

Gene variants implicated in ADHD identify attention and language

October 15 2014

Are deficits in attention limited to those with attention-deficit/hyperactivity disorder (ADHD) or is there a spectrum of attention function in the general population? The answer to this question has implications for psychiatric diagnoses and perhaps for society, broadly.

A new study published in the current issue of *Biological Psychiatry*, by researchers at Cardiff University School of Medicine and the University of Bristol, suggests that there is a spectrum of attention, hyperactivity/impulsiveness and language function in society, with varying degrees of these impairments associated with clusters of genes linked with the risk for ADHD.

Viewing these functions as dimensions or spectrums contrasts with a traditional view of ADHD as a disease category.

To answer this question, researchers led by senior author Dr. Anita Thapar used genetic data from patients with ADHD as well as data from the Avon Longitudinal Study of Parents and Children (ALSPAC). The ALSPAC is based in England and is a large, ongoing study of parents and children followed since birth in the early '90s.

They created polygenic risk scores - a 'composite' score of genetic effects that forms an index of genetic risk - of ADHD for 8,229 ALSPAC participants.

They found that polygenic risk for ADHD was positively associated with higher levels of traits of hyperactivity/impulsiveness and attention at ages 7 and 10 in the [general population](#). It was also negatively associated with pragmatic language abilities, e.g., the ability to appropriately use language in social settings.

"Our research finds that a set of genetic risks identified from UK patients with a clinical diagnosis of childhood ADHD also predicted higher levels of developmental difficulties in children from a UK population cohort, the ALSPAC," said Thapar.

First author Joanna Martin added, "Our results provide support at a genetic level for the suggestion that ADHD diagnosis represents the extreme of a spectrum of difficulties. The results are also important as they suggest that the same sets of genetic risks contribute to different aspects of child development which are characteristic features of neurodevelopmental disorders such as ADHD and [autism spectrum disorder](#)."

"It may be the case that at some point polygenic risk scores may, in conjunction with other clinical information, help to identify children who will struggle in school and other demanding contexts due to attention difficulties," said Dr. John Krystal, Editor of *Biological Psychiatry*. "The objective of this type of early identification would be to provide children who are at risk for difficulties with support so that problems at school may be prevented."

More information: *Biological Psychiatry*, Volume 76, Issue 8 (October 15, 2014) [DOI: 10.1016/j.biopsych.2014.02.013](https://doi.org/10.1016/j.biopsych.2014.02.013)

Provided by Elsevier

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