Internet use

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Title
Internet Use

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Word Count
4137

Abstract
Children’s use of the internet has been increasing tremendously in the past decade. Prevalence rates of children’s online time, devices and activities are outlined. Some insight is offered into digital divides by geographic region and socioeconomic circumstances. A typology of online opportunities and risks for children is presented, followed by a brief discussion of online risks, concluding with theoretical models proposing approaches to identify risk and resilience factors with regards to children’s internet use.

Keywords
Internet use, online risks, resilience, social networking

Main Text
Children are using the internet and digital technologies at younger and younger ages with an emerging trend of very young children (babies, toddlers and pre-schoolers) using internet connected devices, especially touch screen tablets. In addition to this, primary school aged children are going online in increasing numbers and with increasing frequency.

With little evidence-based research regarding the benefits and risks of device use, current screen-time recommendations, largely based on research into passive television viewing, assume that screen time is detrimental to children. On the other hand, advice from education experts and app developers commend interactive screen time as engaging and educational.

Thus, when parents allow their young children to engage with internet connected devices they enter a highly charged arena in which conservative child-rearing philosophies are in discord with other progressive positions where these early engagements are seen to build the very skills and literacies that children need to participate fully in technologies of their future.

Parents of children in this age group are more likely to be experienced internet users themselves, and tend to be more comfortable with their children using internet connected devices. These families are also at the forefront of changing family communicative practices such as relocating the family photograph album on to social networking sites such as Facebook (Holloway & Green, 2017) or using video chat to connect with distant grandparents or a parent who travels for work.
Screen time

Various surveys and studies suggest that children exceed the recommended American Academy of Paediatrics’ (AAP) screen time limits. The AAP (2016) advise parents that: children under 2 years should avoid screen use altogether, apart from video chatting. Another exception is that children between 18 months and two years may be introduced to digital media alongside their parents in short episodes. For children age between two and five years of age the AAP recommends no more than 1 hour per day of screen time.

Various studies also show that screen time tends to increase with age. In the UK 3 to 4 year olds spend an average of 4 hours and 11 minutes screen time, 5 to 7 year olds 4 hours and children aged 8 to 11 spend 5 hours and 7 minutes (Ofcom, 2016). In the US the figures are higher with children aged between 3 and 7 spending just over 7 hours a day using screens and those aged between 8 and 12 about 8 and a half hours per day (Sanders et al, 2016).

Recent statistics suggest that children are now beginning to spend more time online than in front of television sets, one reason being that they are watching more television and video content on their consoles, tablets and smartphones. YouTube is one of the most popular online destinations for children to watch content, with around three quarters (73%) of those aged 5-15 using the video site. It is also a hit with pre-schoolers with 37% regularly watching YouTube videos, typically ‘TV content’ such as cartoons and mini-movies (Ofcom, 2016).

What devices are young children using?

The roll out of touchscreen technologies such as smartphones and tablets into the domestic market has allowed very young children the opportunity to use the internet. “Somewhere around the age of 10 months to fourteen months a baby learns to point with his or her forefinger” (Holloway, Green, & Stevenson, 2015) and is ready to tap and swipe a touchscreen. Previous to this, very young children needed assistance to use a mouse or keyboard on laptops and PCs. These new mobile devices now have a large ecosystem of child-friendly apps and games to go with them that help create straightforward access for infants and pre-schoolers and allow even the youngest child to go online.

Thus, over the last 10 years, while increased usage is noticeable in all age groups, it is very young children (0-8) who are showing significantly increased patterns of internet use (due primarily to the introduction of touchscreens). There are a limited number of studies mapping the ongoing rise of very young children’s internet use across the globe, with some countries surveying internet use of children in the 0 to 8 year-old age range and others not yet capturing this data.

Unsurprisingly, the main screens used by children aged between 0 and 11 are television sets and tablets. In the UK 92 % of 3 to 4 year olds, 96% of 5 to 7 year olds and 98 % of children aged between 8 and 11 use television sets. Tablet use is 55% for 3 to 4 year olds, 67% for 5 to 7 year olds and 80% for 8 to 11 year olds (Ofcom, 2016).
A general rise in the number of portable devices used by children is thought to be associated with a rise in tablet use. The two main reasons given are that parents prefer tablets for their children who they thought too young for smartphones and that the interfaces on touchscreen devices are easy for very young children to use independently. Therefore children under the age of 10 are now more likely to have a tablet than a smart phone.

In addition to this, some young children are using consoles to play games. In the UK 25% of 3 to 4 year olds and 52% of 5 to 7 year olds use consoles. This usage is gendered with boys using consoles more than girls (Ofcom, 2016). In the US, as of 2014, 10% of 3 to 4 year olds and 27% of 5 to 7 year olds use game consoles (Common Sense Media, 2014). These figures, it should be noted, have been decreasing over the last few years—most likely as a result of the popularity of tablets and apps for these tablets.

Children’s personal ownership rate of tablet devices are on the rise as well. While a few years ago very young children tended to use their parents’ or siblings’ devices they are now gaining personal ownership of touchscreen devices, especially tablets. UK research indicates 16% of children aged 3 to 4, and 32% of 5 to 7 year olds own their own tablet (Ofcom, 2016). Ownership in the US also increased with one survey indicating that personal ownership of tablets devices have doubled from 2013 to 2015. These researchers found that in 2015 most children had their own tablet by the time they turned four compared to negligible ownership in 2013 (Kabali et al, 2015).

What are young children doing online?

One of the main changes in children’s online media consumption is the move towards on-demand television and/or Youtube content via digital televisions, tablets, consoles and computers. Another is the age at which children begin consuming content online. Smaller children (0-5), especially those with access to touchscreen technologies, enjoy using their touch screens mostly to play games and watch videos or movies. Others enjoy reading digital books. Children may also use the communications capacities of these devices for video calls (Skype, Facetime) and audio calls to relatives and friends—with their parents or caregivers help.

The number of online activities children participate in increases with age. Children below the age of 3 – 4 are most likely to use their touchscreens to watch video clips. As they get a little older (3-4) they start to play games on their devices. When they reach 5 or 6 they begin to participate in many more activities apart from video watching and games. This may include information seeking, completing homework and socialising via virtual worlds.

Children aged from 8 to 11 years of age are playing games, viewing television or Youtube content, private messaging (on group chat services with family and friends) posting comments and posting status updates. These older children are also more likely to be completing homework tasks online and to be looking things up that interest them.

There is some disparity between studies regarding whether or not primary school aged children are socialising online in large numbers. While many researchers limit their definition of social networking to sites such as Facebook, Twitter or Snapchat, others are now including children’s virtual worlds as a space where online socialising takes place (Holloway, 2015). These virtual
worlds use communication functions which range from text and graphical icons to sound and visual gestures. In addition to this, primary school aged children are also using digital distribution platforms, which deliver a suite of digital games and incorporate chat functions within the platform.

**Digital divides**

There are nonetheless differences in uptake between countries as the rise in uptake by children is not uniform. It is not always possible to generalise between and within countries but figures from different countries suggest that the usage patterns seem to follow usage patterns of older children within each country. That is, in countries where more children overall use the internet, they also go online younger in greater numbers (Holloway et al, 2015). Lower uptake is to be expected in the global south than global north, as well as between countries with differing GDPs, or for those smaller countries with languages groups not supported by global producers of these devices and associated apps for children. For example, Bulgaria with a lower GDP per capita identified 59 per cent of households with children accessing the internet in 2015 while countries such as Luxembourg, Denmark, the UK and Finland reported an access rate of 90 per cent (Eurostats, 2015).

It is important to also note that not all children within different regions or countries have access to the same range of devices, and that issues of difference, diversity and equity exist. Factors affecting digital exclusion can include socioeconomic status, disability, gender and geographical isolation. For example, Aboriginal children living in remote Australia are doubly disadvantaged with generally low socioeconomic circumstances and inferior telecommunications services to their communities. Other socio-economic status effects now being noted in the global north are the ‘app gap’ and the ‘homework gap’. In the US 75 per cent of households with children aged 0 to 8 and earning over $75 000 US downloaded educational apps for their children, while only 35 percent of households earning less than $30 000 downloaded educational apps (Rideout, 2013, p. 29). Some school aged children are experiencing a ‘homework gap’ where children living in disadvantaged families have no internet access or inferior internet access. These access issues limits these children’s ability to complete homework tasks that are set by their teachers (Kang, 2016).

**A typology of internet risks and opportunities**

When children use the internet they have advantages and opportunities, but they may also be exposed to risks. Most research looking at the risks of internet use has focused on adolescents; however, some larger scale studies have included older pre-adolescent children. This research has often been conducted with a focus on risks or addressing risks and opportunities as separate entities. However, research evidence points to nuanced connections, where online risks are interlinked with opportunities as well as with offline risks and opportunities (Livingstone, Haddon, Görzig, & Ölafsson, 2011). Hence, efforts have been made to reflect this connectivity in a classification of online risks and opportunities (see Table 1).
Table 1. Classification of children’s online opportunities and risks by child’s role

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Content: child as recipient</th>
<th>Contact: child as participant</th>
<th>Conduct: child as actor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education learning and digital literacy</td>
<td>Educational resources</td>
<td>Contact with others who share one’s interests</td>
<td>Self-initiated or collaborative learning</td>
</tr>
<tr>
<td>Participation and civic engagement</td>
<td>Global information</td>
<td>Exchange among interest groups</td>
<td>Concrete forms of civic engagement</td>
</tr>
<tr>
<td>Creativity and self-expression</td>
<td>Diversity of resources</td>
<td>Being invited/inspired to create or participate</td>
<td>User-generated content creation</td>
</tr>
<tr>
<td>Identity and social connection</td>
<td>Advice (personal/health/sexual, etc.)</td>
<td>Social networking, shared experiences with others</td>
<td>Expression of identity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risks</th>
<th>Commercial</th>
<th>Aggressive</th>
<th>Sexual</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advertising, spam,</td>
<td>Violent/gruesome/hateful</td>
<td>Pornographic/harmful sexual</td>
<td>Racist, biased info/advice</td>
</tr>
<tr>
<td></td>
<td>sponsorship</td>
<td>content</td>
<td>content</td>
<td>(e.g. drugs)</td>
</tr>
<tr>
<td></td>
<td>Tracking/harvesting</td>
<td>Being bullied,</td>
<td>Meeting strangers,</td>
<td>Self-harm, unwelcome</td>
</tr>
<tr>
<td></td>
<td>personal info</td>
<td>harassed or stalked</td>
<td>being groomed</td>
<td>persuasion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Providing advice,</td>
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<td>for example,</td>
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<td></td>
<td></td>
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<td>suicide/proanorexia</td>
</tr>
</tbody>
</table>

*Note: Adapted from Livingstone et al. (2017) with the authors’ permission.*

Notably, these classifications distinguish between the child as a recipient, as a participant and as an actor in terms of their interaction with the internet. This allows the differentiation of risks and opportunities broadly into the categories of content, contact and conduct. For the younger children the opportunities mainly lie in the area of education, learning and digital literacy. Children may develop digital skills through an early interaction with the technology. There is a
plethora of online applications which are aimed at supporting children’s education and are specifically targeted towards different age groups. Older children may use the internet to connect, share interests as well as collaborating on homework activities. In terms of risks, commercial and value related risks have received little attention by researchers and policy makers to date. However younger children themselves seem to be most worried about those and other content risks (Livingstone, Kirwil, Ponte, & Staksrud, 2014). Most attention has been given to aggressive risks where the child is a participant or actor (e.g., cyberbullying) and sexual risks with the child as a recipient (e.g., pornography), as a participant (e.g., online grooming) or an actor (e.g., sexting) (Livingstone & Smith, 2014).

There are many types of aggressive risks but cyberbullying has perhaps received most attention by researchers, as well as the media. Cyberbullying can take various forms such as sending unwanted, derogatory, or threatening comments, spreading rumours, sending pictures or videos that are offensive or embarrassing as well as excluding someone via means of electronic communication. Mostly, cyberbullying has been defined by borrowing from the definition of traditional bullying, i.e. as an act of aggression that is intentional, repetitive, and aimed at an individual of lower power, and extended to electronic forms of contact (Smith, 2015). However, there has been a lack of consensus in defining and measuring cyberbullying. Hence, reporting on the prevalence of cyberbullying is inconsistent. Reviews of cyberbullying studies suggest that most prevalence rates range from between 20%-40% (Aboujaoude, Savage, Starcevic, & Salame, 2015), while thoroughly designed survey studies report significantly lower rates, with 6% being reported by a representative European survey of 25 000 9-16 year old children across Europe (Livingstone et al., 2011). Smith (2015) argued that these differences are mainly driven by the manner in which the frequency of occurrences is recorded and assessed, yielding around 20% for one-off occurrences and around 5% for repeated incidences. Age also plays a role with younger children reporting fewer incidences. Only a 3% prevalence has been reported for 9-10 and 5% for the 11-12 year olds in the European survey (Livingstone et al., 2011).

Sexual risks have similar definitional issues making their measurements and estimates difficult. Moreover, ethical concerns often prevent researchers from asking younger children about the exact nature of these experiences. Among a US sample of 1500 10-17 year olds, 23% reported unwanted exposure to pornography and 9% sexual solicitations online, while among the 10-12 year old pre-adolescents in this sample these were lower with 15% and 2%, respectively (Jones, Mitchell, & Finkelhor, 2012). Similarly, the representative European survey showed 14% of 9-16 year olds having seen sexual images online, with lower rates of 5% for 9-10 and 8% for 11-12 year olds. Whilst not asking about sexual solicitations, the survey showed that 30% of the sample had made online contact with people they did not previously know offline. These were 13% among 9-10 and 20% among 11-12 year olds. Further, 9% went on to meet these online contacts face-to-face, 2% among 9-10 and 4% among 11-12 year olds (Livingstone et al., 2011). Likewise, in the US sample most of the online encounters of unwanted online sexual solicitations did not lead to any attempted or actual offline contact, with 3% of 10-17 year olds, 1% of 10-12 year olds among those, attempting or encountering a contact (Jones et al., 2012).

Sexting is the peer-to-peer exchange of sexual messages using digital technologies ranging from text or image messaging on mobile phones to social networking sites and instant messaging
services. There is a diversity of research about the issue ranging from studies with a mere focus on the exchange of such messages, to those implying willing exchange by romantic partners or an assumption of harm caused by the exchange of unwelcome or hurtful sexual messages. Hence, as for cyberbullying, prevalence estimates show a wide range from 7% to 48% (cf. Livingstone & Smith, 2014). However, only two of the reviewed studies involved pre-adolescent children below the age of 13 which showed 0% among 9-10 year olds and 7% among 11-12 year olds being involved from the European sample and only 2 children from the sample of American children (N = 1560) being involved below the age of 13.

Despite the low prevalence rates among younger children, pornographic content remains one of children’s main concerns which is only topped by violent content. Surprisingly little research has addressed the impact of violent content on the internet whilst this has been a main concern of research relating to traditional media (Livingstone et al., 2014; Livingstone & Smith, 2014; Piotrowski & Valkenburg, 2015). Children tend to differentiate between factual and fictitious contents from the age of seven. Hence, it is not surprising that from that age the content that upsets them the most is violent content found in online news, but even more so, other often decontextualized violent online content. This decontextualised content involves footage that has been placed on the internet independent of official news sites such as abuse, accidents and deaths (Livingstone et al., 2014).

Internet risks, harm and resilience

Not all children are upset by the risks they encounter online. It has been acknowledged that those who experience risk in one domain are likely to also experience them in others and that risk factors tend to compound each other. Indeed, those who engage in more risky offline (and risky online) activities are more likely to be involved in sexting. Thus, the single underlying factor for online and offline risks, which is a child’s propensity to take risks in general, has been established (Görzig, 2016).

For this reason, children’s online risk experiences have been set within the framework of risk and resilience adapted from the literature on offline risk (see wecad00186). With risk being defined as the possibility of harm, attempts have been made to identify factors that might link risk, on the one hand to harm and to opportunities, on the other.

Two theoretical models stand out with regards to children’s internet use and subsequent risk and resilience factors. The Differential Susceptibility to Media effects Model (DSMM) (Piotrowski & Valkenburg, 2015) and the EU Kids Online Model (Livingstone et al., 2011). Both models acknowledge that not all children respond the same way to similar experiences and circumstances. Frameworks that take into account different individual and contextual level factors are provided by both models.

The DSMM suggests that different children show a variance in susceptibility to different conditions which may lead to adverse or beneficial consequences. The DSMM suggests that, in relation to media effects such as those encountered by internet use, there are three types of susceptibility factors to consider: dispositional, developmental, and social susceptibility. Dispositional susceptibility refers to factors related to the individual child (e.g., genetics, gender, temperament, personality, cognitions, values, attitudes, beliefs, motivations, and moods); developmental susceptibility refers to factors associated with the child’s development (e.g.,
cognitive, emotional, and social); and social susceptibility includes social-context ranging from the micro to the macro level (e.g., family, peers, school, cultural norms and values).

In a similar vein the EU Kids Online model sets a framework proposing different levels from which children’s internet use can be considered (see Figure 1). The model is based on Bronfenbrenner’s ecological theory which situates the child within the different levels of its social environment thereby acknowledging the mutual and interactional effect of their influence upon the child’s development. The model specifies two relevant issues in the context of children’s internet use; 1) the relationship between the risks with harm or coping (i.e., resilience) and 2) the incorporation of those relationships within the traits of the individual child and their social as well as cultural surroundings.

[Figure 1 near here]

Figure 1. Explaining risks and opportunities: The EU Kids Online model.

Note: Adapted from Livingstone et al. (2011) with the authors’ permission.

Plenty of research is available, although not exhaustive, indicating factors underlying both models that are associated with the effects of internet use on children (cf. Livingstone & Smith, 2014; Piotrowski & Valkenburg, 2015). In terms of risks experienced Livingstone and Smith (2014) concluded that, while access to mobile and online technologies has increased, the same does not hold true to a similar extent for the associated risk experiences. Moreover, while older children or teenagers, those with higher sensation seeking tendencies and those in countries with low attitudes towards equality and higher crime rates were more likely to experience risk, these risks were more upsetting or harmful to younger children, girls, those low in self-efficacy, those with greater psychological difficulties and those who were members of a group which faced disadvantages in society (Görzig & Machackova, 2016).

SEE ALSO:
wecad00186
wecad00251
wecad00284
wecad00287
wecad00295
wecad00342

References


**Further Readings**


**Dr Anke Görzig** is Senior Lecturer in Psychology at the University of West London, Visiting Fellow at the London School of Economics and Political Science and part of the UK team of the EU Kids Online network. Her research interests focus around children's risks and opportunities on the internet with an emphasis on cyberbullying, multiple risk behaviors and disadvantaged groups. She is co-editor of Children, Risk and Safety on the Internet (2012, Policy Press) and author of A Social-Ecological Approach to Cyberbullying (2016, Nova Science). She has authored/co-authored 13 peer reviewed journal articles, 9 book chapters and 11 reports.

**Dr Donell Holloway** is a research scholar based at Edith Cowan University in Perth Western Australia. She is lead author of EU Kids Online report Zero to Eight: Young Children and their Internet Use and has authored or co-authored over 50 refereed journal articles, book chapters and conference papers. She is currently a chief investigator on two ARC grants, Digital Play: Social network sites and the well-being of young children, and Toddlers and tablets: exploring the risks and benefits 0-5s face online. Her research centres on the domestic context of children’s media use for children (0-12) and their families.
Explaining risks and opportunities: The EU Kids Online model.

224x134mm (150 x 150 DPI)
Re: co-authors' permission

Livingstone,S

Mon 07/08/2017 16:19

To:Goerzig,AS <A.S.Goerzig@lse.ac.uk>; Leslie Haddon <leshaddon@aol.com>; Kjartan Ólafsson <kjartan@unak.is>

Dear Anke

I think that’s fine – just note the source, and thanks!

Best, Sonia

From: Anke Goerzig <A.S.Goerzig@lse.ac.uk>
Date: Monday, 7 August 2017 at 16:01
To: "LesHaddon@aol.com" <leshaddon@aol.com>, "kjartan@unak.is" <kjartan@unak.is>, "Livingstone,S" <S.Livingstone@lse.ac.uk>
Subject: co-authors' permission

Dear co-authors,

I hope you are well :) 
I would like to ask your permission, to reproduce the figure of the EU Kids Online model in an entry of "The Encyclopedia of Child and Adolescent Development" that I am currently working on with Donell Holloway.
Do let me know if you have any objections.

Many thanks,
Anke

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