

# STUDYING THE LEVEL OF THE SELECTIVE ATTENTION AND WORKING MEMORY AMONG CHILDREN WITH WRITING LEARNING DISABILITIES (DYSGRAPHIA)

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**ABSTRACT**\_\_ *The present study aims to know the level of the selective attention, and the working memory among children with Dysgraphia, and if there is a difference between the efficiency of the working memory (phonological loop and visual satellite Notepad). The researchers applied the selective attention measurement "Stroop" in addition to the working memory measurement which is adopted by [1], on a sample of primary school pupils whose age between 7 to 11 years old with writing learning disabilities (Dysgraphia). The results were that the pupils with learning disabilities have average level of the selective attention, and the working memory.*

**Keywords:** *Selective Attention, Working Memory, writing learning disabilities (Dysgraphia).*

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# STUDYING THE LEVEL OF THE SELECTIVE ATTENTION AND WORKING MEMORY AMONG CHILDREN WITH WRITING LEARNING DISABILITIES (DYSGRAPHIA)

## I. INTRODUCTION

Language is one of the important topics in the cognitive psychology, consisting of names, verbs, letters, syllables, sounds and rules. The ability of an individual to use language in an appropriate way as in speaking, listening or writing is essential to human life. The use of language during the communication process requires the use of an individual vocabulary dictionary as well as grammatical rules that control the organization of these words in a meaningful chain. The language in its oral and written form is considered as ability for man alone. Scientists have tried to understand this linguistic and cognitive behavior for several years. This is the most important mean to communicate, think, and learn and scientific production.

The writing is the third form of the linguistic system based on the integration of oral and written language. The writing is also an adjective dimension that is characterized by its psychological image. Writing is an interactive process that requires qualification of multiple skills in order to be able to write, which is a basic function of the school, it is an acquired skill that requires the integration of all types of learning and previous experiences of the individual. It depends on the efficiency of oral language skills, along with other receptive language skills, handwriting and spelling, which are expressed in writing. Many individuals develop writing skills after they have perfected the skills of listening and speaking, which contributes to the success of the pupil in his study because of the overlap of writing at all levels of education, so writing is an important aspect of language proficiency. The individual, who speaks language and doesn't express it in writing when he wants, can't be considered to have gained this language fully.

The written language is not taught in isolation from cognitive activities. Literary production requires the use of cognitive mechanisms. Cognitive abilities, its structure and its information processing system are factors that affect their acquisition that cause underachieving in the writing level. And the mental processes that are studied especially memory and attention, which play an important role in the various activities that the individual does, with regard to the process of learning. Selective attention is known as the use of mental competence in the process of knowledge, and directing the feeling and focus on a particular thing. Attention is noted in the selection. The memory is operating as a record to store information during the conduct of complex cognitive processes, and this in a short period, and it facilitates the acquisition and storage of many sensory inputs in the process of learning, especially in the early stages of the child, and the occurrence of any disorder in one of them leads to the emergence of difficulties in learning and collection, especially the learning of the basic skills of writing.

The difficulties that arise in any of the language skills are an obstacle in the way of mastery of writing, and show the difficulties of learning to write in the inaccuracy in drawing, or deletion of some characters or sections or errors in the spelling and verbal and in general, most of the

difficulties of learning to write: It is in handwriting, spelling and in expressive writing.

The problem:

Learning difficulties are important domains in which pupils are different. Students with learning disabilities are healthy children, in most psychological aspects, but they have obvious deficits in one or another area of learning. For many of the problems that children with learning disabilities exhibit as heterogeneous groups, some have tried to classify them in order to facilitate appropriate diagnosis and treatment methods for each group [2].

Based on the latter, we considered studying one of these academic learning difficulties, which raised our concerns, is the difficulty of learning writing. In the natural state, Writing is one of the basic skills in the language system, as it is integrated with the oral language and reading in this system. It represents a communication skill for self-expression as well as learning skill. It also requires integration in all types of information processing. The efficiency and effectiveness of writing depend on the skill of oral language as well as other language skills [3]. It is also known as a linguistic system in which sounds and symbols are organized according to rules that define how they are drawn and controlled so that they can visualize the words in a way that determines their meaning. It transfers to mind in a way that makes it easier for the student to understand their purposes clearly. And feelings through pronunciation and listening, while writing the process of codification of those ideas and meanings, through the symbols and sounds [4]. and in order to codify these symbols must be mechanisms in which the intervention of several elements, so the mechanism of writing is a complex process. Each of these has a role which can't be passed and this means that any dysfunction in the writing mechanism affects writing skills [4].

In order to write the rules that protect the learner from falling into error, the word is reserved because the meaning of the words is related to its name. If the drawing differs, the meaning varies. Therefore, the lack of knowledge of the rules of writing and the ability to do so entails a deficiency in expressing meanings and communicating them to others. The teachers stressed the importance of written drawing and the need to take care of it and spelling because the reading, coupled with the written drawing are complementary, so it is necessary to qualify learners to write and knowledge of their rules and ability to increase the need to master the writing, most of the subjects are based on written drawing, and therefore the weak student has a weak achievement. In light of this phenomenon, the level of damage caused by learning difficulties is reflected in the student's achievement at all levels of study [5]. Mustafa AlKamel (1988) showed that the ratio of the reading difficulties was 25% and in writing 28.4%. while Abd Elnasser Anis (1993) cleared that the learning disabilities ratio in reading 16.5% , writing 18.8%, and mathematics 3.5% , so Mykle Beit is the first who used the term learning disabilities to write only to indicate disorders that are symbolic in nature. In this case, writing learning difficulties occur as a result of confusion

or disorder between the mental image of the word and the movement system [6].

The study of Paulin et al. (Polin et al, 1984), on the abilities of writing expression, showed that there were statistically significant differences at the level of (0.05) in the writing performance of students with learning disabilities and ordinary students in the third grade, Language difficulties in terms of pronunciation, spelling, punctuation, writing, and the interests of the ordinary, including the difficulties of learning to write in those difficulties in which students face overlapping problems such as the ability to retain ideas and their interrelationship, problems in language and morphology or poor quality and consistency or wrong spelling or misconception [7]. Since learning difficulties are written in a number of factors and variables that contribute to their appearance, which may in general involve learning difficulties in general, among these factors, Cognitive factors as there are many studies or research agreed that learners with difficulties.

In particular, they lack the specific quality capabilities associated with writing, such as visual memory and the ability to recognize spatial relationships as well as the ability to recover from memory. They also suffer from deficiencies in the central system for processing and processing information and in the cognitive functions of the brain. In our research selective attention and working memory, studies and research on attention processes indicate that the importance of selection of the stimulus occurs only after giving meaning and connotations in working memory, so selective attention is the process that allows us to The choice of information available for the purpose of retaining and processing appropriate information for the activity is in place. This is enough for other stimuli, so that the individual or the child can't pay attention to all the different stimuli at once or in parallel . Therefore, the slow of the developmental process of the ability of the selective attention among children with writing learning difficulties that hinder the possibility of early learning in school, which weakens their basic educational ability, leading to further difficulties. So large number of children with learning difficulties in selecting the appropriate stimuli among the enormous stimuli that they are exposed to, and teachers describe these children as unable to focus in their work, they are easily distracted and do not finish the instructions and the extent of attention to them is limited [8]. A number of studies have examined this aspect, including the study of Susan Berlitt et al. (1983). The aim of this study was to compare the visual perception of children with learning disabilities and ordinary ones following visual stimuli to attract and maintain attention during the presentation of visual stimuli.

Baddeley shows in his studies and researches that working memory is the same as short-term memory, but Baddeley (1992, 1997, 2002 ...) proved that the working memory is an independent system ,as the short – term memory can't do the role that the working memory in analyzing, interpreting, integrating, and connecting the recent information with the previous ones that are saved. So Baddeley mentioned [9]. that the working memory is characterized in comparing to short-term memory with storage capacity, processing, and the ability to perform cognitive processes such as comparing, deducting, and the

logical process [9]. In a research about working memory in learning disabilities, several studies were conducted, such as Lee Soinson (1990), which aimed at comparing the students with difficulties and the ordinaries in working memory capacity. The sample of the study is 58 students from the fourth to the sixth grade, and the results found that there are statistically significant differences between students with learning difficulties and ordinaries in working memory capacity and for the benefit of ordinaries [10].

Therefore, the selective attention and the working memory are necessary, as each intervenes in learning many basic skills in primary school children, especially with regard to writing.

Based on the above, this research aims at trying to detect the level of the impact of these variables on the emergence of learning difficulties writing in primary school children. Therefore, the problem of the research can be formulated in the following questions:

What is the level of the selective attention among children with writing learning difficulties?

What is the level of the working memory among children with learning disabilities?

Is there a difference between the efficiency of the working memory (the phonological ring, the visual space)?

The research aims:

Through our interests the researchers seek to achieve the following objectives:

Knowing the level of the selective attention in a sample of pupils with learning difficulties.

Attempting to detect the level of the working memory in a sample of students with learning difficulties.

The researchers aim to identify the level of both the working memory efficiency which are the phonological and the visual space.

The importance of the research:

This research is a multi-dimensions subject, because it touches number of different disciplines. It has a cognitive dimension because it deals with purely cognitive variables such as attention and memory. On the other hand, it has an educational dimension. It concerns one of the special categories within the school; that needs a specialized quality care, which is the category of pupils with learning difficulties, including writing difficulties.

In light of the simple theoretical and field, the researchers have encountered several questions, including: What is the motivation to study the writing process and its difficulties, and from this the researchers will present their concerns, which the researchers hope to eliminate some of this ambiguity.

The importance of the current study is that it is interested in studying variables of high importance:

The lack of many researchers dealing with the difficulties of writing, as it is a normal category does not need much attention, especially as the current era keeps pace with technological development, so can compensate these difficulties with various modern means of technology, "computers and electronic boards ... etc.

This research has led to the prevalence of learning difficulties in general and the difficulties of writing especially.

Showing teachers and parents some cognitive processes and their importance in the achievement of good students with learning disabilities.

Dealing with the basic aspects of cognitive aspects, especially writing, identifying some of the mental components associated with them.

Motivating researchers and scholars to carry out other studies related to the current research variables in order to achieve the scientific richness of the cognitive aspects associated with it.

Considering the attention of the guardians to some difficulties, which some workers saw it simple, but it is too important as the difficulties of writing, especially in the advanced stages of primary education.

An attempt to identify and deduce the nature of the effect of both selective attention and working memory on writing difficulties.

The research limits:

Location boundaries of research:

The basic study was achieved at the Blida Children's Center in the primary school "Mohamed the son of Ali".

The research time limits:

The research was conducted over a period of time from March until 9 May.

The Research Group:

The research group was chosen according to the hypotheses. It consisted of 9 cases suffering from writing learning difficulties and they were deliberately selected by the orthopedic specialist.

Hypotheses:

The first main hypothesis:

Children with learning disabilities are characterized by a high level of the selective attention.

The second main hypothesis

Children with learning disabilities are characterized by a low level of the working memory.

There is a difference between the efficiency of the ring of phonology and visual space.

The definitions:

The Selective attention:

Broadbent definition 1958:

"It is a filter through which information is picked up, to be well aware" [11].

Posner definition 1980:

"Is a concept based on the high speed and correctness of the processing of information expected in the space area, compared to information located in an unexpected area" [12].

Parasuman definition 1988:

"Selection is defined as a mechanism that allows the identification of information to be processed" [13].

Procedural definition of selective attention:

"It is calculated by the degree to which children receive the Stroop selective attention test".

The Working memory:

Baddeley defines it as "a device for the temporary preservation and processing of information during complex cognitive activities such as understanding, learning, focusing, and problem solving" [14].

Procedural definition:

"The Working memory is a basic process of the cognitive function of the individual. It also allows the storage and processing of verbal and visual material, and the storage capacity of the information is limited by keeping a number of elements whatever their nature. If this amount is exceeded, the information will be lost".

It is calculated by the degree to which children receive in the working memory measurement test.

The definition of the phonological ring:

"Is a device for storing oral information in a systematic manner at a specific time. This process of repetition to keep the items is as a radio band and its time is often very short (one second and half)".

It consists of two levels: the phonological storage unit responsible for the processing and storage of linguistic information for a short period, and the self-replication system, or the unit of verbal audit of linguistic information and storage for a short period [15].

Procedural definition:

It is calculated by the degree obtained by children, in the working memory measurement.

Visual Space Notepad:

It is known as a space visual image storage device. According to Baddeley, the visual space field is responsible for the maintenance and processing of visual information and spatial information. It also consists of two systems: the visual window and the image activation system.

Procedural definition:

Calculated through the degree which children obtained in the working memory rectum test .

Writing learning difficulty:

Is a difficulty in the mechanism of remembering the succession of characters and their sequence, and then the harmony of muscles and movements required by successive or sequential character to write letters? [16].

Procedural definition:

Writing difficulties are a form of academic learning difficulties. The child is characterized by a failure to produce written language away from any motor or neurological disorder, cognitive, sensory or mental retardation. This difficulty is also noticed by distortions that touch the shape of the letters that make up the writing passages or for writing space ... and also for the difficulty of synthesizing ideas and formulating coherent sentences during written expression. These imbalances occur during the process of spelling, either through the photographic input, or the verbal input.

And, in a practical way, determines the difficulties of writing with the difficulties that measured by the test of achievement in writing and dictation.

Previous studies:

The subject of this study concerns the difficulty or disruption of the phonological awareness of dyslexia. In this context, the researchers found a group of studies that examined the reading difficulties and phonological awareness, the most important of those are:

Lwani Yamina Study, Master Thesis (2006-2007), entitled: The relationship of phonological awareness to reading disorders. Where the researcher conducted a study aimed at identifying the relationship between phonological awareness and dyslexia. The researcher problem was that if there was a correlation between phonological awareness and learning disabilities?

She hypothesized that there was a strong correlation between phonological awareness and learning-learning disorder. The researcher used the rest test) Ghalab Salihah (drawing man test (Gaudnauph), the phonological awareness test (Delpech) and adapted by Lwani Yamina. The research sample consisted of 18 children (boys – girls)

divided into two groups: The first group: representing children who are good and Mediterranean reading, their age between 8 years and 2 months, and 9 years and 4 month. The second group: aged 9 years and 8 months up to 14 years and 12 months and representing the dyslexic readers, the study used the rest test, which diagnoses dyslexia readers and ordinary readers. The results were as follows: The children with reading disorder have little or no success, and this is actually a reflection of their difficulty with phonological awareness, unlike ordinary children of the same school year where they have shown great success. She maintained that Learning Disorder is a disorder of phonological awareness in the first degree.

**B- Monique Plaza study:**

she followed a case of a child with severe developmental dyslexia for three years. In 8 years and 9 months, the girl read only a few words that stored her general forms. Her great deficit was pre-phonological abilities. In order to test the reading mechanisms of this child, the researcher examined the abilities related to the associations and also the ability to read the unreal words. The researcher concluded that despite of the first phonological deficit of this girl, she was able to learn and read some words in the first year using visual method.

**Study of S. Casalis and Charolles, Sprenger:**

Sprenger - Charolles and S. Casalis studied how to recognize words in children with developmental dyslexia based on classical models that distinguish between two strategies: the phonological mediation strategy and the lexical strategy. They had conflicting hypotheses about the interpretation of dyslexia. The purpose of the study was to evaluate these two hypotheses by examining the method of phonological mediation and spelling in children with reading difficulties of two different levels.

**Procedures:**

**8.1. The Exploratory study**

**8.1. a . Aims of the exploratory study:**

The exploratory studies represent the starting point in scientific research. Thus, the beginning is always one of the most important steps. Success depends on the continuation of the research process. No matter how accurate the methods and procedures that the researcher creates in later stages, they are worthless if the beginning is incorrect or not [17]. The exploratory study is important because it enables the researcher to identify some of the problems that may appear in the basic study, which can solve these unexpected problems at this stage of the study, which gives him a lot of time and effort in the study later [18]. From this point of view, it can be said that there are many objectives that the researcher seeks to achieve through the exploratory study, and the objectives are as follows:

- identify the most important difficulties that may hinder the possibility of conducting research to avoid in the basic study.

- Find out how to choose a search sample for the application of search tools.
- Ensure the appropriateness of the data collection tools selected for the study by verifying their psychometric properties.

**8.1 .b. Description the study group of the exploratory study:**

The sample of the researchers study consists of 30 children, who do not suffer from any sensory, motor disorder or mental retardation. The researchers chose the sample from ages 8-12. It was an intension choice as the writing learning difficulties can be observed and diagnosed from the age of seven to eight years old. This according to [19]., so the writing learning difficulties in this period is considered a problem that worth study and research. This stage of the child's life is considered one of the most important stages of growth, maturity and acquisition of the basic skills, principles and learning writing, as well as the following levels: 2nd, 3rd, The sample of the exploratory study (normal children) had a normal level of response to the Stroop test, from which they could be relied upon in the basic study and taken as reference, as well as comparing their results with children with writing learning difficulties.

**8.1 .c. Place and time of the exploratory study:**

The researchers selected the sample from four primary schools: Salimi Mustafa, Hamza Omar, Hamza Mohammed schools, and a preparatory school. The field application was extended from February until April 2015.

**8. 1. D. The results:**

One of the most important results of the exploratory study was the possibility of depending on the above mentioned standards because they fulfil the psychometric properties (validity and stability), and the following is a detailed presentation of the properties of each tool:

The psychometric properties of the selective attention measurement Stroop:

The psychometric properties of the scale in the current study were verified by the following methods:

The validity : the validity of this test was estimated by two ways:

**1.1. Internal consistency validity:**

The correlation between the total score for each class and the total score of the test as a whole was calculated by the Pearson correlation coefficient, which was statistically significant at the  $\alpha = 0.01$  level. The correlation of the total score of card A with the total score of the test as a whole was 0.88, while the correlation the of the total score of the B card with the total score of the test as a whole was 0.89, the total score of the C card with the total score of the test as a whole, and the total score of B2 with the total score of the test as a whole. Thus, this test can be said to be valid, as shown in the following table:

**Table 1**  
**The correlation matrix of the total score of the cards to the whole total score**

		<b>Total score</b>
Card A	Correlation factor	0.76
Card B	Correlation factor	0.87
Card C	Correlation factor	0.78
Card B2	Correlation factor	0.80

**\*\* the correlation is significant at the significant level (a = 0.01)**

**1.2. Peripheral comparison validity:**

Studying the level of the selective attention and working memory among children Samira Rakza, Heba Elsayed

The validity of this test was also calculated by using the Peripheral comparison by descending the order of the scores and then taking 27% of the upper and lower scores, the upper 8 and lower 8 degrees, and then comparing them using the T- test. Then this value was interpreted according to two cases:

- If the value of the difference to (T- test) significant at the significance level (0.05 or 0.01 =  $\alpha$ ) it means that this measurement is valid because it was able to distinguish between the two peripherals.

- If the value of the difference to (T- test) is not valid at the significance level (0.05 =  $\alpha$ ) it means that this measure is not true because it did not distinguish between the two peripherals.

Given the value of the T- test test as shown in Table (2), it is clear that this questionnaire is valid (12.10), which is significant at the free degree (4) and the error level or significance ( $\alpha = 0.01$ ).

**Table 2**  
**The peripheral comparison validity of the tool**

Two peripheral	Even F	Significant level	Sample Number	Median	Standard deviation	Free	T	Significant level	decision
The upper Degrees	33.98	0	8	376.5	3.38	4	12.1	0	Significant at 0.01
The lower			8	317.25					

2. Stability: The stability of this tool was estimated by two ways:

2.1- Internal consistency: (Alpha Kronbach):  
The stability of this test was calculated by the internal consistency method using Alpha Cronbach factor, which is

based on an estimate of the correlation factor of the test indicators between them. It is estimated at 0.95. This value indicates that this test is stable, as shown in the following table:

**Table 3**  
**The stability of the tool using Alpha Cronbach factor**

Alpha Cronbach factor	Number of cards
0.95	4

2.2.Half- Retail factor:  
The stability was calculated by using the half- retail factor which supposed to divide the test indicators into two halves, the correlation factor between the two halves was

(0.59) and by the compensation in the total stability or stability equation of Spearman Brawn was determined to be 0.74, and therefore it can be said that this test is stable, As shown in the following table:

**Table 4**  
**The stability of the tool using two halves correlation factor`**

Two halves correlation factor	0.59
Spearman Brawn factor	0.74

Psychometric characteristics of the working memory scale "Phonological ring tests - sentences, words, numbers, and the visual space aspect test":

The validity and stability of the scale have been verified in the present study through the following methods:  
Validity using discriminatory validity (peripheral comparison).

**Table 5**  
**The validity of the study tool using the peripheral comparison**

The group	Sample	Median	Standard deviation	T -test	Significant Level
variable	The upper	8	132.38	3.02	18.71
	The lower	8	78.13	7.62	

From table (5), it is noticed that the median for the upper group was 132.38 and the Standard deviation was 3.02, while the median for the lower group was 78.13 and the Standard deviation was 7.62. The "t-test" is 18.71 at the

significant level of 0.01, so the test is distinctive and it is valid.

The stability through using the application and reapplication method:

**Table 6**  
**The tool stability using the application and reapplication method**

Variable	Correlation factor	Significant level
A	0.77	0.01
B	0.91	0.01
C	0.87	0.01
D	0.79	0.01
Total scale	0.93	0.01

From table (6) it is clear that Pearson correlation coefficient between the degrees of application and re-application ranges from (0.91- 0.77) according to the dimensions (exercises), which is significant at 0.01, and the correlation coefficient of the total scale is 0.93, that is significant at 0.01, so the scale is stable.

8.2. The Basic Study:

Based on the results of the researchers exploratory study that was on ordinary children, helped them to obtain

the psychometric criteria, for both the selective attention Stroop test and the working memory test, they will apply these tests on 9 cases of writing learning difficulties, and they have been able to get these cases in the Association of cultural guidance and education in Blida.

8.2.1. The research Method :

The nature of the research, which aspires to reveal the level of influence of each of its variables and the specificity of the subject of writing, led the researchers to

choose the analytical descriptive approach, as a comprehensive functional approach, because it is distinguished from the rest of the other methods, it aims to identify the current situation of specific levels of behavior, It provides them with a quantitative and qualitative assessment and diagnosis of a particular behavioral skill and contributes to the provision of evaluative provisions that can be generalized. It is the best approach in terms of its utilization of present reality in the examination of the different relations between performance aspects.

The descriptive approach is based on collecting, comparing, analyzing and interpreting facts in order to reach accepted generalizations, or is to study, analyze and interpret the phenomenon by defining its characteristics and dimensions and characterizing the relations between them, in order to reach an integrated scientific description.

8. 2.2. The research Tools:

In order to achieve the research aims, two tools were used according to the nature of the questions and hypotheses presented in this research, which were also suitable for collecting the data required. Based on this, the researchers depended on the two measures mentioned in the exploratory study:

Description of the research tools:

Description of the selective attention scale "Stroop":

This test measures the selective attention prepared by Stroop in 1935. The principle of this test lies in placing the case in front of stimuli bearing inappropriate properties that are ignored and at the same time answering another property. This test contains three cards with a size of 4 A (21x30 cm).

The first card "A": consists of 50 words written in black, representing the words "red, green, yellow, blue".

The Second card "B": contains the same words but this time the words are written in different colors do not represent the semantic meaning to them, for example a blue word written in red.

The Third card "C": represents rectangles of the same colors mentioned above. The time required to give the answer is 45 seconds for each card. These cards consist of 10 rows and each row has 5 alarms. This test aims to evaluate the selective attention and the ability to stop the situation that represents a competition between two optional answers.

Instructions: The Instructions should be as detailed as possible to be understood by individuals.

- The first position is "Card A": I will give you a paper with written words, you have to read it from right to left as soon as possible, and when you reach my regret, read from the first until I tell you stop, at 45 seconds. That there is an error you have to correct. If you are ready you have to start.

- The Second position "Card B": In this paper returns the same as you did the previous time, you will read the words, and when you reach the bottom of the paper repeat it from the first.

- The third position: "Card C": This paper has colored rectangles, you should call these colors, and when you reach the end of the paper you have to return from the first until I tell you to stop.

- The fourth position: "Card B2": I will give you a paper as I gave you before , but this time you have to say the color that I wrote the words with it and don't read the words. When you reach the end, you have to repeat it again till I

tell you to stop.

- The method of correction of the scale is as follow:

The examiner must put four cards in front of him with the possible answers that the child must give. In each card he will follow up and write off the errors and frequencies. Then, he will transfer the results on the punctuation paper that contains the personal information of the examiner. If one or more lines are crossed, the examiner calculates the error score for each card, by multiplying the total errors by 2+ frequencies.

Score of errors = 2Errors + Hesitation

Score of errors = 2E + H

As E represents the sum of the wrong answers, H is the sum of the hesitated responses. Here we mean the words that are repeated in which you say, for example: Imm .... green, and when you do not read a line example not alerted by the examiner, but the words are counted as errors.

Then we calculate the degree of interference that is calculated by subtracting the correct answers in the "C" label, which belongs to the color label of the correct answer score that represents the overlap (the color of the ink in which the words were written) in the "B" card.

Score of the interference = Score 3 - Score 4.

- Category:

After obtaining the final results, we compare them with the tables of the results in the Scale Guide.

- The conditions of the test application:

- Do not rotate the paper more than 40 °.

- Ensure that the individual has a good vision. If he holds glasses for reading, it is necessary to carry them at the time of the test.

- Do not leave the individual to take away the glasses, or do any behavior that can block the readability of words, especially in the fourth Part .

- If he is mistaken, he must reread the misspelled word and does not recite the line.

- The individual must feel reading, and know the naming of colors.

- If the individual stops before the end of time or until the end of the paper we have to encourage him to continue. [20].

2- Description of the working memory scale:

2.a. Phonological ring tests:

2.a.1. The Working memory test - sentences:

This test was prepared by Yuill et All 1989, in which the child presents long chains consisting of sentences, the child is asked to produce the last word in the sentence and pronounce it aloud and retain it. At the end of each chain of sentences the child must remember the words. The words that the child is required to produce are words that are known, spoken and varied between adjectives, names and verbs.

We have 42 sets of sentences divided into strings growing in length and there are three for each string.

- Instruction given to the child:

"I will give you a series of sentences, each sentence that includes an incomplete word, you have to find and pronounce it aloud, then keep it in your memory so that you can remember it in order once I finish showing the chain." Example: For a series of two chains : 1,2,3 are numbers, ABC are.....

On Fridays all shop..... ..

Remember: words, closed.

How to correct the scale: We calculate the number of the

correct words that the child remembers in order.

$$MTN = N / 42 \times 100.$$

2. a.2. The Working Memory Test - words:

This test was applied by Saadoun S. (2004) in her note for the passing of the Master's degree. In this test, the child recognizes the odd word in the 4-word group; where there are three words belong to the same semantic group only one is different, and the child has to pronounce the odd word and remember it at the end of the test in order. The test contains 42 sets of words divided into chains increasing in length and there are 3 attempts per each chain. It begins by training the child on two attempts. The examiner reads the groups aloud, the child pronounces the odd word, and when the chain is complete, the child has to remember the odd words in order.

- The instruction given:

"I will show you a set of words and you have to find the odd word that has nothing to do with the other three words and keep in your memory, and at the end of each chain you must remember the odd words in order."

-The correction of the test:

The same as applied in the test of working memory - sentences.

$$MTN = N / 42 \times 100.$$

Example: A series of two groups:

Moon - sun - star - pillow.

Car - Bike - Forest - Train.

The child remember in order : pillow, forest.

2.a.3. The Working Memory Test - numbers:

Use the test by Yuill and his partners 1989, complete the test of the memory of the psychological ring, and they used it to observe if there is a difference between a test using letters and the last to use numbers. The child should read the groups of three separate numbers and keep in his memory the last number of each group, Groups are presented as strings, and at the end of each series the child must remember the last numbers in order.

Example: In a group of two series:

1 7 3

0 4 8

Remember: 3 8

- As for the method of correction of the test:

The same method mentioned above.

2. a.4. The segments test "visual-space aspect":

It is a selection among several work memory options that have been completed in a laboratory and have been prepared by Limitop in cooperation with Gokhill and has been used in a recent study of Gokhill & y.Willo , et all.

The test contains multiple tables 3 x 3 cells, and two points with a single straight line. The rectangles are horizontal, vertical or inclined, and two lines never occupy the same position in a series.

And use the color variable to cancel the random correct memory of the segment where the two points in the same table of the same color and change the color of the 8 cells table by following the same order so that the colors are as follows: Red in the first table, blue in the second table, green in the third table, and yellow in the fourth table.

There are 27 tables distributed on chains of different lengths, the purpose of which is to address the visual space aspect, which is in two stages:

Give him tables, but each table alone and ask him:

- Place the appropriate disc in the right place to form a straight segment.

At the end of each chain they hide the tables after they ask the child to save the position and color of each table and then ask it to return it in another empty table.

For this reason, it is presented with colored disks equal to the number and color, the previous lines that appeared in the chain, after hiding the table.

2. a.5. Dotting:

Dotting is done on 27 points, 1 point on each table (1/2) if color is correct, and (1/2) if the position is correct [22].

Statistical methods used in the research:

In the treatment of the results of the research, the researchers used statistical methods, including the median in the descriptive statistics, in order to obtain the total scores or values of the selective attention test Stroop and the working memory test, in order to detect the level of the two previously mentioned tests.

**II. THE RESULTS**

The following table shows the total results for selective attention testing Stroop:

**Table 7**  
**Summarizes the total results of the whole cases in Stroop test**

No.	Cards Cases	Card A	Card B	Card C	Card B2
1	Abd AlMoomein	45	1 0 23	13 9 33	3 1 14
2	Yassen	42	0 0 30	1 0 34	0 0 17
3	Mohamed Amein	29	0 0 24	1 0 30	2 0 17
4	Reyad	24	3 1 19	0 1 37	3 2 20
5	Ayoup	25	3 0 17	1 1 29	0 5 13
6	Rafeiq	35	0 0 32	0 0 32	5 0 14
7	Yassen	30	4 2 26	4 11 31	1 5 20
8	Belal	40	0 0 35	0 1 42	1 1 11
9	Abd AlMaleik	22	7 0 18	1 0 35	4 1 21

10- Discuss the results in light of the hypothesis:

After presenting the results of applying the tests on the sample of this research that is consisting of nine (9) cases, and these were the general results.

Discussion of the first hypothesis results:

Through the presentation of table (7), "children with writing learning disabilities obtain a high level of the selective attention."

According to the results obtained from qualitative and quantitative analysis in the selective attention test.

The researchers found that most of the cases that have disabilities, their reaction time is slow, and this in the four positions with the occurrence of some frequencies and errors in the reading of words and naming colors, in the fourth card, "interference mode," which represents a competition between two answers to the same alarm clock was a response time, and giving the color side of the word, the answer was represented by the semantic side as observed in the fifth and ninth cases.

These results can be explained by a disturbance in the

selective attention due to a disturbance in the cessation process caused by interference between the stimuli and in the "B" card, which carry words written in different colors, where the overlap between the semantic side (reading the word) in the first stage and the chromatic side. In the second stage there was an internal competition in the cases, which led to a weak ability of attention to perform the tasks that required selectivity, as not all cases were able to answer the stimuli to be completed at 45 seconds. The researchers also noted that the high overlap between the "C" and the "B2". That the instruction was the same, that's what makes the cases with writing learning disabilities can't fulfil the automatic process to read the word instead of naming the colors. This is based on the Broadbent model. When there is a competition between two stimuli for the same alarm clock, the selective attention in this case will select the information for the activity. This information (the chromatic side and the semantic side) by sensory records, and the latter encodes the stimuli literally without any physical or symbolic change, and when this information reaches the selector filter in turn determine the physical properties of information and does not allow. The passage of a single excitation based on the instruction given, and from it pass to the exploration device, which analyzes the semantic and

works to retrieve the meaning of the stimuli before the transfer of information for short-term memory and in cases with difficulties learning to write, these stages in the knowledge system disrupt their function before the transfer of information to short-term memory. The response of the cases is disturbed because the selection of the responses is after the semantic analysis in the working memory. When this information reaches the detector, the analysis process is disturbed in the end because the selective filter that reduces the burden in the probe is therefore; the selective candidate function is unstable, which makes it not to reserve the inappropriate response to the activity. This makes the situations occur in the overlap between the chromatic side and the semantic side. In view of the median of the selective attention test "Stroop" estimated at  $X = 106.77$  is a mean result compared to the total median of the test estimated at  $X = 200$ .

From the above, it can be concluded that the hypothesis that children with writing learning difficulties are characterized by a high level of the selective attention has not been realized and the researchers have shown this through the previously reported results that the selective attention has an average level of impact on those with writing learning difficulties and the results of the working memory test:

**Table 8**

**Summarizes the total results of the working memory test**

Cases	Working memory – sentences	Working memory – words	Working memory – numbers	Working memory - segment
1	24	23	30	11
2	30	23	25	10
3	14	19	30	13
4	16	11	30	12
5	21	19	32	12
6	24	25	28	14
7	16	18	28	14
8	16	20	37	10
9	25	22	23	17
Median/ sum	42/18.88	24/20	42/29.22	27/12.55

The result of this hypothesis is consistent with (Susan Berlant et al. 1983), which found that people with learning disabilities are less able to pay attention to stimuli than the normal ones.

Discuss the results of the second hypothesis:

The second hypothesis came in the following formulation: Children with writing learning disabilities are characterized by a poor level of the working memory. The results presented in Table (8), the working memory test for words, the highest score was 30/ 42 and the lowest was 14 out of 42. The median was 17.5, which is a very poor grade, not exceeding half of the total answers.

The working memory of the words was the ability to recall and remember what is below the average. The highest score was 25 out of 42 and the lowest did not exceed one-third of the test answers. It was estimated by 11 out of 42 correct answers. The median was 19.16, this show that the results that the recall in this test is below than the average. While the highest score in the working memory was 37 and 23 and the median 29.22, indicating that it was above average.

The researchers can conclude that the hypothesis has been realized, because children with writing learning disabilities have difficulties remembering because of the inability to store and retrieve well, thus achieving a poor level in the test of working memory. This is what (Paulin

et al. 1984) found about the writing expression as there are differences in the written performance among students with learning disabilities and the ordinary students, especially in the primary skills of language in terms of pronunciation, spelling, punctuation, writing and for the benefit of the ordinary. Learning disabilities to write in those difficulties where students face interrelated problems such as the ability to retain ideas and their interrelations or problems in language and morphology, badness and consistency or wrong spelling or wrong perception of the distances between the letters of the words making reading what is written difficult.

As Lee Soinson study (1990) showed that there are statistically significant differences between students with learning disabilities and normal in the working memory capacity.

Discuss the results of the partial hypothesis:

The partial hypothesis states: There is a difference between the phonological ring and the visual space. The results of the visual space aspect showed that the highest score is 17 out of 27, while the minimum mark is 10 / 27, and the median is 12.55, which is generally weak. This indicates the poor recruitment of space optical memory in storage and retrieval. The results of this group in the working memory tests were weak in the sense that the members of this group were answering poorly for the

working memory, especially in the working memory of the sentences and the visual space, ie the retrieval and memory was weak and this in view of the median and therefore the researchers can say that these cases are weak in the cognitive abilities and language.

Also the cases had almost the same level in the working

memory of sentences and visual space that are shown in the weakness achieved by the sample after the application of the phonological ring test, and the visual space aspect test and the hypothesis is achieved by the equivalence between both tests.

General Conclusion:

**Table 9**

**Summarizes the total scores of the correct responses for both the selective attention test and the working memory test**

Cases	the selective attention	the working memory
1	115 / 200	88/153
2	123 / 200	88 /153
3	100 / 200	76 /153
4	100 / 200	69 /153
5	84 / 200	83/153
6	113 / 200	91 /153
7	102 / 200	76 /153
8	128 / 200	84 /153
9	96 / 200	87/153
Median	106.77	82.44

During the study of the selective attention and the working memory of people with learning disabilities, the researchers found that these two cognitive functions play an important role in the learning of writing and any defect in them, which makes it difficult to learn to write, after applying the selective attention test Stroop, After the qualitative and quantitative analysis of each test individually, they were able to determine each level, and from this they can answer the hypotheses in question. The results revealed that those with writing learning difficulties have an average disturbance in selective attention that led to the slow reaction time caused by the overlap between the stimuli. This negates the first hypothesis in the research, which is characterized by children with difficulties learning to write a high level of the selective attention, on the contrary, they are characterized by a low level, because they have difficulty performing tasks that require selectivity, which in turn leads to an extension of the reaction time. As for the results of the working memory, they found that those with writing learning difficulties have a disorder in the working memory; the second hypothesis is that children with learning difficulties are characterized by a very low level of working memory, especially in the phonological ring of sentences and the field of visual-space. In this regard, the researchers found the study of Ahmad Saber, there is a relationship between the selective attention, the working memory and dyslexia. The third hypothesis was also achieved because there is equivalent between the phonological ring and the visual space test.

Finally, after the hypotheses are realized, it can be said that the aims of this research have been achieved, and from this the researchers conclude that all knowledge processes, especially the selective attention and the working memory, have a role in learning to write.

Conclusion:

The researchers aim is to identify the characteristics of two cognitive processes that are the main entrance of the learning process, namely selective attention and working memory, in children with writing learning disabilities. This is one of the most common learning difficulties among children.

This has led to the study of this subject, which is considered as an addition to research conducted in this field, through which we decided to disclose the level of

selective attention and working memory in children with writing learning difficulties.

Through the theoretical aspect, we find that working memory and selective attention in general have a role in the cognitive and linguistic processing of the oral and written form, based on the Broadbent model for selective attention and the Baddeley model for the working memory. In the researchers' field study, the aim was to try to detect by measuring the level of the selective attention and the working memory at the research group, following the application of tests for these two processes (Stroop Test, sentences, Words, numbers, and visual space test. in addition to the orthodontic and a written note network. Based on the analysis of the results and the discussion, there is a difference in the level of the variables of research, characterized by weakness in the working memory, especially in the tests of the phonological rings and the visual - space, while the selective attention is characterized by a lower level compared to the working memory in children with writing learning difficulties. Thus, it is possible to say that children with writing learning difficulties despite the differences in the level of employment of both selective attention and working memory, but these variables affect the same level in these children, and this is because the selective attention and the working memory are two components and should not be considered separate processes, Mechanisms of attention use the working memory record to ensure its function, while some functional memory mechanisms monitor intravenous processes.

Finally, the researchers note that the research group was very limited to issue absolute judgments or generalize the results.

### III. SUGGESTIONS

It is recommended:

Holding training sessions for teachers on the cognitive processes and their progress in the students so that they can deal with them and teach them and the field has proved their need for this.

Parents follow their children's activities for the purpose of early detection of these difficulties.

Trying to build remedial programs for the children with writing learning difficulties in the primary stage.

Building standards in line with the pupils' environment, especially in writing and cognitive processes, "selective attention and working memory.

Applying the same study in the Egyptian society to know if there is an effect of different culture.

Putting a therapeutic protocol for the selective attention and the working memory for the pupils with learning disabilities.

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