Neural Processing of Threat Cues in Young Children with Attention-Deficit/Hyperactivity Symptoms.

Flegenheimer C, Lugo-Candelas C, Harvey E, McDermott JM.


Abstract

A growing literature indicates that attention deficit/hyperactivity disorder (ADHD) involves difficulty processing threat-related emotion faces. This deficit is especially important to understand in young children, as threat emotion processing is related to the development of social skills and related behavioural regulation. Therefore, the current study aimed to better understand the neural basis of this processing in young children with ADHD symptoms. Forty-seven children between 4 and 7 years of age were included in the analysis, 28 typical developing and 19 with clinically significant levels of ADHD hyperactive/impulsive symptoms. Participants completed a passive affective face-viewing task. Event-related potentials were assessed for each emotion, and parental report of child behaviour and emotion regulation abilities was assessed. Children with ADHD symptoms showed altered N170 modulation in response to specific emotion faces, such that the N170 was less negative in response to fearful compared to neutral faces, whereas typically developing children showed the opposite pattern. Groups did not differ in reactivity to anger or non-threat-related emotion faces. The N170 difference in fearful compared to neutral faces correlated with reported behaviour, such that less fear reactivity predicted fewer prosocial behaviours. Abnormalities in the underlying neural systems for fear processing in young children with ADHD symptoms may play an important role in social and behavioural deficits within this population.