INDIVIDUALIZED TRAINING ON EXECUTIVE FUNCTIONS FOR CHILDREN WITH LEARNING DISABILITY: A PRE-POST COMPARATIVE INTERVENTION STUDY

ABSTRACT

Introduction: Executive functions (EFs) refer to the cognitive processes that enable children to engage in goal-directed or problem-solving behaviours. It includes setting goals, identifying a problem, developing a plan, ability to execute the plan, show the required flexibility, attention and memory systems to guide, evaluate and/or self-monitor till the end of an effective problem solving activity. There is ample research evidence to show that children with learning disabilities (LDs) have difficulty in focusing attention on a particular academic task, planning and preparing the project reports and assignments, and working memory related to academics. Therefore, individualized training on EFs will help these children to enhance EFs and to overcome academic difficulties. Aim: To examine the efficacy of individualized training programme on EFs for children with LDs. Method: A pre-test and post-test with crossover and comparative intervention study design including a suspended treatment phase was employed on a purposive sample of ten children diagnosed with LDs or specific developmental disorders of scholastic skills (ICD-10; F81.9) in age range of 11-13 years for the experimental group (N=10) and five children with LDs as a control group (N=5). Experimental group was again divided into two groups, experimental group A (N=5) and experimental group B (N=5). Purpose and the procedure of study was explained to the participants, written informed consent was taken and confidentiality was assured as enshrined in the mandate on ethical guidelines followed at the institute. An assortment of standard tests was used such as
Digit Span Forwards and Digit Span Backwards, Verbal Working Memory and Symbolic Working Memory subtests of Wide Range Assessment of Memory and Learning-2, Children’s Color Trails Test-1 & 2, Stroop Color and Word Test-Children’s Version, and Wisconsin Card Sorting Test. Intervention activities were validated against the identified EFs and used through 20 individualized training sessions. **Results:** The results of the study highlight that subjects of experimental group A have got higher scores on all the measures of EFs in comparison to experimental group B and control group or wait list group. Subjects of experimental group B have got higher scores on all the measures of EFs in comparison to control group. Subjects of control group have got lower scores on all the measures of EFs in comparison to experimental group A and experimental group B. **Conclusion:** This study indicates that individualized training is effective in improving the EFs or skills such as span of attention, motor speed, shifting set and visual scanning; inhibition control, verbal working memory, symbolic working memory, and abstract ability in children with LDs. **Implication:** The findings of this study have implications for future educational curricula aiming at improved academic performance stemming from an enhanced executive function based intervention. **Limitations:** This study was done only on ten children with LDs. Hence, finding of this small sample size may be generalized with caution. **Future Research Directions:** Computer-assisted training programme on EFs for children with LDs can be carried out on larger sample size with comparable representation of both gender.

**Keywords:** Attention, Dyslexia, Efficacy, Executive functions, Working memory, Training