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Attention to television in preschoolers who exhibit ADHD symptoms: an ERP investigation

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Abstract

Children with ADHD suffer from low and high order attention deficits. Work by E.P. Lorch and colleagues shows that these attention deficits affect televised narrative comprehension. The purpose of this research was to determine the extent to which the televised narrative comprehension deficits are the result of an inability to inhibit processing of irrelevant information. To achieve this, data were collected from 16 healthy adults and 37 preschool age children who varied in their ADHD symptoms. Participants were instructed to attend to one of two simultaneously presented audio tracks from children's television shows. For all participants the video that matched the target audio track was presented on a screen in front of them. Throughout viewing, white noise probes were played from the same locations as the attended and unattended audio tracks. Each participant sat through two different televised narratives. Narrative comprehensibility was manipulated within-subject such that each participant saw one comprehensible narrative and one incomprehensible narrative. Throughout both, EEG was recorded and subsequently time-locked to the presentation of the auditory probes from the attended and unattended locations. After each narrative, participants were asked to recall aspects of the story that were either central or peripheral to the causal chain of events. The morphology of the participants' auditory evoked potentials followed the expected pattern (a positive-negative-positive complex for adults and a broad positivity for children during the 300ms after stimulus onset). All participants showed greater processing of the probes from the attended location during the incomprehensible narrative than during the comprehensible narrative, which suggests that participants were processing more information from the attended location when the sequence of events in the narrative was unpredictable. Only children with relatively higher levels of ADHD symptoms showed processing of the probes during the comprehensible narrative. This pattern of results suggests that children with ADHD symptoms were as capable as the typically developing children and adults at the spatially selective attention task, but that they had difficulty engaging in selective attention within the target channel. Contrary to our hypotheses, the amount and type of information recollected did not differ by ADHD status.

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