Children’s cognitive development

The impact of the pandemic

As the world seeks to recover from the COVID-19 pandemic, academics are beginning to research the effects of the policy measures that governments introduced to reduce the threat of the disease. Measures included, for example, contact and movement restrictions, restrictions on leisure and sporting activities, and the closure of schools and workplaces.

Families and school-age children were particularly affected by school and workplace closures. Not only did caregivers have to look after their children and help them with distance learning, many had to do so while also having to work from home. A large amount of learning and work went online. Yet despite the growth in ownership of home computers, tablets, smartphones, and internet resources, not every household had access to digital facilities. And those that did may not have had sufficient resources or access to allow more than one person to work online at the same time.

Such challenges have led the COVID-19 pandemic to have far-reaching effects on educational attainment. Research has already looked at the impact of government containment measures on pupils’ abilities in specific subject areas. Studies have also measured the amount of effective learning time that pupils experienced while distance learning, compared with the amount experienced in school-based lessons. Other research has highlighted the difficulties that caregivers, pupils, and teachers had in adjusting to distance education, not least because of a lack of resources, guidance, and professional support. Younger pupils have also been shown to find independent learning more challenging, mainly due to their cognitive abilities and age.

A newly published Austrian study examines how the societal measures to contain COVID-19 affected primary school children’s cognitive abilities and whether they developed as well during lockdown as they would have done under normal living conditions. The research breaks new ground by also looking at how pandemic-related changes in living and learning conditions affected some more than others, widening the achievement gap between pupils from disadvantaged and more privileged backgrounds.

SCISSORS EFFECT

The research is underpinned by the concept of social origin put forward in the 1970s by the French sociologist and social mobility theorist Raymond Boudon. Boudon argued that students’ different social backgrounds influence their academic performance as well as their future aspirations and achievements, and that inequality in education can lead to different academic outcomes.

In the case of COVID-19, the research by Rollett, Leitgeb, and Scharenberg considers whether the pandemic widened an already existing achievement gap between different pupils, relative to their social origin. Taking a metaphor from economic theory, they use the concept of the ‘scissors effect’ to illustrate the achievement gap that usually opens up like a pair of scissors when the blades are set too far apart. The research by Rollett, Leitgeb, and Scharenberg is based on a longitudinal study of the educational experience during lockdown of 104 third-grade-pupils – 48 girls and 56 boys – in three primary schools in Austria. Two schools had a rural catchment area and one was based in the urban capital, Vienna. The research covered the school year from September 2020 to June 2021.

Out of a total 38 weeks of education, 21 weeks were delivered face-to-face in the classroom, and pupils spent 17 weeks distance-learning at home. In addition, drastic all-society measures were set, including three ‘hard lockdowns’ totalling 61 days with all-day curfew restrictions.

Students took recognised assessment tests in inductive and numerical reasoning to measure their cognitive ability. The tests were carried out two times during the school year in September and June.

In addition, individual and social background characteristics were surveyed like age and gender, pupils’ immigrant background (e.g., their country of birth and the language they speak at home), as well as their parents’ level of education and the number of books at home. Socio-economic factors were also assessed, for example, pupils’ access to digital resources (like computers or smartphones) and the internet, as well as assets the family owns (like one or two cars, musical instruments, a television set or a lawnmower indicating a garden at home).

The results of the questionnaire were analysed using statistical techniques like correlation and regression analyses. The evaluation of the pupils’ cognitive development was based on a study conducted by the German psychologist Heiner Rindermann in 2011. From this study it can be deduced that pupils of the study’s age in German-speaking countries could be expected to achieve an average increase of 8.18 IQ points each year of life.

ZERO GROWTH AND WIDENING GAPS

Analysis of the study data reveals that, rather than improving over the school year, pupils’ test scores for cognitive development for third-grade-students were no better at the end of the school year than they had been at the beginning.

The World Economic Forum estimates that globally, during the first year of the COVID-19 pandemic, 1.5 billion pupils were unable to attend school due to lockdowns designed to stop the spread of the disease. Government containment policies were essential to help save lives, but the wider impact of those policies is now the focus of academic research. A new Austrian study led by Thomas Leitgeb of the University of Education in Burgenland looks at primary school children’s cognitive development over the lockdown period.

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The changing living conditions demanded by pandemic containment measures impeded the age-appropriate, positive development of pupils’ cognitive abilities. COVID-19 had a detrimental effect on the normal course of the cognitive development of school children. By taking into account the variables in pupils’ family background, the study revealed that “scissor effects” occurred in pupils’ development during the COVID-19 pandemic: depending on differences in family background, some pupils’ cognitive skills developed better whereas other pupils’ cognitive skills seem to have declined.

Rollett, Leitgeb, and Scharenberg acknowledge that the study is based on a small sample of children from one primary school grade, and that circumstances meant that there could be no control group. In addition, only two tests for inductive and numerical reasoning were used to assess intelligence development, and information about home-backgrounds was self-reported by pupils rather than parents. There is therefore a limit to how far the research findings can be generalised to the wider school population.

However, the authors argue that the study shows that societal containment measures introduced during the pandemic – particularly changes in pupils’ living and learning conditions – provided a less favourable environment for their cognitive development. For pupils from disadvantaged backgrounds, the pandemic resulted in further developmental disadvantages. Although the lack of a pre-COVID-19 control group means that widening achievement gaps with respect to “scissor effects” between advantaged and disadvantaged pupils cannot be proven, the results suggest they are likely.

Further research is therefore needed, for example, similar analysis for data sets collected for students of different age-groups and different educational contexts during the pandemic. In addition, Rollett, Leitgeb, and Scharenberg argue that it is simply not enough to aim to restore pupils to pre-pandemic living conditions. As the authors conclude: ‘Rather, targeted and concerted programmes are required to set development incentives and to compensate as far as possible for the disadvantages suffered by the children and young people.’

References