
Project DyAdd: Implicit learning in adult dyslexia and ADHD.

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In this study of the project DyAdd, implicit learning was investigated through two paradigms in adults (18-55 years) with dyslexia (n=36) or with attention deficit/hyperactivity disorder (ADHD, n=22) and in controls (n=35). In the serial reaction time (SRT) task, there were no group differences in learning. However, those with ADHD exhibited faster RTs compared to other groups. In the artificial grammar learning (AGL) task, the groups did not differ from each other in their learning (i.e., grammaticality accuracy or similarity choices). Further, all three groups were sensitive to fragment overlap between learning and test-phase items (i.e., similarity choices were above chance). Grammaticality performance of control participants was above chance, but that of participants with dyslexia and participants with ADHD failed to differ from chance, indicating impaired grammaticality learning in these groups. While the main indices of AGL performance, grammaticality accuracy and similarity choices did not correlate with the neuropsychological variables that reflected dyslexia-related (phonological processing, reading, spelling, arithmetic) or ADHD-related characteristics (executive functions, attention), or intelligence, the explicit knowledge for the AGL grammar (i.e., ability to freely generate grammatical strings) correlated positively with the variables of phonological processing and reading. Further, SRT reaction times correlated positively with full scale intelligence quotient (FIQ). We conclude that, in AGL, learning difficulties of the underlying rule structure (as measured by grammaticality) are associated with dyslexia and ADHD. However, learning in AGL is not related to the defining neuropsychological features of dyslexia or ADHD. Instead, the resulting explicit knowledge relates to characteristics of dyslexia.

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