Genetic disposition most important factor for difference in school performances

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Why does one child learn easily, whereas another has difficulty keeping up at school? Why does the one child find it so difficult to remain sitting on a chair whereas another can work independently without any problems? Researcher Eveline de Zeeuw from VU University Amsterdam investigated the causes of differences in school performances and behaviour between primary school children. She discovered that the differences between children are largely caused by genetic disposition. On 24 March 2015 she defended her doctoral thesis about a twin study she did thanks to funding from NWO.

Eveline de Zeeuw investigated the influence of genetics on the results of

the Cito pupil monitoring system tests (for ages 6 to 11) and the Cito final test (age 12). Her research revealed that genetic disposition has more influence than the environment on the results for arithmetic (60-74%), reading (72-82%), reading comprehension (54-63%) and spelling (33-70%). Genetic disposition was also largely responsible (74%) for differences between children in the Cito final score.

ADHD behaviour and genetic disposition

For ADHD behaviour the genetic disposition is also important for differences between children. Different class environments, teachers and classmates do influence the degree to which genes exert an influence on ADHD behaviour. In a group of identical twins the child that exhibits the most ADHD behaviour performs worse at school than his or her genetically identical twin brother or sister. The negative effect of ADHD on school performances therefore persists if this is corrected for genetic disposition.

Causal effect ADHD on school performances

The negative correlation between ADHD and school performances seems to be the consequence of a causal effect of ADHD on school performances. If a behavioural intervention or the use of medicines results in reduced ADHD, this will also indirectly improve school performances. This effect was found to be even greater among children with predominantly attention problems than among children who mainly exhibited hyperactive behaviour.

This research made use of data about 7-, 9- and 12-year-old twins and their brothers and sisters, which the Netherlands Twin Register (NTR) of the VU University Amsterdam collected as part of a project for the National Initiative Brain and Cognition (an NWO temporary taskforce). Parents and teachers completed questionnaires about problem behaviour

and school performances, report marks and test results (Cito) for these children. Some of the families also gave tissue samples from which DNA was isolated for genetic research.

More information: "Educational Achievement in Children: Twinning, Teachers and Genes." dare.ubvu.vu.nl/handle/1871/52459

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