in English language is low.

The researcher also conducted open interviews with some children who are prone to of learning difficulties to determine the skills that they miss and that affect their psycho-linguistic skills in English language.

On the grounds of the foregoing, and with the researcher's observation that there are no local studies that have dealt with this topic, as this field lacked previous studies and research, and based on the importance of developing treatment strategies that help reduce the difficulties of psycho-linguistic skills in English language

among kindergarten children who are prone to learning difficulties and improve their academic performance in English, it has been proven that the strategy of brain gym may be effective in developing the psycholinguistic skills of gifted kindergarten children prone to learning difficulties in English language.

Therefore, the current research tries to answer the following main question:

**What is the effectiveness of the brain gym strategy in developing some psycho-linguistic skills among gifted kindergarten children prone to learning difficulties in English language?**

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

1. What are the psycho-linguistic skills that need to be developed among gifted kindergarten children prone to difficulties in learning English language?
2. What training activities can develop psycholinguistic skills for kindergarten children prone to English language learning difficulties?

3. What are the differences between the mean scores of the gifted kindergarten children prone to difficulties in learning English language in the pre-post measurement of the Psycholinguistic Skills Scale?

4. What are the differences between the mean scores of the gifted kindergarten children prone to difficulties in learning English language in the post and follow-up measurement of the Psycholinguistic Skills Scale?

### **The Research Objective:**

In general, the research aimed to measure the effectiveness of the brain gym strategy in developing the psycholinguistic skills of gifted kindergarten children to reduce learning difficulties in English language, in addition to knowing the extent to which the psycholinguistic skills of children have improved after applying the program later.

### **Importance of the Research:**

- The research gains its importance from the scarcity of Arabic studies, which dealt with the psycholinguistic skills of gifted children prone to learning difficulties, to the best of the researcher's knowledge.

- The importance of the current research also comes through dealing with an important aspect of the educational process, which is to reveal the effect of the brain gym strategy on developing some psycho-linguistic skills among gifted kindergarten children prone to learning difficulties in English language.

- The results of this research and the knowledge contained in it may contribute to raising the level of cognitive awareness of kindergarten teachers and mentors about taking advantage of the measures of brain gym strategy in their interaction with gifted children who are prone to difficulties learning English language and improving the level of psycho-linguistic skills in English language.

### **Methodological Procedures of the Research:**

#### **First: The Research Sample:**

The current research sample consisted of (15) gifted kindergarten children who are prone to difficulties in learning English language at the age of (5-6) years. It is a systematic sample selected from Port-Said Language School Kindergarten in Port Said Governorate. The form of "Indicators of The Gifted Prone to Learning Difficulties" was distributed on female teachers to assess

the children in the four halls, including (15) children (boys and girls) at the second level. The (15) children and (boys and girls) who are agreed upon as gifted children prone to learning difficulties have been identified according to the indicators of learning difficulties and through the opinions of the teachers. The homogeneity of the children of the study sample was taken into account by observing the following:

1. The chronological age of all the children of the sample ranges between (5-6) years.
2. IQ scores should not be less than (90-110) on the Stanford-Binet scale, Fifth Edition.
3. Children got the highest marks in the difficulty scale, prepared by (Fathi Mustafa Al-Zayat)
4. Children of the sample who are obligated to attend kindergarten, which facilitates their commitment to attend and then undergo the current study program.
5. Those with obvious health problems or disabilities were excluded from the research sample so as not to affect the sample's performance in the program.

Based on the previous conditions, the study sample was identified (15) boys and girls (9) males, and (6) females. Data were collected on the chronological age of the

sample members from the lists of the school administration.

### **Second: Research Methodology:**

The quasi-experimental approach, one-group design, was used to investigate the effectiveness of the brain gym strategy in developing psycho-linguistic skills among gifted kindergarten children prone to learning difficulties.

### **Third: Research Instruments:**

The researcher prepared the following instruments:

1. A scale of psycho-linguistic skills among gifted kindergarten children prone to learning difficulties (prepared by the researcher)
2. A program based on brain gym to develop the psycho-linguistic skills of gifted kindergarten children prone to learning difficulties (prepared by the researcher)
3. A scale of psycho-linguistic skills among gifted kindergarten children prone to learning difficulties: The scale consists of six sub-tests divided into three main areas that cover linguistic communication methods and their levels, and the psychological and mental processes involved in those methods. These areas and their sub-tests

are as follows:

### **The first area: (reception skills):**

It means the ability of a kindergarten child to comprehend spoken or written English words, and it includes:

1) **Auditory reception:** It refers to the kindergarten child's ability to understand spoken English words, meaning (extracting the meaning from the material presented to him/her verbally). The response to the test here does not require the child's ability to express, but the answer is Yes or No.

2) **Optical reception:** It means the ability of the kindergarten child to understand pictures and words written in the English language by matching a picture with another related image, meaning (gaining meaning from visual symbols).

### **The second area: (correlation skills):**

It means the ability of a kindergarten child to perceive the relationships between visual or auditory symbols, and it includes:

1) Auditory correlation: It means the ability of the kindergarten child to relate concepts and ideas presented to him/her in a verbal way, meaning (linking words spoken in a meaningful way).

2) Visual correlation: It means the ability of the kindergarten child to connect concepts and ideas presented to him/her in a visual way, meaning (linking between homogeneous or related visual stimuli).

### **The third area: (expression skills):**

It refers to the ability of the kindergarten child to put ideas into words and express them with a gesture or sign, and it includes:

1) Verbal expression: It means the ability of the kindergarten child to express things phonetically in the form of spoken English words.

2) Manual expression: It means the ability of the kindergarten child to express things in a manual or kinesthetic manner.

The scale was rationed in terms of reliability validity as follows:

## Reliability of the Scale:

The researcher used (Cronbach's Alpha Coefficient) to measure the reliability of the scale on a pilot sample consisting of (30), and it was excluded from the main sample of the study. The following table illustrates the statistical procedure:

**Table (1)**  
**Demonstrates reliability coefficients for the Psycholinguistic Skills Scale using Cronbach's Alpha**

Dimensions of the Psycholinguistic Scale	Cronbach's Alpha Coefficient
Reception Skills	0.820
Correlation Skills	0.895
Expression Skills	0.902
Total Score	0.886

Table No. (1) Shows that the general reliability coefficient for the scale dimensions is high as it reaches 0,886 \* for the total items of the scale. This indicates that the scale has a high degree of reliability to be relied upon in the area of application of the search according to the

Nunnally Scale, which adopts 0, 70 as a minimum limit for reliability.

### Validity of the Scale:

Validity of Terminal Comparisons:

The scale was applied to the standardization sample (n = 30) of gifted kindergarten children who were not included in the final application of the scale, with the aim of calculating the differences between the highest and lowest quartiles (27%) of the children's scores, by using the (T) test shown in the following table:

**Table (2)**

**Results of the "T" test to study the differences between the averages of the peripheral groups of the Psycho-Linguistic Skills Scale for the pilot sample**

Variable	Higher Quadrant			Lower Quadrant			T Value	Significance Level
	N	Mean	Standard Deviation	N	Mean	Standard Deviation		
Psycho-Linguistic Skills as a Whole	8	8.750	0.462	8	5000	0.000	22.913	0000

According to the above-mentioned table, It is evident that there is a statistically significant difference at the level (0.001) between the upper and lower quadrants on the psycho-linguistic skills scale in favor of the average of the higher quadrant in the total sample. This indicates that the Psycho-linguistic Skills Scale has a high ability to distinguish between children with high psycho-linguistic skills and those with low psycho-linguistic skills.

Thus, the researcher has made sure that the Psycholinguistic Skills Scale has a high degree of reliability on the pilot sample of the current research.

### **3. A program based on the brain gym strategy to develop the psycho-linguistic skills of gifted kindergarten children prone to English language learning difficulties:**

The researcher has designed and implemented a set of (32) training sessions based on a brain gym strategy. She has also prepared activities to cover all dimensions of psycho-linguistic skills, the subject of the study (i.e. reception skills, correlation skills, and expression skills). The activities have been designed to develop such skills while being used correctly for gifted kindergarten

children who are prone to learning difficulties.

### **Program Building Steps:**

The program was built with the following steps:

#### **First: the main objective:**

Developing some psycho-linguistic skills in English language among gifted kindergarten children prone to difficulties in learning English language

#### **Second: The sub-objectives:**

- Developing the child's ability of auditory reception,
- Developing the child's ability of visual reception,
- Developing the child's ability of auditory interconnection,
- Developing the child's ability of visual interconnection,
- Developing the child's ability of verbal expression, and
- Developing the child's ability of manual expression.

#### **- Cognitive objectives:**

- After completing the program, the child should be able to:
- Learn common concepts and terms used in activities,

- Ask about new things,
- Simulate simple letters and words in creative ways,
- Identify creative methods for implementing the activity.
- Mention the steps of the game.
- Repeat the correct sounds of letters and words s/he heard.
- Respond to the teacher's questions.
- Take the initiative to speak English.
- Connect kinesthetic performance with implementing language skills.
- Answer the questions asked in English.
- Understand the rules of exercises during the activity.
- Understand creative methods before carrying out the activity.
- Mention the letters of his/her name in English, and pay attention to brain gym exercises.

**- Skill objectives:**

After completing the program, the child should be able to:

- Perform the required movements.
- Follow a planned path to draw a picture, letter and word.

- Imitate the teacher's correct ways of exercises and activities.
- Do some brain gym exercises.
- Recognize converging sounds in pronunciation.
- Practice some brain gym exercises.
- Move his/her hands and feet correctly during an activity.
- Use new methods of language development.
- Use new words, grammar, and structures in speech.

**- Affective goals:**

After completing the program, the child should be able to:

- Respect his/her colleagues and appreciate belonging to the group.
- Feel his/her talent during the activity.
- Collaborate with the teacher in a variety of creative ways during the implementation of the activity.
- Respect the rules of carrying out exercises.
- Feel satisfied and happy through the activities.
- Participate in activities.
- Find creative ways to implement exercises and activities of brain gym.
- Show a response that denotes joy.

- Collaborate with teammates to help the group win.
- Appreciate the importance of activities.
- Respect the opinions of colleagues.
- Feel happy through the activities.
- Participate in activities.
- Respect the rules of the instructional game.
- Find it easy to play with other children.
- Collaborate with the teacher while performing exercises.
- Want to do things over and over in creative ways.
- Take initiative to speak with the teacher.

### **Second: Designing sessions and activities of the program based on the strategy of brain gym:**

In light of the objectives that the program seeks to achieve, (23) training sessions have been determined aimed at developing psycho-linguistic skills to reduce learning difficulties in the English language.

### **Third: Preparing the evaluation instruments:**

The purposes of evaluating the brain gym program appear as follows:

- 1) Ensure the effectiveness of the brain gym strategy in

developing psycho-linguistic skills among gifted kindergarten children prone to learning difficulties in English language.

2) Identify the difficulties that children face during the implementation of the brain gym program.

Three methods of assessment are used in the program:

1) **Pre-assessment:** This is done before implementing the program by applying the Psycho-linguistic Skills Scale to the children of the experimental group, and recording the children's grades on the scale in order to determine the psycho-linguistic difficulties while learning English language.

2) **Formative assessment:** The child is evaluated continuously from the beginning of the program until its end. This is done on a daily basis during or after the presentation of the activity through cards presented to children daily as an application of the activity, and can be called (individual assessment) to know the progress made by children after they have undergone the Brain Gym Program, then compare this to their scores before exposure to the program.

3) **Post-assessment:** It is used after the completion of the application of the Brain Gym Program to find out the

progress achieved by the program and compare that with the children's scores before exposure to the program. This is done by re-applying the Psycho-Linguistic Skills Scale on the children.

### **Research Hypotheses:**

Based on the research problem and objectives, the researcher puts the following hypotheses for the research:

- 1) There are statistically significant differences between the mean scores rank of the experimental group children (the experimental study sample) on the Psycho-Linguistic Skills Scale of gifted kindergarten children prone to learning difficulties in English language before/after the application of the Brain Gym Program in favor of the post-measurement.
- 2) There are no statistically significant differences between the mean scores rank of the experimental group children (the experimental study sample) on the Psycho-Linguistic Skills Scale of gifted kindergarten children prone to learning difficulties in English language, in the post and follow-up measurements.

## **Research Findings:**

The hypotheses formulated were tested with the aim of ensuring the effectiveness of the brain gym strategy in developing psych-linguistics skills among gifted kindergarten children prone to learning difficulties in English language.

## **Findings of the First Hypothesis: Discussion and Interpretation:**

The first hypothesis of the research states that:

"There are statistically significant differences between the mean scores rank of the experimental group children (the experimental study sample) on the Psycho-Linguistic Skills Scale for gifted kindergarten children prone to learning difficulties in English language before/after the application of the Brain Gym Program in favor of the post-measurement."

To verify the validity of this hypothesis, the researcher used the Wilcoxon Test for Related Groups, to find the significance of the differences between the mean scores rank of gifted kindergarten children before applying the program, and the mean scores of the same group after

applying the program, as shown in the following table:

**Table (3)**

**The mean and sum of the negative and positive ranks and the Z-value between the pre and post measures on the Psycho-Linguistic Skills Scale as a whole by Wilcoxon Method**

Skills	Rank of the Psycho-Linguistic Skills Variable	Number	Pre/post Measurement		Z Value	Statistical Significance
			Ranks Mean	Ranks Total		
Psycho--Linguistic Skills as a Whole		(N)				
	Negative Ranks	0.0	0.00	0.00	- 3.424	0.001
	Positive Ranks	15	8	120		
	Neutral Ranks	8				
	Total Summation	15				

From the above table, it is evident that there are statistically significant differences at the level of significance (0.001) between the score ranks mean of gifted children who are prone to learning difficulties who are members of the study sample before and after the application of the program on the dimension of Psycho-Linguistic Skills Scale as a whole used in the current study in favor of the post application. The Z values between the pre and post applications of the current study sample have gone to (-3.424).

### **Interpretation and Discussion of the First Hypothesis Findings:**

It is evident, from the previous table, that there are statistically significant differences between the score ranks of the experimental group before and after applying the program on the Scale of Psycho-Linguistic Skills as a whole. The researcher attributes these differences to the brain gym strategy used in this research, where the lack of psycholinguistic abilities experienced by gifted kindergarten children who are prone to learning difficulties (the research sample) is an important factor influencing the deficiency of language skills in English language. The lack of psycho-linguistic skills is reflected

in the child's deficiency in both reception and audio-visual interconnection, which affects the ability of these children to satisfy their needs and desires to learn English language, as well as the ability to recall and remember audio and visual information, which in turn, affects their ability to follow instructions and recall information related to the language. This of course required the preparation of the current program, including many objectives and activities based on brain gym that the researcher sought to prepare in a way that suits the capabilities of gifted children who are prone to learning difficulties to achieve the aims of the current study. The objectives of the program were applied to the members of the experimental group, which contributed to finding statistically significant differences between the mean scores of the experimental group's children's score ranks before and after the implementation of the program on psycho-linguistic skills in favor of the post application.

The researcher's brain gym exercises helped gifted kindergarten children who are prone to learning difficulties, as brain sport activities played a large role in helping children understand and absorb the new language and develop it in innovative and new ways. Since the

English language and its establishment for children should be given all the care and attention, it is no secret to any of us that the learners suffer from linguistic weakness in the different stages of education, whether in their speech, writing, or reading, which is caused by various factors, including the lack of developing the methods used in teaching English language, the lack of interest of the child's family members in the language, the negative use of pressures, and the resort, in most cases, to punishment during teaching the language, without taking into account the innate preparations and natural growth and not using modern and innovative means to develop gifted children who are prone to learning difficulties.

For children, the new language needs stimulation and creativity in order for the child to master it without boredom or fear. Many English language teachers in different instructional stages still adopt sterile methods of teaching that do not attract children and do not work to develop their linguistic vocabulary and develop their language skills as required. In fact, some of these methods diminish the enthusiasm for learning English language, weaken the ability to acquire its correct vocabulary and formulas, and lead to aversion to its

lessons.

Despite the current linguistic situation and the general weakness of children in English language, we see the lack of academic studies that look into the real causes of such weakness and the its consequences. Therefore, the researcher was interested in developing psycho-linguistic skills in English from the beginning of the educational stage with the aim of empowering the child with language skills, by providing them with basic skills, such as listening, speaking, reading, and writing, in addition to helping them acquire its correct practices and sound directions. This also gradually develop such skills at all instructional stages so that, at the end of this stage, the child reaches a language level that enables him/her use the language in a way that aids them to continue studying at the following educational stages. One of the most essential factors in the communication process is reception.

Therefore, the researcher was interested in developing reception skills to learn English correctly in terms of speaking and pronunciation.

Since the second language plays an important and

tangible role in human life as it is the main means of acquaintance and interaction between all people, seeking to enhance and develop it according to the characteristics, readiness and ability of man begins from the first stages of instruction.

The researcher saw weak reception, interconnection, and expression skills in English language among gifted children who are prone to learning difficulties; therefore, the researcher used modern methods of innovative programs, as well as various and innovative activities to develop the psycho-linguistic skills in English language among gifted children who are prone to learning difficulties.

The researcher has used brain gym exercises and activities that resemble a field which most countries of the world seek to rely on for instruction and training in early childhood, especially gifted children who are prone to learning difficulties. That is because experts in the field of special education realize the importance of brain gym activities and exercises because they lead to the prevention of many problems, and stimulate such children to learn innovatively.

The stage of childhood occurs in what is known as "critical periods of development, where the child is at the height of his/her preparations and ability to grow and change. Therefore, the use of speaking and listening skills through brain gym activities helps to invest those periods to develop the child's mental, linguistic and social abilities.

Educators and psychologists have unanimously agreed that kindergarten is the most important period in a child's life. Hence, the urge to engage in physical and mental activity "brain gym" at this stage is considered a matter of great importance. If the child is not able to treat the problems that arise during that period, s/he is able to alleviate them, or at least be able to prevent their exacerbation in the future.

Numerous studies and researches concerned with early detection of gifted people who are prone to learning difficulties indicate that the ability of this group to make any progress or educational effectiveness is steadily diminishing with delayed detection and treatment of them via physical activity. These studies also confirm that early detection of them has a positive effect on the effectiveness of programs and activities prepared for their

treatment.

Therefore, the need for early identification, diagnosis and treatment of this group is a basic and important prerequisite for dealing with its members.

### **Results of the second hypothesis: discussion and interpretation:**

The second hypothesis of the research states, “There are no statistically significant differences between the mean score ranks of the experimental group children (the experimental study sample) on the Psycho-Linguistic Skills Scale of gifted kindergarten children prone to learning difficulties in English language in the post and follow-up measurements.”

To verify the validity of this hypothesis, the researcher used the Wilcoxon Non-Parametric Test to reveal the significance of the differences between the post and follow-up measurements of the research sample. Table (4) illustrates what the findings have revealed:

**Table (4)**  
**The mean and sum of negative and positive ranks and the Z-value**  
**between the post and follow-up measures of the Wilcoxon**  
**Psycholinguistic Skills Scale**

Scale Psycho- Linguistic Skills as Whole	Ranks of the variable in the Psycholinguistic Skills Scale	Number	Follow-up & post measurement		Z-value	Its Significance
		N	Ranks Mean	Ranks Total		
	Negative Ranks	0.0	0.00	0.00	0.000	1.000
	Positive Ranks	15	8	120		
	Neutral Ranks	0				
	Total Summation	15				

The above table shows that there are no statistically significant differences between the mean score ranks of gifted children who are prone to learning difficulties (individuals of the study sample) after implementing the program and after a month of post application of the

Scale of Psycho-Linguistic Skills as a whole, used in the current research, and the Z-values reached between the post and follow-up measurements of the study sample on the scale as a whole (0.000).

### **Interpretation of the second hypothesis findings:**

It is evident, from the previous table, that there are statistically significant differences between the score ranks of the experimental group in the post and follow-up application on the Scale of Psycho-Linguistic Skills as a whole. The researcher attributes these differences to the brain gym strategy used in the current research, as this is due to the continuing effect of brain gym on the research sample in the total score of the Psycho-Linguistic Skills Scale used in the post and follow-up-measurement.

This may be due to the mental age convergence of the children, which led to the convergence of their responses despite the repetition of the follow-up application after a month of the post application, which, in turn, indicates the stability of effect of the program.

The researcher believes that the use of brain gym contributed to improving the child's motivation to accomplish the activities required of them. The diversity

in the use of audio-visual stimuli included in the training program led to the motivation of the child to pay attention to those stimuli more positively, and improved the child's performance in terms of receptivity. During the implementation of the training program, the researcher noticed the transfer of the impact of improving receptive skills from the child's reception of audio-visual stimuli to an improvement in the reception and understanding of verbal instructions addressed to them. The child's ability to receive the researcher's verbal vocabulary during the performance of the training program activities increased.

The current research findings showed the effectiveness of using brain gym activities in developing psycho-linguistic skills (reception, interconnection, and expression) among gifted kindergarten children with learning difficulties, as was evident from the results of the research hypotheses. This reflects the tangible improvement in psycho-linguistic skills that are measured by the Psycho-Linguistic Skills Scale after implementing the program, which indicates the feasibility of the program in developing psycho-linguistic skills.

Perhaps the program's dependence on the brain gym activities has increased the effectiveness of the program

used. In addition, taking into account the characteristics of gifted children with learning difficulties in preparing the program has increased its effectiveness, in addition to the fact that the children of the experimental sample have an intelligence level located in the medium term. Consequently, when a suitable learning environment was created for them, which would enable them to benefit from their abilities, it resulted in their learning as it appeared in the improvement of the level of their psycho-linguistic skills after applying the proposed training program.

This result is consistent with what was presented by the theoretical heritage and previous studies on programs that work to develop skills and psycho-linguistic abilities, with the need to emphasize enriching the environment surrounding a gifted kindergarten child prone to learning difficulties with resources and capabilities that help them develop their audio and visual independence skills, optical and audio interconnection, and the skills of verbal and manual expression..

The effectiveness of the use of brain gym and the spirit of fun that dominated it can be attributed to utilizing it in the context of competitive games among children, which

increased their attention and awareness.

Previous studies and theoretical frameworks have confirmed that gifted kindergarten children prone to learning difficulties in English language benefit from the programs offered to them, especially in the field of psycho-linguistic skills, such as Saqr study (2008) that aimed to reveal the differences between individuals with learning difficulties in the academic fields (reading and writing) and normal ones in performance on the Illinois Battery's sub-tests of psycho-linguistic abilities.

The researcher attributes the effectiveness of the current research program to the inclusion of brain sport, which stimulates and activates the manifestations of reception, visual and auditory interconnectedness of the gifted child with learning difficulties and activates his role. This results in increasing the child's motivation to learn actively and efficiently.

The effectiveness of the program based on brain gym on developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) is also evident in this research

through the improvement in the aspects of reception, correlation and expression among the members of the experimental group. This was done through the Psycho-Linguistic Skills Scale, whose results indicated an improvement in the reception, correlation and expression skills of children through the post-measurement. This improvement of gifted kindergarten children prone to learning difficulties (children of the experimental group) is due to the fact that they have been affected by the program based on brain gym, which aims to develop psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression).

Due to the increased motivation provided by the program for gifted kindergarten children with learning difficulties, and their desire to learn brain gym activities that led to an improvement in the manifestations of psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression), the study program could develop the psycho-linguistic skills of gifted kindergarten children who are

prone to learning difficulties in English language, depending on the activities of brain gym, which confirms the effectiveness of the current research program.

The researcher attributes the improvement of children's performance on the Psycho-Linguistic Skills Scale to the use of brain gym, which is an important method on which the current study program relied for developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression).

The sessions also included musical, story and kinesthetic activities related to brain gym activities that help to increase the concentration of the reception time for children and focus on performing the required tasks, which leads to the development of reception skills.

The researcher explains the improvement in children's performance after the program due to taking into account the mental characteristics of gifted kindergarten children with learning difficulties. In addition, the study program relied on group sessions containing small groups to train the child in psycho-linguistic skills. Thus, the reliance of the program sessions on group activities is one of the

factors that helped the effectiveness of the current program and the improvement of children's performance in doing brain gym activities and thus the development of psycho-linguistic skills.

The results of the hypotheses indicated the effectiveness of the program used in the research in the development of psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) among gifted kindergarten children who are prone to learning difficulties in English language (members of the experimental group). It indicates the presence of positive effects of the program in providing experiences and brain-motor practices that led to improvement of psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression). This, in turn, can lead to many positive effects on gifted kindergarten children who are prone to learning difficulties. Therefore, it was rational that the children of the experimental group showed significant improvement after undergoing the study program based on brain gym.

Thus, the hypotheses of the current study on the effectiveness of the current program in developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) were realized in accordance with the previous interpretation of the results and depending on the theoretical heritage and various theories of learning.

Thus, all the results of the current research indicate that all the hypotheses that the researcher tried to answer in the current research have been fulfilled, and they all aim to verify the effect of using the kinesthetic brain gym on developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) for gifted kindergarten children with learning difficulties. The results are evident through a comparison between the responses of the children of the experimental group in the pre- post- and follow-up measurements.

These findings confirm the effectiveness of using the brain gym strategy in developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic

expression, and manual expression) in gifted kindergarten children prone to learning difficulties in English language.

Based on the above, and by accepting the two hypotheses of the research, the strategy of brain gym has done well in developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) among gifted kindergarten children who are prone to learning difficulties in English language.

Hence, the effectiveness of brain gym in developing psycho-linguistic skills (auditory reception, visual reception, optical interconnection, auditory interconnection, linguistic expression, and manual expression) in gifted children prone to learning difficulties in English language is confirmed.

### **Recommendations and Proposals:**

Based on the foregoing, the researcher can mention the following recommendations and suggestions:

1. Holding lectures and awareness seminars for parents

who have gifted children who are prone to learning difficulties in English language to familiarize them with their children's learning difficulties, characteristics, needs, and appropriate programs.

2. Trying to inform parents about the conditions of gifted children prone to learning difficulties in English language, encourage them to accept their capabilities and convincing them of the possibility of using these capabilities to produce a child with learning difficulties who is effective and compatible with themselves.

3. Holding special courses for ordinary teachers who teach gifted children prone to learning difficulties in English language on a regular basis to familiarize them with children with learning difficulties and how to deal with them.

4. Conducting special programs for gifted children prone to learning difficulties in English language to equip them with social communication skills and raise their self-concept.

5. Conducting more research on psycho-linguistic skills in English language for gifted children who are prone to

learning difficulties, this measures the extent to which parents know the characteristics of their children who suffer from learning difficulties.

6. Conducting further research and studies dealing with linguistic skills in English language for gifted children who are prone to learning difficulties in environments other than those in which this study was conducted in order to generalize the findings to a larger possible sample.

### **Suggested Research:**

1. Conducting a study on the effectiveness of a training program to develop reception skills for gifted children prone to learning difficulties.
2. Conducting a study on the importance of brain gym to help teach English language to gifted children prone to learning difficulties and dealing with the surrounding community.
3. Doing a study dealing with training kindergarten teachers to develop the psycho-linguistic skills of kindergarten children.

4. Conducting a study on the effectiveness of a counseling program to learn the basics of brain gym for successful communication with gifted kindergarten children who are prone to learning difficulties.
5. Conducting a study that deals with the effectiveness of training mothers on how to teach languages to gifted children who are prone to learning difficulties.
6. Conducting a study that deals with a training program using brain gym to modify some wrong behaviors for kindergarten children.

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