Cognitive Load Differentially Impacts Response Control in Girls and Boys with ADHD.

Seymour KE, Mostofsky SH, Rosch KS.

J Abnorm Child Psychol. 2015 Jan 28. [Epub ahead of print]

Abstract

Children with attention-deficit hyperactivity disorder (ADHD) consistently show impaired response control, including deficits in response inhibition and increased intrasubject variability (ISV) compared to typically-developing (TD) children. However, significantly less research has examined factors that may influence response control in individuals with ADHD, such as task or participant characteristics. The current study extends the literature by examining the impact of increasing cognitive demands on response control in a large sample of 81 children with ADHD (40 girls) and 100 TD children (47 girls), ages 8-12 years. Participants completed a simple Go/No-Go (GNG) task with minimal cognitive demands, and a complex GNG task with increased cognitive load. Results showed that increasing cognitive load differentially impacted response control (commission error rate and tau, an ex-Gaussian measure of ISV) for girls, but not boys, with ADHD compared to same-sex TD children. Specifically, a sexually dimorphic pattern emerged such that boys with ADHD demonstrated higher commission error rate and tau on both the simple and complex GNG tasks as compared to TD boys, whereas girls with ADHD did not differ from TD girls on the simple GNG task, but showed higher commission error rate and tau on the complex GNG task. These findings suggest that task complexity influences response control in children with ADHD in a sexually dimorphic manner. The findings have substantive implications for the pathophysiology of ADHD in boys versus girls with ADHD.