The Training N-Back Program and Its Effect on Improving Emotional Cognitive Regulation and Mental Arithmetic of the Student- Teachers at the Faculty of Education - Fayoum University.

Abstract :

The study aimed at identifying the effect of the training N-Back electronic program based on the activation of working memory on improving the emotional cognitive regulation and the mental arithmetic of the student-teachers at the Faculty of Education - Fayoum University. The researchers developed two data collection tools which are the emotional cognitive regulation scale in the form of situational judgments,and the mental computation test .They prepared also the training manual for using N-Back program .The sample consisted of (١٣٣) students in the fourth year (mathematics, physics, chemistry, biology) to verify the psychometric properties of the study tools. The basic sample consisted of (٨١) students were divided into experimental group consisted of (٤٢) students (Mathematics and physics department) and control group consisted of (٣٩) students (Mathematics and physics department).

A number of statistical analysis techniques were used to answer the study hypotheses: Descriptive statistics (Mean, Standard Deviation, Pearson Correlation Coefficient, and Logarithmic transformation of data), Exploratory factor analysis using Oblique rotation, Confirmatory factor analysis, Independent sample *t* -test, Repeated measures ANOVA, and the test of effect size.

The results of the study showed that there were statistically significant differences between the mean scores of the experimental and control groups in both of the emotional cognitive regulation and the mental arithmetic in favor of the experimental group. The effect size of the experimental manipulation on the cognitive emotional regulation

(according to Cohen's coefficient) was (٠.٧) which means an effect extending from medium to strong effect. Moreover, the effect size of the experimental manipulation in the mental arithmetic (according to Cohen's coefficient) was (١.٩٩) which means that the effect was very strong.

The main effect of the experimental manipulation over time was statistically significant. The results indicated that there were statistically significant differences between the means of pretest and posttest in both of the emotional cognitive regulation and the mental arithmetic in favor of the posttest. In addition, there were statistically significant differences between the means of pretest and follow up test in both the emotional cognitive regulation and the mental arithmetic in favor of the follow up test , while the differences were not statistically significant between the means of the posttest and the follow up test in each of the two dependent variables, reflecting the continuing impact of training in improving the level of these variables for the experimental group even after finishing the period of training. The researchers discussed the results in light of the theoretical framework and previous studies.

Key Words : N-Back Program - Emotional Cognitive Regulation - Mental Arithmetic.