

Toddlers' screentime linked to activity levels as five-year-olds

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Children aged two to three who spend more than three hours a day viewing screens such as tablets and televisions (TVs) grow up to be less physically active at age 5.5 years, compared to children who used screens for an hour or less each day, a study published in *The Lancet Child & Adolescent Health* journal has found.

The study, involving more than 500 [children](#) in Singapore, suggests that adhering to the World Health Organization (WHO) guidelines to limit [screen time](#) to one hour per day or less among children aged two to five years may promote healthier behaviors in later life.

Screen viewing is increasingly prevalent but excessive screen time in childhood has been linked to a range of health problems, including increased risk of obesity and reduced cognitive development.

One way that screen viewing may influence health is by replacing time that would otherwise be spent doing something else, such as physical activity and sleep. Efforts to investigate this have had mixed

results, with most studies focusing on [school-aged children](#) and adolescents.

The latest study is the first to look at the effects of early-life screen use on daily activity in preschool children.

Associate Professor Falk Mueller-Riemenschneider, from the Saw Swee Hock of Public Health, National University of Singapore, said; "We sought to determine whether screen viewing habits at age two to three affected how children spent their time at age five. In particular we were interested in whether screen viewing affected sleep patterns and activity levels later in childhood."

Parents were asked to report how much time the children spent on average either watching or playing video games on TV, using a computer, or using a [handheld device](#), such as mobile phone or tablet. These screen habits were recorded when the children were aged two and again at age three. An average of the two recordings were used in the analysis. At age five, the children wore an activity tracker continuously for seven days to monitor their sleep, sedentary behavior, light physical activity, and moderate-to-vigorous physical activity.

Children in the study spent an average of 2.5 hours a day watching screens at age two to three. Television was the most commonly used device and was associated with the longest viewing time. Only a small proportion of children in the study met WHO recommendations of one hour per day or less.

The findings revealed that children who had used screens for three or more hours a day at age two to three spent an average of 40 minutes more time sitting down each day at age five than did those who had used screens for less than an hour a day at the same ages. Such higher screen use in infancy was associated with around 30 minutes less light physical activity each day, and around 10

minutes less moderate to vigorous activity each day. Similar effects were observed regardless of screen type. Higher screen time in early childhood did not appear to affect sleeping habits at age five, however.

The authors note some limitations, including that parents may be biased in their reporting of their child's screen use, and that the study did not control for other health behaviors (diet, sleep, physical activity) or environmental factors (such as time in childcare) because there was limited information about these available. The authors note that the findings were still similar when they conducted an additional analysis to see how much of an impact health behaviors had, however.

The authors advised caution when generalizing from their results as the families involved in the study were not representative of the entire Singapore population.

However, they argue that the negative impact of early-life screen time on movement behaviors in later childhood highlights the importance of strategies to limit screen use during the early years.

Miss Bozhi Chen, of the Saw Swee Hock School of Public Health, National University of Singapore, said: "This analysis addresses an important research gap and strengthens existing evidence linking screen viewing time with later child health. Our findings support public health efforts to reduce screen viewing time in young children and suggest further research into the long term effects of screen viewing on movement behaviors is needed."

Writing in a linked comment, Dr. Dorothea Dumuid (who was not involved in the study), of the University of South Australia, cautioned that the findings do not provide evidence of a causal link between screen time and reduced [physical activity](#), and that screen time may be a marker for other underlying causative factors not measured in this study.

She said: "In this rapidly evolving digital age, children's screen use is a key concern for parents and medical bodies. Guidelines to limit screen time have been released by many governments and

WHO, however, screens offer digital and social connectedness and educational opportunities. Future research is needed to assess the influence of media content, to determine optimum durations of screen time in the context of 24 h time use, and to explore causal pathways."

More information: Bozhi Chen et al. Associations between early-life screen viewing and 24 hour movement behaviours: findings from a longitudinal birth cohort study, *The Lancet Child & Adolescent Health* (2020). [DOI: 10.1016/S2352-4642\(19\)30424-9](#)

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