Cognitive and neurophysiological markers of ADHD persistence and remission

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Abstract

Background
Attention-deficit hyperactivity disorder (ADHD) persists in around two-thirds of individuals in adolescence and early adulthood.

Aims
To examine the cognitive and neurophysiological processes underlying the persistence or remission of ADHD.

Method
Follow-up data were obtained from 110 young people with childhood ADHD and 169 controls on cognitive, electroencephalogram frequency, event-related potential (ERP) and actigraph movement measures after 6 years.

Results
ADHD persisters differed from remitters on preparation-vigilance measures (contingent negative variation, delta activity, reaction time variability and omission errors), IQ and actigraph count, but not on executive control measures of inhibition or working memory (nogo-P3 amplitudes, commission errors and digit span backwards).

Conclusions
Preparation-vigilance measures were markers of remission, improving concurrently with ADHD symptoms, whereas executive control measures were not sensitive to ADHD persistence/remission. For IQ, the present and previous results combined suggest a role in moderating ADHD outcome. These findings fit with previously identified aetiological separation of the cognitive impairments in ADHD. The strongest candidates for the development of non-pharmacological interventions involving cognitive training and neurofeedback are the preparation-vigilance processes that were markers of ADHD remission.