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Neuropsychological analysis of human executive and other cognitive functions in natural aging

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During newborn and early childhood period forming and developing of brain's neural circuits is mirror projection of the processes of structural atrophy and neural cell loss which take place during the natural aging. Revealing and stating the sign of natural cognitive aging is the basic milestone for neuropsychological diagnostic process of different age-related mental disorders.

Objectives: Current research objective is to study the changes of executive functions during natural aging and the influence of the changes on other cognitive functions.

Methods: Cognitive and executive functions were assessed by means of Neuropsychological battery. The battery was completed by 218 subjects of 7 different age groups. Besides age, gender, education, bilingualism, dominant hand, somatic and neurological disease factors have been controlled.

Results: Study results revealed that age factor first of all has significant influence on subject's executive functions. The natural decline of executive functions during aging causes secondary decline of certain cognitive functions. Mental fatigue is revealed in age groups of 50 and older subjects. According to correlational analysis results battery completion total score correlates significantly with executive functions among all age groups. Bilingualism and gender factors have no significant influence either on total score of executive functions assessing subtests or on battery completion total score. Whereas the disease and education factors influence become significant at the age when executive functions' natural decline begins.

Conclusions: Revealed cognitive age-related differences probably are based on age-related neural changes in prefrontal cortex and functional conditions of the dopamine system of the aging brain. Neurocognitive mechanisms of age-related decline of executive and other cognitive functions could be explained within the executive control model.

Biography

Maia Machavariani Tsereteli has completed her M.sc in clinical Neuropsychology in 2007 at Ivane Javakishvili Tbilisi State University. Currently she is PhD student of the same university. She is working as neuropsychologist (National programs on prevention and early diagnosis of epilepsy in children and adults) at Institute of Neurology and Neuropsychology since 2011 up to now and delivers lectures and seminars as Professor at Ivane Javakishvili Tbilisi State University. She conducted researches on Naming Development Neuropsychological and Neurolinguistic analysis, the research of Creativity in Georgian Population -Torrans Creativity Test adaptation, Neuropsychological analysis of human executive and other cognitive functions during natural aging.

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