THE EFFECTS OF INTERVENTION FOR SELF-REGULATION AND PLANNING ON EXECUTIVE FUNCTIONS, METACOGNITIVE AWARENESS AND MATH PERFORMANCE AMONG COLLEGE STUDENTS WITH ADHD

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Abstract

ADHD is currently identified by diagnostic criteria that include difficulties of attention and hyperactive–impulsive behavior. Individuals with ADHD typically have trouble getting organized, staying focused, planning, and self-regulation, and for many it is associated with academic impairments. Although planning and self-regulation has received strong attention for decades, it is still important to understand the influence of strategies for planning and self-regulation on student’s school achievements across ages. Researchers showed that mediation for self-regulation and planning (Iseman & Naglieri, 2011) and meta-cognitive therapy (Solanto, et. al., 2010) might improve significantly children’s performance at the strategies level as well as the content level.

The objectives of this study were to investigate the effects of a short-term intervention for planning and self-regulation within a dynamic assessment (DA) framework on executive functions and math performance among college students with ADHD.

A sample of college students diagnosed with ADHD (Mean age = 23.24, SD = 1.80) were assigned randomly to experimental (n = 30) and control (n = 29) groups. All participants received the Seria-Think Instrument pre- and post-teaching phases before and after the intervention (teaching phase), respectively. After the intervention all participants were administered the transfer phase of the Seria-Think Instrument, and Tzuriel’s Math Test (Tzuriel, 2017). The intervention, which took about 60 minutes, included mediation for planning and self-regulation in a mathematical modality. The intervention is based on the Mediated Learning Experience theory (MLE, Feuerstein, et al., 2002) and the Seria-Think Instrument-Revised (STI-R, Tzuriel, 2000; Tzuriel & Caspi, in press). MLE processes describe a special quality of interaction between a mediator and a learner. The mediator interpose him/herself between a set of stimuli and the learner and modify the stimuli for the learner (i.e., modifying their frequency, order, intensity, and context, arousing curiosity, vigilance, and perceptual acuity, and improving the learner’s cognitive functions). The STI-R (Tzuriel, 1998, 2000), which is a DA measure, is aimed at assessing basic cognitive processes in the mathematics domain and a variety of arithmetic skills, especially seriation, estimation, counting, and computation. The problems of the STI-R require cognitive functions such as planning, self-regulation and inhibition of impulsivity, systematic exploratory behavior, and simultaneous consideration of several sources of information. The STI-R includes a Transfer phase which contains different problems than the original pre- and post-teaching problems. The control group practiced the STI-R problems with no teaching, for the same amount of time as the experimental group.

A series of MANOVA’s of Treatment X Time (2 X 3) revealed significant Group X Time interactions indicating that the experimental group showed higher improvement than the control group in all measures of planning and self-regulation, including the Transfer problems. The experimental group showed also significantly higher improvement on the math test than the control group. The findings have theoretical and practical significance especially in view of the short intervention efforts for both students with special needs and students without difficulties.

Keywords: Mediated Learning Experience, Self-Regulation, Executive Functions, Metacognitive Awareness, College Students, ADHD.