A Longitudinal Study of Attention Development in Primary School Children with and without Teacher-Reported Symptoms of ADHD.


Abstract

Background: Prospective longitudinal studies are essential in characterizing cognitive trajectories, yet few of them have been reported on the development of attention processes in children. We aimed to explore attention development in normal children and children with attention deficit and hyperactivity disorder (ADHD) symptoms in a repeated measures design using the attention network test (ANT).

Methods: The population sample included 2,835 children (49.6% girls) aged 7-11 years from 39 schools in Barcelona (Catalonia, Spain) who performed the ANT four times from January 2012 to March 2013. According to teacher ratings, 10.5% of the children presented ADHD symptoms. We performed multilevel mixed-effects linear regression models, adjusting for school and individual, to test the effects of age-related growth on the ANT networks: alerting, orienting and executive attention, and three measurements related to attentiveness: median of hit reaction time (HRT), hit a reaction time standard error (HRT-SE) and variability.

Results: We observed age-related growth in all the outcomes, except orienting. The curves were steeper at the younger groups, although for alertness the improvement was further at the oldest ages. Gender and ADHD symptoms interacted with age in executive attention, HRT and variability. Girls performed better in executive attention at young ages although boys reached females at around 10 years of age. For HRT, males showed faster HRT. However, girls had a more pronounced improvement and reached the levels of boys at age 11. Children with ADHD symptoms had significant differences in executive attention, HRT and variability compared to children without ADHD symptoms.

Conclusions: We detected an ongoing development of some aspects of attention in primary school children, differentiating patterns by gender and ADHD symptoms. Our findings support the ANT for assessing attention processes in children in large epidemiological studies.