Changing media environments

Although online media are so deeply integrated into today’s everyday practices, they are still regarded as a “new medium”. Accordingly, empirical research, as well as public and political debate, has focused on questions related to the transition from “offline” to “online”: who uses online media for which kinds of online activities linked with which particular kinds of online opportunities and risks?

With this diffusion and appropriation of online media, the distinction between offline and online is becoming less important. Instead it becomes apparent that online environments are subject to rapid and ongoing processes of change. This includes the increasing role of mobile communication, new technical devices, new services or “apps”, and new individual and societal communicative practices. As a consequence, research must pay more attention to children’s changing online experiences – on the individual level as biographical change, on the level of age cohorts as generational differences, and on the societal level as aggregate changes over time.

This report reflects on the conceptual and empirical work of the EU Kids Online network from a longitudinal perspective: what can we say about changes in children’s online experiences? Some general factors of change are discussed that can be regarded as the relevant context for children’s online experiences, namely, changes on the level of technologies and services and on the level of societal and cultural practices. EU Kids Online’s empirical evidence on children’s online use in different countries shows that the state of internet diffusion matches specific patterns of uses and experiences: on average, children in “advanced” countries start to go online earlier, use a broader range of online services, are more skilled in safer internet issues, but, nevertheless, are more at risk. Thus the societal appropriation of online communication is not a synchronous process across Europe. In addition, longitudinal findings based on repeated surveys on the international and national level, question the intuitive expectation of a linear process of children making an increasingly long, diverse, skilled, and resilient use of online media. Given the complex interplay of many factors of change, there is an urgent need to repeat the comparative survey in the near future.
experiences can be interpreted as the result of some countries being “ahead” in terms of internet diffusion and some countries “lagging behind”. In addition to this cross-country analysis, international and national findings based on repeated surveys are presented that permit longitudinal comparisons based on particular indicators of children’s online experiences. Finally, the conclusions summarise the main findings regarding the most relevant aspects of change in children’s online experiences, and discusses the consequences for longitudinal research design.

Factors of change

In 2010 the EU Kids Online network conducted its comprehensive survey of about 25,000 children aged between 9 and 16 and their parents from 25 European countries (Livingstone et al., 2011). Today, four years later, many things have changed in the online environment. Researchers as well as stakeholders are therefore asking for a new survey with a comparable sample and a comparable questionnaire in order to assess changes in children’s online use and experiences since 2010. However, this assessment of change is not as simple as the logic of a repeated survey might suggest. Children’s online use and experiences are embedded in a broader process of societal and cultural appropriation of online media. As illustrated in Figure 1, this process is shaped by several factors of change.

Figure 1: Factors of change within the process of societal appropriation of online media

According to Figure 1, children’s online practices have to be investigated against the background of two comprehensive contextual factors, as follows.

1) Changes in media access, media supply, and media content. The most relevant drivers of this process are technical innovation on the one hand, and market developments and industry strategies on the other. These two are obviously closely interwoven. Together they result in “what is available for media use”.

Over the last few years the availability and accessibility of online services has continued to increase in terms of regional scope, bandwidth and mobility. Today children are much more likely to have access to the internet throughout their everyday lives than in 2010. In addition, the online environment is characterised by a rapid change in technical devices and services offering new options for online activities leading to new opportunities and risks. It may be assumed that changes in children’s online experiences between 2010 and 2016 (as a possible year for a follow-up survey) are substantially shaped by changes in the online options available. For instance, one of the striking changes since 2010 is obviously the increasing role of mobile devices such as smartphones and tablets.

2) Changes in societal and cultural practices, in the structure of everyday life and people’s interests and needs. This is the media users’ side of the broader change. The main drivers here are, on the one hand, new cohorts of children and parents (this refers to differences between consecutive cohorts or generations of media users). On the other hand, there are changing societal and cultural contexts (this emphasises that the societal and cultural evaluation of digital media is changing, e.g. pressures to stay connected, to be present on social networking platforms, etc.). Again, these two factors are obviously interwoven; together they result in “changing patterns of societal and cultural practices.”

A new survey in 2016 would be based on new cohorts of children and parents as respondents whose (media) socialisation is different from that of the children and parents from the 2010 survey. Thus differences between the two surveys might reflect a specific cohort effect. In addition, given that the diffusion process of the internet is still ongoing, if a new survey retains the same definition of the relevant population (children aged between 9–16 who use the internet) the resulting survey would be based on a different online population. While this effect would be small in those countries that had already reached almost full online coverage in 2010, it would be substantial for those countries where the first survey was based on a sample representing only about 50 per cent of the children’s population. In as much as the diffusion process is stratified by social position and well-known patterns of diffusion processes such as “early adopters” or “latecomers”, the
composition of the new sample would be quite different from the first.

Furthermore, it is assumed that there is a general societal process of appropriating the internet that leads to new social practices that are regarded as up-to-date and appropriate. Thus, in 2016, children’s internet-related activities will have to be interpreted against a different background of social practices and meanings from those six years ago. Any longitudinal perspective on children’s online experiences has to reflect these factors of change in order to interpret meaningfully the processes underlying the empirical observation of changes in children’s online experiences over time.

We now turn to existing empirical evidence, looking at concrete changes in children’s online behaviours.

**Data for longitudinal analyses**

**Cross-country comparisons**

In order to obtain empirical evidence regarding changes in children’s online experiences, an initial approach would assume that countries differ in when they started adopting and appropriating online communication. Cross-sectional data provided by the EU Kids Online survey in 2010 can be used to analyse the process of appropriation. Figure 2 illustrates the argument: the curves represent the distribution of the internet in three illustrative countries. The country represented by the blue, upper curve started earlier than the other countries. The assumption is that empirical differences between the countries as they have been observed in the 2010 survey are (partly) explained by this difference regarding when the countries started their internet diffusion. These differences can therefore be interpreted as indicators of changing patterns of online use.

**Table 1: Building groups of countries based on the status of internet diffusion**

<table>
<thead>
<tr>
<th>Internet users (2009) (%)</th>
<th>Years since 50% internet users</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>&gt;75%</td>
<td>DK, FI, NL, NO, SE, UK</td>
</tr>
<tr>
<td>II</td>
<td>58–71</td>
<td>DE, BE, EE, AT, FR, IT, SI</td>
</tr>
<tr>
<td>III</td>
<td>42–57</td>
<td>HU, LT, ES, PL, CZ, CY, IT, PT</td>
</tr>
<tr>
<td>IV</td>
<td>30–40</td>
<td>BG, EL, RO, TR</td>
</tr>
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</table>

Source: Eurostat

**Longitudinal data**

The second approach to learning about long-term changes in children’s online practices is based on research that includes at least two measurements at different times. An important source for this kind of empirical evidence is the survey conducted by the Net Children Go Mobile project (see Mascheroni and Ólafsson, 2014a, b) in 2013/14. Net Children Go Mobile replicated major parts of the EU Kids Online survey, adding a focus on mobile devices, with about 3,500 European 9- to 16-year-old internet users in seven selected countries (Belgium, Denmark, Italy, Ireland, Portugal, Romania and the UK). Therefore, for these overlapping aspects of online practices and for those countries that participated in both studies, a
comparison between 2010 and 2013/14 is possible (see Livingstone, 2014).

Beyond these two comparative projects are a considerable number of national studies in different countries that provide repeated measurements of certain aspects of children’s online practices. These cannot be analysed in a comprehensive way at this stage. However, in order to provide a wide range of empirical evidence regarding some key indicators of children’s online practices, we also present selected findings from some of these national studies.

Empirical evidence of changes in children’s online practices

Access to online media
With regard to current changes in children’s online access, one of the most obvious factors within the societal appropriation of online media is related to technical innovation, new devices and new services (see Figure 1 above). Net Children Go Mobile data show that children in 2013/14 were more likely to use the internet in their own bedroom than in 2010 (Livingstone, 2014; Mascheroni and Ólafsson, 2014a). Furthermore, between 2010 and 2013/14, the personal computer (PC) lost its dominant position as the technical device to access the internet, while laptops and smartphones became the most common (Livingstone, 2014; Mascheroni and Ólafsson, 2014a). These observations of substantial changes on the level of technical access are supported by several national studies.

The annual JIM (Youth, Information, Media) study in Germany of the media use of 12- to 19-year-olds found that between 2006 and 2013, use of the PC or laptop use as the device for accessing the internet decreased (from 99 to 87 per cent), while use increased of smartphones (from 5 to 73 per cent), tablets (from 0 to 12 per cent), and games consoles (from 0 to 7 per cent) to go online (MPFS, 2013, p.23). These examples illustrate a strong trend towards children using more personalised devices to access the internet (see Mascheroni and Ólafsson, 2014a).

Generally, the primary focus of EU Kids Online has not been how many children from which kind of social background have access to online media. That is why the sample only included those children who already use the internet in order to investigate their actual patterns of use and their experiences. However, there is one aspect related to access that is highly relevant for discussions of online risks and opportunities: the age at which children start using the internet. It is highly plausible that children in countries who are more advanced in the process of societal appropriation of online media are younger when they first use the internet. One argument in support of this assumption is the fact that parents in these countries are more likely to use the internet themselves, and that they have developed more everyday routines based on the internet.

In the EU Kids Online survey, all children were asked how old they were when they first used the internet. Figure 3 shows the average age of first internet use for each age group for the four country groups. For example, the nine-, the nine year-old internet users in Group I countries reported they were younger than seven when they first used the internet, while their peers in Group IV countries were older than seven. Throughout the age band from 9 to 16 there is clear evidence that children in the most advanced countries (lower, blue line) started to use the internet at a younger age, and that children in the least advanced countries (top line) started later. The statistical analysis shows a significant effect of country group, with all differences between the four groups (even that between Groups II and III) being significant and in the predicted order.

The assessment of the average age when children start using the internet is a challenging task in methodological terms. Therefore the overall empirical evidence is unclear. For the UK, for instance, the Net Children Go Mobile data, based on 9- to 16-year-old internet users, do not indicate a clear change compared to 2010. In line with this, German data for 6- to 13-year-olds do not show a disproportionate increase in internet use among younger children (MPFS, 2013c). However, a review of international research that has been done within the EU Kids Online...
network provided clear evidence that younger children are increasingly using the internet (Holloway et al., 2013).

**Use of online media**

Regarding how long children use online media and which particular services they prefer, the implicit assumption underlying public debate is that children in countries with an advanced level of online appropriation would spend more time on the internet, and make use of a wider range of different online activities.

Findings from the EU Kids Online survey on how much time per day children spend on the internet are somewhat ambiguous (see Figure 4). For the older children and young people at least, Group I has the longest duration of online use. The other three groups do not fit with the above assumption. On average, children in the least advanced Group IV countries have the second highest duration of use, and those in Group II countries the lowest. The statistical analysis shows a substantial interaction between age and country group, indicating that in the less advanced countries, younger children use the internet longer than in advanced countries. The opposite is true for older children.

**Figure 4: How long are children online?**

National findings indicate that there is at best a slight increase in the time devoted to using the internet (e.g. MPFS, 2013a; Ofcom, 2013). This is an important observation. In contrast to the dominant story about internet diffusion going along with a substantial and linear increase of online use, the empirical evidence provides a different picture. The impressive growth rates of online use over the last few years are primarily due to the ongoing increase in terms of access. Once we look at the behaviour of those groups who actually use the internet, the changes over time are not that clear. One of the reasons might be that today’s online populations also include many “latecomers”, that is, people who are less interested in online communication than the “early adopters”.

The next indicator for online use is the range of online activities. EU Kids Online data include the number out of 17 different types of online services that were used within the last month (see Figure 5). It is only for 16-year-olds that the four country groups rank exactly as hypothesised. And on average, children in Group IV countries have the smallest range of activities. Besides that, the overall findings are rather unclear and do not support the assumption that societal appropriation of online media goes along with a broader range of children’s online activities.

**Figure 5: Range of online activities**

Empirical evidence from longitudinal research provides mixed results regarding the range and the kind of online activities. On the one hand, findings generally indicate that children tend to use an increasing range of online opportunities; for the UK, Livingstone et al. conclude: “More children do more of most activities now compared with a few years ago” (2014, p. 16). On the other hand, the composition of different broader types of activities seems to be rather stable.

The German longitudinal study JIM uses a classification of four categories: communication (including social networking communities, email, messaging), and searching for information, games and entertainment (including videos, music, pictures, etc.). Between 2008 and 2013 the percentages of these categories within the overall time budget that young people spend using the internet have stayed rather stable; they only show a slight trend towards more entertainment-oriented activities (MPFS, 2013b). The largest part of the online time budget is made up by communication activities (2008: 48 per cent, 2013: 45 per cent), followed by entertainment (2008: 18 per cent, 2013: 24 per cent), games (2008: 18 per cent,
2013: 17 per cent), and searching for information (2008: 16 per cent, 2013: 13 per cent).

As research on children's online use constantly shows, social networking platforms are a key attraction for young people. According to Net Children Go Mobile data, the percentage of young internet users who have at least one profile on a social media platform increased between 2010 and 2013/14, from 61 to 68 per cent, as did the share of those with a Facebook profile. In 2010, 66 per cent of those who had at least one profile on any social networking site (SNS) had a profile on Facebook; in 2013/14 this figure was 90 per cent (Livingstone, 2014).

Nevertheless, the concrete platforms and services that are used by young people constitute one of the most dynamic aspects of online use, sometimes leading to substantial changes over time. This can be illustrated by the shift of 12- to 19-year-olds in Germany away from the German SNS SchülerVZ to Facebook. In 2009, 59 per cent of the internet users in this age group used SchülerVZ and 6 per cent had a profile on Facebook; in 2013, only 2 per cent still used SchülerVZ, while 80 per cent were on Facebook (MPFS, 2013a, p. 26). Another example is WhatsApp. In 2013, among 12- to 19-year-olds in Germany, WhatsApp was the most relevant app, more important than Facebook and YouTube (MPFS, 2013a).

Online skills

Regarding online skills, the EU Kids Online data include a variable that measures the number of online-related skills (out of eight) that the child reported they had (see Figure 6). Findings fully support the hypothesis that children in more advanced countries are more skilled than those in other less advanced countries. Throughout the age band surveyed for this indicator (those aged 11–16), the four-country group rank almost exactly the same along according to this hypothesis. The statistical analysis confirms significant contrasts for all the differences.

The comparison between the EU Kids Online and the Net Children Go Mobile data confirms the assumption that within the process of societal appropriation of online communication, online skills are increasing, and this is particularly true for skills related to internet safety (Livingstone, 2014). Other studies for single countries provide less positive evidence according to which indicators for general media or online literacy are not increasing over time (e.g. Ofcom 2013).

An interesting indicator of skills is the percentage of children who believe that they know more about the internet than their parents. An important finding from earlier analyses of the EU Kids Online data was that children whose parents have reached a higher level of formal education have more online skills than children of less educated parents, but they are less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents. Following this finding we can assume that children in advanced countries, whose parents are more familiar with the internet, will be less likely to claim that they know more about the internet than their parents.
Online risk and resilience
The EU Kids Online survey asked about seven different online risks. Figure 8 shows how many children have experienced at least one of these risks. On average, the findings follow the assumption that risk increases with the ongoing societal appropriation of online communication (Group I: 46 per cent, Group II: 42 per cent, Group III: 38 per cent, Group IV: 36 per cent).

Taking the likelihood of experiencing risk and resilience together, children in Group I countries are most likely to be bothered or upset by something online (14 per cent). However, the ranking of the other three groups rather leads to the conclusion that children’s likelihood of feeling bothered or upset by something online increases with the process of societal appropriation (Group II: 8 per cent, Group III: 10 per cent, Group IV: 11 per cent).

Turning to longitudinal data on changes in online risks, the comparison between EU Kids Online data (2010) and Net Children Go Mobile data (2013/14) for the seven European countries that were included in both studies, the findings indicate a slight increase in children’s likelihood of being bothered or upset by something online (see Figure 10). Some concrete risks have also increased, for example, hate messages and to a lesser degree, porn, cyberbullying and meeting online contacts offline. Only sexual messaging has decreased.
Conclusions

Cross-country comparisons

In order to analyse changes in children’s online uses and experiences, we first started from the assumption that differences between countries with respect to the status they have reached in the process of internet diffusion can be taken as an indicator of change. Following this assumption, the EU Kids Online survey 2010, produced some reasonable findings. Children in “advanced” countries start using the internet at a younger age, tend to spend more time engaged in a broader range of online activities, are more skilled in terms of internet safety issues, and encounter more online risks but tend to be more resilient. These trends are highly plausible, suggesting a cumulative process of societal appropriation of online communication. However, the findings for some of these aspects were inconsistent, indicating that this appropriation cannot be regarded as a linear and uni-dimensional process that all countries follow in exactly the same way.

The EU Kids Online network has proposed a country classification that is based on empirical data concerning children’s patterns of use, their experiences of risk and harm, and their parents’ parental mediation (see Helsper et al., 2013). Table 2 shows how the country groups that have been built in this report – based on independently collected data on internet diffusion – relate to the four country clusters that have been defined based on children’s patterns of use and experience. There is some evidence that the four clusters can be ordered along the line of internet diffusion. All countries whose children were classified as “supported risky explorers” belong to Group I in terms of internet diffusion. Most countries that were characterised as “protected by restraint” belong to Group II. Although the evidence for the other groups is less clear, it can be concluded that there is a substantial correlation between internet diffusion and how children use and experience the internet: 15 of the 25 countries fall into the framed cells of Table 2.

Table 2: Groups of countries based on (a) internet diffusion (Groups I–IV) and (b) children’s online experiences

<table>
<thead>
<tr>
<th>Country classification</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported risky explorers</td>
<td>DK, FI, NL, NO, SE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected by restraint</td>
<td>UK</td>
<td>BE, DE, FR, IE</td>
<td>ES, IT, PT</td>
<td>GR, TR</td>
</tr>
<tr>
<td>Unprotected networkers</td>
<td>AT, SI</td>
<td>HU, LT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-supported risky gamers</td>
<td>EE</td>
<td>CY, CZ, PL</td>
<td>BG, RO</td>
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</tbody>
</table>

Source for country classification: Helsper et al. (2013)

This correlation between the two country classifications supports the assumption that international comparisons can actually provide information about changes over time.

Longitudinal data

The second approach for analysing ongoing changes of online use was based on repeated surveys with the same populations. The most important evidence is provided by the Net Children Go Mobile project, because it includes seven European countries (most other studies refer to single countries only). Generally the findings of these studies support the changes that have been observed by international comparisons. However, once the analysis goes into more detail, differences between countries become apparent, stressing that the process of societal appropriation of online communication is not a linear and uni-dimensional process. While the factor of technical innovation and also the strategies of global online players, particularly Facebook, shape children’s online
experiences across Europe (and beyond), other factors such as local industries and market conditions, and in particular the societal and cultural context and established cultural practices, lead to international variances in how children’s online experiences develop.

Consequences for longitudinal research
This overview of the empirical evidence on changes in children’s online experiences has shown that we have to deal with a combination of different processes and factors that require a combination of different methods. On the one hand, changes are shaped by accumulative and “slow” processes of appropriating online communication, leading to a broader range of activities and increasing skills and resilience. On the other hand, there are those abrupt changes associated with particular devices, services, and apps, offering new opportunities and leading to new risks. These divergent types of change lead to substantial challenges for longitudinal research, such as finding a compromise between keeping its instruments constant, and including new indicators that are able to assess new developments in the field.

Another methodological issue is the changing composition of survey samples across time. Particularly in countries belonging to Groups III and IV, any follow-up study will rely on samples that include far more “latecomers” regarding internet use. Since we know that access and use of the internet is considerably stratified, this means that the new samples represent different parts of the total population than previous samples. Thus, observed changes or stabilities over time can be a consequence of changes of the population under investigation.

This report has shown that a combination of cross-cultural comparison and comparison across time can help to sort out the complex relationship between an overall process of societal appropriation of online communication and many specific varieties of this process as they can be observed in different social and cultural contexts.

References

Further reports available at www.eukidsonline.net

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The EU Kids Online network has been funded by the EC Safer Internet Programme in three successive phases of work from 2006–14 to enhance knowledge of children’s and parents’ experiences and practices regarding risky and safer use of the internet and new online technologies. As a major part of its activities, EU Kids Online conducted a face-to-face, in-home survey during 2010 of 25,000 9- to 16-year-old internet users and their parents in 25 countries, using a stratified random sample and self-completion methods for sensitive questions. Now including researchers and stakeholders from 33 countries in Europe and beyond, the network continues to analyse and update the evidence base to inform policy. For all reports, findings and technical survey information, as well as full details of national partners, please visit www.eukidsonline.net