

International Conference on Brain Disorders & Therapeutics

August 24-26, 2015 London, UK

Working memory in 6 years old children and cognitive training

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The research aims to investigate the functioning of the brain at an early age, while taking into consideration the role of working memory and stimulating the function. We explored the cognitive profiles of children with working memory impairments in an initial screening of 180 six-year-olds and identified children with low working memory scores. The research includes 2 groups of children: Active (with cognitive training) and passive (without cognitive training). Cognitive skills (Raven's Coloured Progressive Matrices (CPM) - psychological test, Antisaccades (AS) task, Memory Guided Saccades (MGS) – eye-tracking research, Test of Working Memory Capabilities (TOWMC), Test of Knowledge and Competences (TOKAC) were assessed before, after cognitive training and third time, three months after cognitive training). The training took 8 weeks, 5 times a week, 15 – 20 minutes each day. We studied the hypothesis:

1. The improvement of the trained function of operational memory measured by the eye-tracker will be noted in all training groups, but a higher dynamic of progress will be observed among children with low working memory
2. The transfer of the effects of cognitive training will be observed in eye-tracker, TOWMC and TOKAC data, but among children with low working memory it will be more differentiated, than among healthy children
3. The improvement of learning skills measured by TOKAC will be noted in all training groups, but a higher dynamic of progress will be observed among children with low working memory
4. Durability of the training results on the operational memory's functioning will be observed in all groups. The results of the research should serve as a basis for further studies, both cognitive and clinical. In cognitive studies, they should serve as a reference point to further studies into the role of working memory and cognitive training in early development stage. In clinical studies, the effects of the experiment can serve an important role in combining computer cognitive training with another treatment e.g. medication.

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