

B. Kakuszi¹, S. Papp¹, L. Tombor¹, L. Balogh¹, I. Bitter¹, P. Czobor¹

¹Psychiatry and Psychotherapy, Semmelweis University, Budapest, Hungary

Introduction: Major symptoms evidenced by patients with Attention Deficit Hyperactivity Disorder (ADHD) have been linked to deficiencies in cognitive control, especially when conflicts in information processing occur.

Objective: We wanted to define neural correlates of impairments in conflict monitoring in ADHD using the ERP technique. Unlike previous ERP studies that focused on brain potentials following incorrect responses in ADHD, we investigated a brain potential, the N2, which reflects conflict monitoring before a correct response.

Method: Participants were 33 adult ADHD subjects, and 29 matched healthy controls. We recorded 128-channel EEGs for ERP responses during a Go/NoGo Task with a prepotent GO response, where subjects had to withhold response to repeated stimuli.

Results: Using age and gender as covariates in the analyses, subjects with ADHD evidenced significantly larger N2 amplitudes than healthy controls. The extent of N2 enhancement showed a significant association with the number of errors in the incongruent condition of the Stroop Task. With regard to scalp topography, the differences were manifested over the frontal areas, with the most pronounced difference appearing at the midline areas.

Conclusions: Patients with ADHD evidence a marked enhancement in N2 amplitude in a Go/NoGo task with prepotent response tendency. The fact that N2 enhancement is directly related to incongruent errors in the Stroop task suggests that behavioral deficits in conflict processing in ADHD may be underlied, at least partially, by the 'hyperreactivity' of neurobiological processes that generate this brain potential.

Supported by the Hungarian Scientific Research Fund (OTKA), Grant NN103325