The Neurocognitive Profile of Attention-Deficit/Hyperactivity Disorder: A Review of Meta-Analyses

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Abstract

Objective
Numerous meta-analyses have summarized studies comparing the neurocognitive performance of individuals with attention-deficit/hyperactivity disorder (ADHD) to that of healthy controls.

Method
The present study is a systematic review and quantitative summary of those meta-analyses that aimed to determine the extent to which individuals with ADHD differ cognitively from typically developing controls.

Results
Of 253 standardized mean differences (SMDs) drawn from 34 meta-analyses, 244 (96%) were positive, indicating better neurocognitive performance in the control group than the ADHD group. The mean effect size was .45 (SD = .27). Unweighted means of SMDs for neurocognitive domains ranged from .35 (set shifting) to .54 (working memory). When weighted by the number of studies aggregated, they ranged from .35 (set shifting) to .66 (reaction time variability). Neurocognitive domains with mean effects over .50 included working memory (.54), reaction time variability (.53), response inhibition (.52), intelligence/achievement (.51), and planning/organization (.51). When weighted by a number of aggregated studies, the domains with mean effects over .50 were reaction time variability (.66), intelligence/achievement (.60), vigilance (.56), working memory (.54), and response inhibition (.52). Age moderated the relationship between ADHD diagnosis and neurocognitive functioning, with greater between-groups differences among children and adults than among adolescents. Funding also moderated this relationship: meta-analyses that received drug funding found larger effect sizes than those without drug funding.

Conclusions
The evidence suggests that ADHD is associated with substantial deficits across a variety of neurocognitive domains. This is the most in-depth review of the neurocognitive functioning of people with ADHD to date.