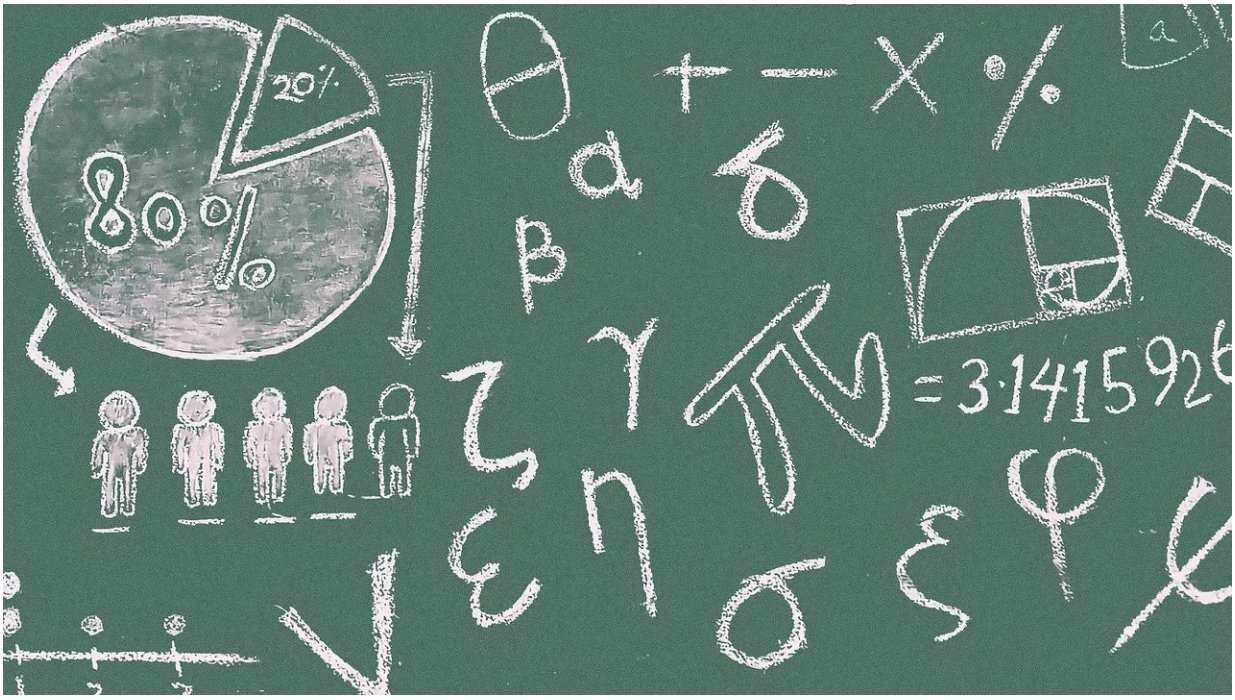
Parents with degrees give their children significant advantage in maths

May 20 2020, by Neil Vowles



Credit: CC0 Public Domain

Children of parents with a degree are almost a year of schooling ahead in maths by the age 11 than peers whose parents have just GCSEs, a new study by the University of Sussex has discovered.

Greater parental education is the strongest predictor of maths attainment and faster future growth for children moving into secondary school even

after adjusting for their intelligence (IQ), research by University of Sussex psychologists published today by the Royal Society reveals

The study also showed that:

Boys achieve significantly higher grades in maths at age 11 but this gap did not grow through secondary school. Academics believe the gap at 11 could be explained by girls' increasing maths anxiety and decreasing enjoyment of the subject at this age.

Statistically significant but very weak evidence that pupils with higher emotional symptoms in early childhood had lower maths attainment when they were older.

The study's authors recommend that strategies focusing on improving parental education could be a very effective method of increasing attainment in children.

Danielle Evans, researcher in achievement in mathematics at the University of Sussex, said:

"Our study shows that increased maths growth was significantly predicted by higher IQ, higher socioeconomic status and greater parental education, suggesting that children with greater intelligence and higher socioeconomic status progress at a quicker rate across the transition to secondary education compared with their peers. While this finding is not unexpected, it demonstrates the importance of parents within their child's education and suggests that having higher-educated parents may potentially 'buffer' the negative impacts of the transition to secondary education on children's attainment."

Dr. Darya Garsina, senior lecturer in psychology at the University of Sussex, said:

"Recent campaigns launched by the BBC in collaboration with the National Numeracy Charity focusing on promoting adult education and maths training is a step in the right direction but much more work is needed to overcome the extent of poor numeracy in the UK and the negative effects associated with underachievement in maths."

The study examined working memory and internalizing symptoms as predictors of children's maths attainment trajectories across the transition to secondary education through analysis of the Avon Longitudinal Study of Parents and Children (ALSPAC) involving almost 9,000 children born between 1 April 1991 and 31 December 1992.

The study focuses on the transition from primary to secondary education because of the reported declines in academic achievement and maths specifically during the move from primary to secondary schools—it is reported that more than a third of children do not show any progress in maths during the transition year.

The study's authors believe higher-educated parents support the transition to secondary education in different ways that lessen the negative impact of the transition on maths attainment including their own positive attitudes towards education, involvement with school activities or helping with homework in a supportive environment.

The authors had hypothesised that emotional temperament in early childhood could be a very early indicator of poor maths attainment later on in adolescence but later concluded that it was not possible to predict later problems with underattainment in maths using emotional difficulties early on in childhood.

The study's authors say additional research is needed to further uncover the relationship of memory during a task (working memory) and internalizing symptoms such as anxiety on attainment, using more time-

appropriate measures.

Andy Field, Professor of Quantitative Methods at the University of Sussex, said:

"The current state of maths attainment and performance of children and adults in the UK is particularly alarming with almost half of all working-age adults in the UK having the maths skills expected of primary-school children. Poor maths attainment in childhood persist well into adulthood and can be associated with several negative outcomes such as poorer employment prospects, greater likelihood of homelessness, poorer health outcomes and mental health difficulties such as depression. The ability to identify predictors of maths attainment as early as possible in childhood could have life-changing consequences."

More information: Danielle Evans et al, Internalizing symptoms and working memory as predictors of mathematical attainment trajectories across the primary–secondary education transition, *Royal Society Open Science* (2020). DOI: 10.1098/rsos.191433

Provided by University of Sussex