

# Children's genes influence how well they take advantage of education

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New research from the Twins Early Development Study at King's College London Institute of Psychiatry (IoP), published in *PLoS ONE* on February 2nd, shows that measures used to judge the effectiveness of schools are partly influenced by genetic factors in students.

The study, funded by the Medical Research Council (MRC), was conducted by scientists in the UK at the MRC Social, Genetic and Developmental Psychiatry Centre, King's IoP, and in the US at the University of New Mexico.

The assumption behind measures of school effectiveness is that changes in student performance over time must be explained by the quality of the school environment. So the quality of [education](#) can be measured by the amount of improvement over time.

However, using data on school performance over time from 4000 pairs of twins from the Twins Early Development Study the researchers have shown that this and other approaches to assessing school quality do not measure the school environment alone. Perhaps unexpectedly, these measures are also substantially influenced by [genetic factors](#) that [children](#) bring to the classroom.

Dr. Claire Haworth, a lecturer at the King's IoP and lead author of the study said: "These findings do not mean that educational quality is unimportant, in fact environmental factors were just as important as genetic factors. However, these results do suggest that children bring

characteristics to the classroom that influence how well they will take advantage of the quality.

She continues "Consider a classroom full of students being taught by the same teacher. Some children will improve more than other children, even though their educational experience at school is the same."

Future research will aim to identify which characteristics in the child allow them to gain more from their educational experience. High on the list of candidates are motivation, persistence, and self-control, all of which are already known to show genetic as well as environmental influence, and are likely to affect school learning.

This genetic perspective on education suggests moving away from thinking of children as passive recipients of knowledge in education to an active view of learning in which children select, modify and create their own education in part on the basis of their genetic propensities. The research supports the trend towards personalizing education to each child's individual strengths and weaknesses.

**More information:** Haworth CMA, Asbury K, Dale PS, Plomin R (2011) Added Value Measures in Education Show Genetic as Well as Environmental Influence. PLoS ONE 6(2):e16006.

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