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## Covid-19: Children born during the pandemic score lower on cognitive tests, study finds

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Children born during the pandemic score markedly lower on standard measures of verbal, motor, and overall cognitive ability, US researchers have found.

In a longitudinal study of 672 children from Rhode Island that has run since 2011, those born after the pandemic began showed results on the Mullen scales of early learning that corresponded to an average IQ score of 78, a drop of 22 points from the average of previous cohorts.

The study, which was funded by the US National Institutes of Health is awaiting peer review before publication in *JAMA Pediatrics*. But a preprint copy is available online.<sup>1</sup>

The researchers have largely ruled out a direct effect of the virus, as mothers or children with a history of testing positive for covid-19 were excluded from the analysis. Instead, the authors say, reduced interaction with parents and less outdoor exercise are likely culprits, along with effects that occurred during pregnancy.

Other research has hinted at behavioural effects in children born during the pandemic, including a recent study from Italy.<sup>2</sup>

Children born in 2019 did not experience a decline in development scores during the pandemic. “Their trajectories of maturation were unaltered,” said lead author of the longitudinal study and paediatrician Sean Deoni of Brown University. “They seemed to be doing alright. It’s really affecting those born during the pandemic, whether through transference from their mother, what she’s experiencing during late term pregnancy, or during those crucial earliest months after birth.”

Scores among children born during the pandemic began to decline in 2020 in an early learning composite that measured fine and gross motor control, visual reception, and expressive and receptive language. But it was in 2021 that the developmental deficit became significant ( $P < 0.001$ ). The effect was larger in boys than in girls.

The strongest protective factor was higher maternal education, and mothers in the study population had more schooling than the US average, suggesting that results in less educated parts of the country could be “even more depressing,” said Deoni.

In terms of effect size, he said, “the closest thing we’ve seen in other research—and this is horrible, not a good comparison to be making—is the studies that were done of orphans in Romania. The effects of institutionalisation and lack of interaction on them were profound, but what we’re seeing here is on par with that.”

A push by Romanian dictator Nicolae Ceausescu to increase birth rates led to hundreds of thousands of children being abandoned to state orphanages, where many spent most of the day in cots, staring at the ceiling.<sup>3</sup>

While the Rhode Island study did not directly measure time spent interacting between family members, said Deoni, “we do have some preliminary data that we’re working on in a separate study using miniature recorders which the infants wear on their chest which measure the interaction between the caregiver and the child, and what we are seeing, anecdotally, is a significant depression in the number of words spoken to kids and, as you can imagine, a massive increase in TV exposure, and a decline in meaningful conversations. Time spent engaged with a caregiver is way down.”

- 1 Deoni SCL, Beauchemin J, Volpe A, et al. Impact of the covid-19 pandemic on early child cognitive development: initial findings in a longitudinal observational study of child health. *Medrxiv* 2021.08.10.21261846 [Preprint]. doi: 10.1101/2021.08.10.21261846.
- 2 Provenzi L, Grumi S, Altieri L, et al. MOM-COPE Study Group. Prenatal maternal stress during the COVID-19 pandemic and infant regulatory capacity at 3 months: A longitudinal study. *Dev Psychopathol* 2021;1-9. doi: 10.1017/S0954579421000766 pmid: 34210369
- 3 Powell A. “Breathhtakingly awful”: HMS professor’s work details devastating toll of Romanian orphanages. 5 October 2010. <https://news.harvard.edu/gazette/story/2010/10/breathhtakingly-awful>.

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