

Under 5's and screen use EY NW 210921

(For Early Years professionals)

I work in reception and year one classes, as a behaviour specialist. My focus is on children (and their parents), who stand out because of their behaviour in class. Early intervention enables a quicker and easier sorting out of barriers to their learning, rather than these being left until later.

Over the last 18 months where would we have been without screens? While not as good as the real thing, we have learnt the value of the virtual classroom, and most of us have been reluctant to raise the risks of screens during this times.

Always a concern

We have been concerned about screens since the 1950s, both how much, and what children were watching. While the headlines about addiction are generally overplayed, parents and Early Years professionals need to be aware of the risks for *some* children. It is always disconcerting to see a child, barely able to talk, and certainly unable to do up their shoelaces, able to sweep an iPad into action, although most risks lie in other places.

How much, and what content

Concerns about screen-use continue to be on how much, and what content. How much is more complex than often suggested. An hour might be too much for one child, while 10 minutes excessive for another. **Any** activity that dominates a child's time will limit others. Reading all day will reduce outdoor exercise, and social contact. So, quantity needs to be looked at from how much an individual child can manage, and also how much time lost on activities important for their development.

Viner, R. The health impacts of screen time: a guide for clinicians and parents. Royal College of Paediatrics and Child health. 2019.

Some content is of course inappropriate for under 5's. A four-year-old playing 'Call of Duty' is, but unfortunately some four-year-olds have older brothers and sisters, and even if they are not playing, they might be watching over, or under a shoulder. Research has suggested that a

fourteen-year-old playing violent video games for 2 hours, will have the effects of the game out of their system within 30 minutes. In contrast, a four-year-old playing for 2 hours may take as long as 3 hours. So time and content interact, but age also plays a significant part.

Anderson, C. A., Keio, A. S., Ochanomizu, I., Swing, E. L., Bushman, B. J., Sakamoto, A., Rothstein, H. R., & Saleem, M. (2010). Violent Video Game Effects on Aggression, Empathy, and Prosocial Behavior in Eastern and Western Countries: A Meta-Analytic Review. *Psychological Bulletin*, 136 (2), 151–173.

Language and learning

Learning language from a screen, can be of limited educational benefit (even when it is 'educational TV'), as the more nuanced aspects of communication (facial expression, and emotional content), are not communicated well through a two-dimensional screen.

Background TV, is thought to distract a child from both play and communication. The presence of a screen is enough to draw attention to it, and this is even more so for small children. For some, this makes it harder to stimulate the brain in other ways. Blank sheets of paper and pens require imagination and pictures to be generated by the brain, and these are areas where screen stimulation can negatively impact.

Madigan, S; Anne McArthur, B; Anhorn C. Associations Between Screen Use and Child Language Skills. A Systematic Review and Meta-analysis. JAMA Pediatr. 2020;174(7):665-675.

Schmidt, M.E; Pempek, T.A; Kirkorian, H.L; Frankenfield Lund, A; and Anderson, D.R. The Effects of Background Television on the Toy Play Behavior of Very Young Children. Child Development. Vol. 79, No. 4 (Jul. - Aug., 2008), pp. 1137-1151.

The buzz

Games such as Fortnite, Minecraft and Candy Crush, are built on small successes, which give a child dopamine buzzes. The more of these they get, the more they want. Children who play these games can find themselves looking for the "buzz" in other activities, and if they do not get them, they will want the games even more.

Again the sharp contrast between the "buzz" of games and stimulation that starts from the brain (imagination, and concentration) make the latter harder for some children. Within schools, in the dinner line, the playground and sometimes at a low point in class, a child will gesture, and perform directly from a game, or of course superhero routines.

Many of these are harmless, but for some children they become their default position, when the stimulation outside of their heads is not strong enough to engage them.

Day, J.J. Et Al. *Associative learning mediates dynamic shifts in dopamine signalling in the nucleus accumbens. Nat. Neurosci. 2007, 10, 10290-1028.*

Han, D. H. Et Al. "Brain Activity and Desire for Internet Video Game Play." *Comprehensive Psychiatry* 52, no. 1 (January 2011): 88–95.

Kim, S. H. Et Al. "Reduced Striatal Dopamine D2 Receptors in People with Internet Addiction." *Neuroreport* 22, no. 8 (June 11, 2011): 407–411.

Parkin. S. *Has Dopamine got us hooked on tech? The Guardian* 4th March 2018.

Sleep

One of the less discussed concerns for under 5's screen-use is its impact on sleep. Regular screen use before bed **stops** melatonin being produced, which helps us to fall asleep, and then to drop into a deep sleep. Small children need deep sleep to release growth hormone essential for their physical and mental development. When children in early years arrive in school yawning; fall asleep in the afternoon (unless it is the first week of term one), or their energy levels drop when they are sitting on the carpet, sleep is probably an issue. Tablet use as a child goes off to sleep, TV use too near to sleep time can reactivate the brain and slow the sleep process.

Bruni O et al. Technology Use and Sleep Quality in Preadolescence and Adolescence. J Clin Sleep Med. 2015 Dec 15; 11(12): 1433-1441.

Takahashi, Y. et al. Growth hormone secretion during sleep. J. Clin. Investig. 1968, 47, 2079-2090.

The beginning of life habits

Small children get into habits that continue into adulthood. A fussy eater at 3, is too often a fussy eater at 13, while an active child at 3 is likely to be an active child at 13.

Developing screen habits are important for under 5's. Children require a broad range of activities to develop well. Critical are language and communication (with both adults and other children); physical activity; play (games and movement) as well as books and stories. If *any* of these activities are dominant, then the others suffer. If screens dominate then there is a risk that a four-year-old who wants to play with a phone; watch cartoons on a tablet; watch TV and look over brothers shoulder as they play games with their mates, will want screens to dominate their waking lives.

Avants, B. B. Et Al. Early childhood home environment predicts frontal and temporal cortical thickness in the young adult brain. 2012 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.

Gentile DA, Et Al. Protective effects of parental monitoring of children's media use: A prospective study. JAMA Pediatr 2014; 168 (5): 479–84.

Loewenstein, G. Et Al. Habit formation in children: Evidence from incentives for healthy eating. J Health Econ. 2016 Jan;45:47-54

Implications for Early Years settings

Screens are here to stay. For the majority of children, they are an important part of their development and education. For some, the negative impact will require intervention, and this is likely to be with parents. Here are some possible symptoms that may require a conversation with a parent.

What to look for

Sleep – most children under 5 need 10-12 hours of sleep a night to rest, and benefit from growth hormones releases. If a child is not getting this; finding it difficult to go off to sleep; sleeping fitfully and waking up tired, you will see this in the classroom. Tired when they arrive for school, more tired in the afternoon, yawning during carpet time and when classroom activities are calmer.

Early habits - If parents report regular tears, or furniture being kicked when screens go off, there is a problem.

If you notice a child is having fewer conversations with adults and other children, and if there is a computer/tablet in the class and you see a child often in conflict with others, or even watching others while waiting for their turn, this maybe a problem.

Dopamine - Wanting to be on screens as much as they can; regularly asking “just one more”; getting upset and angry when they have to stop, and not being interested in other types of activities, there is a problem. If a child flits, moving from one activity to another and struggling to retain information and interest unless there is a reward or a buzz, this is a problem. If they struggle with a blank sheet of paper, and have to be stimulated to offer their ideas, this maybe a dopamine problem.

Young children's brain development - If a child doesn't talk a lot and doesn't have much vocabulary, *and* is drawn to screens whenever they can be, this is a problem.

If language and communication skills are slow to develop, and they are showing little interest in drawing and other basic pencil activities, there is a problem, which could be screen-related.

WHAT TO DO

Of course, these symptoms could also be related to other issues, however, screen-use is territory professionals need to address, to ensure that difficulties are picked-up and dealt with as early as possible. This means talking to parents, but not about parenting. For many Early Years professionals, their hesitance to discuss screen use is the potential defensiveness of parents.

To avoid this, requires a subtle, but significant change in focus, that starts in the classroom, and not the home. Conversations with parents are best started with "in the classroom...." And "what Cameron needs to help him in the classroom is...." And buckets of "you want the best for him...." If the focus is on the child (in the classroom), parents are much more receptive to conversations about the impact of screen use, their child's future education, and achievement. This is much less "bad parent" and much more "achievement if..."

Here are the most common strategies we use with parents:

Sleep – start with no screen time in the hour before sleep, which may mean no screens in the bedroom, or at least all-screens off. So, for example, if bed is at eight, no screen use from seven (even background TV). No tablet next to beds, no bedtime stories on a tablet, or a quick game on the phone before sleep.

Early habits - Put screens where they belong, as one of a range of activities your child has, and not their first choice, or when they have nothing else to do! Screens are screens, watching TV because a child cannot have the tablet, or the phone is just replacing one screen with another. If you get tears, anger and "just one more..." decide what is a reasonable amount in your house, and make sure you stick to it consistently. Make sure there are alternative activities. This will lead to a

habit where screens are a part of your child's activities, and not the dominant one.

Dopamine - Decide how long and how often games can be played, and strongly encourage your child to do other activities. You will know when you reach the right amount, as the fights, upsets and negotiations will reduce and stop.

This will probably involve you being more active in play, and making sure there are games, and alternatives available.

Young children's brain development - Reduce screen use and time and provide more verbal interaction (communication and language). Encourage them to stay on an alternative activity, and gradually increase the time they spend on these.

More general reading:

Screen time and young children: Promoting health and development in a digital world. Canadian Paediatric Society, Digital Health Task Force, Ottawa, Ontario

Paediatrics & Child Health, Volume 22, Issue 8, 27 November 2017, Pages 461–468, Lloyd. T. FACTSHEET on Boys (5-11) and Screens. Boys Development Project, 2014.

Mosher, D. Smartphones horrified me as a new parent -- here's why I stopped worrying and learned to embrace kids' tech-filled futures. Business Insider, Australia. 18th June 2017.

Stiglic N, Viner RM. The effects of screentime on the health and wellbeing of children and adolescents: a systematic review of reviews. BMJ Open 2019.

Wolf, C. Et Al. Children's Environmental Health in the Digital Era: Understanding Early Screen Exposure as a Preventable Risk Factor for Obesity and Sleep Disorders.

Children (Basel). 2018 Feb 23;5(2).

Trefor Lloyd (Boys Development Project)

A similar sheet for parents **Screens and under 5's (Information sheet for parents)** is also available to download for free from [Boys Development Project website](#)