

## Cognitive Overlap Processing Methods among Students of the Preparatory Stage

<sup>1</sup>Tayseer Fahim Jaffat, <sup>2</sup>Prof. Ali Saqir Jabber Alkhazay

<sup>1</sup>edu-sycho.post22.10@qu.edu.i

<sup>2</sup>Ali.Saqir@qu.edu.iq

Qadisiyah University College of Education, Department of Educational and Psychological Sciences

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**Abstract :** The current research aims to identify:

1- Methods of treating Cognitive overlap among middle school students

2-The significance of statistical differences in methods of processing of Cognitive overlap according to gender variables ( males , females ) , academic specialization ( scientific , literary ) , and the academic stage ( fourth , sixth )

In order to achieve the objectives of the research , the two researchers built a scale of methods of processing of Cognitive overlap according to the theory (Sarason , 1990), which subjected the scale in its initial form to the procedures of statistical analysis and extracted the psychometric properties of (validity, reliability , and discriminatory strength) to become in its final form consisting of (40) items distributed into five methods (reducing cognitive dissonance, refuting cognitive distortions, emotional organization and mitigating negative emotions, reducing mental stress, focusing on the task ). (8) items were prepared for each of them because the scale consists of (40) items and the statistical analysis was conducted for it and the psychometric properties were extracted from the validity and reliability of a sample consisting of (700) students and students from the preparatory stage were selected in a random manner and in a proportional manner by (256) students and (444) students for the academic year 2022-2023, and after completing the research procedures, the researchers extracted the results of the analysis of the social science phase after the use of (SPS), and the electronic means of the two independent statistical methods, and the statistical analysis of the two methods. The research came up with a number of results arranged as follows:

1- Students have the ability to use methods of Cognitive overlap processing

2- There are no statistically significant differences in the five methods of processing of Cognitive overlap according to variables ( gender , Section , grade )

**Keywords :** Cognitive overlap Processing Methods, mental disposition, conceiving, remembering, reasoning.

### Introduction to the research

#### Research Problem:

The influential variables that affect the present time and researchers in cognitive psychology try to understand the causes of the occurrence of cognitive overlap and find the means of processing , which refers to this cognitive overlap to a number of negative tensions for reactions to sensory stimuli and self-reactions (Calvo& Eysenk, 1996: 293) . As the situations in which the student finds an effect of Cognitive overlap and is a main condition for it , so that the cognitive overlap occurs only when the individual is learning multiple memorable materials do not have a real substantive relationship ( Anderson , 2007: 288) where Cognitive overlap refers to the conscious ideas that hinder the performance of the task These ideas may be directly related to the task at hand and may not be. Through this, a wide range of psychological phenomena can be considered a cognitive intervention, as we find that Cognitive overlap occurs through the emergence of Ideas are any ideas that occur at a conscious level and the content of ideas are any ideas that are concerned with anxiety , and the origins of ideas that arise internally from within and the person is supposed to be aware of them (Barbara et. al, 2016: 78), especially when students face a large momentum of increasing information

and this huge amount of information that occurs as a result of academic pressure. The student here is difficult for him how to deal with this information pressure and forms a cognitive burden between the important ideas that he needs and the unimportant ideas, which results in him cognitive overlap, which calls for solutions and methods to try to get rid of this cognitive overlap in students . Conway &Engle(1994) study showed that high school students show significant cognitive overlap, because they do not follow a strategy or processing methods to exclude information (information cessation) away from their goals instead of obtaining working memory processing, and direct their attention more , and this leads to show a deficit in following the strategy of information cessation in the attention process (Conway &Angle , 1994: 354, 373)

### **Research importance.**

The information processing stage is one of the procedures that emerge from a number of processes that occur gradually in the cognitive structure of the human being from the introduction of the stimulus until the issuance of the response. With the exposure of the individual to it, a sequence of a set of interim procedures arises ( Saber , 1999: 19). The cognitive representation of information is one of the mental processes that have a great impact on the processing of information, which is related to coding, processing, retention and retrieval. It is based on converting the meanings and meanings of cognitive inputs into meanings, ideas, mental perceptions, plans, buildings or cognitive strategies where cognitive representation introduces, absorbs and relieves meanings

The ideas and mental perceptions to become part of the permanent fabric of the cognitive structure of the individual , and the effectiveness of the processes of introduction, assimilation and housing vary according to the nature of each of the cognitive structure, and the memory of the meanings, so these processes are shortcut oriented and soft and this goes depending on the degree of familiar cognitive content, and what involves symbolic formulas or formal formulas, and the extent of its harmony and association with the cognitive structure of the individual ( Muhammad , 2010 : 250) .

Failure to remember information, or the results of a response, is related to perception and analysis , which in turn serves as an important factor in producing the response. Cognitive specialists believe that stimuli overlapping with each other lead to a response commensurate with the nature of that stimulus or to a failure to produce that response ( Green, 1987:8). Among the researchers who studied cognitive overlap, they faced the distinction between external and internal ideas, as internal ideas reflect ideas related to the completion of tasks related to the duty , and external ideas that refer to extraneous ideas ( not related to the duty ) that distance the individual from completing the task assigned to it (Al-Tai ,2020: 57 ).

The researcher concludes that the theoretical importance and practical importance of the current research: -

### **Theoretical Importance:**

1- The study of these variables may help specialists in finding methods of processing of cognitive overlap and another point that this variable records a scientific addition to the field of broad knowledge where it helps in understanding the course of cognitive processes and how to address them .

2- The variable of methods of processing of cognitive overlap is one of the modern concepts that were not highlighted by previous studies and research and did not take enough studies, which contributes to reducing the waste of information that students are exposed to

### **Practical Importance:**

1-The current research studies an important sample in society represented by preparatory students, as this group is a great force in building a society and a major source in its development

2- This study contributes through its use in psychological and educational research using new methods and methods of measurement in learning environments

**Research Objectives: The current research aims to identify:**

- 1- Methods of processing Cognitive overlap among middle school students
- 2-The significance of statistical differences in methods of processing of Cognitive overlap among middle school students according to gender variables (males – females), the Section (scientific – literary) and the grade (fourth – sixth)

**The limits of the research :** The current research is limited to students in the fourth and sixth preparatory grades, with their scientific and literary Section es, the morning study, in the governorate of Qadisiyah , for the academic year 2022-2023. The results of the research are also determined by the tools that have been adopted and their indications of validity and reliability

**Terminology:**

**Cognitive overlap**

1- Sarsan ( Sarsan, 1988) : It is a cognitive process that leads to reducing cognitive efficiency, and academic performance, which is a set of negative ideas, and these relate to the performance of the tasks assigned to the individual, as well as a set of negative ideas that are not related to the task , which affect his performance and lead to the loss of time , and the distribution of attention resources negatively . (Sarsan, 1988:118)

Through the previous definitions, the researcher realized that the following definition of methods of processing of Cognitive overlap , which were based on Sarason's theory (Sarason 1990)

**Processing methods of Cognitive overlap**

It is what the individual adopts from cognitive processes that contribute to reducing overlap and waste of information by focusing on important ideas by using mechanisms and tools that correct negative and irrational ideas and organize them so that they lead to directing attention and time to what is necessary.

**Chapter two**

**Theoretical framework and previous studies**

The concept of cognitive overlap began to spread early in the cognitive literature, which has a major role in the cognitive processes of the learner, as cognitive overlap in terms of explanations is an explanatory structure for the learner's behavior, and the mechanism of their learning and the results of their behavior has played a major role in the beginning of the behavioral school orientation of the likes of Benkhaus 1864 and Jimmy's ( Al-Tai , 2020: 54) .

Processing information at its core includes the process of controlling the flow of knowledge and transforming it into lifelong knowledge, as well as the methods and methods of receiving information, including, analyzing, and how to link, integrate and reconstruct it to adopt it in solving emerging problems (Al-Efwa et al., 2013: 19) . Especially that information processing is a major force in the field of psychology because it dealt with the analysis of individuals' memory, attention, cognitive representations, understanding and solution of problems (Miller, 2005:214) . Unless...

We find that the processing of Cognitive overlap is one of the most prominent cognitive functions in cognitive organization, and information processing skills, as it represents the individual meditation , and thinking about the information before retrieving it, among several information already existing in long-term memory (Atkinson, et al 1996: 170) .

- 1- Targeting the information components, and directing the focus towards them.

2- Comprehension, which is due to the total amount of sources of focus and awareness available. The ability to engage ,meaning the ability of an individual to maintain focus in selected stimuli

Selectivity, which is due to the degree of focus sources, and where it is narrowly on the subset of signals and there are many of these signals . (Eysenk, 1988:65). Theories of cognitive overlap are important in order to understand how cognitive overlap affects the learner's performance in cognitive tasks. For example, when cognitive overlap increases, it leads to an increase in negative evaluation of the self. All of these in turn make an increase in cognitive overlap (Sarason , et al, 1995 : 285)

### **Sarason 's theory of Cognitive overlap (1990)**

Sarason (1990) pointed out an important explanation in cognitive overlap, as it includes two main areas:

1- Ideas related to tasks : It is a set of negative ideas that relate to the self and the performance of the tasks assigned to the individual as it relates to the level of his capabilities and ability .

2- Ideas unrelated to tasks : It is the set of ideas that make the individual feel tension that distances him from the task entrusted to him, such as the individual thinking about his family, games, friends and other things related to negative ideas about himself , and his expectations about himself and others (Sarason, 1990 : 89-95) .

As individuals in exam situations, we find that their attention is distributed between their responses related to the tasks that they are required to accomplish with the test situation, and their responses that are not related to the tasks, which are his anxiety responses, as individuals with high levels are found when the exam situation allocates a small amount of attention to unrelated responses in the required tasks, leaving a small amount to responses associated with the tasks that they are required to accomplish , which in turn leads to a reduction in achievement , or academic performance among these students (Sarason 1998,285-290). This is done by reducing the amount of concentration available in the central task, which is called evaluation anxiety, exam anxiety or test anxiety, as it weakens productive sources (Sarason , 1984 : 929- 931)

### **Research Methodology and Procedures:**

In order to achieve the objectives of the research, the researcher used the descriptive approach, as one of the appropriate methods of scientific research if the phenomenon or problem is described as it is in reality , which is expressed in qualitative and quantitative terms, as the qualitative expression describes the phenomenon , and explains its characteristics , and the quantitative expression gives us a numerical description that shows the amount of existence of the phenomenon , or its size, ( Abbas, 2009, 74) .

### **Research community:**

The research community is identified as all the elements that the researcher seeks to generalize the relevant results in the problem of his research ( Odeh and Malakawi, 1992: 127) The current research community is represented in the schools of middle school students in Diwaniyah Governorate grade ( fourth , sixth ) and the morning study of (14,141) male and female students representing scientific and literary specialization for the academic year ( 2022-2023)

### **Second : Research Sample**

In selecting the sample, the researcher used the random stratified method with a proportional distribution ( Sample Stratified Random) (Melhem , 2002, 251), where the percentage of males reached (37%) of the sample, while the percentage of females reached (63%) and the percentage of scientific specialization (79%) and the percentage of literary specialization (21%), which reached the fourth grade (47%) and the percentage of the sixth grade ( 53%) and Table No. ( 1) shows that

Table ( 1) The sample is distributed according to variables (gender, specialization and grade )

Male schools	4th grade		Total	Sixth grade.		Total	Grand Total
	scientific	Literary		scientific	Literary		
1. Public schools	25	11	36	24	6	30	66
2. Kara-ma	13	8	21	14	13	27	48
3. Ja-wahery	28	-	28	31	24	55	83
4. Al thaqalien	26	11	37	10	12	22	59
Total	92	30	122	79	55	134	256

### Third: The Research Tool

The two researchers built a scale of methods of Cognitive overlap processing and define : - Processing styles of Cognitive overlap (Processing styles of Cognitive overlap) is what the individual adopts from cognitive processes that contribute to reducing overlap and waste of information by focusing on important ideas, using mechanisms and tools that correct negative and distorted thoughts and organize them so that they lead to directing attention and time on what is necessary, which includes several five of it. The researcher derived (40) items to measure methods of Cognitive overlap distributed on the methods of the scale by ( 8) items for each of the five methods, which are ( Reducing cognitive dissonance, refuting cognitive distortions, emotional organization, mitigating negative emotions, reducing mental stress, focusing on the task and performance ). Each item has four alternatives (completely applicable to me, often, sometimes, not applicable to me forever ). The items were drafted in the style of the statements of the report, taking into account a number of conditions that must be met, and following the items to calculate the overall scale of the scale ( 4, 3, 3, 4, 4, and 4). The negative items were in the case of negative statements.

A- Reducing cognitive dissonance B- Refuting cognitive distortions: C- Emotional regulation and mitigation of negative emotions: D- Reducing mental stress: E- Focus on the task and performance :

In order to verify this, the scale presented the methods of processing of cognitive overlap in its initial form to a group of arbitrators with specialization in the educational and psychological field, numbering ( 26) arbitrators, and asked them to express their observations and opinions according to the following :

1- The validity of the measure to measure what it was set for 2. Validity of the item to the area in which it is placed 3- Modifying, deleting or adding some items of the scale 4- Validity of Answer Alternatives 5- Validity of items (face validity) :

For the purpose of knowing the validity of the items , the scale was presented to a group of specialists in the educational and psychological sciences, and in the light of the opinions of experts, the items that obtained an agreement rate of 80% and more were retained. Accordingly, all items were retained, the scale of methods of processing of cognitive overlap with some linguistic modifications and Table (2) shows that

To verify the validity of the items , the measure of the trends of methods of processing of Cognitive overlap in its initial form was presented to a group of arbitrators with competence in the field of education and psychology, numbering (26) arbitrators, and they were asked according to the definition set by the researchers of methods of processing of Cognitive overlap and the definition of its five areas, and to express their observations and opinions on the validity of the items to measure what was set for it, the validity of the item for the area in which it was placed, modifying, deleting or adding to some items of the scale, the validity of the alternatives to answer, and the calculated value of the square of Chi-Square was adopted as a criterion for the survival of the item or not, and according to the

table value of (3,84) at a level of significance (0.05) with a degree of freedom (1). All the items were statistically significant and were not deleted as shown in Table (2)

**Table ( 2 ) K-square values of the arbitrators' agreement on the validity of items**

Female schools	4th grade		Total	Sixth grade.		Total	Grand Total
	scientific	Literary		scientific	Literary		
1. Sana 'a	30	6	36	38	7	45	81
2. Taliaa	30	9	39	37	/	37	76
3. Fadhilat	22	4	26	31	7	38	64
4. Rabab	36	/	36	29	7	36	72
5. Di-waniyah	21	4	25	19	8	27	52
6. Al-Hawra	41	3	44	46	9	55	99
Total	180	26	206	200	38	238	444
Grand Total	700						

### **Statistical analysis of the scale of methods of processing of cognitive overlap**

The process of statistical analysis of items is one of the basic steps in the construction and preparation of measures, and one of the important conditions for the items of educational and psychological measures is that they are characterized by their ability to distinguish between individuals in the measured capacity, as well as the need for the condition that the degree of the item is related to the overall degree of the scale (Al-Kubaisi, 2010 :271).

### **Statistical analysis:**

Nunnally points out that the size of the discrimination sample is related to the number of items of the scale, as it should be (5-10) times the number of items , to reduce the impact of chance in statistical analysis (Nunnally, 1978 p:262). Since the number of items of the measure of methods of processing of cognitive overlap is (40) items , and that the researchers have the right to choose the sample of statistical analysis between

(200-400) individuals, so the researchers chose a statistical analysis sample (300) students from the research community in the proportional stratified method (Stratified Sample Proportional Random).

### **Discriminatory power of vertebrae:**

The discriminatory power of items is the ability of items to distinguish between the upper and lower levels of individuals in relation to the characteristic measured by items (Shaw, 1967 p:97). The researchers adopted the two peripheral groups method (Contrasted Group Method) to verify the discriminatory strength of the items of the Cognitive overlap processing methods scale, as follows:

- Determine the overall degree of style of each form after correcting it

2-The ranking of the total grades obtained by the sample members according to the methods in descending order from the highest grade to the lowest grade that ranged :

First : Reducing cognitive dissonance between (32 - 9) Second : Refuting cognitive distortions between (32 - 8) Third : Emotional regulation and mitigation of negative emotions between (32 - 9) Fourth : Reducing mental stress between (32 - 11) Fifth : Focus on the task and performance between (32 - 8)

2- (27%) of the upper group and (27%) of the lower group of grades were chosen to represent the two terminal groups, and because the statistical analysis sample consists of (300) male and female students, therefore, the number of forms of the upper group members was (81) and the forms of the lower group was (81) as well .

3- The scale items were analyzed using the t-test of two independent samples, to test the significance of the differences between the mean scores of the upper and lower groups (Firkson, 1991 :458)

4- Comparing the calculated T-value of each item with the table T-value of (1.66) at the significance level of (0.05), and with the degree of freedom (160). It turned out that all the items of the scale are statistically significant, which means that all the items have a discriminatory force, and calculated T-value of each item all vertebrae between (13.519-5.595)

### **Item Score Relation to Overall method Score**

The relationship of the item to the total degree of the field to which it belongs was calculated, and using the Pearson correlation coefficient for the scores of the Cognitive overlap Processing Methods Scale for the statistical analysis sample of (300) students , and all correlation coefficients were statistically significant when compared to the critical values of the correlation coefficient of (0.113) at a level of significance (0.05) and a degree of freedom (298), as Table ( 4 ) shows that

### **Standard Characteristics of Cognitive overlap Processing Methods**

Validity and reliability in the scale must be available in order to be usable , as validity and reliability are the most important aspects of the scale (Rust, 69, 1986)

Validity The concept of validity is one of the most important concepts in the field of psychological measurement, and therefore its definitions are numerous, but one of the most important of these definitions is the ability of the scale designed to measure what it was developed for. ( John&Shaugness,15: 1985) The validity of the current scale has been achieved through the following methods:

- **Face Validity:** The face validity expresses the clarity of the items , the appropriateness of their formulation and their suitability for the field that contains them within the scale , as

Expresses the accuracy, objectivity, and suitability of the scale instructions for the purpose for which they were developed ( Imam , 1990, 130), as there is no doubt that the best way to extract it is to present the scale to a number of arbitrators specialized in psychological and educational sciences, and to take their views and instructions on the validity of items and their representation of the characteristic to be measured ( Zamili et al., 2009, 242)

Accordingly, the researcher presented that the items of the scale to a number of specialists and the items of the scale have been accepted by the arbitrators , and statistically significant , and as explained in the procedures for presenting the scale to the arbitrators Table (2)

### **C- (Construct Validity)**

This type of validity is called the validity of the concept (Concept Validity) or the validity of the hypothetical formation (Hypothetical Construct) , and it depends on the empirical verification of the extent of conformity of the scores of the scale with the measured property, and this type of validity is considered the most acceptable type of validity and the methods of statistical analysis of items are one of the most important indicators of this type of validity ( Majeed , 2010,

57). This type of validity was achieved from the conduct of the two groups of parties and the relationship of the item score to the overall degree of the method to which it belongs, as explained .

### Scale reliability )

Reliability means obtaining almost the same results when the test or scale is reapplied to the same sample after a period of time and using the same instructions. It is also a prerequisite of the research tool because it provides reliability in the test results when reapplied several times (Al-Ajili, et al., 1990 :145). The researchers verified the reliability indicators of the scale using the test and retest method for external reliability and using the Cronbach Alpha equation for internal reliability as follows :

#### 1. Test Method – Retest (External Reliability )

The reliability coefficient extracted by the test method - re-testing is called the reliability coefficient over time and this requires reapplying the test to the reliability sample itself with an interval of time, (Allam, 2000 :162). Therefore, the researchers applied the scale to a sample of (40) male and female middle school students who were randomly selected from the scientific and literary Section es, and reapplied the scale to the same sample after (18) days. The Pearson correlation coefficient was calculated between the first and second application scores, the first method was reduced cognitive dissonance (0.735), the second method refuted cognitive distortions (0.719), the third method emotional regulation and mitigation of negative emotions (0.723), the fourth method reduced mental stress (0.751), and the fifth method focused on the task (0.825) as shown in the table (), which are good reliability coefficients on the reliability of individuals' responses (if the correlation coefficient between the first and second applications is 0.70) and more, it is considered a good indicator of the reliability of tests in the educational and psychological sciences ( Al-Issawi , 1985, 58)

#### 2- Analysis of variance using the method of the Cronbach alpha equation (internal reliability ):

In order to extract reliability in this way, the statistical analysis sample scores of (300) forms for the Cognitive overlap Processing Methods Scale were subjected to the Alfa Cronbach Frommula equation, and the reliability coefficient for the Cognitive overlap Processing Methods was reached in this way as in Table (5), which is high reliability , so the scale was considered internally consistent and has high reliability , and this is confirmed by Cronbach that the scale whose reliability is high is an accurate scale (Cronbach, 1970,p :63).

Table No. (5) Alpha-Cronbach coefficient to measure the internal reliability of the Cognitive overlap Processing Methods Scale

GENRE	Reliability Alpha Cronbach	Reliability Retest
Cognitive dissonance	0.744	0.735
Refuting cognitive distortions	0.736	0.719
Emotional regulation and mitigation of	745 .	723



negative emotions		
Mental	783	0.751
Focus on task and performance	0.871	0.825

#### IV /Final application of the scale to the research sample

When the researchers completed a tool and verified its validity and reliability , the researchers applied it to the research sample of (700) students, who were selected in the random class method with a proportional style from the schools of Diwaniyah Governorate as mentioned above .

#### Presentation and interpretation of results

First Objective: Identifying the methods of processing of cognitive overlap among students of the preparatory stage

The researcher analyzed the students' answers on the scale of Cognitive overlap processing methods and extracted the arithmetic means and standard deviations for each method and then compared them to the hypothetical average using the T-test for one sample and the results appeared as in the table.

#### Statistical processing in Table ( 6 ) refers to the following:

- 1- The method of reducing cognitive dissonance: The calculated T-value (37,924) of the difference between the arithmetic mean of this method of (25,110) and the mean hypothesis of (20) is statistically significant because it is greater than the tabular T-value of (1,96) at the degree of freedom (699) and the level of significance (0.05), and in favor of the arithmetic mean of the sample. This indicates that students use this method significantly greater than the hypothetical average, which is in first place relative to the rest of the methods according to its relative weight of (21.21%).
- 2- The method of refuting cognitive distortions: The calculated T-value (12,877) of the difference between the arithmetic mean of this method of (21,956) and the mean hypothesis of (20) is statistically significant because it is greater than the tabular T-value of (1,96) at the degree of freedom (699) and the level of significance (0.05), and in favor of the arithmetic mean of the sample. This indicates that the students' use of this method is greater than the hypothetical average and is in fifth place relative to the rest of the methods according to its relative weight of (18.55%).
- 3- Emotional regulation method and the mitigation of negative emotions: The calculated T-value (22,866) of the difference between the arithmetic average of this method of (23,451) and the average hypothesis of (20) is statistically significant because it is greater than the tabular T-value of (1,96) at the degree of freedom (699) and the level of significance (0.05), and in favor of the arithmetic average of the sample. This indicates that the students' use of this method is greater than the hypothetical average and is in fourth place relative to the rest of the methods according to its relative weight of (19.81%).
- 3- Method of reducing mental stress: The calculated T-value (27,998) of the difference between the arithmetic mean of this method of (24,199) and the mean hypothesis of (20) is statistically significant because it is greater than the tabular T-value of (1,96) at the degree of freedom (699) and the level of significance (0.05), and in favor of the arithmetic mean of the sample. This indicates that the students' use of this method is greater than the hypothetical average and is second to the rest of the methods according to its relative weight of (20.44%).
- 4- The method of focusing on the task and performance: The calculated T-value (21,438) of the difference between the arithmetic mean of this method of (23,673) and the mean of the hypothesis of (20) is statistically significant

because it is greater than the tabular T-value of (1,96) at the degree of freedom (699) and the level of significance (0.05), and in favor of the arithmetic mean of the sample. This indicates that the students' use of this method is greater than the hypothetical average and is in third place relative to the rest of the methods according to its relative weight of (20.00%).

### The second goal: Differences in methods according to the variables of gender, specialization and grade

To achieve this goal, the researcher used the triangular variance analysis after extracting the arithmetic averages and standard deviations of the research sample in the methods of processing of cognitive overlap by gender (males and females), academic specialization (scientific, forget about me) and grade (fourth, sixth) to identify the differences between the averages of groups in each method of cognitive overlap processing methods. The result of the analysis of triangular variation for each method was as follows:

A- The method of reducing cognitive dissonance: the results of the analysis of the triple variance of this method as in Table ( 7)

Table ( 7) The results of the triangular variance analysis to reveal the significance of the differences in the method of reducing cognitive dissonance according to the variables: gender (males, females), specialization (scientific, literary), and grade (fourth, sixth)

Source of variance S.V	Sum of squares s.s	Degree of freedom m D.F	Mean squares M.S	Pecuniary value		Level of Significance
				Calculated	tabular	
Gender	0.274	1	0.274	.022	3.85	(Nonsignificant)
Section	11.511	1	11.511	0.907		(Nonsignificant)
Grade	48.067	1	48.067	3.786		(Nonsignificant)
Gender x Section	0.942	1	0.942	0.074		(Nonsignificant)
Gender x Grade	2.909	1	2.909	0.229		(Nonsignificant)
Section x grade	39.090	1	39.090	3.079		(Nonsignificant)
Triple Interaction	17.690	1	17.690	1.393		(Nonsignificant)
Error : {error}	8785.757	692	12.696			-
Total	8906.240	699				-

Statistical processing in Table ( 7 ) refers to the following:

- There are no statistically significant differences in the averages of the method of reducing cognitive dissonance according to the variables of gender (males, females), academic specialization (scientific, literary), and grade (fourth, sixth), as the calculated value reached (0,022), (0,907), (3,786), respectively, which is smaller than the tabular value of (3,85) at the level of significance (0.05) and the degrees of freedom (1-692). That is, the method of reducing cognitive dissonance among students is similar, as well as among students of scientific and literary specialization, and students of the fourth and sixth grades. There are no statistically significant

differences in the method of reducing cognitive dissonance among middle school students according to the interaction of gender (males -females) with the academic specialization (scientific, literary), gender (males - females) with the fourth grade (sixth), and the academic specialization (scientific - literary) with the fourth grade (sixth), as the calculated values were (0,074), (0,229), (3, 079), respectively, which is smaller than the tabular value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).

- ❖ There are no statistically significant differences in the method of reducing cognitive dissonance according to the interaction of the three variables: gender (males - females), academic specialization (scientific - literary) with grade (fourth, sixth), as the calculated values were (1,393), which is smaller than the tabular value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692). As shown in Figure ( 1)
- ❖ This can be explained by the fact that the theory adopted did not indicate the existence of differences in the type, specialization or grade of the same school stage as long as they are going through similar circumstances for many years, and through the experiences they have experienced, they realized that these conditions have become part of life that cannot be changed. They were able to conform to the surroundings in which they lived, their communication with others, their compatibility with themselves and their self-awareness.

## 2-The method of refuting cognitive distortions

Results of the triangular variance analysis of this method as in Table (8 )

Table ( 8) The results of the triangular variance analysis to reveal the significance of the differences in the method of refuting cognitive distortions according to the variables: gender (males, females), specialization (scientific, literary), and grade (fourth, sixth)

Source of variance S.V	Sum of squares s.s	Degree of freedom D.F	Mean squares M.S	Pecuniary value		Level of Significance
				Calculated	tabular	
Gender	9.056	1	9.056	0.559	3.85	(Nonsignificant)
Section	0.432	1	0.432	0.027		(Nonsignificant)
Grade	10.171	1	10.171	0.627		(Nonsignificant)
Gender x Section	2.187	1	2.187	135		(Nonsignificant)
Gender x Grade	6.740	1	6.740	416		(Nonsignificant)
Section x grade	24.110	1	24.110	1.487		(Nonsignificant)
Triple Interaction	3.497	1	3.497	0.216		(Nonsignificant)
Error : {error}	11217.705	692	16.211			-

Total	11273.899	699				-
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**Statistical processing in Table ( 8 ) refers to the following:**

- There are no statistically significant differences in the averages of the method of refuting cognitive distortions according to gender variables (males, females), academic specialization (scientific, literary), and grade (fourth, sixth), as the calculated mortality value was (0,559), (0,027), (0,627), respectively, which is smaller than the tabular value of (3,85) at the level of significance (0.05) and two degrees of freedom (1-692). That is, the method of refuting cognitive distortions among students is similar, as well as among students of scientific and humanitarian specialization, and students of the fourth and sixth grades.
- ❖ There are no statistically significant differences in the method of refuting cognitive distortions among middle school students according to the interaction of gender (males -females) with the academic specialization (scientific, literary), gender (males -females) with the fourth grade (sixth), and the academic specialization (scientific - literary) with the fourth grade (sixth), as the calculated values were (0,135), (0,416), (1, 487), respectively, which is smaller than the table value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).
- ❖ There are no statistically significant differences in the method of refuting cognitive distortions according to the interaction of the three variables: gender (males - females), academic specialization (scientific - literary) with grade (fourth, sixth), as the calculated values were (0,216), which is smaller than the tabular value of (3,85), at a level of significance (0.05) and two degrees of freedom (1-692). As shown in Figure (2)

### 3- Emotional regulation method and mitigation of negative emotions

**Results of the triangular variance analysis of this method as in Table (9 )**

Table ( 9) The results of the triangular variance analysis to reveal the significance of the differences in the style of emotional regulation and reduce negative emotions according to the variables: gender (males, females), specialization (scientific, literary), and grade (fourth, sixth)

Source of variance S.V	Sum of squares s.s	Degree of freedom m D.F	Mean squares M.S	Pecuniary value		Level of Significance
				Calculated	tabular	
Gender	10.567	1	10.567	0.663	3.85	(Nonsignificant)
Section	8.960	1	8.960	.562		(Nonsignificant)
Grade	13.089	1	13.089	0.821		(Nonsignificant)
Gender x Section	12.134	1	12.134	761		(Nonsignificant)
Gender x Grade	8.419	1	8.419	0.528		(Nonsignificant)
Section x grade	24.058	1	24.058	1.509		(Nonsignificant)

Triple Interaction	1.591	1	1.591	0.100		(Nonsignificant)
Error {error}	11033.631	692	15.945			-
Total	11112.449	699				-

Statistical processing in Table ( 9 ) refers to the following:

- There are no statistically significant differences in the averages of the method of emotional regulation and the mitigation of negative emotions according to the variables of gender (males, females), academic specialization (scientific, literary), and grade (fourth, sixth), as the calculated mortality value was (0,663), (0,562), (0,821), respectively, which is smaller than the tabular value of (3,85) at the level of significance (0.05) and two degrees of freedom (1-692). That is, the method of emotional organization and mitigation of negative emotions among students is similar as well as among students of scientific and humanitarian specialization, and students of the fourth grade and sixth grade.
- ❖ There are no statistically significant differences in the method of emotional organization and mitigation of negative emotions among middle school students according to the interaction of gender (males -females) with the academic specialization (scientific, literary), gender (males -females) with the fourth grade (sixth), and academic specialization (scientific - literary) with the fourth grade (sixth), as the calculated values were (0,761), (0,528), (1, 509), respectively, which is smaller than the table value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).
- ❖ There are no statistically significant differences in the method of emotional regulation and mitigation of negative emotions according to the interaction of the three variables: gender (males - females), academic specialization (scientific - literary) with the fourth and sixth grades, as the calculated values were (0,100), which is smaller than the table value of (3,85), at a level of significance (0.05) and two degrees of freedom (1-692).

#### 4- Mental stress reduction method

Results of the triangular variance analysis of this method as in Table ( 10) **Table ( 10) The results of the triangular variance analysis to reveal the significance of the differences in the method of reducing mental stress according to the variables: gender (males, females), specialization (scientific, literary), and grade (fourth, sixth)**

Source of variance S.V	Sum of squares s.s	Degree of freedom m D.F	Mean squares M.S	Pecuniary value		Level of Significance
				Calculated	tabular	
Gender	0.187	1	0.187	0.012	3.85	(Nonsignificant)
Section	0.194	1	0.194	0.012		(Nonsignificant)
Grade	76.899	1	76.899	4.901		significance
Gender x	3.586	1	3.586	0.229		(Nonsignificant)

Section						
Gender x Grade	9.071	1	9.071	0.578		(Nonsignificant)
Section x grade	0.072	1	0.072	0.005		(Nonsignificant)
Triple Interaction	6.036	1	6.036	0.385		(Nonsignificant)
Error {error}	10857.272	692	15.690			-
Total	10953.318	699				-

**Statistical processing in Table ( 10) refers to the following:** There are no statistically significant differences in the averages of the method of reducing mental stress according to the variables of gender (males, females), and academic specialization (scientific, literary), as the calculated value of (0,012), (0,012), respectively, which is smaller than the table value of (3,85) at the level of significance (0.05) and two degrees of freedom (1-692). That is, the method of reducing mental stress among students is similar, as well as among students of scientific and humanitarian specialization.

- There are statistically significant differences in the averages of the method of reducing mental stress among middle school students according to the variable of the fourth and sixth grade, as the calculated phi value reached (4,901), which is greater than the tabular value of (3,85) at the level of significance (0.05) and two degrees of freedom (1-692). When comparing the arithmetic means of students' grades according to the variable of the academic specialization. We find that the students of the sixth grade is (24,662), which is greater than the arithmetic average of the students of the fourth grade, which is equal to (23,790), that is, the students of the sixth grade have a method of reducing mental stress is greater than the students of the fourth grade

This can be explained by the fact that the sixth students have the ability to take some rest so that they can focus on performing his exams. In addition, their family provides them with all the atmosphere they need to study to help them focus on their studies

- ❖ There are no statistically significant differences in the method of reducing mental stress among middle school students according to the interaction of gender (males -females) with the academic specialization (scientific, literary), gender (males -females) with the fourth grade (sixth), and the academic specialization (scientific - literary) with the fourth grade (sixth), as the calculated values were (0,074), (0,229), (3, 079), respectively, which is smaller than the table value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).
- ❖ There are no statistically significant differences in the method of reducing mental stress according to the interaction of the three variables: gender (males - females), academic specialization (scientific - literary) with grade (fourth, sixth), as the calculated values were (1,393), which is smaller than the tabular value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).

## 5-The method of focusing on the task and performance

Results of the triangular variance analysis of this method as in Table ( 11)

**Table ( 11) The results of the triangular variance analysis to reveal the significance of the differences in the method of focusing on the task and performance according to the variables: gender (males, females), specialization (scientific, literary), and grade (fourth, sixth)**

Source of variance S.V	Sum of squares s.s	Degree of freedom D.F	Mean squares M.S	Pecuniary value		Level of Significance
				Calculated	tabular	
Gender	4.428	1	4.428	0.217	3.85	(Nonsignificant)
Section	61.138	1	61.138	2.998		(Nonsignificant)
Grade	23.936	1	23.936	1.174		(Nonsignificant)
Gender x Section	0.653	1	0.653	0.032		(Nonsignificant)
Gender x Grade	17.057	1	17.057	0.836		(Nonsignificant)
Section x grade	39.886	1	39.886	1.956		(Nonsignificant)
Triple Interaction	46.155	1	46.155	2.263		(Nonsignificant)
Error {error}	14111.913	692	20.393			-
Total	14,305.166	699				-

The statistical processing in Table ( 11 ) refers to the following:

- There are no statistically significant differences in the averages of the method of focusing on the task and performance according to the variables of gender (males, females), academic specialization (scientific, literary), and grade (fourth, sixth), as the calculated f value was (0,217), (2,998), (1,174), respectively, which is smaller than the tabular value of (3,85) at the level of significance (0.05) and the degrees of freedom (1-692). That is, the method of focusing on the task and performance among students is similar, as well as among students of scientific and humanitarian specialization, and students of the fourth and sixth grades.
- ❖ There are no statistically significant differences in the method of focusing on the task and performance of middle school students according to the interaction of gender (males -females) with the academic specialization (scientific, literary), gender (males -females) with the fourth grade (sixth), and the academic specialization (scientific - literary) with the fourth grade (sixth), as the calculated values were (0,032), (0,836), (1,956), respectively, which is smaller than the table value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).
- ❖ There are no statistically significant differences in the method of focusing on the task and performance according to the interaction of the three variables: gender (males - females), academic specialization (scientific - literary) with the grade (fourth, sixth), as the calculated values were (2,263), which is smaller than the tabular value of (3,85), at the level of significance (0.05) and two degrees of freedom (1-692).

**Recommendations :** In light of the findings of the current research, the researcher recommends the following:

1- Intensifying developmental courses in providing learners with methods of treating cognitive overlap or helping them to follow methods to address cognitive overlap. These effective methods have a role in reducing cognitive overlap and even enabling them to focus on the important ideas they need during their studies.

2- Instructing teachers of the need to pay attention to students, especially in terms of preparing exam questions and following the logical sequence of information so that there is no cognitive overlap

**Suggestions:**

1- Conducting a study to find out the impact of a training program in reducing cognitive overlap

2- Conducting a study that deals with the relationship of methods of processing of cognitive overlap with other variables such as problem solving , motivation (achievement motivation) and intelligence

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