Rapid automatized naming (RAN) in children with ADHD: An ex-Gaussian analysis.


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Abstract

Children with ADHD demonstrate increased frequent "lapses" in performance on tasks in which the stimulus presentation rate is externally controlled, leading to increased variability in response times. It is less clear whether these lapses are also evident during performance on self-paced tasks, e.g., rapid automatized naming (RAN), or whether RAN inter-item pause time variability uniquely predicts reading performance. A total of 80 children aged 9 to 14 years-45 children with attention-deficit/hyperactivity disorder (ADHD) and 35 typically developing (TD) children-completed RAN and reading fluency measures. RAN responses were digitally recorded for analyses. Inter-stimulus pause time distributions (excluding between-row pauses) were analyzed using traditional (mean, standard deviation [SD], coefficient of variation [CV]) and ex-Gaussian (mu, sigma, tau) methods. Children with ADHD were found to be significantly slower than TD children (p < .05) on RAN letter naming mean response time as well as on oral and silent reading fluency. RAN response time distributions were also significantly more variable (SD, tau) in children with ADHD. Hierarchical regression revealed that the exponential component (tau) of the letter-naming response time distribution uniquely predicted reading fluency in children with ADHD (p < .001, ΔR² = .16), even after controlling for IQ, basic reading, ADHD symptom severity and age. The findings suggest that children with ADHD (without word-level reading difficulties) manifest slowed performance on tasks of reading fluency; however, this "slowing" may be due in part to lapses from ongoing performance that can be assessed directly using ex-Gaussian methods that capture excessively long response times.