

Should We Design for Control, Trust or Involvement? A Discourses Survey about Children's Online Safety

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ABSTRACT

Children are growing up in an increasingly digitalized world and concerns for their online safety picture in research and in public debate. We contribute to the discussion about children's online safety through a discourses survey on public discussions carried out in Finland 2014-2015. We reveal that discourses on control, trust and involvement permeate debates on children's online safety, and we argue that this has important implications on the means that we develop for ensuring children's online safety. While some control is needed, instead of risking to lose their children's trust through restricting or monitoring, parents may want to build a trusting relationship with their children so that they can trust children to make good decisions and that the children trust them. There is a need to build technical mediation that is transparent and facilitates building of trust.

Author Keywords

Online safety; children; web 2.0; social mediation; technical mediation; control; trust; involvement; discourses survey.

ACM Classification Keywords

K.4.1: Public policy issues, K.4.2: Social issues.

INTRODUCTION

I love that I can take all of my social networks with me wherever I go: Facebook, Instagram, WhatsApp, Spotify being the most important ones. My phone holds a lot of personal emotional charge. You are never alone when you have your phone. (N33, child)

This quote is from a Finnish teenager, telling in a news article about how much her smart phone and different social media accounts mean to her. This kind of absorption in online communication has usually been seen as typical for teenagers [17], however it is becoming characteristic of ever younger children [25]. There has been an increase in Internet usage by children under nine years old [16, 44], and in addition to

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watching videos, gaming and doing homework, these young Internet users are socializing in virtual worlds meant for children, or as underage participants in social media meant for teenagers and adults [16]. This is a problem as it has not been established that young children have the capacity to engage with the Internet in a safe manner, especially when it comes to social media [16]

No doubt children today are growing up in an increasingly digital world and their communication as well as socialization, creation, and learning processes are all strongly affected by technology [36]. They are increasingly surfing the web with their mobile devices – smartphones or tablet computers [31]. Being always online and reachable by peers has become routine among children [25] and at the same time their online activities are becoming more private and inaccessible to parental oversight [23]. When this is combined with the fact that adolescence is characterized by heightened risk-taking and independence from parents, and that these tendencies seem to be magnified by the opportunities afforded through online interactions [47], it is quite understandable that adults are afraid for children, the things to which they might be exposed to, and the harm they might end up in [5].

Threats linked with mobile and Internet use are often divided into content threats and contact threats [5]. However, also conduct threats [5] and computer/Internet threats [26] can be included in the categorization. *Content threats* include inappropriate content for children, such as commercial spam and targeted emails/ads (treating children as active consumers) as well as adult/abusive content such as pornography, violence, pro-anorexia and drug related content [26]. *Contact threats* include grooming (adult forming an emotional bond with a child for the purpose of sexual abuse), sexting (sending sexually explicit messages via text or chat), cyberbullying and cyberstalking (using technology to harass someone), and privacy loss [26]. *Conduct threats* include a child engaging in disapproved or illegal activities such as illegal file sharing or bullying others [5]. *Computer/Internet threats* include information security threats like malware (software used to damage a system, to gain access to computers, to gather sensitive information), phishing (trying to get the user to reveal private information

by impersonating a trustworthy entity), data theft/loss, password stealing/cracking but also Internet addiction [26].

In human-computer interaction (HCI) research online safety of children has been addressed from many viewpoints, including parents and their concerns when posting information of their children online [1, 2]. Others have reported on online risks of children's own actions [34] and the means by which the risks could be mitigated [39, 48]. Solutions for preventing certain kind of online behavior of children have been studied [32, 39] while some researchers have argued for children's resilience [48], translucence in the solutions [49], and parental involvement [32] as significant issues concerning children's safety and well-being.

We contribute to this discussion through a 'discourses survey' [40] on public discussions regarding children and their online safety, carried out in Finland in 2014-2015. Our aim is to understand *what are the most germane discourses concerning children's safety online*. The strength of discourses surveys is that the data is not initiated by a research interest, but instead naturally occurring data on everyday thoughts and worries of ordinary people, created independently of any research interest, is examined. This type of data may open up new paths for research and design. Our analysis reveals that discourses on control, involvement, and trust permeate debates on children's online safety in our society. This has important implications both for research and practice: how we design mediational means for ensuring children's online safety.

The chosen research method has the inherent limitation that the ages of the children who were discussed by their parents and other stakeholders, or who took part in the discussions themselves cannot always be known or verified. Even though children of different ages behave differently when they are online, online safety is important to all of them, may they be teens, preteens or younger than that. In this paper, we have therefore decided to use the word child, or children, to refer to legal minors of any age.

This paper is structured as follows: The following section first reviews existing research on the means available for ensuring children's online safety, and then research on trust, control, and parental involvement. After that we describe the research method we relied on, i.e. discourses survey, as well as its implementation. The main empirical findings are illustrated next, while in the last section the main findings are summarized, their implications and limitations discussed, and paths for future work identified.

RELATED RESEARCH

In this section we first review previous research concerning the means taken to ensure children's online safety. Our empirical, data driven analysis enabled us to inductively identify from our data discourses on trust, control, and involvement that permeate public debates on children's online safety. Therefore, we review also existing literature connected with these concepts.

Means for Ensuring Children's Online Safety

The youth join, use, and leave different Internet and social media services with growing fluency and frequency [34]. The fast adoption of the Internet and online technologies presents industry, policy makers and governments the task of recognizing the risks of Internet use and developing strategies and tools, i.e. mediation mechanisms, to ensure that harm associated with them is minimized [33]. Parents, schools, and other children are also involved in a practical way in seeking to maximize online opportunities while minimizing risk of harm [14].

Industry Mediation

The most important method for industry mediation is age limits. Games are age and content rated for example using the Pan-European Game Information (PEGI) established to help parents make informed decisions on buying computer games [35]. Popular social media meant for sharing and discussing user generated content like for example Instagram or Facebook are usually targeted for teenagers and adults and set their age limit to 13 or higher. Sites that contain adult content try to limit their audience to those that are 18 or older. However, most of these service providers rely on users' self-professed age [4], and although they try to limit the services for appropriate users only, this is effective only for screening out accidental access [39] as in the Internet no-one knows if you're as young or old as you say you are.

Additionally, the industry applies different mechanisms to screen off offensive content, using e.g. keyword blacklists or offering users possibility to report offensive content. However, for example most social media use a simple lexicon-based automatic filtering that is not very accurate and might generate false positive alerts. If these systems depend on users and administrators to detect and report offensive content, they can fail to take quick actions. [42]

Most services have also different privacy policies and settings available, but the settings have been criticized for having too weak defaults for younger users [16] and the privacy policies as generally vague or non-transparent [3].

Policies and Educational Efforts

There are efforts underway in many countries to promote digital learning technologies in schools, e-governance initiatives, digital participation, and digital literacy [33]. These include initiatives on e.g. European Union level, such as The Safer Internet Programme and European Strategy for a Better Internet for Children [9]. In Finland topics related to online safety are included at schools in subjects related to the development of media and communication skills [9, 43]. Educational efforts are also made by national actors such as the Mannerheim League for Child Welfare, National Audiovisual Institute and Save the Children. There are also a myriad of educational efforts made by individual researchers and experts, for example guidebooks for children [29, 46], guidebooks for parents [8, 45], and even a prototype of an information security board game [38]. However, educating children about online safety can be problematic,

especially if children feel that they are more competent technology users than their instructors [38].

Social Mediation

The different social mediation strategies employed for reducing the risks that children face online include for example active mediation of child's Internet use (talking to them and offering help), restricting it, or monitoring it (checking the computer, profiles on a social networking site, or messages etc.). Parents are the main agents of mediation about safety. However, the role of teachers also appears to be important. On the other hand, peers play a major role when seeking social support as children turn to them first, whatever the problem. [14]

Even though parents are the most important mediators of children's online safety, they can be somewhat blind to what their children are doing with technology and they might struggle to understand how to set rules and boundaries regarding it, especially as technology today is so personal and mobile. Even though the parents want more transparency in their children's use of the Internet and mobile devices, they might also struggle with their own unfamiliarity with technology. [49]

Technical Mediation

Technical mediation can be seen as an extension to social mediation in a sense that for example a parent or a guardian can install an application to the child's computer or phone. In addition to protecting the device itself from e.g. viruses, other solutions for technical mediation are also available. Those focus mainly on risk prevention [48], for example filtering and restricting unwanted use. However, criticism against these kind of software include, e.g., that they are not very good in blocking non-English language content, and that there is a tradeoff between underblocking (permitting sites that should be blocked) and overblocking (blocking sites that should be permitted) [26]. It is also argued that this kind of preventative approach does not help children build resilience to the online risks that they will eventually encounter [48]. There are also some ethical considerations: although law might give parents legal grounds to monitor their child online to keep them safe it should still be asked if full-scale monitoring is ethically acceptable [26].

Developmental Process

In addition to viewing children's online safety as something that depends on others, it can also be seen as a developmental process of adolescent growth [47]. It has been argued that more use facilitates more digital literacy and safety skills and European pre-teens and teens are usually not unskilled when it comes to online safety [24]. However, children's skills related to online behavior develop differently [43] and their developing moral judgment skills also affect their behavior [47]. The younger children, furthermore, tend to lack in skills and confidence [24].

Defining Trust, Control and Parental Involvement

Trust as a concept has been widely used in e.g. management literature but researchers have also faced difficulties when

trying to find a universally accepted definition for it and the term has been used even in incompatible ways [22, 27]. Regarding trust between children and their parents or other adults, Kerr and colleagues [19] point out that parents have to rely on their children behaving responsibly even when parents don't know where their children exactly are or what they do, i.e., parents just have to trust their children's good intentions, knowing that there is a possible risk for children behaving in unwanted way. In line with this, we define trust based on McKnight & Chervany [27] and in line with Jøsang and Presti [18] as 'the extent to which one party is willing to depend on somebody, in a given situation with a feeling of relative security, even though negative consequences are possible'. However, we do not see trust and control as mutually excluding each other or as opposites. In line with this, Kerr and colleagues [19] suggest that parental trust is based on knowledge of their children's past and present behavior. This knowledge can be obtained by 1) children voluntarily sharing information with their parents ("child disclosure"); 2) parents actively asking for the information from their children ("parental solicitation"); or, 3) parents setting rules and restrictions ("parental control") [41].

Such measures can also be considered as forms of *parental involvement* that is also a multidimensional concept with a multitude of definitions attached to it [10]. However, based on an extensive literature review it has been argued to include 1) parent-child communication, 2) parental supervision, 3) parents' aspirations for children, and 4) parents active participation [10]. Hence, parental trust and parental involvement are connected concepts.

On the other hand, parental control seems also to be connected with trust in the literature. As for a deeper analysis of the concept of control, we were inspired by the work of Kirsch [20] who views control to include all the means that aim at predictable behaviour and categorizes control into four different modes: formal modes of control including behavior control and outcome control and informal modes of control that include clan control and self-control. *Behavior control* is based on defined rules and procedures (In our context: "our family has this set of rules for good behavior and you need to follow them"). In *outcome control* goals are set and achieving them is rewarded (In our context: "when you have collected five stars for good behavior, you will get a new toy"). In *clan control* common values, beliefs, and philosophies are created and acceptable behavior is reinforced (In our context: "in our family we think that this a good way to behave; I will explain you why"); and in *self-control* goals are set by individuals who monitor, reward, and sanction themselves (In our context: "it is good for me to behave this way"). [20] Hence, in our context one can summarize that parents may exercise formal control by setting rules, goals, and rewards for their children's online behavior. On the other hand, through parental solicitation and involvement and by teaching their children appropriate values [32] parents may exercise informal modes of control and at the same time try to create a basis for trust. Close and

caring relationship between children and parents together with appropriate amount of parental control has been deemed to reduce children’s undesirable conduct [11].

Equipped with these conceptual lenses, we will later make sense of the empirical data gathered.

RESEARCH DESIGN

This research draws from the research strategy of ‘nexus analysis’ (NA) [40] that allows a longitudinal study of phenomena and is well suited for researching complex social action. This paper details one important step in the NA research process in order to engage in the nexus of practice: conducting a ‘discourses survey’ (DS) that can be used to e.g. to find the central discourses within an important issue [40]. A discourses survey is conducted by collecting any kind of information about the phenomenon in different media, such as news, websites, and governmental documents but also more informal online discussions in blogs or discussion forums. Data gathered are then analyzed to see which discourses seem to be under current interest [40].

In NA, discourses are seen to exist both at a micro (here and now) and macro (societal) levels. In this paper we detail broad discourses concerning children’s online safety in a societal level. We collected naturally emerging data that reveals how people in our society respond to these issues without any researchers’ intervention. As the purpose was to examine the discourses in the Finnish speaking open Internet, using a search engine was the logical choice for data collection. More specifically, the data collection for this study was carried out using Google search engine. Material concerning children and their online safety was collected using 18 different search word combinations, including for example “children + Internet”, “children + social media”, “children + safety” and “children + information security”. The search was carried out in Finnish language, and the publication dates were limited between 1.10.2014-31.3.2015. In addition, further material was collected by going through the related articles and links in all of the collected materials, and a separate content search was done on the most popular discussion forum of Finland called suomi24.fi. The forum was screened for relevant threads published during the aforementioned time period. The final dataset included a total of 338 sources.

Because Google uses personalization to filter search results, some issues using it in data collection should be addressed. The searches in Google are personalized based on location, search history (Google account), browsing history (cookies), activity in other parts of Google, the device that is used, and what other people have clicked on when they carry out similar searches; Google examines these things using information stored in a cookie with 180 days of data and refines the search results using this information [6, 12]. In this study, no history information or cookies were stored on the PC used for data collection: they were cleared every time the browser was closed; the researcher collecting the data has a Google account but does not connect to it automatically in

that PC and has selected in the account settings for Google not to trace searches; and, every page of the results was gone through, not just the first pages with the most popular items. The PC location was visible, and Google’s local country version gives priority to Finnish language content, but we do not see this as a problem as the search results were already limited in the settings to only Finnish language content. The obtained material (see Table 1) was imported to a RefWorks database together with relevant information, such as author information, keywords, and links to the original location. For easier analysis the data was then transferred to NVivo. In the first phase of analysis, each Internet source was read through, and text was coded into different categories and themes that were seen to emerge from the data concerning mediation of children’s online safety. The process was iterative, and each source was gone through several times until no new categories could be identified. In the second part of the analysis, reports were pulled out of NVivo and discussed in between the authors, in order to find those cycles of discourse that are relevant to our topic. After their identification, the analysis progressed through narrating findings. Here, as much empirical evidence as possible was included in the account. Finally, the findings were compared with existing research and their implications to both research and design were discussed between the authors

Source type	Identification	References
News article	N#	141
Magazine/tabloid	MT#	39
Website	W#	49
Slide share	S#	9
Blog post	B#	41
Discussion	D#	59

Table 1: Source types and number of references

Overall, in these discourses, the voice of the parents was the most prominent one. However, children and teachers also actively took part in the discussions e.g. related to cyberbullying as well as the use of smartphones at home and in schools. In addition, also different kinds of experts took part. The experts include a diverse group of people representing for example the Finnish police, Finnish National Audiovisual Institute, Mannerheim League for Child Welfare, National Development Centre for Online Youth Work, the Youth Service Association, Finnish Society for Media Education, Ombudsman for Children, Finnish Association for Substance Abuse Prevention, Service Operation Boot (volunteers of ev.luth, church), Information and Support Point Tiltti, Information Society Development Centre and information security specialists for example from such organizations as F-Secure and the police.

For the purposes of this paper, all quotes have been anonymized and translated to English by the authors. All of them include a source identification number and the type of stakeholder speaking (For example: N33, child).

DISCOURSES ON CHILDREN'S ONLINE SAFETY

In this section we first examine and exemplify the different categories and themes that emerged from the data concerning the mediation of children's online safety. We will then move on to discuss the inductively identified discourses on control, trust, and involvement that permeated the public debates on children's online safety.

Mediating Children's Online Safety

Active Social Mediation

Active mediation of online safety includes for example guiding children in online safety, either by helping them in the case of difficulty, or by telling them what to do in an upsetting or disturbing situation [14]. Parents were the most vocal discussants of active mediation; may it be concerning the excessive use of smartphones, gaming or cyberbullying:

It is quite same both at a sand box and in social media: It is good to go through the appropriate courses of action with children. At the sandbox they shouldn't start bickering and arguing but play constructively. It is the same with social media. Children learn through playing and restrictions/limits shouldn't stand in the way of learning. (N35, parent)

Electronics, games, Internet and so on are a part of the times we live in and I get that. But it is the responsibility of us, parents, to look after our children online, we also need to learn to trust the children and set a good example for them, instead of closing our eyes and taking the easy way out. (D54, parent)

Gaming is here to stay – it is better to find out what it is about than to be trapped by your own prejudice. (N52, parent)

We haven't started to demonize smartphones either, instead we have taken the approach that the adult will show the child a sensible way to use it. A smartphone in itself is nothing bad. It becomes bad with unlimited use and abuse. (D54, parent)

Teachers saw parents as the main mediators of safety, but the role of teachers and collaboration with parents were also discussed:

Parents should call a spade a spade. Get to know WhatsApp and other social media channels children favor. Parents could be involved in the same social media channels as their children. Ask their kids to be their friends. (N26, teacher)

The best medicine to eradicate bullying is openness. The inclusion of children, the working environment, homes, and in certain cases police and the youth team are involved in the work. (N70, teacher)

In addition, different expert's voice became apparent, especially concerning gaming:

Those that work with the youth invite parents to look at their own attitude towards computer games and gaming. Parents might feel that their child is doing nothing but playing, but they shouldn't assume a negative attitude straight away, but to keep an open mind and try the hobby themselves. (N63, youth instructor)

The adult has the responsibility over what the child is doing and they need to know what games the child is playing. The games should reflect the values of the family. (N47, professor)

Monitoring was mentioned only few times in the discussions, and it was seen to be exercised by parents only. The

discussions centered mostly on monitoring smartphone use. On the other hand, also criticism against monitoring was expressed.

Our daughter has a smartphone and we monitor its use. There are a couple of Angry Birds games installed on it that she can play for about 15 minutes every day. (D54, parent)

You can monitor the web surfing of adolescents from the browsing history, and you can also talk to them and tell them about different things. Somewhere along the line they will face life's realities and raising them in cotton is not good in the long run. (D47, discussant)

It is however important that the relationship between a parent and a child is a trusting one. The child is fascinated by the freedom that the online environment offers. The child should also be given some freedom. The parent should not all the time be monitoring what the child is doing online. (MT14, sociologist)

Restrictive mediation was also exercised, both by parents and teachers. Restrictive mediation was discussed, e.g., in relation to smartphones, screen time and gaming.

On the way to school the phone is muted, and we have discussed that they are NOT to use it at school. (D54, parent)

You can try to control children's use of smartphones during the night by demanding them to turn it off, or muting it for the night. On mute the phone won't be beeping all night as the child gets new messages. (N21, youth trainer)

In our family we try to restrict children's screen time to a maximum of one hour per day. That is the direction that [Mannerheim League for Child Welfare] also advises. I guess we are straight-laced. As I have understood it, every other first grader is spending their evenings mostly with Mario & Sonic and every self-respecting 10-year old spends their days in Instagram or Facebook. (B16, parent)

We have also been forced to restrict gaming strictly to weekends, and 2-3 hours per day even then. Otherwise, the controllers would grow attached to their hands. (D54, parent)

Restricting use was also done regarding age limits, for example related to a child wanting to join some social media services as an underage user:

Every parent of course does what they prefer when it comes to their own child, but I personally won't let my 11y old girl join Instagram. The reason being simply that the age limit to use Instagram is 13. (D53, parent)

Restricting was sometimes found hard, and also criticism against restricting was expressed:

Restricting is many times hard. Even when there would be the need to do so. I think it has to do with parents not having the courage to restrict online activities. Somehow they start from the point of view that just monitoring screen time tells something about Internet use. Or they might have a feeling that they cannot take away their child's laptop or phone. Still, sometimes there is just a need to stay tough – I try to encourage towards thinking that us adults have the responsibility, and above all the right to educate the youth. (W4, Youth Service Association)

If too strict limits are set, the child might start playing in secret from their parents, at a friend's house, or even in the middle of the night. [...] Parents should be more interested in what the child is doing

when they use the computer; simply demonizing gaming is wrong in my opinion. (D54, parent)

Even though schools are allowed in Finland to restrict the use of smartphones during schools hours, and it is visible in media that many choose to do so, some educators didn't see restricting as the right way to go at all:

I do not believe in instructions. We have to approach it through different functions and activities. Then the use will maybe naturally decrease, when you have other meaningful things to do. (N60, teacher)

Technical Mediation

While technical mediation includes firewalls, antivirus programs, ad blockers and so on, the discussions about technically mediating children's online safety mainly centered on parental controls. They were discussed as a solution to keep children from being exposed to content threats such as pornography and other adult material. Mostly, technical mediation was not seen as very effective as many discussants thought children can get around it. Parents might also have trouble finding good parental control software, and using it.

Programs blocking or restricting Internet use are not the only solution to problems. Children learn to bypass them; the most important thing is that they grow an internal understanding about responsible internet use. (N9, media education developer)

Children today are skilled computer users, maybe better than their parents. They know how to remove/bypass parental programs from computers and smartphones so they are of no use. -- Even a 10-year old knows how to bypass these restrictions. They are meant for those who have no understanding for ICT, mainly parents. (D47, discussant)

Parental programs and screen time are an easy solution to try and control the media children use, but using them does not increase our understanding of the phenomenon we are trying to restrict. (B1, media education designer)

Children Mediating Safety by Themselves

Children took online safety also in their own hands, thinking about what they should and should not do online, and also advising their friends:

We talk about what we can publish on social media both with our friends and with our parents. I do not know of any one of us putting anything hurtful there, but we would tell our friends if they did. (N26, child)

On social media, common sense is more important than age limits. You can start to use them, as long as you don't put anything stupid there. Some put quite revealing photos there. But I know what I can publish, and I won't put anything stupid there. (N35, child)

It is nice to talk to friends and play games in the evenings, but it is not good for schoolwork. Even if it were nicer [to continue using a smartphone], we still have to put it away. We hope that kids could control their phone use by themselves. (N30, children)

The main persons with whom children would be discussing their actions on the Internet, and their possible problems, were their parents:

Sometimes I might ask for my mom's opinion if it is ok to put this or that photo on the Internet. (N24, children)

If an unwanted photo appeared online, we would tell our parents, and contact the helpdesk of the social media in question. (N15, children)

Children were also advising parents and teachers, and collaborating with them related to online safety:

The primary school will not ban the use of smartphones during school hours even if the law makes it possible. We have no need for it as, concerning smartphone use, the children have made their own rules that they follow. (N61, teacher)

To prevent [cyber] bullying, the victims themselves should be encouraged to tell someone about it, and the teachers should react as soon as they get informed. Just warning the bully is not enough, appropriate measures need to be taken straight away. The problem could be monitored for a while for example. (N37, children)

Discourses on Control, Trust, and Involvement

An overarching theme through the discussions related to children's online safety was the balancing act of when to *trust* that children will make good decisions, and when to try and *control* children's online activities to keep them out of harm's way. *Parental involvement* was seen to contribute to trust but it can also be considered as a form of control.

Regarding the discourse on trust, parents were advised to *give freedom* and *have trust* in their children:

Trusting your children, and teaching them limits. Learning to behave on social media is the result of collaboration between the child, the parents and the school. Children will end up in places that are not appropriate for them by accident on the Internet and in social media. Then you have to support the child to use these tools and to recognize good content. (N35, parent)

We also need to learn to trust the children and set a good example for them instead of closing our eyes and taking the easy way out. (D54, parent)

It is however important that the relationship between a parent and a child is a trusting one. --- The child should also be given some freedom. The parent should not be all the time monitoring what the child is doing online. (MT14, sociologist)

As becomes evident, trusting children and allowing them freedom are strongly connected with parental involvement. In the sentences calling for trust, activities such as *teaching children, collaborating with children, discussing with children, supporting children, and looking after children* were brought up. Parental involvement was encouraged in order to build trust with children, so that if something bad happened, they would come and talk to you.

Those situations that might come up should be considered/reflected about together beforehand. The child should understand and have courage to speak to their parents if someone suggested something inappropriate on the Internet. (N21, youth trainer)

What is preventing you from asking the child to show you their messages? What is preventing you from talking with your child about everything? Why would you want to break your child's trust in you over nothing? After that it will be much more difficult to

support the child and to take care of them. You cannot spy everything anyway. It is better to keep their trust, so that they will trust your word better and be more open in discussing things with you. (D55, discussant)

The adults should remember that the youth has learned ages ago that their media culture is experienced as something unwanted. Instead of moralizing they need sincere adults to converse with who can support the development of their media skills in this world of screens. (B8, media education coordinator)

Adults were to show interest, and collaboratively help children and develop children's skills and understanding:

Parents should be more interested about what the child is doing when they use the computer; simply demonizing gaming is in my opinion wrong. (D54, parent)

The most important thing is that [the children] grow an internal understanding about responsible Internet use. (N9, media education developer)

School personnel should create a safe environment, where students could easily tell about [bullying]. (N37, children)

Additionally, also parents were seen to be in need of *help and education*. Parents were also *encouraged to familiarize and experiment themselves* with the things that children are interested in:

Adults need more support and more information for example about safe Internet use, on how to find educational and developing games, age limits, setting of limits, media behavior, and source criticism. They hope to keep up with the times so that they can understand what their children are doing online and they wish for the experts to tell them facts about the harmful effects of the moments spent before a screen. (N50, news reporter)

The parents might feel that their child is doing nothing but playing, but they shouldn't assume a negative attitude straight away, but to keep an open mind and try the hobby themselves. (N63, youth instructor)

However, in these public discussion, in addition to the discourse on trust, a discourse on control was also evident. Here, parental involvement was again in a significant position. Parents were to *set limits and restrict and monitor* children.

Our daughter has a smartphone and we monitor its use. There are a couple of Angry Birds games installed on it that she can play for about 15 minutes every day. (D54, parent)

I personally won't let my 11y old girl join Instagram. (D53, parent)

Adults were to have courage to take responsibility and stay tough:

I think it has to do with parents not having courage to restrict online activities. --- Sometimes there is just a need to stay tough – I try to encourage towards thinking that us adults have the responsibility, and above all the right to educate the youth (W4, youth agent)

The adult has the responsibility over what the child is doing and they need to know what games the child is playing. The games should reflect the values of the family. (N47, professor)

Give the child what they need; this is not necessarily the same thing that they want. Limits are love. It is the job of the parents to provide the child safe disappointments. (B16, parent)

Interestingly, however, in this discourse it was not only adults controlling children, but children controlling themselves, e.g., by setting their own rules for cell phone use at school, by saying they would tell their friends if they thought something they posted or uploaded was inappropriate or by asking for help and guidance from adults:

We talk about what we can publish on social media both with our friends and with our parents. I do not know of any one of us putting anything hurtful there, but we would tell our friends if they did. (N26, child)

We hope that kids could control their phone use by themselves. (N30, children)

Sometimes I might ask for my mom's opinion if it is ok to put this or that photo on the Internet. (N24, children)

Children have made their own rules concerning smart phone use that they are following. (N61, teacher)

As a last note we wish to remind that we view the discourses on trust, involvement and control as intimately intertwined. People may be relying on all of those within one sentence; hence, they are not mutually exclusive. Finding a balance between them is most likely important. Even though most discussants agreed that some control is needed, adults were warned that too much of it can be seen as stalking and adults might end up losing their children's trust:

Steering the youth in the right direction, to behave well and to use the Internet as a tool for learning. Not everything that the youth does on the Internet is the parents business. It is a balancing act between being interested and stalking. (W4, youth agent)

CONCLUDING DISCUSSION

This section summarizes the main results, discusses their implications from the viewpoint of research and design and identifies their limitations and paths for future work.

Summary of the Results

We carried out a discourses survey on public discussions regarding children and their online safety in Finland with the aim to understand *what are the most germane discourses concerning children's safety online*. Overall, in our data the voice of parents was the most prominent one. However, children and teachers also actively took part in the discussions. In addition, a number of different kinds of 'experts' took part in the discussions.

In the public discourses concerning mediating children's online safety, *industry mediation* did not gain much attention. Instead, the discussions centered on *social mediation*. To be more specific, active mediation was the trending topic; monitoring and restricting use were done mainly related to smartphone use and game time and sometimes they were also found hard to accomplish. *Technical mediation*, like parental controls, was discussed especially concerning content threats like pornography or

violence, but most discussants discarded it as ineffective. Other technical mediation such as antivirus programs, passwords and firewalls were only mentioned in passing. It is also visible from the discussions that kids acknowledged the importance of online safety, and *children were also mediating online safety* among and by themselves. Finally, different *policies and educational efforts* could be seen to come to play in the form of the variety of experts from different organizations interacting with and advising different parties like children, their parents and also teachers.

We were able to identify discourses permeating these discussions: the discourses on control, trust, and parental involvement. In the data, the discourse on control became evident, when adults were advised to monitor what children do, to restrict children, to take responsibility of children's Internet use and to set limits to it, to teach their children, to be tough, and to direct children. On the other hand, children themselves argued for control: either controlling themselves or asking for adults for help and guidance. On the other hand, the discourse on trust also featured in these discussions. Trust and freedom were advocated as well as parental involvement that in this case included adults familiarizing themselves with what children do, experimenting also themselves, supporting children, discussing with them, showing interest and offering children something meaningful instead of strictly controlling them. These discourses positioned the various stakeholders differently. The discourse on trust positioned children as the ones having and deserving freedom and trust and the adults allowing it and eagerly participating in and showing interest in children's life online. On the other hand, in the discourse on control children were positioned as a group of people that deserves to be monitored, restricted, taught, and directed and adults as the ones who need to have the will and courage to do it. The discourse on parental involvement can be seen as intimately intertwined with both of these discourses. It was, however, interpreted in a bit different ways within these two discourses. Based on this analysis, we conclude that probably this should not be seen as a question of either or, but instead adults need to try to find a balance between necessary control, loving trust and various forms of parental involvement regarding children's Internet use.

Implications for Research

Some of the findings presented in this paper corroborate the findings of previous research. However, some of our findings open entirely new avenues for research as well as point out gaps in our existing understanding.

As regards mediation of online safety, while the importance of active mediation, monitoring, and restrictive mediation by parents and teachers have already generated attention amongst scholars from various fields [7, 14, 28], not much research exists that discusses children mediating online safety by themselves. This definitely warrants future research. There is also an acknowledged need for further research on the role of parents and teachers in ensuring

children's online safety, along with other forms of safety mediation [33]. For example, the effectiveness of industry mediation, technical mediation solutions, and different educational efforts deserves more attention [13].

Additionally to these findings, we argue that fascinating discourses arguing for controlling our children for the sake of their safety and discourses arguing for trust and involvement emerged from the data. The existence of such discourses can be related also to the existing research as there are studies discussing the prevention of certain kind of online behavior of children [32, 39] while some researchers have argued for children's resilience [48], translucence in the solutions [49] and parental involvement [32] as significant issues concerning children's online safety. These studies, however, succeed only to surface this interesting issue, while this study offers a more thorough treatment.

For the concepts of trust and control, we remind that we see them as parallel concepts, not mutually exclusive or opposites. In addition, parental involvement seems to be intimately intertwined with them both. As for the discourse on trust, some discussants argued for adults to allow children freedom and to trust them to behave in a responsible manner. A more moderate position argued for parental involvement to enter the picture: parent-child communication, parental supervision, and parents' active participation in children's online activities were recommended (in line with [10]). These parental involvement dimensions come very close to Kerr and colleagues' [19] discussion of parental trust that is to be based on child disclosure, adult solicitation or parental control, which were all evidenced in our data. Child disclosure was seen for example when children explained that they ask advice from their parents about what they can publish and showed their messages to their parents if asked, while parental solicitation was seen for example when parents were encouraged to ask their children what kinds of social media they use. Finally, parental control was seen for example in the ways the parents were monitoring their children's screen time or game time, or restricting their access, for example by using technical mediation. These, in turn, could all be contributing to building parental trust [22].

It was also interesting to observe how well the categorization of different modes of control (see [20]) fitted our data, albeit they have been derived from a different kind of context. Examples of *behavior control*, such as rules for smartphone use or screen time were obvious in our data. On the other hand, *outcome control* was less exercised but there still were mentions for example about restricting game time during the week so that children can play on the weekends. *Clan control* emerged in the data, too, in the sense of children enforcing their own rules concerning smartphone use at school or families discussing and settling rules for online safety together. Finally, it was very interesting to observe that instances of *self-control* could also be found from the data, such as children contemplating on what kind of pictures they should publish online or how much to use their smart phones.

Overall, we can conclude that the most prominent of these control modes seemed to be clan control, and the less discussed was the outcome control mode.

We also wish to point out that the framework on control we adopted (i.e. [20]) enabled us to show a lot of variety in what control may entail and how it may be accomplished. It was not only adults controlling children, but also children controlling each other or themselves. One may also speculate whether in some of these instances children tried to echo the voice of a concerned adult and say what they expected adults wish them to say (see e.g. [30]). Then again, self-control and peer control among children are certainly necessary if adults truly give children freedom and trust children to be able to make the right choices and engage online by themselves. Hence, it is good news that such control modes emerged in our data. However, further research is needed also in relation to this topic. It would be very interesting to examine each of these control modes in more detail with children and families.

Our results show that currently technical mediation was not much endorsed, as it was seen ineffective and relatively easy for children to bypass. We have to note that although the myth of the “expert” child and the “dumb” parent is visible in the discussion, this is something that is not supported by current research. In fact, for example in Finland children have acknowledged that their parents are more competent media users than children themselves [31]. Furthermore, even if a gap existed, certainly it would be possible to close it by acquiring skills and experience [15].

Implications for Design

Based on our data, active mediation of online safety emerged as the preferred alternative to somehow restricting or monitoring children’s online activities. Earlier research has also acknowledged this trend towards active mediation and suggested that technical mediation should take into consideration not only control for safety but also the fact that parents want to be actively involved in their children’s online activities [32]. Designers have also been encouraged to give the youth access to their own digital footprint to become more self-aware of their potentially risky behaviors and patterns and to build resilience [48]. It has also been recommended that technical mediation should ensure that parental visibility can be accomplished in a way that does not compromise the agency and autonomy that children need in order to mature into independent adults [49].

In the discourses we identified, parents were encouraged to become interested in their children’s hobbies and interests, to get familiar with the services and applications children use, and to teach children how to use those responsibly. While also some control over children’s online activities was called for, instead of losing their children’s trust by restricting or monitoring their Internet use, parents were advised to build a trusting relationship with their children so that they can trust children to make good decisions and that children trust them and know they can come and talk to them

if they have problems. A close and caring relationship between children and their parents is considered to reduce children’s undesirable behavior [11]. We argue that a combination of technical and active mediation would serve both parents’ and children’s interests, giving parents a tool for ensuring children’s online safety but at the same time facilitating trust building between parents and children.

What such solution should be like? We consider it essential that children know that the program is there, and what it will do – i.e. there needs to be transparency [49]. Instead of making hidden programs meant for technical mediation of online safety of children, children should be actively involved in using them. Hence, we suggest that instead of control, we should aim at designing for active technical mediation where both parents and children act as users. This kind of active solution for technical mediation could include features such as customized parental messages that pop up to the children, if they engage in risky behavior, such as using keywords in their Internet searches that the parents have defined as being harmful in the program settings (e.g. related to sex, violence, or pro-anorexia content). In addition, an option for parents to input selected search words could address the problem that the programs are not typically effective in blocking non-English language content [26].

When encountering the messages from the parent, the child in turn should have the option to either stop their risky behavior, or ignore the messages and continue with what they are doing. The freedom to choose would show the child that the parent trusts them to make good decisions, and the option to ignore the parental messages would also take into account that adolescence is characterized by the growing need for independence from parents [47]. The option to bypass the parental messages and “go ahead to see boobs” could help children to build resilience to the online risks that they will eventually encounter [48], as well as help to secure agency and autonomy of children [49].

If the child makes a decision to continue with the risky behavior despite parental warning, the parents of course want to be notified of it. This should not be done in secrecy. The child should also be made aware by the program that this will happen if they choose to continue. However, when reporting to the parents, the program should take into account the child’s right for privacy, and information provided to adults should be modified accordingly. If the report was to be for example weekly, there should be an option to modify what it contains, so that the parents and the child can negotiate this together and perhaps change it over time. The report could, for example, be modified to include only a summary of the search results but not include the number of instances, times, or the specific search words.

Overall, we think that a solution such as this would take into account the ethical considerations related to technical monitoring [26] as well as contribute to maintaining a trusting relationship: parents would know when there is something to worry about, and children would know that

their parents care, and have some understanding of what their children do online, but children would not need to feel like being spied on. This kind of a solution could also encourage parents and children to discuss further their actions and to negotiate shared rules and limits of appropriate behavior, for example through exclusion or inclusion of certain search words in the program settings or the content of the reports received. In this sense, such a solution would also include elements of clan and self-control [20], families settling these issues in collaboration and children gaining understanding of what is appropriate behavior.

We acknowledge that designing and implementing this kind of technical systems can be hard because they have to be very flexible. One thing that the developers of such systems need to take into consideration is the varying requirements of children of different ages; a technical solution that fits a six year old might look very different than one meant for mediating the online safety of a 16-year old. Also not only do children grow and develop, but parenting styles differ from family to family and pose different needs for such systems. Therefore, we also suggest designing such a solution in collaboration among children and adults. This kind of approach would be in line with the central interests of the IDC community: supporting children's participation in design of technologies they use. Designing for children's safety or security solutions is no exception here, although the design methods used might need some adjusting to make the experience meaningful for children (cf. [37]). Inter-generational and multi-perspective design team is likely needed here, as the existing research, in addition to our results, has shown that various kinds of perspectives and values can be associated with means and tools meant for ensuring children's online safety [32]. In addition to children and their parents, also teachers or industry representatives may be invited into these teams, as well as representatives of the numerous expert groups identified in this study. Such design work would enable voicing, negotiating and hopefully also integrating the viewpoints of this variety of stakeholders. The basis for the design sessions could be e.g., the discourses identified in the current study (trust, control, involvement) as well as the formal and informal modes of control presented by Kirsch [20], to give the design discussions a neutral starting point but still covering the central issues related to mediation.

In the end, we wish to point out that from the point of view of children's rights, it is crucial to recognize and acknowledge that media culture is part of children's daily lives from the earliest age. Instead of controlling and restricting children too much we should enhance their supply of information and offer them opportunities for self-expression and participation as well as opportunities for adult support and awareness [21, 33].

Limitations and Paths for Future Work

As is evident both in the previous literature and in our data, children's online safety is an issue that requires teamwork of

many different parties. While a discourses survey is a good starting point for exploring emergent themes in this area, also other methods are needed for capturing the complex interplay between different actors involved in the mediation of children's online safety; children and their friends, parents and extended families, teachers and so on. Discourses survey provides a totally researcher independent glimpse into the germane discourses characterizing the topic, while other methods are needed for more focused studies with the above mentioned stakeholder groups. Overall, more empirical research concerning parental control, trust and involvement in children's life online is warranted. We plan to carry out such research, within which we will study how children as well as their parents and teachers approach and appreciate online safety, and how they think solutions for online safety mediation should be developed.

SELECTION AND PARTICIPATION OF CHILDREN

This paper details the results of a discourses survey concerning children's online safety in a societal level. The survey was carried out in the Finnish speaking open Internet in order to collect naturally emerging data that reveals how people in our society respond to these issues without researchers' intervention. In addition to the voices of stakeholders such as parents, teachers and youth workers, children's voices were heard in this paper for example through the medium of news and magazine articles, discussion board comments and blog posts. It should be noted however, that the participants claimed they were children or they talked about children, but we had no possibility to verify the actual ages represented or addressed in all materials: in the Internet no-one still knows if you are a dog, or as young or old as you say you are.

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