UK children’s screen-based activities: The story of the millennium so far

Killian Mullan
University of Oxford

QoL and Wellbeing Showcase, London
27th November 2017
Children and technological change

• Opening decades of 21st Century witnessed rapid technological change

• Three entwined ‘revolutions’ (Rainie & Harrison, 2012):
  1. Social Network
  2. Internet
  3. Mobile

• Raised/renewed concerns around children’s time in screen-based activities, and their health and well-being
British teenagers among world’s most extreme internet users, report says

Thinktank warns that heavy internet use can have damaging consequences but says educating teenagers more effective than limiting online access


**Key Findings**

**The digital lives of children and young people**

- Over a third (37.3 per cent) of UK 15 year olds are ‘extreme internet users’ (defined by the OECD as a student who uses the internet for more than six hours outside of school on a typical weekend day).\(^1\) This is substantially higher than the OECD average. The only OECD country with higher levels of extreme internet use than the UK was Chile.

24.1% are ‘extreme internet users’ on a ‘typical’ weekday

How much time do you spend online during a typical weekday/weekend: none; up to one hour; 1-2 hours; 2-4 hours; 4-6 hours; 6+ hours?
Old and new screen-based activities

• Prior to the ‘three revolutions’ (*circa* 2000) screen-based activity was time watching TV, playing videogames, and using (desktop) computers

• Now, in addition, includes the use of mobile devices and the internet for:
  • ‘old’ screen-based activity: e.g. watching TV on a tablet
  • new activities, may be combined with non-screen-based activities: e.g. social media while eating/travelling
Change in time in screen-based activities

• Decrease in TV, increases in time using computers and playing videogames
  • Bucksch et al (2016)

• Increase in time online, particularly on mobile devices:
  • Ofcom (2015); Livingstone et al. (2014)

• Suggests increase in total screen time

• Important limitations relating to measures
Measuring children’s time in screen-based activities

• Recall questions (most common)
  • Easy to administer
  • Can be unreliable – memory unreliable; perceptions distort; social desirability bias
  • Difficult to combine responses for different activities, deal with overlapping screen-based activities

• Time diaries
  • Reliable, burdensome
  • Special purpose (e.g. Ofcom’s Digital Day)
  • All-purpose (e.g. UK Time Use Survey)
Research questions

1. How much time do children spend in screen-based activities, and how has this changed between 2000 and 2015?
2. How much time are children spending using mobile devices in 2015?
3. What activities are children engaging in when using mobile devices?
Data

• United Kingdom Time Use Surveys 2000-01 & 2014-15

• Respondents 8+ years keep a time-diary for a weekday and a weekend day
  • Report main activities, other (secondary) activities, location, and co-presence throughout the day
  • In 2014-15 respondents provided data on their use of ‘smartphone, tablet, computer’ throughout the day

• Individual/household questionnaires
## Time diary instrument

### Day 1
**Time: 7am - 10am**
**Morning**

<table>
<thead>
<tr>
<th>Time: 7am-10am Morning (am)</th>
<th>What were you doing? Please write down one main activity.</th>
<th>If you did something else at the same time, what else did you do?</th>
<th>Did you use a smartphone, tablet, or computer?</th>
<th>Where were you? Location, or mode of transport</th>
<th>Were you alone or with somebody you know? Mark all relevant boxes</th>
<th>How much did you enjoy this time? 1 = not at all 7 = very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>7am-7:10</td>
<td>Woke up the children</td>
<td></td>
<td>☐</td>
<td>At home</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>5</td>
</tr>
<tr>
<td>7:10-7:20</td>
<td>Had breakfast</td>
<td>checked emails</td>
<td>☑</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>7:20-7:30</td>
<td>&quot;</td>
<td>Talked with my family</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>7:30-7:40</td>
<td>Cleared the table</td>
<td>Listened to the radio</td>
<td>☑</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>7:40-7:50</td>
<td>&quot;</td>
<td></td>
<td>☑</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>7:50-8am</td>
<td>Helped the children dressing</td>
<td>Talked with my children</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>8am-8:10</td>
<td>&quot;</td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
</tr>
<tr>
<td>8:10-8:20</td>
<td>Went to the day care centre</td>
<td></td>
<td>☐</td>
<td>on foot</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>1</td>
</tr>
</tbody>
</table>
Sample and analysis

• Analysis based on a sample of children 8-18 years in education, living in two-parent (mother and father) or lone-mother families
  • N=3,434 diaries from 1,761 children in 2000-01
  • N=2,227 diaries from 1,134 children in 2014-15

• Multivariate analysis (OLS)
  • Key variable: survey year
  • Controls: sex, age, mothers’ education and employment, family structure, home computer, car, number of siblings, day-type

• Descriptive analysis of device use (smartphone, tablet, computer) in 2015
Change in time in screen-based activities

Change in minutes 2000-2015

TV
Computers
Videogames
Total
Change in screen time: boys and girls

![Bar chart showing change in screen time for boys and girls across different activities: TV, Computers, Videogames, and Total.](chart.png)
Increase in total time in screen-based activities
## Mobile device use

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Average (hr:min)</th>
<th>Min (hr:min)</th>
<th>Max (hr:min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total: 8-18 years</td>
<td>02:46</td>
<td>02:38</td>
<td>02:53</td>
</tr>
<tr>
<td>Boys</td>
<td>02:51</td>
<td>02:40</td>
<td>03:02</td>
</tr>
<tr>
<td>Girls</td>
<td>02:40</td>
<td>02:30</td>
<td>02:50</td>
</tr>
<tr>
<td>8-15 years</td>
<td>02:20</td>
<td>02:12</td>
<td>02:27</td>
</tr>
<tr>
<td>8-11 years</td>
<td>01:30</td>
<td>01:22</td>
<td>01:37</td>
</tr>
<tr>
<td>12-15 years</td>
<td>03:13</td>
<td>03:01</td>
<td>03:26</td>
</tr>
<tr>
<td>16-18 years</td>
<td>03:56</td>
<td>03:37</td>
<td>04:14</td>
</tr>
</tbody>
</table>

Weights applied
### “Extreme” users?

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Mon-Fri</th>
<th>Sat-Sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-11 years</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>12-13 years</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>14-15 years</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>16-18 years</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>28</td>
</tr>
</tbody>
</table>

- **None**
- **Up to 2 hr**
- **2-6 hrs**
- **6+ hrs**
“Extreme” users

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No days</th>
<th>WD or WE day</th>
<th>WD and WE day</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-11 years</td>
<td>91</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>12-13 years</td>
<td>79</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>14-15 years</td>
<td>64</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>16-18 years</td>
<td>63</td>
<td>20</td>
<td>17</td>
</tr>
</tbody>
</table>
Devices used along with screen-based activities

![Bar chart showing predicted hours screen-based activities for 2000, 2015, and 2015.](chart.png)

- **2000**
  - TV: Without device: 2.5 hours
  - Videogames: Without device: 0.2 hours
  - Computers: 0.4 hours

- **2015**
  - TV: Without device: 2.4 hours
  - Videogames: Without device: 0.5 hours
  - Computers: 0.9 hours

- **2015**
  - TV: With device: 1.8 hours
  - Videogames: With device: 0.5 hours
  - Other time with device: 1.2 hours
Other activities when using a device

![Bar chart showing average minutes using device for different activities]

- **School**: 15 minutes
- **Social**: 12 minutes
- **Travel**: 10 minutes
- **Study**: 9 minutes
- **Personal**: 7 minutes
- **Games**: 6 minutes
- **Committed**: 5 minutes
- **Eating**: 4 minutes
- **Sport**: 3 minutes
- **Other**: 2 minutes

*Weights applied*
## Time in other activities and levels of device use

<table>
<thead>
<tr>
<th></th>
<th>Eat</th>
<th>Study</th>
<th>Social</th>
<th>Sport</th>
<th>TV</th>
<th>Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>No device use</td>
<td>0.9</td>
<td>-1.4</td>
<td>-1.0</td>
<td>9.3*</td>
<td>-6.1</td>
<td>-1.1</td>
</tr>
<tr>
<td>Up to 2 hrs</td>
<td>3.1</td>
<td>2.1</td>
<td>-8.6</td>
<td>11.8**</td>
<td>14.4</td>
<td>1.0</td>
</tr>
<tr>
<td>2-5 hrs</td>
<td>2.6</td>
<td>6.2</td>
<td>4.4</td>
<td>1.7</td>
<td>20.2*</td>
<td>-4.5</td>
</tr>
<tr>
<td>6+ hrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001; ** p < .01; * p < .05
Summary

• ½ hr increase in ‘old’ screen-based activities
  • Pronounced among boys’ playing videogames

• A further 1hr 15 min using devices while engaging in other activities
  • Increase in 1hr 45 mins in any activity with a screen-based device

• Device use spread across a wide range of different activities

• Suggestive evidence that device use associated with time in some other activities – exploratory analysis only
Gaps and future work

• Need more information on what children are using devices for along with information about what they are doing while using device

• Not capturing rapid responses to notifications
  • Unknown how much time this would amount to throughout the day

• Work ongoing looking at social aspects of time using devices: e.g. family time

• Need to link reliable measure of time in screen-based activities to indicators of child wellbeing