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The Level of Semantic Memory among Students with Learning Difficulties

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Abstract

The study aimed to reveal the level of semantic memory among elementary stage students with learning difficulties in Jordan. The study sample consisted of (55) males and females from the fourth and fifth grades in Amman in the second semester of the academic year (2021/2022). The descriptive approach was used, a semantic memory scale was developed, and its psychometric properties were verified. Results indicated that the level of semantic memory of students with learning difficulties in the basic stage was at a high degree, and that there were no statistically significant differences at the level of statistical significance (α = 0.05) between the estimates of the study sample on all semantic memory skills due to the difference of the Gender variable. Researchers recommended conducting studies to reveal other mental processes among students with learning difficulties, such as processing information and comparing them with children without learning difficulties.

Keywords: semantic memory; learning difficulties; cognitive skills; learning strategies; academic level.

1. Introduction

Students with learning difficulties face many problems due to their inability to use their previous information and experience in the situations they face, which is due to their poor ability to recall and retrieve verbal, visual and spatial information. They also suffer from difficulty in retrieving their experiences in an orderly and consistent manner with the situations they are going through. This means that these students suffer from weakness in the efficiency of their semantic memory, which can be reflected in many language skills, and thus hinder their learning and interaction with others, whether at the academic or social level (Dewa, 2019).

Semantic memory is a type of memory, which includes the memory of words, concepts, rules, and abstract ideas, which are necessary for the use of language. That means it is the mental organization of the information that the individual processes from words and various

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other verbal symbols, their meanings, and references, in addition to the relationships and rules governing them, and the systems necessary to process these Symbols, Concepts, and Relationships (Puff, 2015).

Semantic memory is based on auditory or visual sensory data that are recognized, which requires not only prolonged focus, but also a selection of the information to be retained. The sound waves that reach the person's hearing transmit the characteristics of the audio message, then the significant words and sentences pass from the auditory memory, which is a short-term memory, to the long-term memory. Before being stored in the long-term memory, the auditory information is retrieved based on two types of mental repetition: aimed at memorizing, and at learning (Pollock , 2020).

The main approach to storage and retrieval from semantic memory is attention, perception and awareness, that is, recognition (Al-Shehri, Nada , & Al-Sawat, 2019) . Abu Al-Diyar (2020) indicates that there is a relationship between semantic memory and people with disabilities in general, and those with learning difficulties. Many of these children are identified by their schools as having learning difficulties in reading and mathematics and have clear impairments in semantic memory. Alloway (2016) confirms that children with learning difficulties have a defect in semantic memory, and the matter varies in terms of severity according to the stages of the practice guide for special education needs.

Also, children with reading, writing and mathematics difficulties have a clear weakness in their performance in the semantic memory, as many researchers believe that semantic memory is not related to working abilities, and it may not be related to individual differences in memory, and in school achievement. In its activity and effectiveness, semantic memory depends on cognitive mental skills such as learning skills. Learning cannot continue without remembering and forgetting, which are processes that students must practice constantly, whether those with learning difficulties, or other ordinary students, and many of these students misjudge themselves through their failure in the process of remembering verbal , visual, and spatial information, facts, and current events in their lives, as well as their poor efficiency in retrieving, using and utilizing it in real life situations, in addition to their low ability to retain this information (Edwards, 2017).

1.1 Semantic Memory

Semantic memory is one of the two types of explicit memory or the so-called declarative memory. Where semantic memory refers to the general accumulated knowledge throughout our lives, and that is why these knowledges (facts, ideas, meaning and concepts) are intertwined in the process of experience. Culture in general is what it

depends on, which is why episodic memory differs from semantic memory (Endel, 2019). Semantic memory is specific experiences and events in our memory that occur during the period of development and adolescence to adulthood, from which these memories can be retrieved at any time (Lauren, 2016).

Abdullah (2018) defined semantic memory as the memory of words, concepts, rules, and abstract ideas, which are necessary for the use of language, and it is a mental organization of the information that the individual processes about words and various other verbal symbols, their meanings and revision, in addition to the relationships and rules that govern them, and the systems needed to process these symbols, concepts and relationships. Camos, et al., (2019) explained the concept of semantic memory that it is not a recording of the input properties that can be perceived rationally or sensory, but rather is the cognitive references to the input signals.

At this stage, the information is transferred to a deeper level, which is the long-term memory, specifically the semantic memory. The information is transformed in the form of semantic nodes and in the form of a base network according to the theory of Quillian and Collins (1969) on how to organize information in semantic memory. They stated that all the concepts presented are limited to semantic memory through the semantic contract that contains linguistic concepts and rules, so that the meaning is attributed on the one hand, and the concept associated with it is semantically activated on the other.

1.2 Semantic Memory of People with Learning Difficulties

There is a strong relationship between memory and learning, as Guilford (1977) points out that most psychologists believe that learning causes structural changes in the brain, and that these changes are retained by the brain or remain within a limited period of time, these changes reveal themselves later and lead a person to take a different path from the one he used before learning (Geary, et al., 2015). Cognitive psychologists also believe that if learning is how the multiple cognitive things that we represent and use are acquired, then memory is a storehouse and repository.

Information is stored and accurately categorized and distributed to a variety of locations so that it can be quickly retrieved when needed (Murphy, Hampton, Milovanovic & Goran, 2012). Learning is the building of structures or cognitive structure, when new information is learned, it is added to the existing cognitive structure in memory, and in order for learning to become more permanent, new experiences must be combined with previous ones, and then these experiences are reused in new situations. (Oren, Willerton, & Small, 2014).

Children with learning difficulties suffer from many semantic memory problems. Several studies, such as (Hills, et al., 2012), showed some of these problems:

- The inefficiency of the strategies they use in retrieving information and concepts from semantic memory.

- Their lack of control and self-review skills to evaluate the effectiveness of their strategies in retrieving concepts and information from memory.

- Failure to integrate verbal and visual memory of visual stimuli when storing and retrieval.

- The presence of two different or separate paths of audio-visual input in the system of memory of meanings.

- The memory of children with learning difficulties lacks coherence, differentiation, organization, and integration, which leads to their weakness in the performance of tasks that require integration between meanings, and which are related to semantic memory.

The field of learning difficulties is one of the most important areas in which the pace of development was steady and accelerating during the second half of the twentieth century. And this field, not like other fields, was unknown to most educators before 1965, as it overlaps with a number of concepts that emerged during the 1960s, such as: the cognitively handicapped, the educationally handicapped, those with disabilities or linguistic deficiencies, and those with mild cerebral disorders, and other concepts that made it difficult to establish stable and acceptable determinants of this concept (Ali, 2015).

The category of people with learning difficulties includes a different set of problems that do not apply to any other category of special education. Mustafa (2015) & (Al-Judoua, 2013) stated that high retention and recall rates of students should involve students in the quasi-academic, and social life of its environment which applies also to students with learning difficulties. Although such children constitute a heterogeneous group and fail to learn for a variety of reasons and reveal wide types of behavioral and personal problems, they share one general thing: the discrepancy between the level of abilities and the level of actual achievement (AL Waqfi, 2012).

2. Related Research

The study of (Hadad & Fatima, 2020) aimed to detect the semantic memory of those with dyslexia, and to compare between those with dyslexia and normal third-year students in Algeria, and to identify the

activity of their semantic memory. To achieve the objectives of the study, the descriptive correlative approach was used, and the study tools represented by the semantic memory test were applied to a sample of (20) male and female students from the third year of primary education who were chosen intentionally, and they were distributed by ten students with dyslexia and ten normal students. The results showed the existence of a statistically significant correlation between dyslexia and semantic memory among students of the third year of primary education, and the results showed that there were statistically significant differences between normal students and students with dyslexia in favor of normal students due to (Semantic repetition of words, semantic repetition of numbers, semantic rhythmic structure, Sensation and phonological discrimination, vocabulary comprehension, naming images, Sentence comprehension and functional connectivity) .

The study of (Boukaz, Yamina, & Laiss, Ismail, 2020) also aimed to reveal the significance of the differences between students with dyslexia and normal students in phonological awareness (audio pattern, visual pattern) and its relationship to verbal working memory in Algeria. The study used the descriptive comparative approach, and the "Raven" colored matrices test was applied to measure intelligence, word reading test, and audio-visual awareness test on a sample of (49) students distributed as (19) students with dyslexia and (30) normal students. The most important results of the study were the presence of statistically significant differences between students with dyslexia and normal students in tests of phonological awareness (audio type, visual pattern), and a clear deficiency in phonemic representation among children with dyslexia.

Al-Ayeb (2017) study aimed to reveal the level of semantic memory of students with dyslexia in Algeria. The study sample consisted of two cases; A male and a female, they were intentionally chosen from among the pupils of the fourth grade. The researcher used the case study methodology, as well as interview and observation methods, in addition to tests related to semantic memory. The results showed that the student had no weakness in performance at the level of naming pictures, recognizing body parts, understanding the functional linkage of sentences, judging things through semantic communication, verbal fluidity and recognizing surrounding sounds, while it was found that the second case has weakness in performance at the level of classification and semantic arrangement of images.

The study of (Moaziz, 2015) also aimed to identify the semantic memory related to dyscalculia in Algeria, The study adopted the case study approach, and the arithmetic test and the semantic memory scale were applied to four cases, and the results indicated that there

were no differences in semantic memory due to the gender variable. The reason for this disorder can be attributed to individuals' lack of some arithmetic concepts, and their lack of good comprehension of them. The results also showed that the teaching methods used by the teacher lack some cognitive processes such as perception, and the researcher attributed this to students' hatred of arithmetic.

3. Research Methodology

3.1 Study design: The descriptive approach was used due to its relevance to the nature of the current study.

3.2 Purpose of the Study: The study aimed to reveal the level of semantic memory among elementary stage students with learning difficulties in Jordan.

3.3 Participants: The study sample consisted of (55) males and females from the fourth and fifth grades in government schools in the First Amman Directorate in the second semester of the academic year (2021/2022).

3.4 Study tool: Semantic memory test.

3.5 The problem of the study: A number of previous studies, such as the study of (Moaziz, 2015), and the study of (Boukaz, Yamina, & Laiss, Ismail, 2020) indicated that students with learning difficulties have weak semantic memory, and they need educational programs that take into account this deficiency and improve the level of their semantic memory. Therefore, this study came to reveal the level of semantic memory among students with learning difficulties of the basic stage in Jordan. Another problem is the lack of local and Arab studies that dealt with the subject of the study within the limits of the researcher's knowledge.

3.6 Significance of study: Results of the study will provide information about the importance of semantic memory for the category of learning difficulties and aim to provide a measurement tool for the semantic memory variable that has acceptable psychometric properties and contribute to directing the attention of those in charge of the educational process in reconsidering the curricula by focusing on the different types of teaching-learning strategies that focus on the use of semantic memory.

3.7 Study questions:

First question: What is the level of semantic memory among students with learning difficulties in the basic stage?

3.8 Second question: Are there statistically significant differences at the significance level ($\alpha = 0.05$) in the semantic memory of students with learning difficulties in the basic stage due to the student's gender variable?

3.9 Data Collection Process

- Reviewing the previous theoretical literature and studies.

- Determining the study population and sample.

- Development of the study tool and verification of its psychometric properties.

- Applying the tool to the study sample.

- Collecting data and performing appropriate statistical processing.

- Extracting results.

- Discussing the results according to the literature, and developing recommendations and Suggestions

3.10 Statistical processing: To answer the study questions, arithmetic means, standard deviations, and the (MANOVA) test were used.

3.11 Data Analysis

Several scales that measure semantic memory were reviewed, and the semantic memory test of Moaziz (2015) was used. The test consisted of eight sub-tests: (semantic repetition of words, semantic repetition of numbers, semantic rhythmic structure, sensation and phonological discrimination, vocabulary comprehension, naming pictures, classification and semantic ordering, Sentence comprehension and functional connectivity). The researcher verified the psychometric properties of the test according to the following:

3.11.1 The validity of the semantic memory test: The validity of the test content was verified by presenting it in its initial form to (10) specialized arbitrators to express their opinion about the validity of the test items and their suitability for the study sample, and its measurement of the trait to be measured, and any other observations such as deleting, modifying or adding items. The comments agreed upon by (80%) or more of the arbitrators were taken into consideration.

3.11.2 Difficulty and discrimination coefficients/ parameter for the test: Difficulty and discrimination coefficients were extracted for each of the test items, where the difficulty coefficient is useful in clarifying the ease or difficulty of any question in the test, While the discrimination coefficient is useful in determining the effectiveness of a question in distinguishing between students with high ability and

students with weak ability to the same extent that the test differentiates between them in the final mark in general, as it was shown in Table (1).

Table (1) Difficulty and discrimination coefficients/ parameter for each item of the semantic memory test

Skill	Item	Difficulty P	Discrimination P	Item	Difficulty P	Discrimination P
Semantic repetition of words	1	0.37	0.69	11	0.47	0.79
	2	0.60	0.63	12	0.40	0.67
	3	0.53	0.45	13	0.43	0.60
	4	0.50	0.45	14	0.57	0.75
	5	0.37	0.53	15	0.43	0.41
	6	0.30	0.65	16	0.30	0.51
	7	0.37	0.78	17	0.37	0.39
	8	0.57	0.75	18	0.50	0.47
	9	0.40	0.67	19	0.47	0.76
	10	0.43	0.62	20	0.43	0.55
Semantic repetition of numbers	1	0.37	0.54	6	0.43	0.42
	2	0.50	0.66	7	0.40	0.49
	3	0.53	0.44	8	0.37	0.56
	4	0.37	0.53	9	0.60	0.48
	5	0.37	0.65	10		
semantic rhythmic structure	1	0.40	0.56	9	0.33	0.52
	2	0.47	0.60	10	0.41	0.50
	3	0.47	0.71	11	0.47	0.48
	4	0.47	0.79	12	0.33	0.50
	5	0.40	0.67	13	0.40	0.49
	6	0.43	0.60	14	0.37	0.56
	7	0.33	0.41	15	0.60	0.48
	8	0.40	0.49	16	0.40	0.55
Sensation and phonological discrimination	1	0.40	0.55	11	0.43	0.62
	2	0.37	0.69	12	0.47	0.79
	3	0.60	0.63	13	0.40	0.67
	4	0.53	0.45	14	0.43	0.60
	5	0.50	0.45	15	0.57	0.75
	6	0.37	0.53	16	0.43	0.41
	7	0.30	0.65	17	0.30	0.51

	8	0.37	0.78	18	0.37	0.39
	9	0.57	0.75	19	0.50	0.47
	10	0.40	0.67	20	0.47	0.76
vocabulary comprehension	1	0.43	0.55	12	0.47	0.60
	2	0.37	0.54	13	0.47	0.71
	3	0.50	0.66	14	0.47	0.79
	4	0.53	0.44	15	0.40	0.67
	5	0.37	0.53	16	0.43	0.60
	6	0.37	0.65	17	0.33	0.41
	7	0.43	0.42	18	0.40	0.49
	8	0.40	0.49	19	0.33	0.52
	9	0.37	0.56	20	0.51	0.50
	10	0.60	0.48	21	0.47	0.48
	11	0.40	0.56			
Naming pictures	1	0.33	0.50	20	0.57	0.75
	2	0.40	0.49	21	0.43	0.41
	3	0.37	0.56	22	0.30	0.51
	4	0.60	0.48	23	0.37	0.39
	5	0.40	0.55	24	0.50	0.47
	6	0.40	0.55	25	0.47	0.76
	7	0.37	0.69	26	0.43	0.55
	8	0.60	0.63	27	0.37	0.54
	9	0.53	0.45	28	0.50	0.66
	10	0.50	0.45	29	0.53	0.44
	11	0.37	0.53	30	0.37	0.53
	12	0.30	0.65	31	0.37	0.65
	13	0.37	0.78	32	0.43	0.42
	14	0.57	0.75	33	0.40	0.49
	15	0.40	0.67	34	0.37	0.56
	16	0.43	0.62	35	0.60	0.48
	17	0.47	0.79	36	0.40	0.56
	18	0.40	0.67	37	0.47	0.60
	19	0.43	0.60	38	0.47	0.71
Classification and semantic ordering	1	0.37	0.53	6	0.60	0.48
	2	0.37	0.65	7	0.40	0.56
	3	0.43	0.42	8	0.47	0.60
	4	0.40	0.49	9	0.47	0.71
	5	0.37	0.56	10	0.47	0.79

Sentence comprehension and functional connectivity	1	0.40	0.67	9	0.40	0.49
	2	0.43	0.60	10	0.37	0.56
	3	0.33	0.41	11	0.60	0.48
	4	0.40	0.49	12	0.40	0.55
	5	0.33	0.52	13	0.40	0.55
	6	0.35	0.50	14	0.37	0.69
	7	0.47	0.48	15	0.60	0.63
	8	0.33	0.50			

Table (1) shows the values of the difficulty coefficients and discrimination coefficients for each item of the semantic memory test after applying it to the exploratory sample, where the values of the difficulty coefficients for the items ranged between (0.30 - 0.60), While the values of the items discrimination coefficients ranged between (0.39-0.79), and these values are acceptable considering that the test items have appropriate degrees of difficulty and discrimination.

3.11.3 The stability of the semantic memory test: To verify the stability of the semantic memory test, a stability coefficient was found for each of the domains and for the scale as a whole using the test-retest method, by applying the scale to a sample of (30) male and female students from outside the study sample, then the scale was re-applied on the same sample after 14 days, the Pearson Correlation coefficient was calculated between the two applications. The internal consistency coefficient of the items was also calculated using the Cronbach-Alpha equation, as it measures the extent of consistency in the answers of the study sample members to the items in the semantic memory test. Table (2) shows the values of coefficients for all items of the study tool:

Table (2) internal consistency coefficient using Cronbach's alpha and re- test reliability

#	Tool areas	Cronbach–Alpha	Re-test	Number of items
1	Semantic repetition of words	0.927	**0.856	20
2	Semantic repetition of numbers	0.769	**0.888	9
3	semantic rhythmic structure	0.879	**0.909	16
4	Sensation and phonological discrimination	0.925	**0.853	20
5	vocabulary comprehension	0.898	**0.896	21
6	Naming pictures	0.948	**0.881	38
7	Classification and semantic ordering	0.833	**0.829	10
8	Sentence comprehension and functional connectivity	0.868	**0.897	15
Total		0.987	**0.883	149

Table (2) shows the values of stability coefficients according to Cronbach's alpha and test-retest methods for the semantic memory test items. Where the values of the stability coefficients ranged on the domains using Cronbach's alpha coefficient (0.769-0.948), while the value of the Cronbach's alpha stability coefficients on the items was (0.987), and the values of the stability coefficients on the areas using the test-retest method ranged Between (0.853 - 0.909), while the repetition coefficient on the items was (0.883).

3.11.4 Instructions and method of correcting the semantic memory test

The test consists of eight subtests:

1- Semantic repetition of words test: It has (20 marks) and contains (10) words arranged in two columns (A, B), and the examiner pronounces one word after another from the words of column (A) and asks the examinee to choose a word in column (B) that has the same significance. He pronounces it, then the examiner repeats the same way for the rest of the words by saying: “Repeat the word like me, then choose the word that has the same significance in column (B) and then pronounce it.” Correction is done by giving the examinee one mark if he succeeds in pronouncing the two words correctly, regardless of the validity of their connotation. If the examinee's choice of the word is correct, he is given a second mark, that is, the examinee who succeeds in pronouncing and choosing gets two marks.

2- Semantic repetition of numbers test: It has (9) points, and it includes (9) series of numbers distributed over three groups (A, B, C) so that each group includes three sequences. The examiner mentions the sequences in order in front of the examinee and asks him to repeat the series at a rate of one second for each number. And the examiner says, "Listen to this series of numbers and then put them back as you heard them in order." Correction is done by giving the examinee one mark if he succeeds in speaking a complete series and within the required speed. And if the examinee fails in a complete group and does not get any mark in it, the next group is immediately cancelled.

3- semantic rhythmic structure Test: It has (16 marks), and it includes (16) set of rhythmic beats that differ from each other in their sound structure, the examiner produces them one after the other, and asks the examinee to reproduce them, with three repetitions. And the examiner says: “Listen carefully how I knock, and then do just as I do.” Correction is done by giving the examinee one mark if he succeeds in repeating the steps correctly. After reaching the ninth set, the examiner stops the test after three consecutive errors.

4- Sensation and phonological discrimination test: It has (20) marks, and this test depends on the principle of (Rime) or tone, which stems

from the idea of compatibility and congruence in tone. The test includes (20) pairs of audio syllables, and the examinee is asked to identify whether the two syllables presented to him have the same tone or not. Before that, the examiner explains the principle of similarity between the tones to the examinee, after which the examiner says: “Notice carefully these pairs presented to you and listen to my reading of them. Correction is done by giving the examinee one mark if he succeeds in identifying similarities.

5- Vocabulary comprehension test: 21 marks are given to it, and it includes (21) vocabulary distributed into three groups, (6) vocabulary for colors, (6) for shapes, and (9) for body parts. The examinee is asked to associate each vocabulary with what is shown in front of him or on his body in the case of vocabulary related to parts of the body, and each group has its own instructions as follows:

- Colors: "I will tell you the color and you will show it to me among these colors in front of you, such as saying: Show me the color purple."

- Shapes: "Show me the drawing I ask you about. Like saying: Show me the square."

Body parts: “I will tell you the names of some parts of your body, and you have to point to it like: Show me your arm.” The examinee is given one mark if he recognizes the word.

6- Image naming test: It has (75) marks and includes (38) images that are shown to the examinee one after the other and each image has to be answered within ten seconds. Then the examiner asks the examinee to name the image by saying: What does the image represent? As for the correction, one mark is given for each correct answer and includes giving the appropriate and indicative name for the presented picture.

7- Classification and semantic ordering test: (15) marks are given to it, and it takes (20) minutes. The method used in the image naming test is used in this test. The examinee is asked to arrange and categorize the images according to their belonging to the same type and group. One mark is given for each correct answer.

8- Sentence comprehension and functional connectivity test: It has (30) marks, and it includes (6) cards, each of which includes (5) sentences, and it uses an input or visual stimulus (the picture), and an entrance or verbal stimulus (the sentence). The application is carried out by asking the examinee some suggested sentences, such as defining the characteristics of the thing in the picture, and asking him to select the correct sentences appropriate for the picture, as well as the wrong sentences such as saying: I will give you five sentences that

represent the picture in front of you, answer yes or no. Correction is done by giving the examinee one mark for the correct answer.

4. Study Results

The following is a presentation of the results of the study:

First: What is the level of semantic memory among students with learning difficulties in the basic stage? To answer the question, the values of the arithmetic means, standard deviations, estimation and ranks of the semantic memory level among students with learning difficulties in the basic stage in general, and for each of the semantic memory skills were calculated. Table (3) shows the results of that:

Table (3) Arithmetic means and standard deviations of the level of semantic memory among students with learning difficulties in the basic stage and for each skill in descending order.

Num	Skill	Means	standard deviations	Rank	level
6	Naming pictures	74.45	0.60	1	high
8	Sentence comprehension and functional connectivity	29.50	0.71	2	high
5	vocabulary comprehension	18.25	1.27	3	high
1	Semantic repetition of words	18.04	1.43	4	high
4	Sensation and phonological discrimination	16.73	2.03	5	high
3	semantic rhythmic structure	15.00	0.91	6	high
7	Classification and semantic ordering	14.61	0.59	7	high
2	Semantic repetition of numbers	8.34	0.64	8	high
Total Arithmetic mean		194.91	3.63	High	
Total Arithmetic mean		24.63	0.45	High	

Table No. (3) Shows that the overall arithmetic mean of the level of semantic memory among students with learning difficulties in the basic stage was high, with an arithmetic mean (24.63) and a standard deviation (0.45). The skills at the level of semantic memory among students with learning difficulties in the basic stage were as follows:

The skill "naming pictures" ranked first with an arithmetic mean (74.45) and a standard deviation (0.60), and a high evaluation. In the second place was the skill " Sentence comprehension and functional connectivity " with an arithmetic mean (29.50) and a standard deviation (0.71), and a high evaluation, and in the third place came the skill " Vocabulary Comprehension " with an arithmetic mean (18.25)

and a standard deviation (1.27), and a high evaluation, while in the skill “Semantic Repetition of Words” ranked fourth with an arithmetic mean (18.04) and standard deviation (1.43), and a high evaluation, and in the fifth rank came the skill “sensation and phonological discrimination” with an arithmetic mean (16.73) and standard deviation (2.03), and a high evaluation, the skill “Semantic Rhythmic Structure” ranked sixth with an arithmetic mean (15.00) and standard deviation (0.91), and a high evaluation. As for the seventh rank, the skill “Semantic Classification and order” came with an arithmetic average (14.61) and standard deviation (0.59), and a high evaluation, and in the eighth and last rank the skill "Semantic Repetition of Numbers" came with an arithmetic mean (8.34), a standard deviation (0.64), and a high evaluation.

Second: The results related to the second question "Are there statistically significant differences at the significance level ($\alpha = 0.05$) in the semantic memory of students with learning difficulties in the basic stage due to the student's gender variable?"

To answer the question, the arithmetic means and standard deviations of the responses of the study sample members about semantic memory were calculated according to the gender variable of the student, as shown in the table below.

Table (4) Arithmetic means and standard deviations of the responses of the study sample members on semantic memory according to the student's gender variable

Skill	Gender	Num	Means	standard deviations
Semantic repetition of words	Male	30	17.73	1.46
	Female	26	18.38	1.33
	Total	56	18.04	1.43
Semantic repetition of numbers	Male	30	8.33	0.66
	Female	26	8.35	0.63
	Total	56	8.34	0.64
Semantic rhythmic structure	Male	30	15.00	0.91
	Female	26	15.00	0.94
	Total	56	15.00	0.91
Sensation and phonological discrimination	Male	30	16.37	1.83
	Female	26	17.15	2.20
	Total	56	16.73	2.03

Skill	Gender	Num	Means	standard deviations
vocabulary comprehension	Male	30	18.27	1.36
	Female	26	18.23	1.18
	Total	56	18.25	1.27
Naming pictures	Male	30	74.47	0.51
	Female	26	74.42	0.70
	Total	56	74.45	0.60
Classification and semantic ordering	Male	30	14.67	0.61
	Female	26	14.54	0.58
	Total	56	14.61	0.59
Sentence comprehension and functional connectivity	Male	30	29.47	0.68
	Female	26	29.54	0.76
	Total	56	29.50	0.71
The whole test	Male	30	194.30	3.30
	Female	26	195.62	3.93
	Total	56	194.91	3.63

Table No. (4) shows that there are apparent differences between the arithmetic averages in the responses of the study members to the semantic memory skills according to the student's gender variable and the total test score, and to show the significance of the statistical differences between the arithmetic averages, the MANOVA analysis test was used on the skills and the total score of the test. Table (5) shows the results of the analysis

Table (5) Results of the (MANOVA) analysis of the study sample members' responses to semantic memory skills according to the student's gender variable:

Variation source/variable	Skill	sum of squares	degrees of freedom (DF)	Squares' average	F-value	Significance level
Gender Hotelling's = 0.112 Sig = 0.725	Semantic repetition of words	5.908	1	5.908	3.009	.088
	Semantic repetition of numbers	.002	1	.002	.005	.941
	semantic rhythmic structure	.000	1	.000	.000	1.00
	Sensation and phonological discrimination	8.631	1	8.631	2.134	.150

Variation source/variable	Skill	sum of squares	degrees of freedom (DF)	Squares' average	F-value	Significance level
	vocabulary comprehension	.018	1	.018	.011	.917
	Naming pictures	.026	1	.026	.072	.789
	Classification and semantic ordering	.229	1	.229	.646	.425
	Sentence comprehension and functional connectivity	.072	1	.072	.139	.711
	Total score for the test	24.100	1	24.100	1.853	.179
Error	Semantic repetition of words	106.021	54	1.963		
	Semantic repetition of numbers	22.551	54	.418		
	semantic rhythmic structure	46.000	54	.852		
	Sensation and phonological discrimination	218.351	54	4.044		
	vocabulary comprehension	88.482	54	1.639		
	Label pictures	19.813	54	.367		
	Classification and semantic ordering	19.128	54	.354		
	Sentence comprehension and functional connectivity	27.928	54	.517		
	Total score for the test	702.454	54	13.008		
Total	Semantic repetition of words	111.929	55			
	Semantic repetition of numbers	22.554	55			
	semantic rhythmic structure	46.000	55			
	Sensation and phonological discrimination	226.982	55			
	vocabulary comprehension	88.500	55			
	Naming pictures	19.839	55			
	Classification and semantic ordering	19.357	55			
	Sentence comprehension and functional connectivity	28.000	55			
	Total score for the test	726.554	55			

*Statistically significant at the level of significance (0.05≥α).

Table No. (5) shows that there are no statistically significant differences at the level of statistical significance (α = 0.05) between the estimations of the study sample on all semantic memory skills, (Semantic repetition of words, semantic repetition of numbers, semantic rhythmic structure, Sensation and phonological discrimination, vocabulary understanding, naming pictures, semantic classification and order, Sentence comprehension and functional connectivity) due to the difference in the gender variable. The statistical value of the (f) test on skills (3.009) (0.005)) (0.000) (2.134) (0.011) (0.072) (0.646) (0.139) at the significance level (0.088) (0.941) (1.00) (0.150) (0.917) (0.789) (0.425) (0.711) respectively, and these values are considered not statistically significant at the significance level (0.05≥α) for all skills.

The table also shows that there are no statistically significant differences at the level of significance (0.05≥α) between the mean estimates of the sample members on the total score of the test due to the difference in the gender variable of the student. The statistical value of the (F) test on the test was (1.853) and at the level of statistical significance (0.179), and this value is not statistically significant at the level (0.05≥α).

5. Discussion of Results

In relation to the first question, results indicated that the level of semantic memory of students with learning difficulties in the basic stage was high, and this may be explained according to what the previous literature on semantic memory indicated as the general knowledge and experiences that accumulated during the first years of the child's life, considering learning the process through which the construction of cognitive structure. When new information is learned, it is added to the cognitive structure in memory, and in order for learning to become more permanent, new experiences are combined with previous ones, and these experiences are then reused in new situations.

This result can also be explained in the light of what is related to semantic memory in the cognitive framework that reflects the knowledge of students with learning difficulties about the world around them and is based on the use of consistent knowledge. It includes knowledge of concepts, facts, words, rules, laws, and what the concept of meanings refers to. It also includes many things that they know and that cannot be expressed in words only. There must be stimuli presented in a way that is closer to their feelings. This result can also be explained through what was presented by personality theories, especially the phenomenological perspective, which is one of

the most important approaches that provided explanations about their personality and linked it to the cognitive aspect, which Bandura adopted.

Where this perspective confirmed that our perception of things and meanings is not the same as the things themselves, or as they are or with their characteristics, but there are characteristics and rules that determine the processes of perception, which shows the importance of the quality and method of presenting the stimulus and the extent of the student's response to it. This result also explains the extent of the family's awareness and interest in the development and education of their children with learning difficulties, to be able to adapt and interact with their surroundings, enabling them to reach the level that makes them more compatible with their peers. It differed with the result of (Al-Ayeb, 2017) study, which indicated that the level of semantic memory in children with dyslexia was weak. It also differed with the study of (Moaziz, 2015), which revealed a deficiency in the semantic memory of these students.

Concerning the second question, results indicated that there were no statistically significant differences at the level of statistical significance ($\alpha = 0.05$) between the estimates of the study sample members on all semantic memory skills due to the difference of the gender variable. This result explains that the level of students of the same age group has the same characteristics in cognitive development, and the results of neuroimaging of semantic memory and audio-visual images are related to a common semantic system. If the event is isolated, it is linked to the memory of events in a specific spatial and temporal content, but if it is repeated, it is possible to integrate it into the semantic memory, due to the loss of its characteristic of that temporal and spatial content. Therefore, the issue of semantic memory is not limited to gender differences.

This result also explains that semantic memory is more like a relationship between learning inputs and outcomes, so the information and its quantitative and qualitative characteristics among students with learning difficulties are very close in characteristics, the surrounding environment and learning styles. As theories form the cognitive units that constitute the semantic memory of this category, which in turn are subject to many educational and organizational foundations or patterns that stand behind the students' ability to receive and process information and output it in the way they can express it. This result agreed with (Moaziz, 2015) study, which showed that there were no differences in semantic memory due to the gender variable.

6. Recommendations

Researchers recommend increasing the interest of those in charge of developing special curricula for the category of people with learning difficulties that depend on different learning styles that contribute to raising the level of memory for this category, through the development of cognitive exercises, which will develop and improve their abilities in the visual style skills, and the kinesthetic style. Also, arranging educational seminars to correct the prevailing belief about the category of people with learning difficulties, and to confirm that these children have abilities like normal children if they are well-directed, and they do not differ from the normal at all.

Bibliography

Abdel Hamid, M. (2013). In learning difficulties. Al Mutanabbi Library.

Abdullah , M. (2018). In The psychology of memory recent issues and trends. . Kuwait: The National Council for Culture, Arts and Letters.

Abu Al-Diyar, M. (2020). Working memory and learning difficulties. 1st floor, Kuwait Student Assessment and Education Center.

AL Waqfi, R. (2012). In Fundamentals of special education. Princess Tharwat College.

Al-Ayeb, J. (2017). In Semantic memory for people with dyslexia. Unpublished MA Thesis, University of Martyr Hamma Lakhdar in El-Oued, Algeria.

Ali, S. (2015). In Reading and writing difficulties, diagnosis and treatment. Al Falah Library for Publishing and Distribution.

Al-Judoua, E. (2013). In learning difficulties. . Amman: Dar Al Yazouri Scientific for Publishing and Distribution.

Alloway, T. (2016). How does working memory work in the classroom? Educational Research & Reviews, 1(4).

Al-Shehri, Nada , & Al-Sawat. (2019). The effectiveness of a training program using educational games in developing working memory for primary school students with hearing disabilities in Taif Governorate. Al-Manhal Magazine, 9 (30), pp. 1-31.

Boukaz, Yamina, , & Laiss, Ismail. (2020). In The nature of phonological awareness disorder (auditory, visual) and its relationship to verbal working memory among people with dyslexia. (pp. 1121-2170.). Journal of the researcher in the humanities and social sciences, 12 (3),.

Camos, V., Mora, G., Oftinger, A.-L., & Mariz Elsig. (2019). In Does semantic long-term memory impact refreshing in verbal working memory? (pp. 1664–1682.). Journal of Experimental Psychology: Learning, Memory, and Cognition, 45(9).

Collins, A. M., & Quillian, M. R. (1969). Retrieval time from semantic memory. Journal of verbal learning and verbal behavior, 8(2), 240-247.

Dewa, M. (2019). The differences between students with learning difficulties in listening comprehension, memory, reading and spoken language and their relationship to some variables.

Edwards, J. (2017). Techniques to improve working memory in students with disabilities,. In Idah Learning Disabilities Association of Halton, 23(2), . (pp. 117- 132).

Endel, T. (2019). In "Episodic Memory: From Mind to Brain". Annual Review of Psychology. (pp. 53: 1–25.).

Geary, David C., Hoard, Mary K, Nugent, & Lara; Rou. (2015). In Individual differences in algebraic cognition: Relation to the approximate number and semantic memory systems. (pp. 140(10), 211–227.). Journal of Experimental Child Psychology.

Guilford, J. P. (1977). Will the real factor of extraversion-introversion please stand up? A reply to Eysenck.

Hadad, S., & Fatima. (2020). In . A study of semantic memory for people with dyslexia. . Unpublished MA Thesis, University of Martyr Hamma Lakhdar - El Oued, Algeria.

Hills, Thomas , T., Jones, Michael N, Todd, & Peter M. (2012). In Optimal foraging in semantic memory.Psychological Review, Vol 119(2). (pp. 431-440).

Lauren, H. (2016). In The Complete Guide to Memory Control. Translation (Jarir Bookstore, 1998), Jarir Bookstore,.

Melhem, S. (2019). In Learning Difficulties Amman. Dar Al Masirah for printing, publishing and distribution.

Moaziz, M. (2015). In Semantic memory of students with difficulty in arithmetic - a field study in the unit of detection and follow-up Ghadiri Abdel Qader. Unpublished MA Thesis, Al Arabi Ben M'hidi University - Oum El Bouaghi -, Algeria.

Murphy, G. L., Hampton, J. A., & Milovanovic, G. S. (2012). Semantic memory redux: An experimental test of hierarchical category representation. Journal of memory and language, 67(4), 521-539.

Mustafa, M. B. (2015). The impact of campus life on student retention. International Journal of Arts and Commerce, 4(3), 92-107.

Oren, S., Willerton, C., & Small, J. (2014). In Effects of Spaced Retrieval Training on Semantichills Memory in Alzheimer’s Disease: A Systematic Review., (pp. 57(1), 247-277.). Journal of Speech Language and Hearing Research.

Pollock , B. (2020). Distinct memory profiles in children with learning disabilities:. A Neuropsychological Perspective, University of Windsor. https://scholar.uwindsor.ca/etd.

Puff, C. (2015). Hand book of research Methods in Human Memory and cognition. Academic Press.

Talafha, A. (2020). In Building an educational program using multimedia and measuring its effectiveness in developing reading and writing skills for students with learning difficulties at the primary stage in the Kingdom of Saudi Arabia. Unpublished PHD thesis: Amman Arab University.