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Changing behaviour: Children, adolescents and screen use

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Recommendations

- Encouraging certain media behaviours, such as co-use and active goal-directed use, can help young people gain the most from digital media.
- Minimise media use before bed, and encourage children to experience a mix of screen-based and non-screen-based activities.
- Parents and carers should share and discuss media activities with their children.
- Studies should be designed which can identify causality (longitudinal studies and experimental manipulations if appropriate) and they should allow for identification of mediating and moderating factors.
- More qualitative methods, such as interviews, ethnography and participatory design, should be employed with young people to understand their media practices and what they themselves seek from their digital experiences.
- Designers/producers and developmental psychologists should be encouraged to collaborate to create and evaluate age-appropriate products/content.
- The Department of Digital, Culture, Media and Sport should focus on helping children and families gain the most from the digital world.



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The background

Digital media is embedded in our 21st century society and with recent technological advancements, the number of opportunities to be exposed to digital media has increased. It is therefore not surprising that children's screen use is increasing with 5- to 15-year-olds using digital media for around 15 hours per day¹ and 99 per cent of 6- to 36-month-olds using digital media daily.² The Department for Education recognises that digital literacy is a highly important skill for children growing up in our digital society and have incorporated computer science and digital literacy into the school curriculum since 2013.³ However, many threats to the health of children and adolescents have been proposed, including disrupted cognitive and social development, obesity, sleep disruptions, impaired wellbeing and problematic media use. Indeed, media coverage has included scaremongering headlines such as 'screen-based lifestyle harms children's health' among others.⁴ Nevertheless, the issue remains that 'screen time guidelines need to be built on evidence, not hype'.⁵

There is currently an absence in the UK of a well-publicised, centralised resource for parents and professionals to seek balanced advice on children's screen use.⁶ However, the American Association of Pediatrics (AAP) propose that families institute a family media plan that prioritises healthy activities over media use, encourages co-use, and sets boundaries over when and where young people use media.^{7,8} These guidelines expand on the original statement by the AAP (1999, and updated in 2011) which advised no screen use for children younger than two, and a limit of two hours for older children. The newer AAP guidelines recognise that the issue of children's digital media use is more complex than amount of screen time and acknowledges both benefits and risks to media use.

The challenge

Screen-use and digital media use can refer to a number of different mediums (e.g. smartphones, tablets, televisions, computers, gaming consoles) which can support different applications or functions (e.g. internet, social media, video, gaming). They can further display a range of content (e.g. educational, entertainment, violent, adult) and be interacted with in different ways (e.g. passive watching of content, active use of internet and social media, co-viewing with others). However, technological innovation continues to increase rapidly, from the introduction of the iPhone in 2007 to the Apple watch in 2015. As a result, both policy and academic research struggle to keep abreast of these advances in technology. Indeed, much of the academic research in this area suffers from key limitations, notably cross-sectional data with an over-reliance on self-report correlational designs and broad measures of 'screen-use' which overlook context, content and behaviours. To date, there is a far greater number of studies that have researched detrimental effects of screen-use than have focused on the positive opportunities that digital media can offer. Furthermore, media use changes across development, being relatively more constrained by cognitive development for infants and children, and by socio-emotional developmental goals in adolescence. These issues collectively create a set of interconnected challenges to the provision of clear guidance on how to best ensure positive uses of digital media in childhood and adolescence.

The psychology

Cognitive changes: A large body of research has investigated the relationship between media use and various cognitive outcomes. A recent systematic review⁹ found that the evidence points to the potential for television viewing in infancy to be detrimental for language development, attention and executive function. However, the links between television viewing and cognitive outcomes are nuanced and indirect, mediated by a complex range of factors related to the child, their home environment and the quality of the programme content. Furthermore, some links are likely bi-directional, in which cognitive factors influence TV viewing, and vice versa. Television use may be particularly detrimental if it displaces developmentally appropriate activities such as play and interaction with parents and caregivers.⁹ The majority of this work has focused on television viewing and therefore many of the findings will necessarily need to be revisited in light of new media, which differ from television through their interactive capabilities.¹⁰

Supporting young children's learning from digital media: The AAP emphasise the use of educational content for children under the age of five years when children are exposed to digital media. However, understanding what constitutes educational digital media can be a minefield for parents. Researchers suggest that in order to promote an educational learning goal screen media should encourage the learner to be active and engaged in meaningful content and encourage socially interactive learning.¹¹ Typically, young children learn less from digital media than they do in live interactions.¹² Therefore, for young children, co-using screen media with parents can be important for helping them understand the role of screen media as a learning tool applicable to their daily lives.¹³ It is therefore not just the content or technology that determines whether or not digital media can be educational for young children, but also the way they are used.

The displacement hypothesis: One key concern surrounding digital media is that media use displaces time spent on other more beneficial activities including physical activity, sleep, reading and educational activities. Research evidence on the displacement hypothesis is mixed with studies showing no evidence of displacement and others showing a small displacement effect of media related activities.^{14,15} Critically however, much of the research evidence pre-dates the release of mobile media (e.g. smartphones and tablets) which enable users to engage in multiple media and non-media related activities simultaneously. For example, users can be using their touchscreen device with the TV on in the background while talking to family or friends. Therefore, it is important to consider content and environmental context as well as time spent engaging with screen media.

Screen use and sleep: Studies have highlighted a relationship between the amount and quality of sleep, and various measures of screen use. For instance, television viewing in younger children¹⁶ and smartphone use in both young children and adolescents^{17,18} is associated with shortened and/or disturbed sleep. Sleep may be impaired due to displacement by screen use, arousal from a media activity, interruption from incoming messages, or the effects on melatonin by the light emitted by screens.¹⁹ Some authors¹⁷ argue that reduced sleep mediates the relationship between digital media and mental health problems such as depression. Screen use in the bedroom is particularly problematic,¹⁹ and the very presence of media devices in the bedroom has been linked to sleep disruption in several studies. As such, the AAP recommends that children do not sleep with devices in their bedroom or use screens an hour before bed.^{7,8}

Effects of screen time on mental health: There is a substantial body of literature linking screen use to various indices of mental health in adolescents. These studies predominantly focus on depression, anxiety, self-esteem, subjective wellbeing or suicide ideation. The proposed mechanisms include lack of physical activity or sleep, displacement of social relationships, and exposure to distressing content or messages. A number of recent systematic reviews exist,^{20,21} and these find that on balance there is persuasive evidence for links between screen time and depression, reduced wellbeing and

psychological distress. However, the vast majority of the evidence reviewed is cross-sectional and it is therefore not possible to infer causality. Indeed, some longitudinal studies report that mental health can predict screen time at a later follow-up²² and others report a curvilinear trend: Those who engage in an intermediate level of screen time report more positive mental health than those who use screens excessively or not at all.²³ In addition, in a review of published research on the relationship between Facebook use and wellbeing,²⁴ the authors suggested that more active use (posting content and interacting with connections) alleviates loneliness, increases social capital and provides access to informational resources and social support. Such results suggest that active screen use, in which children and young people are encouraged to interact with screen media in a goal-directed way, is one way to encourage more positive outcomes. The vast majority of the evidence to date is undermined by the same methodological flaws (discussed above). There is also a lack of UK-based studies (none met the inclusion criteria in Hoare et al., 2016²¹). Therefore it is not yet possible, or sensible, to draw straightforward conclusions on whether screen use is harmful to young people's mental health.

Online risk and harm: Families may worry about what dangers their children could experience on the internet. Exposure to sexual or disturbing content (whether intentional or accidental), or online interaction (cyberbullying, 'stranger danger', or 'sexting') are among the most discussed risks.²⁵ Estimates of the extent of exposure are challenging to establish as they vary over time, location, the characteristics of the sample, and how 'exposure' is defined. In their systematic review, Peter and Valkenburg²⁶ report that prevalence rates of adolescent exposure to internet pornography vary substantially, and their review also unearthed no UK-based studies. In contrast, a recent large-scale UK-based study (a sample of over 100,000 15-year-olds) found four per cent experienced regular cyberbullying, defined as repeated intentional aggression that takes place in an electronic context.²⁷ Data from a Europe-wide study on over 17,000 11- to 16-year-olds found that around two per cent of young adolescents had sent sexual information (pictures or messages) over the internet, rising to nearly four per cent in older girls and seven per cent in older adolescent boys.²⁸ Such studies point to fairly small rates of exposure to these online risks. It is also important to distinguish between risk and harm, as exposure to a risk does not necessarily lead to actual harm.²⁵ A recent UK-based longitudinal study suggests that being the victim of cyberbullying increases the risk of depression and anxiety,²⁹ although questions remain over the extent to which such effects exist over and above those caused by traditional forms of bullying.²⁷ Longitudinal research on the effects of exposure to pornography reveals a number of direct effects on the development of sexual attitudes and behaviours, although effect sizes are often small and only a few effects have been replicated (see Koletić, 2017³⁰ for a review). Nevertheless, whilst quantitative studies may point to low prevalence rates and small effects sizes, online risks such as contact with strangers can lead to tragic consequences for a minority of young people.²⁵

Positive uses of digital media: The ways in which digital media may enhance the lives of children and adolescents have been relatively overlooked. However, media may provide the means for children to meet developmental needs in a numerous ways.³¹ For example, touchscreen technologies are an intuitive way to interact with objects and provide babies with the means to explore sensori-motor contingencies. The internet affords access to knowledge on almost any topic to satisfy a child's instinctive curiosity. The multi-modal presentation of web content gives children flexibility and control over how they learn new information. Adolescents may obtain a sense of social belonging through social media³² which also provide a way to explore their emerging personal and social identities. Screen time can facilitate socioemotional needs through distraction from negative moods³³ or through a shared activity with family or friends.³⁴ Interactive media provide opportunities for learning, creating, civic action and engagement,⁶ exposure to ideas and current affairs, collaboration, communication across distance and promoting healthy behaviours.⁸ In summary, any policies and guidance on screen use need to consider not only risks, but also the potential benefits and opportunities that digital media bring to young people's lives.

Summary/recommendations

Much has been discussed in the media of the potential risks associated with children's screen use. Stories often sensationalise research findings and present them out of context. However, the evidence base as a whole is undermined by methodological weaknesses, becomes quickly dated, and fails to capture the complex and nuanced ways digital media are used. In parallel, families and other stakeholders would benefit from balanced and sensible guidance on how to minimise risk whilst encouraging positive uses of digital media.

Evidence suggests that encouraging certain media behaviours (for instance, co-use and active goal-directed use) can help young people gain the most from digital media. Likewise, certain guidelines are sensible to implement, such as minimising media use before bed, and encouraging children to experience a mix of screen-based and non-screen-based activities. The AAP recommends incorporating rules such as these into a family media plan, and for parents to share and discuss media activities with their children.^{7,8} However, whilst such guidelines may help to minimise risk, they do not provide guidance on how parents can help children exploit the opportunities offered by digital media.⁶ Furthermore, parents' digital skills often lag behind those of their children. It is therefore not reasonable to place full responsibility on parents to provide adequate guidance on all of their child's media behaviours.⁶

Media psychologists can make progress with this issue by identifying the underlying aspects of digital media use which create risk but also those which afford positive opportunities. Studies should be designed which can identify causality (longitudinal studies and experimental manipulations if appropriate) and they should allow for identification of mediating and moderating factors. In addition, more qualitative methods, such as interviews, ethnography and participatory design, should be employed with young people to understand their media practices and what they themselves seek from their digital experiences.

As recommended by the AAP,⁷ a better understanding of children and adolescents' media use will allow psychologists to work more closely with media industries in creating healthy technologies and positive media experiences. Likewise, designers/producers and developmental psychologists should be encouraged to collaborate to create and evaluate age-appropriate products/content.

The Department of Digital, Culture, Media and Sport have a stake in ensuring young people are protected from harm whilst developing the skills to contribute to the digital economy. There is scope for policy to make the task easier for parents by making inappropriate content harder to access.⁶ Policy and guidance should be focused on helping children and families gain the most from the digital world.

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