Developmental changes of neuropsychological functioning in individuals with and without childhood ADHD from early adolescence to young adulthood: a 7-year follow-up study

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Abstract

BACKGROUND:
Our knowledge about the developmental change of neuropsychological functioning in attention-deficit/hyperactivity disorder (ADHD) is limited. This prospective longitudinal study examined the changes in neuropsychological functions and their associations with the changes of ADHD symptoms across the developmental stages from early adolescence to young adulthood.

METHODS:
We followed up 53 individuals diagnosed with the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) ADHD during childhood (mean age 12.77 years at time 1, 19.81 years at time 2) and 50 non-ADHD controls (mean age 12.80 years at time 1, 19.36 years at time 2) with repeated psychiatric interviews at two time points to confirm ADHD and other psychiatric diagnoses. Neuropsychological functions with high- and low-executive demands, measured by the Cambridge Neuropsychological Testing Automated Battery (CANTAB) at two time points, were compared.

RESULTS:
Both groups showed improvements in all neuropsychological tasks except reaction time in the ADHD group. Despite having a greater improvement in spatial working memory (SWM) than controls, individuals with ADHD still performed worse in various neuropsychological tasks than controls at follow-up. Better baseline intra-dimension/extra-dimension shift and parental occupation predicted fewer ADHD symptoms at follow-up independent of baseline ADHD symptoms. The degree of ADHD symptom reduction was not significantly linearly correlated to the magnitude of neuropsychological function improvement.

CONCLUSION:
Individuals with ADHD and controls had parallel developments in neuropsychological functioning, except a catch-up in SWM in ADHD. Almost all neuropsychological functions herein were still impaired in ADHD at late adolescence/young adulthood. There may be a threshold (i.e. non-linear) relationship between neuropsychological functioning and ADHD symptoms.