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of risk and safety**

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Chapter 25
Towards a general model of determinants of risk and safety
Sonia Livingstone, Uwe Hasebrink and Anke Görzig

Introduction

Rapid adoption of the internet and other online technologies is presenting policy makers, governments and industry with a significant task of ensuring that online opportunities are maximised and the risks associated with internet use are minimised and managed. Online opportunities are the focus of considerable public and private sector activity, and diverse ambitious efforts are underway in many countries to promote digital learning technologies in schools, e-governance initiatives, digital participation and digital literacy. The risks associated with the technologies are receiving similar attention through national and international initiatives that address child protection, cyber-security and privacy, and through discussions explaining the potential for state and/or self-regulation.

Policy initiatives assume particular circumstances, understandings and practices applying to children, their parents and teachers. These assumptions may be more or less accurate and well-judged, and at worst, they may be unnecessarily anxious or already out of date. Herein lies the value of direct research on children's contemporary experiences across diverse contexts. But, although technological and regulatory change since the early 2000s has been accompanied by research seeking to understand the social shaping and consequences of internet use, early research tended to be more descriptive than theoretical (Wellman, 2004). However, since researchers seek to understand and predict children's online experiences, mere descriptions of survey findings are insufficient. Consequently, a central feature of the *EU Kids Online* project has been to develop a theoretical framework within which its findings can be interpreted for, in the absence of theory, three problems occur. First, it is difficult to say what 'findings' mean since they are open to multiple interpretations – for example, is a certain percentage large or small, surprising or banal? Second, findings tend to be mere lists of percentages that cannot be connected to the findings of other studies, either in the domain of children's internet use or in relation to other studies of risk in childhood, the nature of parenting, or the role of the internet in adolescent development. Third, theory is needed to generate predictions and, so, to go beyond the particularity of any one dataset in order to anticipate the consequences of different combinations of factors in future situations. In short, theory enables the judicious evaluation of evidence, it extends its relevance into bordering domains and it allows for generalisations beyond the particular.

However, when framing new lines of investigation, such as that of children's online experiences of opportunities and risks, the theory is somewhat thin on the ground, which has tended to impede analysis of survey data in this area. To put it simply, there is no carefully developed, widely accepted, readily operationalised theory of

children's internet use. Thus, when we designed our research initially, despite our substantial review of the literature (Hasebrink et al., 2009), we had only a partly completed jigsaw puzzle, with some obvious pieces in place but also some whose contribution to the larger picture was unclear at the start of our project. Having embarked on our empirical work, the very complexity of the resulting dataset then invited exploration from many theoretical perspectives – first in the construction of the variables and then especially in the examination of their interrelations. Even though some of our initial ideas had to be discarded or substantially revised, as charted in the foregoing chapters, we can now observe that, significantly, the results have broadly converged to support the working model proposed in Chapter 1.

This working model had been formalised first by building on a set of basic questions often posed by researchers, policy makers and the public (e.g. Carr and Hilton, 2009; Internet Safety Technical Task Force, 2008; Livingstone, 2011). These were used to structure the interviews with children and then the data analysis, specifically: how do children use the internet; what do children do online; what online factors shape their experiences and their risk experiences in particular and what are the outcomes for children (in terms of benefits and harms, our focus being on self-reported harms)? These core questions were examined in terms of child and parental perceptions, and contextualised, first, in relation to the circumstances of the individual (i.e., regarding internet use as shaped by demographic and psychological variables) and then in widening concentric circles around the individual, following Bronfenbrenner's (1979) ecological theory of child developmentⁱ. Thus we worked both with the child as unit of analysis, including the immediate social context as shaped by parents, teachers and peers, and with the country as the unit of analysis, focusing on such national factors as socio-economic stratification, regulatory framework, technological infrastructure, education system and cultural values.

Our working model is grounded in several linked areas of theory (Livingstone, 2009). A general influence was the historically and culturally sensitive contextualisation of childhood (Cunningham, 2006; James and James, 2008), which is underpinned by the social theory of individualisation and the risk society in late modernity (Beck, 1986, 2005; Giddens, 1991). More specifically, we applied these theories to new media developments to construct a critical account of moral panics about media in children's lives (Cricher, 2008), complemented by an agentic account of media appropriation, by children (Buckingham, 2008), and within the home (Berker et al., 2006). Together, they refuse over-celebratory notions of 'digital natives', panicky accounts of the dangerous internet, technologically determinist accounts of radical societal transformations and idealised visions of family life. However, these theories can be less helpful for understanding the processes of social development from childhood through adolescence to young adulthood (Coleman and Hendry, 1999) or for grasping the specific affordances of digital media and a convergence culture (Jenkins, 2006). Nevertheless, while there are some disagreements about emphasis or direction, taken together, these diverse theories contribute to a framework able to encompass the fast-

developing body of research on children and online risk (e.g., Hope, 2007; Mitchell et al., 2007; Patchin and Hinduja, 2010; Stern, 2008; Valkenburg and Peter, 2009).

On a more practical level, the *EU Kids Online* survey has produced what essentially is a huge matrix, defined by about 25,000 individual respondents on one dimension, and about 1,000 variables on the other. Typically, theory is built from the relations that structure the variable dimension, though an idiographic account – a typology of individuals – can be derived from the respondent dimension. Ideally, these two should converge in a common account of the important patterns in a dataset. Note that this is to operationalise the above theory, metaphorically and literally, in terms of the general linear model. For the most part, then, we extracted from the dataset a series of conceptually distinct and reliable measures, and sought to understand their intercorrelations, whether simple bivariate associations or more complex paths, through reference to the working model. Some of the chapters in this volume focused in detail on particular parts of the model; others took a wider overview of patterns of relations among the variables. It will also be observed, however, that the limitations of the general linear model (which underpins the multiple regressions and related analyses widely used in this volume) also became apparent in the process, for many social processes are cyclic, with key variables mutually influencing each other bi-directionally. For example, the nature of children’s experiences online leads them their parents to increase or reduce their supervisory activities, this in turn shaping the conditions under which children go online. Similarly, the more children encounter risks through their internet use the more they develop skills and resilience, and this in turn alters how much they go online as well as the consequences of their encountering risk. Ideally, future research would undertake longitudinal studies that could track children’s changing online experiences over time, identifying the path dependencies that progressively enable or constrain the opportunities and risks before them.

A typology of young internet users

To conclude this book and to draw together the many insights and findings in the foregoing chapters, we examine the similarities and differences among individuals in order to propose a typology of young internet users, and then look at the associations among factors shaping online risk and safety. Our motivation here is the recognition that, on the one hand, it is hardly helpful to consider every different way in which each individual child goes online but, on the other, it is problematic that discourses of childhood and of the internet tend to treat ‘children’ as a homogenous category and to construct ‘the internet’ as something unitary and fixed (Hasebrink et al., 2011, Livingstone, 2009). Our research recognises that the internet is complex in its affordances and diverse in its uses, and that children are not all the same. We sought a middle way – identifying some broad patterns in children’s online use to enable the construction of a typology of young online users that allows for individual differences but also permits some general conclusions. The foregoing chapters in this volume reveal that frequency and amount of internet use correlate with variations in the places

where children use when going online. Together, they provide a strong indication of their likely online opportunities and risks. A more subtle account is achieved by including the range of online activities that children undertake, which, in turn, is indicative of their diverse motivations and skills, captured by ‘the ladder of opportunities’ presented in Chapter 6. The end result of combining all these variables was the cluster analysis identifying six ‘user types’ presented in Chapter 10.

While these user types initially were based on online uses and opportunities, what also emerges strongly from the *EU Kids Online* findings is the positive association between opportunities and risks, which suggests that efforts to increase opportunities will be likely to increase risks, and that efforts to reduce risks will be likely to restrict opportunities. When we examine the six user types in relation to measures of risk and harm, a more complex relation to online risks is revealed (see Table 25.1, developed from Hasebrink et al., 2011, in turn developing the earlier research in Livingstone, 2006).

Table 25.1 about here

- ‘Low risk novices’ – average age 11.1 years, this group does not use the internet for long or for many activities. The focus is mainly schoolwork, watching video clips and reading/watching news, all fairly popular forms of one-to-many communication in which the internet is more of a mass medium than an interactive or creative one. Few in this group have social networking site profiles, and participation in risky online activities is low. The risk indicators are very low, but indicators for harm (among those who encounter risk) are quite high, particularly for sexual content and meeting new people. Not surprisingly, given their low digital skills– while at low risk, this group seems vulnerable to harm. Their parents tend to be rather restrictive of their online activities – understandable in the light of their vulnerability yet in itself a factor that may prevent the exploration that builds resilience.
- ‘Young networkers’ – on average 12.7 years old and more girls than boys, this group is less likely than the first group to use the internet for schoolwork or news, and more likely to use social networking sites. They include some interactive experiences as well as mass communication uses, so it is not surprising that their incidence of risk is higher than in the first group, especially for meeting new online contacts offline. However, this group’s greater resilience (possibly due to their slightly higher digital skills), means they report being upset by online risks less than the first group, so they report a lower risk of harm online.
- ‘Moderate users’ – are a similar age to the second group (on average 12.7 years); they spend about the same time online, but engage in a wider range of activities (though not as many as the three succeeding groups) without the clear focus on social networking sites. They are less likely to encounter online risks directly linked to the communicative functions of online media, i.e. meeting new contacts. The general pattern of the results for this group can be characterised by the notion

that opportunities and risks go hand in hand. Thus, some use among this group makes for some opportunities, some risk and, at least in relation to sexual content – some harm.

- 'Risky explorers' –13.5 years on average and more boys than girls, these children spend almost two hours a day online and engage in the most diverse range of activities in our study, including far more risky online activities and also the more advanced and creative activities on the ladder of opportunities. Not only are they the most likely to read/watch news, to download music or films, to send or receive emails, to play games with others and to use webcams, they are also the most likely to create avatars, use file-sharing sites, spend time in virtual worlds and write blogs. Although this group is slightly younger than the next two groups, with a lower level of use than in the 'Intensive gamers' group (see below), they report the most risk encounters. However, looking at the single risks, the likelihood that those who have encountered a risk are bothered by this is comparatively low, particularly compared with the three younger groups. It is possible that these children who have the highest level of sensation seeking (see Chapter 10) have become desensitised to harm, but equally that experiencing risk provides opportunities to learn (how) to cope, which renders them more resilient. Nonetheless, high use is clearly associated with high risk for these children. Perhaps unsurprisingly, their parents are the least restrictive as regards their child's internet use.
- 'Intensive gamers' – are on average 13.6 years and more often boys than girls. They are online for the longest of all (around 3 hours per day) and have a fairly wide range of activities. They like playing games – on their own or against the computer – and watching video clips; and engage in relatively little schoolwork, news or creative activities on the internet. Their exposure to risk is quite high, and some use the internet excessively – and relatively less restricted by their parents. Although high users, they are at lower risk than the previous group (but more than the three younger groups), possibly because the *intensive gamers'* lengthy use is less indicative of risk than the *risky explorers'* comparably high diversity of use.
- 'Experienced networkers' – are the oldest (average 14.1 years), with more girls than boys. They use the internet for less than two hours and have a fairly broad range of activities. They are the most frequent users of social networking sites. They also read/watch news, use instant messaging, post photos or music and write blogs. The most significant difference compared with the other groups is their complete lack of interest in gaming. Their online risk encounters are fairly high, as are their online risky activities, as similar to the previous group. The level of perceived harm is also comparatively low; they are least likely to be bothered by meeting new online contacts offline, but they are more often upset when they encounter bullying online; both may be consequences of the importance they place on social networking and interaction with peers.

What does this typology suggest? First, confirming the emphasis on adolescent social development, the analysis shows that age is the main differentiating factor. Gender is

less important except for marking a well-known difference in preferences for social networking and gaming, and socioeconomic status matters mainly in relation to access rather than use. Second, following the usage hypothesis ('the more, the more'), more use, more opportunities and, it seems to follow, more risk. However, those whose low use is focused largely on one-to-many activities encounter fewer risks than those whose low use includes peer-to-peer communication: thus mode of use, matters. Similarly, among high users, who encounter more risks, it is the most diverse users rather than those who use the internet for the longest period of time that experience the highest levels of risk. Those who use the internet a lot, but mainly for games or *YouTube* report fewer risks than the 'risky explorers' group, suggesting that it is context that affords experimental engagement with web 2.0 applications which lead to most risk. Third, as has been stressed throughout this book, risk of harm does not result necessarily in actual harm. Theories of risk (Breakwell, 2007) emphasise that risk is a probabilistic judgement and, for the most part, the *EU Kids Online* evidence suggests that these probabilities are relatively low. Moreover, the harm from a risk may be greater for some children (low use, low risk) than for others (high use, high risk). Thus, it is crucial to understand how children's vulnerabilities or resilience factors mediate the relationship between risk and harm (Schoon, 2006).

Relationships among factors shaping online risk and safety

The patterning among variables (rather than children), points to some cautionary observations before moving to abstract generalisations. Many results from the statistical analyses in the chapters in this volume are statistically significant, but fairly small in terms of effect size. Thus, it is not possible to propose a 'strong' theoretical model, because much of the variance observed remains unexplained. Also, as noted earlier, cross-sectional surveys cannot measure temporal relations (e.g., which comes first – an upset child or a restrictive parent?); thus, causal claims remain only hypotheses, and cyclic relations cannot be examined. Last, cross-national analysis proved particularly difficult, firstly, because the research literature provides few developed hypotheses (e.g., what, at a cultural level, accounts for country differences in parenting?), secondly, because it was difficult to find reliable external indicators for the factors we hypothesised were important (e.g., there are few robust indicators of country differences in regulatory frameworks), and thirdly, because the few external indicators we were able to identify (e.g., broadband penetration) ultimately explained rather little in relation to the internet use. In what follows, the focus, therefore, is on patterns across Europe, bearing in mind that other causal hypotheses might be tested and new cross-cultural explanations might yet be proposed.

More constructively, the evidence obtained from the very substantial survey of European children largely supports the working model presented in Chapter 1, which does not require substantial revisions. The key features of the model are supported as follows.

In terms of overall structure, usage (breadth and extent) is associated with the range of activities such that both account for degrees of digital inclusion or exclusion (especially by age, but also by socioeconomic status and country); in turn, both usage and activities are correlated with digital skills, resulting in either a virtuous or a vicious circle, depending on the circumstances of the individual child. Also, activities are linked with risk factors, such that more use is connected to more online opportunities and more online risks and, conversely, restrictions on use or opportunities are the most effective but destructive (in terms of resilience building) means of reducing risks. Finally, there is empirical support for one of the project's initial assertions that risks may or may not result in harm, depending on circumstances (many of them explored in the foregoing chapters); equally, although the project did not seek to measure actual benefits, we would hypothesise that, depending on the child's circumstances, undertaking a wide range of activities may or may not result in actual benefits. It might be more accurate to say that, in the demographic, psychological and social (i.e., the offline) context of children's lives, there are both risk factors and protective factors – examples from the research include risk factors such as offline risky activities, and protective factors such as self-efficacy. Similarly, in the online context, both risk factors and protective factors occur – examples from the research include risk factors such as the receipt of unwanted sexual messages, and protective factors such as the use of filters or availability of safety tools.

In terms of Bronfenbrenner's (1979) ecological approach (here, individual, social and national), a focus on the individual user provides the best explanations – here, we identified the clearest relationships. These include the positive correlations between use, activities, skills and risks (cf. the ladder of opportunities). Also, it is important to distinguish between risk and harm, summarised in the overall finding that children who are older, higher in self-efficacy and sensation seeking, who engage in more online activities (i.e., are higher up the ladder of opportunities) and who have more psychological problems, encounter more risks of all kinds online; in contrast, younger children, lower in self-efficacy and sensation seeking, who undertake fewer online activities, have fewer skills, and who have more psychological problems find online risks more harmful. In other words, the explanations for risk and for harm differ and should not be confused.

Overall clear findings at the individual level are revealed – the primary significance of age as a variable structuring almost all aspects of children's experience of the internet; the importance of the psychological variables of self-efficacy, sensation seeking and, most of all, psychological difficulties; and last, the importance of the measure of risky offline activities. This was proposed on the basis of consistent arguments in the research literature that a particular medium – such as 'the internet' – is unlikely to introduce entirely new problems into children's lives; rather, it is likely to change the communicative conditions of children's engagement with others and, thus, enable a degree of migration of risk from offline to online (as discussed in Chapter 12). The evidence from the project strongly supports this initial supposition, inviting further

analysis of the continuities in children's lives across diverse contexts; future research, therefore, should ask many more questions about aspects of children's lives that seem unrelated to the internet, on the assumption that they will become relevant for understanding the significance of the internet. Also, we would propose that it is in these other aspects of children's lives that measures may be found to improve our observations (i.e., effect sizes) and their explanation in relation to internet use.

We explored the level of social mediation primarily in terms of parenting, and future research could further develop the roles of the school, peers and other life contexts in shaping the nature and consequences of online use, activities, risk and harm in children's lives. A particular strength of the *EU Kids Online* survey was that each interview with children and parents posed matched questions, permitting some insightful analyses. For example, although at the aggregated country level it appeared that levels of risk estimated by children and their parents were similar, examining awareness of risk among individual parents matched with the children who had encountered it, parental awareness was low. We found that the greater the parents' familiarity with the internet, the greater their ability to mediate their child's internet use, and the more active and skilled their children in using the internet – and vice versa. Most important, the responses to the matched questions reveal that the children of more restrictive parents encounter fewer risks, but also make more limited use of the internet which could undermine their resilience to harm; this pinpoints the dilemma for policy makers and awareness raisers – should they advise the imposition by parents of rules on their children's internet use, or not? Possibly the decision should depend on the child's degree of vulnerability, as this has been shown to make a difference – less in relation to online risk, but especially to the experience of online harm.

Cross-national explanations were the most difficult (see Lobe et al. 2011). Hypotheses that initially seemed plausible, revealed evidence that seemed far more diverse. Possibly, given a complex situation, a complex conclusion must be drawn. First, although in practice countries are subtly graded in terms of amounts and types of use and risk, we grouped them into four categories. Overall, we found that high internet use was rarely associated with low risk; and high risk was rarely associated with low use: rather, the more use, the more risk. Specifically, in 'lower use, lower risk' countries (Austria, Belgium, France, Germany, Greece, Italy, Hungary), children show the lowest internet usage and they are below average for all risks except meeting online contacts; however, it can be expected that as levels of use in these countries rise, so too will levels of risk. Second, 'lower use, some risk' countries (Ireland, Portugal, Spain, Turkey) show low levels of internet usage, although there is some excessive use of the internet, and some problems with user-generated content. The 'higher use, some risk' countries (Cyprus, Finland, the Netherlands, Poland, Slovenia, the UK) show high levels of internet usage, but high levels of only some risks, possibly because of effective awareness-raising campaigns, regulatory strategies or some strategies of parental mediation of children's internet use. Last, 'higher use,

higher risk' countries (Bulgaria, Czech Republic, Denmark, Estonia, Lithuania, Norway, Romania, Sweden) include both wealthy Nordic countries and east European countries (better called, 'new use, new risk').

There is also some evidence that socioeconomic stratification, regulatory framework, technological infrastructure and the education system all shape children's online risks. Children in wealthier (measured by GDP) countries, encounter more online risk, but, arguably, these countries are also well placed to provide more accessible and user-friendly safety resources for children and parents. Also, in countries where the press has more freedom, such as the Nordic and Baltic countries, children are more likely to encounter online risk. If researchers and policy makers wish to manage risk without introducing more stringent internet regulation, alternative strategies must be found to ensure safety without introducing censorship (as discussed in the next chapter). At country level, somewhat unexpectedly, we found no systematic relation between level of parental filtering and children's risk experiences, although at the individual there is a weak relationship – children whose parents use technical filtering are less likely to encounter sexual content, suggesting a useful role for technical solutions. Rather less unexpected is that the degree of broadband penetration, and length of time that most people have had internet access, are associated with higher levels of online risks, but not a wider range of activities among children. This suggests that, while children are motivated to use the internet everywhere in Europe, higher quality access brings more risks than are being dealt with adequately by policymakers. Last, in countries with a comparatively higher level of formal education, where full-time education continues for most part of adolescents' lives (i.e., for an average of 15 or more years), children are more likely to have better digital skills, as are children from countries where more schools use computers in the classroom; thus education clearly plays a positive role in supporting digital skills, digital literacies and citizenship, and should be supported across all countries.

Time does not stand still

The differences revealed by this pan-European project endorse differences across and within countries and contribute to the wider international effort to understand and influence the changing conditions of childhood. The same questions continue to be asked by researchers, policymakers and the public relating to the value of digital and online media, the digital literacies required to benefit from their use, whether inequalities in access or participation matter, when and how should these technologies be introduced into children's lives, do the opportunities they afford outweigh the risks, and which of the much-hyped risks result in real harm. The *EU Kids Online* project has sought to balance the commonalities and differences in children's lives as they embrace the internet in almost every dimension of their activities. Arguably, Europe has sufficient common history and political-economic realities, as to result in more striking similarities than contrasts in European children's lives, pointing to the value of more international comparisons. Continuing changes in the technological and

social landscapes make for a continually shifting research agenda, with new questions emerging. Key dimensions of these changes include:

- *the technological environment* – the array of increasingly personalised, networked, convergent and mobile media products and services;
- *the social environment* – the changing contexts of media use, as digital and online media are more deeply embedded in diverse spheres of life, blurring the boundaries between home and school, public and private, work and leisure;
- *the regulatory regime* – as new forms of national and transnational governance and new kinds of self- and co-regulatory organisation emerge, with varying degrees of accountability and effectiveness;
- *the practices of childhood* – as children’s agency promotes more digitally literate, creative, participatory and peer-to-peer activities, albeit with considerable variations.

Chapter 25 sought to summarise both what we now know, as a result of the *EU Kids Online* research, and the new questions that are emerging. The final chapter in this volume reviews the implications of these aspects for the linked agendas of policy makers and researchers.

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Table 25.1: Six user types classified by risk and harm

	<i>LOW RISK</i>	<i>HIGH RISK</i>
<i>LOWER HARM</i>	Moderate users	Risky explorers
Age	Younger (12.7 years)	Older (13.5 years)
% girls	48%	More boys (38% girls)
Use (minutes online/day)	Low (71)	High (118)
Online activities (of 17)	Moderate (7.7)	Very high (13.2)
Risky online activities (of 5)	Low (0.7)	Very high (2.1)
Online skills (of 8)	Moderate (3.9)	Fairly high (5.8)
% restrictive parental mediation (reported by child)	Moderate (87%)	Low (69%)
Note:	Exception: high harm for sexual content	Exception: high harm for meeting new contacts
		Experienced networkers
Age		Oldest (14.1 years)
% girls		More girls (67%)
Use (minutes online/day)		High (108)
Online activities (of 17)		High (9.6)
Online skills (of 8)		Fairly high (5.4)
Risky online activities (of 5)		High (1.5)
% restrictive parental mediation (reported by child)		Moderate (81%)
Note:		Exception: high harm for bullying
<i>MEDIUM HARM</i>	Young networkers	Intensive gamers
Age	Younger (12.7 years)	Older (13.6 years)
% girls	55%	More boys (37% girls)
Use (minutes online/day)	Low (72)	Very high (180)
Online activities (of 17)	Low (5.2)	High (9.8)
Risky online activities (of 5)	Moderate (1.0)	High (1.6)
Online skills (of 8)	Moderate (3.8)	Fairly high(5.4)
% restrictive parental mediation (reported by child)	Moderate (87%)	Fairly low (76%)
<i>HIGHER HARM</i>	Low risk novices	
Age	Youngest (11.1 years)	
% girls	50%	
Use (minutes online/day)	Very low (50)	
Online activities (of 17)	Very low (3)	
Risky online activities (of 5)	Very low (0.3)	
Online skills (of 8)	Very low (1.7)	
% restrictive parental mediation (reported by child)	High (96%)	

Endnotes

ⁱ Bronfenbrenner postulated four types of nested systems: 1) microsystem (e.g., family or classroom) 2) mesosystem (two microsystems in interaction) 3) exosystem (external environments which indirectly influence development, e.g., parental workplace); 4) macrosystem (larger socio-cultural context). According to Bronfenbrenner, the roles and norms in each system shape development.