Using screens: How much time are children and young people spending on technology?

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Abstract. In the last two decades, anecdotal evidence suggests that screen use has increased considerably in children and has influenced their health and wellbeing. This study investigates how much time children and young adults spend on their screens. Forty-five participants were interviewed; the maximum number of hours spent on screens is 10 and the lowest is one. Mindful use of screens is recommended with careful monitoring of screen use by users and carers of young children.

Keywords. Screen use, technology, children, health.

1. Introduction

1.1 Background

In the opening ceremony of the Rio Olympics 2016 many individuals, including the athletes, were on their phones probably either texting, taking photographs or using social media. Regular screen use has become commonplace throughout the world. In the last two decades, screen use by children has increased dramatically. A survey by Childwise (2015) found that children aged 7-16 spent an average of 6.5 hours a day in front of a screen compared with approximately 3 hours in 1995. 'Screen time' refers to time spent watching TV, playing games consoles, using a mobile, computer, tablet or other hand held devices (Childwise, 2015). Ofcom (2010) found that 16-24 year-olds spent 6 hours 35 minutes on screens but 29% of their time with media is concurrent. The result is that they use more media and communications than any other age group, fitting 9 hours 32 minutes of activity into this time. There are currently no medical or governmental guidelines on limiting screen time in the UK. From 2008 the UK encouraged technology and computer use for all ages but recent advice from the National Institute for Health and Care Excellence (NICE) is that children should have TV-free days, or have 2 hour limits on the time spent in front of screens. In 2013 the USA Department of Health recommended that children under two should not be in front of a screen at all, and over that age the maximum leisure screen time should be no more than 2 hours a day (Jary, 2016). In Taiwan, China and South Korea there are government limits set for screen use. In Taiwan, a parent can be fined up to the equivalent of a £1,000 if children under 18 are using electronic devices for long periods of time (see Jary, 2016).

Research suggests that too much screen time can affect academic attainment, physical health (Torsheim et al, 2010), sleep (Mak et al., 2014) and emotional development (Napier, 2014). Excessive use has been associated with depressive symptoms, higher interpersonal anxiety and lower self-esteem (Ha et al., 2008). Too much internet use has been associated with feelings of sadness and depression and perceived poorer school grades of adolescents (Mythiy et al, 2008). Last year, researchers at Cambridge University recorded the activities of over 800 14 year-olds and analysed their GCSE results at 16. Those spending an extra hour a day on screens e.g. TV, computer, games console, phone, saw a fall in GCSE results equivalent to two grades overall (Jary, 2016). Problems associated with too much screen time are emphasised in an annual report, 'Our Children Deserve Better: Prevention Pays' (Davies, 2012) which looks at the effects on health including Type 2 diabetes, hypertension, obesity and attention deficit hyperactivity disorder (ADHD). There is also a further problem in that many people seem to become addicted to screens e.g. there is evidence of dopamine release

when playing games and using social networks, and so creating an addictive element in screen use (Hines, 2005). Sigman (2014) reports on the rising number of children involved in addictive and problematic use of screens.

There has been much discussion about how much time is appropriate for a child to spend in front of a screen. A recent report from Public Health England (2013) discusses how too much time in front of screens combined with a sedentary lifestyle is affecting the health and wellbeing of children in the UK. Higher levels of TV viewing are having a negative effect on children's wellbeing, including lower self-worth, lower self-esteem and lower levels of self-reported happiness. Children who spend more time on computers, watching TV and playing video games could experience higher levels of emotional distress, anxiety and depression. Steiner-Adair (2014) studied the impact of digital technology on infant brain development and concludes there is no productive role technology can play in the life of a baby under 2 years.

An Australian comprehensive review (Martin, 2011) suggests that excessive time using screens is associated with health and well-being adversity for children and adolescents; and that time outside and in contact with nature is associated with increased physical activity and enhanced mental and physical health. The British Association for Community Child Health (Sigman, 2015) also endorses the importance of children having time outdoors in a play environment.

One conclusion from the above information is that more research is needed on children's screen use and the type of screens used.

1.2 How to find out about screen use?

This study aims to identify how long 8-18 year-olds spend using screens and what screens they used. A semi-structured interview methodology was used, allowing participants to ask questions and the interviewer to probe answers further.

2. Methods

2.1 Design

Interviews were carried out in groups of three to create a sense of safety for the children, to enable dynamic interaction, and to allow each individual's voice to be heard. Participants were asked about the amount of time they spent using screens and technology. Screen time refers to TV watching, use of a mobile, computer, tablet or other hand held device. The researcher facilitated the interviews, ensuring each individual's participation. Participants were recruited by sending a letter home to parents and the child then volunteering to participate. Ethical approval was given by the University of Bristol's Ethics Committee. Participants could choose to leave the study at any time. Parental approval was gained with a signed consent form.

2.2 Participants

A total of 45 participants were interviewed in 3 age categories as grouped by class: 8-11 years (n=15), 11-14 years (n=15) and 14-18 years (n=15). They were recruited from educational establishments in the South West of England including: two primary schools, three secondary schools and one further education college. The gender balance of interview groups varied; some were mixed, some were all female and some were all male.

3. Results

3.1 The 8-11 Age Group

Table 1 shows the number of hours that 8-11 year-olds report using screens. Interview Group

1 represents the 3 children in the first interview, Interview Group 2 the 3 in the next, and so on.



The longest time 8-11 year-olds spend on screens is 8 hours a day and the lowest is 1.5 (M=4.3. SD=1.9). The range is 6.5 hours.

Interview response examples: One participant, referring to her mobile phone, said "I have my phone on me at all times. In a non-school day (I use) it maybe half the day to say 8 hours, I get so bored." Another said that she used technology for "an hour altogether on a school day but in the holidays and at the weekend maybe 5 hours a day". One said "About half an hour if it is sunny but a maximum of one and a half hours" and another talked about how she "might spend half an hour on the laptop and then go outside to play; a total of two hours but that time is broken up with other things."

3.2 The 11-14 Age Group

Table 2 shows the number of hours 11-14s report they use screens.



The highest screen use is 10 hours a day and the lowest is 1.5 (M=3.8, SD = 2.1). The range is 8.5 hours.

Interview response examples: One participant said that they wouldn't use their phone if it was a sunny day because "I'd be out with other people, so probably about 5 or 10 minutes". Another in the group said "if it's a cold day and it's been raining, probably about six hours". The third person in this group claimed to use their phone "at night, you like you have your phone to entertain you because you can't go out or anything". So, the phone becomes a tool for filling time. Young people often chose to use their screens because they are bored. Another participant said "Ten hours in the holidays, and one day I went on it for twelve hours. I went on it from 6 in the morning and came off at 10 at night". (This is incorrect being more than 12 hours but is as recorded.). He then went on to say that on a school day, "I go on it for like two hours". This is a big difference in usage from school time to the holidays.

3.3 The 14-18 Age Group

Table 3 shows the number of hours that secondary school and college age young people from 14-18 say they use screens. The highest screen use is 5 hours in a day and the lowest is 1 (M=3.7, SD=1.2). For this group, the range is small at 4.0.



The 14-18 year-olds talked about the distracting capacity of screens and how this impedes their concentration when they are studying. One said, "it's just like really distracting because you're like, oh, I wanna know what it says but I'm doing my work, so you're not really concentrating...." Another said, "It's just like you're bored and if you didn't have phones and technology, you'd probably, like, go out for a walk or you'd do something else but you don't because they are just there. They are so easy to access." The time-wasting capacity of phones is emphasized by another, "It's like I'll think I'm going to bed early because I'm really tired but then you'll sit there, like on your phone, for an extra hour or something, like looking, at, just random stuff. You might not even be talking to someone. You are just like on Instagram or something like that, just things that amuse you and then by the time you look at the clock you were going to bed at like 8 and it's like half past 12".

One commented on using many screens: "It sounds so weird but I can be like be on my phone and I'll be texting at the same time, talking to someone else and then doing like work tasks at the same time". So this person is moving from screen use to live contact with those around her and then back. Another said she will "watch movies, text and do her homework" but then "I won't really be concentrating. If I have a deadline, I'll put everything away but if I don't, I'll have everything in front of me." So at important times, she will focus clearly on the task at hand rather than allow herself to use a range of screens. A few others talked about how they move between different screens and media, from using a laptop, a mobile phone and an iPad. As with the 8-11 and 11-14 year-olds, the 14-18 year-olds also give evidence of using screens more in the holidays. One said, "In the holidays, I spend more time because you need to occupy yourself; it's more for social aspects".

Table 4 shows that the mobile phone is the most owned device by 11-14 and 14-18 year-olds but for 8-11 year olds this is the games console. The console is also popular with the other groups. The second most owned device for 14-18 year-olds is the laptop but for 11-14 it is the games console. The mobile is the second most owned gadget for 8-11s followed by the laptop, the MP3 player, tablet and the least owned screen device is the Ebook reader. The Ebook reader is the least owned screen device for all ages. Slightly more 8-18s own a tablet than an Ebook reader. The MP3 player and IPOD touch are more popular than the Ebook reader and tablet for all ages.



4. Discussion and Conclusion

The results show that primary children have a range of screen use from 1.5 to 8 hours a day with 13 out of the 15 children using screens for more than 2 hours a day which is more than the recommended guidelines from NICE (2008). The highest screen use for 11-14 year-olds is 10 hours a day and the lowest is 1.5. There is a lot of variance in this result with one participant reporting 10 hours a day and the next 6, a 4-hour difference. Twelve out of 15 participants use screens for more than 2 hours a day. The highest screen use for 14-18s is 5 hours in a day and the lowest is 1 hour. The variance is small. Twelve out of 15 participants use screens for more than 2 hours a day. More than 2 hours screen use may affect health outcomes e.g. Mark and Janssen (2008) found that screen time was associated with an increased likelihood of MetS in a dose dependent manner. MetS refers to a clustering of cardiovascular disease and Type 2 diabetes risk factors that predispose to several chronic diseases and premature mortality (Arden & Janssen, 2007).

The 8-11 year-olds interviewed spend time after school, 'going out to play' with their friends. Although some report high screen use, the interviews indicate that the children can divide their time between play and screen use e.g. one said that she "might spend half an hour on the laptop and then go outside to play". The importance of balancing screen use with outdoor activities and 'time with nature' has been documented (Martin, 20011).

Participants mentioned boredom a lot when they talked about their use of screens. Whether it is their phone, a tablet, a laptop or another piece of technology, these are seen as gadgets to alleviate boredom, particularly at the weekends and in the school holidays. As with the 8-11 and 11-14 year-olds, the 14-18 group show evidence of using screens more in the holidays. One said, "In the holidays, I spend more time because you need to occupy yourself, it's more for social aspects". One study investigated the association between screen time and metabolic risk factors (Hardy et al, 2010). Results showed that: adolescents in Grade 10 used 2.6 hours of screen time on weekdays and 4.4 hours' at the weekends; and that adolescent boys who used screens more than 2 hours a day had twice the risk of abnormal levels of insulin and HOMA-IR compared with peers who used screens less than 2 hours a day on weekdays.

Participants in the 14-18 age group comment on the time-wasting capacity of screens and the distracting capacity of using screens concurrently. As discussed, it has been suggested that the academic achievements in GCSEs are affected by the amount of time spent using screens (Jary, 2016). The participants themselves expressed difficulty in concentrating when they are using more than one screen. Screen time has also been associated in a dose-response manner with attention problems in many ages (Christakis, 2004, Lillard, 2011, Swing, 2010). For example, Swing's study (2010) of 8-24 year-olds concluded that watching television and playing video games were associated with subsequent attention problems in late adolescence and early adulthood.

This study has many limitations in that it touches only the 'tip of the iceberg' in exploring screen use in young people. Many more questions could be asked to gain a deeper understanding of screen use behaviour. More research could be done on concurrent use of screens and associated behaviours e.g. what postures are children using? Where do they access their screens? Do they get any physical effects? The social aspects of the need for constant connectivity and accessibility and problems of addiction could also be investigated. Interviews could also be structured to further elicit users' perceptions about what they identify as factors associated with their screen use, whether these are health concerns and/or behavioural lifestyle factors. For example, some studies have identified the sedentary nature of screen use as a potential lifestyle issue (Foster et al., 2006, Melkevik et al, 2010). This is an area that warrants further study.

The semi-structured interview approach provides the potential for in-depth exploration of associated issues relevant to the length of time children and young people use screens. However, quantitative data from a large sample would provide a reliable initial indicator of use in the general population.

In conclusion, mindful use of screens is recommended. Restrictions on screen use can be implemented by carers and there are guidelines about leisure time screen use. There are also apps that can be installed to limit their child's screen use on a computer or a mobile phone.

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