

P-803 - REDUCED NEURAL ERROR SIGNALING IN LEFT INFERIOR PREFRONTAL CORTEX IN ADULTS WITH ADHD

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Neuroimaging studies in healthy subjects have shown that the neural network involved in inhibition of inappropriate response tendencies shares commonalities with the error processing network signalling failure of inhibition. It has also been proposed that the observed behavioral response inhibition deficits in patients with attention-deficit/hyperactivity disorder (ADHD) seem to be strongly associated with dysfunctional error processing. Most studies on error processing in ADHD have been conducted in children using electrophysiological methods, while investigations in adult patients with ADHD, and functional magnetic resonance imaging (fMRI) in particular, are sparse. Using event-related fMRI we studied 14 adults with ADHD and 12 group-matched healthy control subjects while performing a modified version of a combined Eriksen Flanker-Go/NoGo-task. The modification permitted for the distinction between congruent and incongruent Go- and NoGo-trials, with incongruent NoGo-trials representing the most demanding condition permitting a response-based analysis of the neural error processing network of failed inhibition. Behaviourally, no differences between groups were observed for reaction times or rates of incorrect NoGo-trials. Compared to healthy controls patients with ADHD demonstrated significant hypoactivation of the left inferior frontal gyrus bordering the anterior insular cortex (BA 47), when contrasting failed against successful inhibitions. The inverse group comparison (ADHD>controls) showed no difference. Our data suggest that hypoactivation in the inferior frontal cortex might represent a neuro-functional marker of altered error processing in adults with ADHD, possibly signaling dysfunctions in the neural system that operates task-set related representations and conscious evaluation of erroneous performance.