Working Memory and Response Inhibition as One Integral Phenotype of Adult ADHD? A Behavioral and Imaging Correlational Investigation

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Objective: It is an open question whether working memory (WM) and response inhibition (RI) constitute one integral phenotype in attention deficit hyperactivity disorder (ADHD).

Method: The authors investigated 45 adult ADHD patients and 41 controls comparable for age, gender, intelligence, and education during a letter n-back and a stop-signal task, and measured prefrontal oxygenation by means of functional near-infrared spectroscopy.

Results: The authors replicated behavioral and cortical activation deficits in patients compared with controls for both tasks and also for performance in both control conditions. In the patient group, 2-back performance was correlated with stop-signal reaction time. This correlation did not seem to be specific for WM and RI as 1-back performance was correlated with go reaction time. No significant correlations of prefrontal oxygenation between WM and RI were found.

Conclusion: The authors' findings do not support the hypothesis of WM and RI representing one integral phenotype of ADHD mediated by the prefrontal cortex.