

Screen time for children may affect future learning: Study

Increased screen time for infants linked to impaired brain function and may have lasting detrimental effects

Ng Wei Kai

Excessive screen time for young children is linked to impaired brain function and may have detrimental effects that last beyond early childhood and impair future learning, a new study has shown.

The study of 506 children showed that infants who were exposed to more screen time had more “low-frequency” brain waves – a state that is correlated with lack of cognitive alertness.

As the duration of screen time they were exposed to increased, more altered brain activity and more cognitive deficits were measured in the children, and these effects continue after the child reaches eight years old, the study said.

Children with deficits in executive function often have difficulty controlling impulses or emotions, sustaining attention, following through multi-step instructions, and persisting in hard tasks.

The study, conducted by researchers from the National University of Singapore (NUS), the Singapore Institute for Clinical Sciences (SICS), the National Institute of Education, KK Women's and Children's Hospital, McGill University, and Harvard Medical School was published on Tuesday in the peer-reviewed medical journal *JAMA Pediatrics*.

Lead author, Dr Evelyn Law from NUS Medicine and SICS' Translational Neuroscience Programme,

said: “The study provides compelling evidence to existing studies that our children's screen time needs to be closely monitored, particularly during early brain development.”

The children studied were those enrolled in the Growing Up in Singapore Towards Healthy Outcomes (Gusto) cohort study and have been so since birth.

In a joint statement on Monday, NUS and SICS said the brain of a child grows rapidly from birth until early childhood, but the part of the brain which controls executive functioning, known as the prefrontal cortex, has a longer development period.

Executive functions include the ability to sustain attention, process information and regulate emotional states, all of which are essential for learning and school performance, it said.

It added that the advantage of this slower growth in the prefrontal cortex is that the gaining and shaping of executive function skills can happen across the school years until higher education.

The statement added: “However, this same area of the brain responsible for executive functioning skills is also highly vulnerable to environmental influences over an extended period of time.

“This study points to excessive screen time as one of the environmental influences that may interfere with executive function development.”

Prior research suggests that in-



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ISSUES WITH PROCESSING INFORMATION

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NATIONAL UNIVERSITY OF SINGAPORE AND SINGAPORE INSTITUTE FOR CLINICAL SCIENCES, in a statement.

fants have trouble processing information on a two-dimensional screen, it said.

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The statement added that the researchers are also concerned that families which allow very young children to have hours of screen time often face additional challenges. These include stressors such as food or housing insecurity, and parental mood problems.

More work needs to be done to understand the reasons behind ex-

Researchers measured impact at 12 months, 18 months and 9 years

When children in the study were 12 months old, parents were asked to report the average amount of screen time consumed on weekdays and weekends each week.

The children were then classified into four groups based on screen time per day – less than one hour, one to two hours, two to four hours, and more than four hours.

When the children were 18 months old, researchers measured brain activity using electroencephalography (EEG), a tool which tracks changes in brain activity.

Each child also participated in various cognitive ability tests that measured his or her attention span and executive functioning – sometimes referred to as self-regulation skills – at the age of nine years, the National University of Singapore and Singapore Institute for Clinical Sciences said in a statement on Monday.

The team first examined the association between screen time and EEG brain activity.

The EEG readings revealed that infants who were exposed to longer screen time had greater “low-frequency” waves, a state that correlated with lack of cognitive alertness.

To find out whether screen time and the changes observed in the brain activity had any adverse outcomes during later childhood, the research team analysed the data across three points for the same children – at 12 months, 18 months and nine years.

It said: “As the duration of screen time increased, the greater the altered brain activity and more cognitive deficits were measured.”

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cessive screen time in young children, it said, and further efforts are necessary to distinguish the direct association of infant screen use versus family factors that predispose early screen use.

Professor Chong Yap Seng, dean of NUS Medicine and chief clinical officer at SICS, said: “These findings should not be taken lightly because they have an impact on the potential development of future generations and human capital.

“With these results, we are one step closer towards better understanding how environmental influence can affect the health and development of children. This would allow us to make more informed decisions in improving the health and potential of every Singaporean.”

ngweikai@sph.com.sg