Neuropsychological Profile Related with Executive Function of Chinese Preschoolers with Attention-Deficit/Hyperactivity Disorder: Neuropsychological Measures and Behavior Rating Scale of Executive Function-Preschool Version.

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Abstract

BACKGROUND:
Previous studies have found that schoolchildren with attention-deficit/hyperactivity disorder (ADHD) showed difficulties in neuropsychological function. This study aimed to assess neuropsychological function in Chinese preschoolers with ADHD using broad neuropsychological measures and rating scales and to test whether the pattern and severity of neuropsychological weakness differed among ADHD presentations in preschool children.

METHODS:
The 226 preschoolers (163 with ADHD and 63 controls) with the age of 4-5 years were included and assessed using the Behavior Rating Scale of Executive Function-Preschool Version (BRIEF-P) and a series of tests to investigate neuropsychological function.

RESULTS:
Preschoolers with ADHD showed higher scores in all domains of the BRIEF-P (inhibition: 30.64 ± 5.78 vs. 20.69 ± 3.86, P < 0.001; shift: 13.40 ± 3.03 vs. 12.41 ± 2.79, P = 0.039; emotional control: 15.10 ± 3.53 vs. 12.20 ± 2.46, P < 0.001; working memory: 28.41 ± 4.99 vs. 20.95 ± 4.60, P < 0.001; plan/organize: 17.04 ± 3.30 vs. 13.29 ± 2.40, P < 0.001) and lower scores of Statue (23.18 ± 7.84 vs. 28.27 ± 3.18, P = 0.001), Word Generation (15.22 ± 6.52 vs. 19.53 ± 7.69, P = 0.025), Comprehension of Instructions (14.00 ± 4.44 vs. 17.02 ± 3.39, P = 0.016), Visuomotor Precision (P < 0.050), Toy delay (P = 0.048), and Matrices tasks (P = 0.011), compared with normal control. In terms of the differences among ADHD subtypes, all ADHD presentations had higher scores in several domains of the BRIEF-P (P < 0.001), and the ADHD-combined symptoms (ADHD-C) group had the poorest ratings on inhibition and the ability to Plan/Organize. For neuropsychological measures, the results suggested that the ADHD-C group had poorer performances than the ADHD-predominantly inattentive symptoms (ADHD-I) group on Statue tasks (F = 7.34, η² = 0.12, P < 0.001). Furthermore, the ADHD-hyperactive/impulsive symptoms group had significantly poorer performances compared to the ADHD-C group in the Block Construction task (F = 4.89, η² = 0.067, P = 0.003). However, no significant group differences were found between the ADHD-I group and normal control.

CONCLUSION:
Based on the combined evaluation of performance-based neuropsychological tests and the BRIEF-P, preschoolers with ADHD show difficulties of neuropsychological function in many aspects.