EU Kids Online

Parental controls: advice for parents, researchers and industry

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Summary

This research report provides:

- A thoughtful understanding of the functionalities of parental controls to guide families with children and adolescents to use them wisely;

- A fine-grained analysis of the characteristics of technical mediation, to support parental mediation researchers in the development of up-to-date scales and analysis schemes;

- A substantiated analysis of the potential for the design of the next generation of parental controls that may inspire industry.

The results highlight three important avenues for families, researchers and industry with respect to the use, investigation and design of parental controls:

- First, this report argues for a more nuanced approach towards parental controls that lies beyond a one-sided focus on child protection to avoid over-controlling and over-protective parenting, which is found negatively to affect the development of the child.

- Second, it outlines future avenues for parental mediation research, by pointing out the need to refine existing measurement instruments of technical mediation, to focus more on *how* and *when* parents employ parental controls, and *how* these tools may work (instead of only questioning *whether* parents use them, and *whether* they are effective), and to move beyond the generalised notion of the parent as *protector* and (all knowing) *teacher*.

- Finally, this report addresses industry's accountability in shaping future affordances of parental controls, and making the internet a better place for children.

Introduction

Caring about children's safety is at the cornerstone of parenting. Children's lives are increasingly interwoven with digital friends, settings and phenomena. New online and digital scenarios unfold with the ever-accelerating progress of technological evolutions. Parents, guardians and others responsible for supervising children play an important role in shaping children's media use, keeping certain possibilities open for children to play, learn and socialise, while limiting others.

Parents are confronted with new challenges to safeguard the security of their offspring in online and digital scenarios, as, in particular, mobile media and the 'Internet of Things' introducing opportunities and threats never seen before. Recent technologies have been launched in an attempt to address these challenges, arming caregivers with **digital tools to monitor or track children's digital media use**, i.e., so-called **'parental controls'.**[1]

In this report, we argue that a **critical stance** towards parental controls is paramount as **their functionalities cut both ways**. Notwithstanding all good intentions, the use of parental controls has repercussions that not only involve opportunities with respect to children's safety, but also threats that affect the trust relationship between the parent and child. Zooming in on what these parental controls offer for both the parent and child, this report provides:

- a thoughtful understanding of the functionalities of parental controls to **guide families** with children and adolescents to **use them wisely**;

- a fine-grained analysis of the characteristics of technical mediation, to **support** parental mediation **researchers** in the development of **up-to-date scales and analysis schemes**;

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[1] We use the term 'parents', to refer to the adults who act as the primary socialisation agents, including (step)mother, (step)father, guardian and caregiver. Thus, we rely on a broad notion of 'parents', 'parental mediation' and 'parental controls'.

- a substantiated analysis of **the potential** for the design of the next generation of parental controls that may **inspire industry**.

Parental controls: an overview

An increasing number of parental controls and technology tracking and monitoring technologies are on the market. They are primarily launched as tools, apps or services that parents can rely on in an attempt to keep their children safe. Such controls enable parents, for instance, to prevent children from seeing inappropriate online content, to detect cyberbullying at an early stage, and to limit chatting or in-app purchases. Although parental controls are often equated with filter programs, **the state-of-the art in commercialised parental controls is more diverse**. In what follows, we propose a categorisation of parental controls along three axes: function, implementation, and design initiator.

Function
The functionalities of available parental controls afford restrictive actions, monitoring and safety measures.

Time restrictions
Along the *function* axis, we discern many parental controls that can limit the time children can spend online. Some software applications also allow parents to define in advance the specific time slots during which the child can go online on weekdays and/or weekends.

Content restrictions
First, content restrictions concern *incoming content interventions* such as white lists (filtering content, allowing pre-approved content only) versus black lists (blocking pre-defined inappropriate content). Implementations are based on URLs, for instance, on a list of (un)problematic, (in)admissible websites for children, key words (e.g., white list search engines)**,** age differentiation by detection of technical age labels or according to the age level defined in the software (e.g., adjusted advertising settings, age-restricted content for pay TV services by means of a PIN code), and automated picture analysis (e.g., detecting nudity in pictures).

The level of control parents can exert in setting incoming content restrictions may range from default to advanced user settings that parents can modify according to their (child's) needs and the child's development. The levels of restrictions may also range from de-activated to a middle and maximum level of protection. For instance, when there is no adult registered for the parental control system, the system is automatically set at the highest protection level.

Second, content restrictions can also take the form of *outgoing content interventions*, typically dealing with functionalities for blocking the type of information that can be uploaded or emailed, e.g., preventing the child from sharing personal data.

Activity restrictions
The first type of activity restrictions deals with functionalities for *restricting economic activities*, such as online purchases (e.g., blocking in-game purchases).

The second type comprises of *restrictions of social activities*, and there are countless examples. Tools can limit the people with whom the child can interact (e.g., only chatting with a limited list of friends, no interaction with strangers), and disable features to share content, add friends or interact with others via gaming platforms.

The third type concerns *restrictions of entertainment activities*, e.g., tools for blocking multiplayer games. Often the underlying rationale involves a restriction of social activities, too, because allowing children to play multiplayer games would bring them in to contact with strangers, for instance.

Monitoring and tracking
This last category refers to tools that allow parents to monitor children's online activities, and enable several follow-up actions. These provide parents with an overview (via email or in a report) of their child's browsing history, or send a warning to children if they visit inappropriate websites.

Tools often combine different features listed above. For example, some monitoring and tracking tools allow parents to set content restrictions by blocking specific sites and/or approving in advance which sites the child can see. Other examples are child-friendly browsers, child-oriented, 'safe' searches, and child-friendly online media consumption zones.

Implementation
The second axis of categorisation considers the platform, device or system on which the restrictions and features are implemented. Parental control

implementations frequently come with security measures against malware and viruses.

Overall, we discern six different implementation approaches, on the level of:

- *operating systems,* such as Windows, iOS;

- *web browsers*, e.g., a children's browser that functions as a 'walled garden';

- *computer control software*, i.e., a separate program designed with the primary goal of protecting the child online, typically using a combination of restrictive functionalities;

- *mobile devices*, allowing users to create restricted user profiles to limit access to features and content on tablets or phones. As such, children can only access a limited set of applications;

- *home network*, i.e., router-based solutions that filter internet content *before* it enters the house;

- *game consoles.*

Design initiator

A third and final axis relates to the initiator who technically implements parental mediation affordances *by design*. We distinguish six types of design initiators: *telecoms operators, software providers*, *social networking site owners*, *hardware manufacturers*, *game platform owners* and *content providers.*

In order to comply with national regulations, design initiators such as telecoms operators are often obliged to implement a system of parental controls to prevent particular content being seen by minors. Likewise, more and more hardware manufacturers provide parents with administrator controls to set up a restricted profile for their children (making use of password protection, content and activity restrictions). Other examples are *privacy by design* initiatives to protect children's privacy online. Social networking sites, for instance, include by default strict privacy settings for children (e.g., restricting their ability to share their personal information, show accounts in search engines, share posts and comments to 'friends of friends')**.**

How effective are parental controls?

Previous research on the use of parental controls has not yet reached a conclusive answer on the effectiveness of the tools in reducing children's online risks. Some research supports the effectiveness of preventive software, and in particular filtering, blocking and monitoring software, in reducing unwanted exposure to online sexual material for 10- to 15-year-olds. However, the evidence could not be generalised across all ages, as there was no significant reduction in unwanted exposure to sexual content for 16- to 17-year-olds (Ybarra et al., 2009). Other studies have reported on the failure of parental controls to reduce online risks. For instance, Dürager and Livingstone (2012) could not find evidence that parental technical mediation, such as using a filter, could significantly reduce online risks.

Furthermore, little is known about the parents who make use of parental controls. Parents of children aged 10 to 15 are said to be more likely to adopt filtering software than parents of children aged 16 to 17 (Mitchell, Finkelhor, & Wolak, 2005). Also, concerned parents who do not trust their child when it comes to online sexual content are more likely to use filtering and blocking software (Mitchell et al., 2005). When it comes to the parents' computer skills, Nikken and Jansz (2014) found that computer-literate parents were especially likely to use technical measures. In contrast, Mitchell and colleagues (2005) did not find any significant relation between parental internet experience and filter use.

The contradictory research findings on the effectiveness of parental controls, we argue, are partly due to the fact that **we miss**:

- a clear **operationalisation** of notions of technically mediated parental mediation;

- an up-to-date **categorisation** of the wide diversity of existing tools;

- an in-depth **understanding** of *how* parents use these tools (rather than *whether* parents use them).

The gaps in literature mentioned above may explain why today's survey items in parental mediation studies treat software intended to improve a child's online safety and generic anti-virus programs together, as if it concerns one coherent technology-mediated practice

with a homogeneous set of characteristics (cf. Sonck, Nikken, & de Haan, 2013; Dürager & Sonck, 2014; Nikken & Jansz, 2014). For instance, in Nikken and Jansz' (2014) research on parental mediation of young children's digital media use, the category of technical safety guidance included technology-supported safety measures such as anti-virus programs and spam filters, as well as applications that are purposefully designed to protect children's safety, such as black/white list filters. A reorientation to examine the ways in which parents use these controls, and a broader recognition of the variety of their functionalities, would not only aid researchers in defining more appropriate scales to investigate the use of parental controls; it would also allow us to move beyond the simple question of whether parents use these tools and whether these are effective. Parents do not all use these controls in a similar way; neither do these controls present a homogeneous group of functionalities:

- Parental controls **are integrated in everyday family dynamics** and hence their use may unfold in different, often challenging, ways. To illustrate this, the advent of restrictive filtering software has provoked conflict with teenagers (Mitchell et al., 2005). Children have even circumvented or uninstalled parental controls, for instance, by lying about their age (Richardson et al., 2002). Furthermore, parenting interventions and children's needs and motivational state should be aligned. 'For example, if children are … guided when they are not motivated to learn or already possess the knowledge …, then these parental actions are likely to be counterproductive' (Grusec & Davidov, 2010, p. 692).

- Understanding parental controls **as consisting of more than just an isolated piece of technology** opens up the perspective of locating them **within the ecosystem of media devices and content.** Take an online video channel's auto play option, for example. Parents might trust their young child to watch a particular online video on their own. However, when parents find out that one video is automatically followed by the activation of another, they lose control. Consequently, parents may eventually opt for restrictions to regain control over the time spent watching videos and the media content.

A critical understanding of the affordances of parental controls

Drawbacks of a one-sided focus on protection

The current review of state-of-the-art parental controls clearly shows their affordances focus on **the protection of children**. Similarly, the tools have been primarily studied to evaluate their effectiveness as a response to parental concerns and efforts to **decrease children's exposure to online risks** (Livingstone & Helsper, 2010; Lee & Chae, 2012). Currently, the functionalities of parental controls align well with parents' strategies to **restrict and supervise** their child's **online activities**. The effectiveness of these strategies is supported by the parenting literature. Proactive behaviour control, like rule setting and supervision, lets children know what is expected from them (Janssens et al., 2015). However, restrictive measures come with certain **drawbacks**:

- In parent–child relationships, protection measures in support of children's safety **only make sense in times of stress**. Even punishing children by prohibiting them from using Facebook or playing a particular game (i.e., a parental, reactive behavioural control strategy) may result in opposite effects in the long run (Janssens et al., 2015). Punishments do not teach children values or norms, and increase the likelihood of secret misbehaviour.

- **Parents do not always understand the potential risks their children may encounter**. They may, for instance, either underestimate teenagers' exposure to sexual content (Mitchell et al., 2005), or overestimate it due to mass media messages. Or there can be a mismatch between what parents and children perceive as harmful (Livingstone et al., 2013).

The current one-sided focus on protection may even be detrimental to children's rights and wellbeing.

- When parents want to prevent external online risks (such as harm caused by strangers or cyberbullying) from happening by enforcing top-down restrictions, they are likely to **impede adolescents' right to interact with peers and autonomously engage in the online world**. Moreover, such actions may **worsen internal family dynamics**, e.g., children losing trust, lying about their use of media or refraining from

discussions with their parents about unpleasant experiences.

- Teenagers or adolescents' online experiences are likely to be social in nature. This implies that when parents (unwittingly) monitor their children's online behaviour, they may also **stumble on information about their children's peers and friends**. This behaviour also presents **ethical challenges** beyond the family unit (Czeskis et al., 2010).

Opportunities related to parental support for online self-regulation

Considering the disadvantages of restrictive behaviour, it is opportune to point out other effective protection measures. **Children's internet skills are an important factor in decreasing exposure to online risks**. This finding has three important implications concerning the extension 'from restrictions as an external control to **a parent-child interaction that supports self-regulation** and discernible participation' (Lee & Chae, 2012, p. 260):

- When parents and children communicate well with each other, they can **come to a better understanding of online risky behaviour**. In the parental mediation literature, this is called *active mediation*, and refers to conversations parents initiate to explain, discuss and/or share critical comments with regard to (digital) media content or experiences (see, e.g., Gentile et al., 2012).

- Similarly, when parents consider the use of parental controls – e.g., to monitor adolescents' digital media use – they should engage in discussions about their motives and intentions with their offspring. In addition, parents should discuss the parental control settings that will eventually affect children's (online) activities and privacy. In effect, when parents deploy parental controls to support distant mediation strategies (Zaman et al., 2016), communication supports the development of a mutual understanding of the degree of self-regulation and autonomy that is still granted to the child.

- Since we can never fully protect children online, protective measures also entail solutions that **help children build more resilience to cope with the harm and risks they may encounter** (d'Haenens, Vandoninck, & Donoso, 2013).

Controlling and restrictive measures cannot achieve this goal. While in this respect parental controls are lagging behind, it does open up a window of major opportunities.

Revisiting parental controls and balancing risks and opportunities

When framing the discourse surrounding parental controls around parents' protection responsibilities, **children's rights to provide for their needs or participate in the (digital) world are not addressed**. Each restrictive measure to decrease the likelihood of encountering risks is **also likely to decrease potential online benefits**. For instance, Mitchell et al. (2005) found that parents discontinued the use of filtering and blocking software because it negatively affected young people's educational activities online.

Therefore, when talking about the affordances of parental controls, they should be placed in relation to children's online activities. Interactions with digital media objects and content define children's media consumption, and provide for children's education and entertainment needs in different ways. To illustrate this, when parents take children to the zoo, the encounter with animals meets the children's entertainment needs. The fences in the zoo provide a sense of safety to the guiding parent. As such, interacting with (wild) animals becomes a child-friendly activity. The fences are put in place *because of* the zoo's 'content' – i.e., the animals. Whereas protection against some animals, such as lions, is a valid argument, the zoo's infrastructure affords *more* for children and parents. Apart from (interactive) panels with information about the animals, the zoo can also provide its visitors with challenges and quests that both parent and child can solve, or allow visitors to feed or pet certain animals.

Just like the zoo's infrastructure, **parental controls are to be understood in relation to the World Wide Web's contents**; some are harmful, others not at all. To date, (design initiators of) parental controls solely focus on reducing the likelihood of undesirable side effects. Since these tools are not making use of the whole online 'infrastructure', **they are ignoring the ways in which parental controls can afford positive outcomes for children and for parents**. The technological opportunities to support these have not yet been explored.

The future: towards enabling parental tools

It is only very recently that the American Academy of Pediatrics has revised its recommendations about children's digital media use. They acknowledge that **'media is just another environment'**, where **'children do the same things they have always done, only virtually'** (Brown, Shifrin, & Hill, 2015, p. 54). Their advice for parents and educators is no longer restricted to setting limits. Instead, they are currently also advocating joint engagement and involvement.

Accordingly, parental controls can **support parents** in this process, in addition to offline rule setting and interactions between the parent and child. **Parenting issues will not be solved because 'there is an app for that'**. Parental controls are like the timer we use when baking a cake. It will not replace our actions as amateur chefs, but merely help us to prevent the cake from burning (and we can still ignore it, or not hear it!). Other things can teach us to bake a *better* cake, like a more experienced chef giving us tips on how much sugar to add. In the same vein, parental controls should provide guidance to both parent and child who can appropriate the tools in such a way that they provide meaning in the context of their everyday practices, child–parent relationship and family values.

Parental perspective: no more helicopter apps

In this report, we have argued that the potential of parental controls lies beyond preventive and protective affordances. The tools should not just be conceived of as helicopter apps that serve the needs of parents who would like to 'hover' over their child wittingly or unwittingly at all costs (Clark, 2013; Haddon & Livingstone, 2014). In the end, a more nuanced approach helps to **avoid over-controlling or overprotective parenting,** which is found to negatively affect the development of the child (Janssens et al., 2015).

Instead of (c)overt control, there is evidence that parental support and the creation of clear expectations is more likely to result in less problematic behaviour in adolescents (Janssens et al., 2015). Considering the implications that parental actions have for children's digital media use, novel support-based parental controls should be understood as **facilitators for parent–child discussions** of what appropriate and inappropriate content entails (Hashish, Bunt, & Young, 2014).

In addition, there is potential to **integrate parental controls with the existing,** but fragmented, educational **initiatives** that are spread over various websites, brochures and workshops. On the one hand, this would aid parents and children to make informed decisions about which content to allow (e.g., which apps to install) or what to expect from (in-app) purchases (Marsh et al., 2015). On the other hand, it can help parents to figure out the various settings and opportunities that parental controls afford. In this context, a benchmark study, like the one performed by SIP Bench (http://sipbench.eu/index.cfm), can serve as a basis for guiding parents, helping them to assess critically the available tools.

Indeed, **parents' critical digital literacy** is paramount **for the selection of parental controls** and coping with the variety of **default settings**. The discussions and negotiations surrounding the level of blocking and choice of settings are, in fact, often more important than the choice of the software or hardware itself (Richardson et al., 2002). Similarly, mediating the quality of the content matters more than simply restricting a platform or the time spent with digital media (Brown et al., 2015).

Clearly, the opportunities for parental controls will unfold differently for various age groups and in various contexts. Parental controls can provide instructional scenarios to the parents of the youngest media users to facilitate their taking up a role as capable 'teacher'. Children will then gain relevant knowledge and skills (e.g., critical media literacy). For teenagers, parental controls can support a relationship of reciprocity between the parent and child. In this way, these controls can invite parents to find ways to comply with or show an interest in the activities adolescents (want to) engage in online.

Future avenues for parental mediation research

With this report, we underline the need for **refining** the existing measurement instruments used in parental mediation research to investigate the use of parental controls as an emerging parental mediation practice in a valid and reliable way. We argue that more specific and in-depth studies are needed, if we want to understand the particularities of technical mediation and to account for the challenges and constraints that prevented previous parental mediation researchers from using a nuanced approach. More particularly, we call on future parental mediation researchers to address the question of *how* parents employ parental controls, *in* and for **which circumstances**, and

critically assess the extent to which this differs from the more 'traditional' parental mediation strategies (see Zaman et al., 2016). By more explicitly focusing on the processes and relational dynamics that play a role in parental mediation practices, we underline how this phenomenon is embedded in technological, social and cultural dimensions.

Reflecting further on the next decade of parental mediation research, we argue that it is important to move **beyond the presupposition of the parent as protector and the (all-knowing) teacher**. In this way, researchers can be more sensitive to and gain a deeper understanding of how some parents deal with their (perceived) sense of losing control, or their (perceived) sense of missing the required media literacy skills to appropriately deal with their child's/adolescent's media usage. It also opens up the perspective **that parents are often learners themselves** – see, for instance, Clark's (2011) notion of participatory learning between parent and child. It allows for the fact that the parents' **own socialisation practices and media use are influenced by their children** – in this context, see, for instance, van den Bulck and van den Bergh's (2005) notion of 'reversed socialisation', or Correa's (2014) 'bottom-up transitions' processes.

Industry's accountability

Finally, we would like to point out that **industry plays a key role** in designing the next generation of parental controls (Bleumers et al., 2015; Nouwen, van Mechelen, & Zaman, 2015), as they significantly shape **children's future media experiences** (Donoso et al., 2016). In recent years, several legal obligations and policy initiatives have been defined to foster **industry's accountability** (see, for instance, the EU Commission's initiative, *Making the internet a better place for children*). Acknowledging the influence of commercial agendas, we see that industry has started to respond to children's online safety matters by adjusting their technical solutions to **comply with legal obligations** (e.g., regarding content that can or cannot be seen by children), defining **design heuristics** (e.g., guidelines for *privacy by design* for mobile applications), launching **parental control features**, and/or **awareness-raising initiatives** (e.g., online documentation on a separate security or privacy web page, distributing printed magazines and organising workshops for parents, professionals and educators).

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