

RELATIONSHIP BETWEEN COGNITIVE DISSONANCE AND ACHIEVEMENT IN MATHEMATICS AMONG HIGHER SECONDARY SCHOOL STUDENTS

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Abstract

Cognitive dissonance is a theory originally developed by Leon Festinger. He is proposing that dissonance, which is the existence of non fitting relations among cognition, is a motivating factor in its own right. This motivating factor encourages the learner to be more self confident in his actions or conclusions and distinguish between correct and incorrect solutions. This motivation will lead to reach the correct decision about a particular problem. The study aims to find out the relationship between cognitive dissonance and achievement in Mathematics among higher secondary school students. Cognitive dissonance was measured by using Cognitive Dissonance Scale developed by the investigator. The sample consists of 100 higher secondary school students from Malappuram districts. The study reveals that cognitive dissonance and achievement in mathematics is significantly related.

Key words: Cognitive dissonance, achievement in mathematics



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Cognitive Dissonance is the perception, by a subject, of a difference, of variable intensity, between what has been previously perceived and learned and new information. Cognitive dissonance is a theory originally developed by Leon Festinger. He is proposing that dissonance, which is the existence of non fitting relations among cognition, is a motivating factor in its own right. This motivating factor encourages the learner to be more self confident in his actions or conclusions and distinguish between correct and incorrect solutions. This motivation will lead to reach the correct decision about a particular problem. The present study aims to find out the cognitive dissonance affect the achievement in mathematics among higher secondary school students.

Objectives:

1. To find out the extent of cognitive dissonance among higher secondary school students.
2. To find out whether there exist significant relationship between cognitive dissonance and achievement in mathematics among higher secondary school students.

3. To find out whether there exist any significant difference in cognitive dissonance between boys and girls higher secondary school students.
4. To find out whether there exist any significant difference in the achievements in mathematics between boys and girls higher secondary school students.

Methodology:

The main purpose of the study is to find out the relationship between cognitive dissonance and achievement in mathematics among higher secondary school students.

Method : Survey method is used in the present study

Tool: The data collected by using Cognitive Dissonance Scale and achievement test in mathematics.

Sample: A sample of 100 higher secondary school students was selected for the study. The samples were taken from Malappuram district.

Sampling Technique: Stratified sampling technique was adopted in this study.

Statistical Techniques: The following statistical techniques were used in the present study

Carl Pearson's correlation

Test of significance of 'r'

Test of significance of difference between means for large independent samples

Analysis and Interpretation of Data:

This section includes mainly four parts: First part depicts the extent of cognitive dissonance among higher secondary school students, second part depicts the significant relationship between significant relationship between cognitive dissonance and achievement in mathematics among higher secondary school students, third part depicts group difference in cognitive dissonance between boys and girls higher secondary school students and fourth part depicts group difference in achievements in mathematics between boys and girls higher secondary school students.

1 .Extent of cognitive dissonance among higher secondary school students

The extent of cognitive dissonance among higher secondary students was established by using mean. The obtained mean value is 55.3. The degree of cognitive dissonance among higher secondary students is low/not satisfactory as the obtained mean value 55.3 is below the population value ($\mu = 60$).

2 .Relationship between cognitive dissonance and achievement in mathematics among higher secondary school students

Table: 1 Data and Result of Relationship between Cognitive Dissonance and Achievement in Mathematics

Variables	N	r	t-value	Level of significance
Cognitive dissonance and achievement in mathematics	100	0.49	5.44	0.01**

** Correlation is significant at the 0.01 level (2 tailed).

The 'r' value obtained for the relationship between cognitive dissonance and achievement in mathematics among higher secondary school students is 0.49. This is positive and there is marked relationship between the two variables.

The obtained' t value for cognitive dissonance and achievement in mathematics among higher secondary school students is 5.44 which is greater than 2.58 the required table value for significance at 0.01 level. This indicates that there exists significant relationship between cognitive dissonance and achievement in mathematics among higher secondary school students.

3. Group difference of Cognitive Dissonance among higher secondary students based on gender

Table: 2 Data and result of test of significance of difference between means of cognitive dissonance among higher secondary school students based on gender.

Gender	N	Mean	SD	t	Level of significance
Boys	50	56.4	2.5	6.74	0.01 level
Girls	50	52.6	3.1		

Table 2 shows that the obtained t value of cognitive dissonance for boys and girls sample is 6.74. Since the observed t value (critical ratio) is greater than 2.58, the difference is significant at 0.01 level of significance. Estimation of mean scores indicates that Cognitive Dissonance of boys is significantly greater than that of girls

4 .Group difference of achievement in Mathematics among higher secondary students based on gender

Table: 3 Data and result of test of significance of difference between means of achievement in Mathematics among higher secondary students based on gender.

Gender	N	Mean	SD	t	Level of significance
Boys	50	26.7	3.6	5.35	0.01 level
Girls	50	23.2	2.9		

Table 3 shows that the obtained t value of achievement in Mathematics for boys and girls is 5.35. The observed t value (critical ratio) is greater than 2.58 the required value of significance at 0.01 level of significance. This indicates that there is significant difference in the achievement in mathematics between boys and girls. Achievement of boys in Mathematics is significantly greater than that of girls.

Conclusions and Suggestions:

From the study it is concluded that higher secondary school students have lower level of cognitive dissonance. The study reveals that the level of cognitive dissonance affects the achievement in mathematics. There is a positive relationship between cognitive dissonance and achievement in mathematics among higher secondary school students. Cognitive dissonance of boys is significantly greater than that of girls. Achievement in mathematics of boys is significantly greater than that of girls.

Students who can attribute their work to an external reward stop working in the absence of that reward, while those who are forced to attribute their work to intrinsic motivation came to find the task genuinely enjoyable. Psychologists have incorporated cognitive dissonance into models of basic processes of learning, notably constructivist models. Several educational interventions have been designed to foster dissonance in students by increasing their awareness of conflicts between prior beliefs and new information and then providing or guiding students to new, correct explanations that will resolve the conflicts allowing a little confusion is not a bad thing. Certainty does not exist in all things, and that is an important lesson for children to learn. So teacher should help the child not only to identify a problem but also develop within the children a motivation to find solutions and to overcome them.

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