

Keep taking the tablets: screen media and children

Just what are the effects of screen use by young people? **Aric Sigman** takes a close look at the evidence.

The number of portable screens, and their use, continues to rise. The Office of Communications has just announced that “91% of parents with a tablet say their children use it or have one of their own.” As parents and schools are increasingly courted and bedazzled by the promise that new screen media in school and at home will enhance learning and prepare children for the digital future, an entirely different aspect of screen media is becoming the subject of concern amongst health professionals. It’s not “e-safety” or cyberbullying, nor paedophiles grooming children on the internet but the sheer overuse of screen media by younger and younger children.

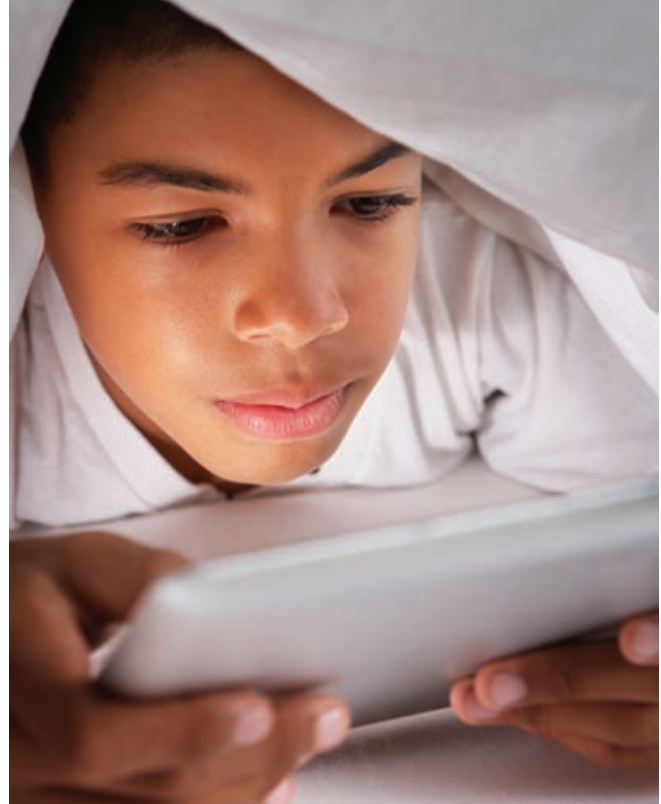
Many people have been led to believe that provided what a child views on a screen is ‘educational’ or ‘appropriate’, they won’t be subject to any negative effects of too much screen time (ST). While purveyors of software and technology and the researchers funded by them stress the distinctions between various devices and products, the child’s brain and body may not: heavy exposure to the medium is associated with outcomes that transcend the quality of the message on the screen. High levels of early ST appear to be more likely to lead to a long-term lifestyle of higher ST, which is increasingly considered an independent risk factor for disease irrespective of the educational value or appropriate/inappropriate content of what is on the screen. ST has become a medical issue, often exhibiting a dose-response relationship with disease risk.

The US Department of Health now cites reducing discretionary ST as one of its key “health improvement priorities”. The UK Department of Health advises paediatricians to “support the family to reduce the time they are sitting in front of a screen to less than two hours in total per day.” The Australian Department of Health, and the American Academy of Pediatrics (AAP) and others all strongly advise parents to limit out of school discretionary ST to a maximum of two hours per day for children aged 2 to 18 years. The AAP adds “media – both foreground and background – have potentially negative effects and no known positive effects for children younger than 2 years.” The French Government prohibits French channels from airing all TV programmes – educational and otherwise – aimed at children under 3 years of age.

Screen time

Children watch more screen media than ever before. Excluding any viewing time outside the home, such as hand-held devices, the average ST in the home for young British adolescents is 6½ hours a day, and rising. By the age of seven, a child born today will have spent one full year of 24 hour days watching recreational screen media. By the age of 80 years, they will have spent 18 years on discretionary screen media. Ofcom has recently reported that there has been yet another year on year increase in children’s ST, adding that now “over one in three 3 to 4 year olds use the internet”.

There are many areas of concern and several are outlined below.



Sleep

A new longitudinal study of 10 to 11 year old children in Finland found that computer use and television viewing predicted significantly shorter sleep duration and later bedtimes, unfavourable changes in sleep duration and bedtimes on school days and weekends. Among boys, media presence in the bedroom predicted poorer sleep habits and irregularity of sleep habits. Interestingly the actual ST for children was relatively low: “children used a computer for one hour per day and watched TV over one hour a day”. Another study of 5- to 6-year-olds found that both active TV viewing and background ‘passive’ TV exposure was related to shorter sleep duration, sleeping disorders and overall sleep disturbances. Moreover, passive exposure to TV of more than three hours per day was strongly related to sleep disturbances; therefore, “parents should control the quantity of TV viewing and ... limit children’s exposure to passive TV.”

Attention and cognition

Montessori places great emphasis on the child investing sustained attention to the activity they are involved in, realising that cultivating and nurturing sustained attention is vital to thinking and coping thereafter. ST is associated in a ‘dose-response’ manner with later attention problems in a variety of age groups. A longitudinal study of 2623 children reported that children who watched television at ages 1 and 3 years had a significantly increased risk of developing attentional problems by the time they were 7 years old. For every

hour of television a child watched per day, there was a 9% increase in subsequent attentional problems consistent with a diagnosis of ADHD. A longer-term dose-response association has been found between television viewing at the ages of 5 and 11 years, and subsequent attention problems in adolescence independent of early attention problems and other possible causes. Similar associations have been reported in 14 to 22 year olds, and in a study of 8 to 24 year olds, the authors writing in the medical journal *Pediatrics* concluded that “viewing television and playing video games each are associated with increased subsequent attention problems in childhood ... late adolescence and early adulthood...”.

In addition to ST, screen ‘speed’ – the pace of editing and degree of novelty within screen material – is increasingly thought to be an important factor in the above findings. Another study in *Pediatrics* “found that nine minutes of viewing a popular fast-paced fantastical television show immediately impaired 4-year-olds’ EF [executive function], a result about which parents of young children should be aware.”

Ideal maximum screen time limits:	
Birth to 3 years:	zero hours per day
3 to 7 years:	a half to one hour per day
7 to 12 years:	one hour
12 to 15 years:	one and a half hours
16+ years:	two hours

Appetite and obesity

Increased TV viewing has been consistently shown to be linked to increased body mass index (BMI) in both children and adults independent of their level of physical activity. The link appears stronger in young children and may be long-lasting. Community health researchers at the University of Montreal recently published a study with the self-explanatory title, ‘Early Childhood Television Viewing Predicts Explosive Leg Strength And Waist Circumference By Middle Childhood’.

It isn’t simply sedentary behaviour that may underlie increased body fat. Studies of children’s eating behaviour in direct response to screen viewing suggest looking at a screen can act as a distraction away from critical satiation

groups: one had its TV and computer viewing reduced by half; the other did not. After three years there had been a significant reduction in the BMI of those who had halved their screen viewing, and relatively little in those who had not.

Cardiovascular risk

In children and adults, ST has been found to have an unfavourable dose-response association with a range of biomarkers for cardiovascular disease (CVD), type 2 diabetes and metabolic syndrome (MetS) including compounds such as LDL/HDL/total cholesterol, triglyceride, fibrinogen, pressure (BP) and C-reactive protein and blood pressure.

Examining television/DVD/video and computer use and metabolic risk, researchers found that adolescent boys who exceed two hours per day of ST were more than twice as likely to have abnormal levels of insulin and another compound HOMA-IR, suggesting an increased risk of insulin resistance. Another study involving 13- to 18½-year-olds in five Spanish cities found those watching more than three hours of TV per day had “significantly less

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Dopamine is central to the ability to pay attention and implicated in attention problems. It is produced in response to seeing novel things on a screen. Significant dopamine release is found to occur quickly in young adult brains while playing computer games.

Video deficit effect

It is known that younger children experience considerable difficulty when translating to real life what they see on a screen. Children learn tasks better from a live demonstration than from an equivalent televised demonstration, a problem referred to as the video deficit. This effect becomes more pronounced and may persist at older ages as the task complexity increases. In the US, complaints by child advocacy groups including health professionals have just been filed with the Federal Trade Commission against companies marketing apps and DVDs claiming to enhance the intellectual development of babies and toddlers and teach babies language or counting skills.

food cues toward non-food cues (screen), thereby disrupting the development of habituation to food and, therefore, increasing the number of calories they eat while viewing the screen.

Eating a meal while viewing screens is also thought to disrupt the encoding and memory formation of the meal. Impaired memory for recent eating may increase food intake hours after viewing stops.

In a recent study, video game playing was found to significantly increase food intake in adolescents immediately after playing “and was not compensated for during the rest of the day”. One hour of playing a video game resulted in a daily energy surplus of 163 kcal, a rate of 60,000 kcal/year, which could help create almost 8 kg of body fat per year. Another study found that when snacks were accessible, young adults playing physically active video games still consumed 376 more calories than they burned.

Interestingly, a clinical intervention trial divided 4- to 7-year-olds into two

favourable levels” of HDL- cholesterol, glucose, apolipoprotein A1 and overall CVD risk scores.

Viewing vs ‘sedentary behaviour’

The link between ST and health risk appears not to be as simple as ST merely being a sedentary behaviour. As a risk factor, sedentary behaviour is not the same as having too little moderate-to-vigorous physical activity (MVPA) in all age groups, with the two possibly being separate phenomena involving different metabolic pathways contributing to disease. Prolonged ST increases a person’s health risk independent of the level of MVPA people routinely engage in.

Moreover, children’s ST may be somewhat distinct from other forms of sedentary behaviour in its influence on biological risk factors for disease. For example, examining a range of sedentary behaviours, screen activities and BP in young adolescents, researchers reported a dose-response relationship, “each hour per day spent

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in screen time, watching TV and playing video games was associated with a significant increase in diastolic BP ... By contrast, each hour per day spent reading was associated with a decrease...".

Interventions

A systematic review by researchers at Harvard Medical School recently reported that 29 studies "achieved significant reductions in TV viewing or screen-media use" in children. And there is additional evidence that children's ST can be reduced through simple measures, mainly raising parental awareness, parental role modelling, reducing background media/passive viewing, establishing screen time rules and limits and in particular discouraging the presence of screen devices in children's bedrooms. Even if they are not adhered to, it is important to establish ideal maximum (non homework) discretionary ST limits as a reference point to work from.

References

Sigman, A. (2012) Time for a view on screen time. *Archives of Disease in*

Childhood. v97 issue 11:935 – 942. doi:10.1136/archdischild-2012-302196

U.S. Department of Health and Human Services. Healthy People 2020, Objective PA-8: Increase the proportion of children and adolescents who do not exceed recommended limits for screen time. <http://healthypeople.gov/2020/>

Department of Health. Healthy Child Programme: The two year review. Crown copyright 2009

American Academy of Pediatrics. Media use by children younger than 2 years. Council on communications and media. *Pediatrics* 2011;128. doi: 10.1542/peds.2011-1753

Nutinen, T. et al (2013) Do computer use, TV viewing, and the presence of the media in the bedroom predict school-aged

children's sleep habits in a longitudinal study? *BMC Public Health*, 13:684 <http://www.biomedcentral.com/1471-2458/13/684>

Christakis, D. A, Zimmerman, F. J., DiGiuseppe, D.L., et al Early television exposure and subsequent attentional problems in children. *Pediatrics* 2004;113:708–13.

Schmidt, M.E., Haines, J., O'Brien, A., et al Systematic review of effective strategies for reducing screen time among young children. *Obesity* 2012;20:1338–54.

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Recent research

A new Canadian longitudinal of 2000 children found that as TV viewing time increases children's vocabulary and math skills, along with their ability to socialize, may very well diminish. For every additional hour of television that a child 29 months of age watches, his or her "vocabulary and math skills, classroom engagement (which is largely determined by attention skills)" and even motor skills are reduced by the time they're 5½ years old. Researchers at the University of Montreal also found that children who watch more television at a young age are more likely to become targets of victimization in the classroom.

Reference:

Pagani, L. S. et al. Early childhood television viewing and kindergarten entry readiness. *Pediatric Research* (2013) doi:10.1038/pr.2013.105



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