Forethought in Youth with Attention Deficit/Hyperactivity Disorder: An fMRI Study of Sex-Specific Differences

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Objective.
The majority of studies investigating neurocognitive processing in attention deficit/hyperactivity disorder (ADHD) have been conducted on male participants. Few studies evaluated females or examined sex differences. Among various cognitive anomalies in ADHD, deficit in forethought seems particularly important as children with ADHD often fail to adequately use previous information in order to prepare for responses. The main goal of this study was to assess sex-specific differences in behavioral and neural correlates of forethought in youth with ADHD.

Methods.
21 typically developing (TD) youth and 23 youth with ADHD were asked to judge whether two pictures told a congruent or incongruent story. Reaction time, performance accuracy, and cerebral activations were recorded during functional magnetic resonance imaging (fMRI).

Results.
Significant sex-specific differences in cerebral activations appeared, despite equivalent performance. Relative to the boys TD participants, boys with ADHD had extensive bilateral frontal and parietal hypoactivations, while girls with ADHD demonstrated more scattered hypoactivations in the right cerebral regions.

Conclusion.
Present results revealed that youth with ADHD exhibit reduced cerebral activations during forethought. Nevertheless, the pattern of deficits differed between boys and girls, suggesting the use of a different neurocognitive strategy. This emphasizes the importance of including both genders in the investigations of ADHD.