

Summary of the Research

Introduction :

A learning disability is defined as student's failure to learn to a suitable standard in spite of the availability of sufficient mental ability, sensory capacity psychological adjustment as well as environmental opportunities. This definition discriminates between expectedly poor academic performance and the unexpectedly poor one (a learning disability).

Research of information processing on exceptional individuals revealed a remarkable progress in the fields of understanding the main process of attention and memory as well as the metacognitive technicalities controlling strategy production and use during problem solving.

Although the learning - disabled students have normal intelligence they suffer from disabilities in information processing. This is because they use qualitatively different mental representations from those used by their normal peers.

It is worth mentioning here that- as far as the researcher knows- there are no research studies in Egypt that dealt with any of the cognitive or effective characteristics of a sample of learning- disabled adolescents. In an attempt to fill this gap, the present research tried to investigate some cognitive processes of a sample of learning- disabled secondary students.

Research studies also investigated the processes of memory and problem solving as they have an outstanding role in forming learning disabilities in general and mathematics learning disabilities in particular.

The Research Problem :

The present research is tried to find answers to the following questions :

- 1- Are there differences between learning- disabled students and those normal as regards their performance on memory tasks in the acquisition stage (coding- elaboration- processing)?
- 2- Are there differences between learning - disabled students and those normal as regards their performance on the recognition task ?
- 3- Are there differences between learning- disabled students and those normal as regards their performance on the representation task ?
- 4- Are there differences between learning- disabled students and those normal as regards their performance on strategy- stage tasks (paralleling- Puzzle) ?
- 5- Are the differences between learning- disabled students and those normal as regards their performance on the tasks of the role of memory in problem solving (similarity- functional fixation) ?

Purpose of the research :

The purpose of the present research was to make sure of the validity of the hypotheses of the cognitive information processing model in interpreting learning disabilities through finding out strategies characterizing learning disabled students that lead to quantitative differences between them and their normal peers in memory and problem solving.

Tools of the Research:

They are as follows :

A- Diagnostic tools that include :

1- Pictorial intelligence test (PIT)

Prepared by Ahmed Z. Saleh

2- Eysenck personality Inventory (EPI)

Translated by Gaber A. Hameed and Moh'd F. El Islam

3- Willoughby's neurotic tendency schedule

translated by Ahmed A. Kalck

4- Format of family Socio-economic status
(FFSS)

Prepared by : Abdul Azoz E. ElShakhs

5- Wechsler intelligence scale for children

Translated by Moh, 'd E. Isamil

6- Accumulative Mathematics Achievement test prepared by the
researcher

B- Main Study Tasks That include :

1- Tasks of encoding stage :

(Coding - Elaboration- Processing)

2- Tasks of Retrieving stage (recognition).

3- Tasks of Representation stage (representation).

4- tasks of strategy stage :

(Parallel- puzzle)

5- Tasks of Memory role in problem solving : (Similarity - Functional
fixation) .

Sample of the study :

The final sample comprised 44 first year secondary students (22 normal and 22 mathematics learning- disabled).

procedures :

Procedures of the study were divided into

1- Diagnostitc phase that includes :

- a) using exclusion by means of Eysenck list, will ough by teast and pictorial intellegence test.
- b) using discripancy by meavs of pictorial intellegence test and accumualtive.
mathematics achirnement test

2Basic study phase :

In this phase the experimental tasks were presented to the students .
They were :

- a) Memory taskes
- b) problem solving tasks
- c) tasks of role of memory in problem solving

This was done with the intention of identifying strategies that characterize earch group.

Statistical techniques :

The researcher used the SPSS/PCT+to apply the following to the deta:

- 1- Chi2
- 2- t-test
- 3- Two- way ANOVA

Major findings :

Results of the study revealed that there are statistically significant mean differences between mathematics normal and learning- disabled students as regards strategies of information processing they use while performing on the encoding tasks (encoding- elaboration- processing) and strategies of problem solving they use in paralleling , role of memory in problem solving as was revealed from their performance on the tasks of role of memory in problem solving (similarity- functional fixation).

Results also revealed that there are statistically significant mean differences between normal and mathematics learning- disabled students as regards the strategies of information processing they use while performing on recognition tasks as well as strategies of problem solving they use in answering puzzles.

Results also revealed statistically significant mean quantitative differences between normal and mathematics learning disabled students as regards accuracy of response to the tasks of encoding, processing and paralleling there are no statistically significant mean quantitative differences as for accuracy of Response to the task of encoding as well as to the number of errors in answering the puzzle and to the time taken in answering the puzzle.