

# PARENTAL MEDIATION OF YOUNG CHILDREN'S INTERNET USE

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## ABSTRACT

Children are using the Internet at younger and younger ages. So far, however, we know little about how parents guide young children's online activities to prevent risks. Filling this void an Internet-survey established empirically which media guidance strategies 792 parents of children (2-12 years) in the Netherlands used. As was established in former television and game research factor analysis revealed that parents also applied 'co-use', 'active mediation', and 'restrictive mediation'. In addition, parents also applied new strategies: 'supervision' i.e. keeping an eye on the child from a distance, and using safety software applications. Mediation types were mainly predicted by the child's age and online behavior, such as gaming and social networking. Also, parents applied more mediation when they expected positive effects and particularly when they expected negative effects of the Internet, indicating that parents deliberately adjust their mediation to the child's needs and interests. Mediation was also predicted by the number of computers at home, and the parent's gender, education and computer / Internet skills.

**KEYWORDS:** young children, Internet, parental mediation, social networking, casual gaming

## Introduction

Recent studies in the US and Europe have established that many children even in their toddler and preschool period already use computers (Livingstone & Haddon, 2009; Rideout, Vandewater & Wartella, 2003; Rideout, Foehr & Roberts, 2010). For most children of this age the family is the natural context for accessing the Internet and contemporary families can be characterized as 'networked households' where "each household member functions as a semi-autonomous actor, with her/his own agenda" (Kennedy & Wellman, 2007). Since the actual autonomy in realizing personal goals within the family is dependent on the members' role and age and since (young) children generally still operate within the

structures defined by their parents in this paper we investigate how parents guide the Internet use of children aged between two and twelve.

Several studies documented the extent of parental worries about new media and the mediation strategies they used to cope with their worries about, for example, the impact of videogames, Internet content or the time their children spend online (Eastin, Greenberg & Hofshire, 2006; Livingstone & Helsper, 2008; Nikken & Jansz, 2006; Van den Eijnden, Spijkerman, Vermulst, Van Rooij & Engels, 2010; Rideout, Foehr & Roberts, 2010; Livingstone, Haddon, Görzig, Olafsson, 2011; Ofcom, 2011). The research showed clearly that the application of parental mediation was related to the risks parents perceive in online activities, as well as to the child's age: early adolescents more frequently experienced their parents' interference than older teens (Courtois et al., 2011; Livingstone & Helsper, 2008; Nikken & Jansz, 2006). This raises the question whether the frequency further increases when pre-adolescent children are the object of parental mediation. Previous Internet research does not provide an answer as it has been concerned almost exclusively with adolescents and their parents. The lack of research on parental mediation of young children's new media use reflects the general void in the literature with respect to the online activities of children below 12 years (Hasebrink, Livingstone, Haddon & Olafsson, 2009).

We consider it a priority to start filling this void for two reasons. Our first reason is concerned with the Internet landscape. Websites and online platforms aimed at children, even as young as 3 or 4 years, are plenty and many children younger than 12 years go online, even though their skills to use the Internet are not yet as elaborated as that of adolescents (Hasebrink et al., 2009). In 2008 in Europe for example on average 60 percent of the children aged 6-10 years were online (Livingstone & Haddon, 2009). Especially in countries with a high Internet penetration like Denmark, the Netherlands and the UK among the 6-7-year-olds, already almost three quarters used the Internet. In the USA, 12 percent of the 0-3-year-olds and 30 percent of the 4-6-year-olds went by themselves to a children's website (Rideout et al., 2003) and 8-11-year-olds on average spend 46 minutes per day on the Internet (Rideout et al., 2010).

Our second reason to study parental mediation of Internet users between 2 and 12 years is that mediation at this age is probably more effective than during adolescence. In that period the child's development towards independence may run into conflict with parental guidance, because peers who may set different standards become increasingly important (Nathanson, 2001a). It was indeed found that adolescents particularly opposed technological measures limiting their freedom online (Byrne & Lee, 2011). Furthermore, 'rebellion', i.e. circumventing safeguards and online restrictions was more prevalent among older adolescents as compared to children in the 10-12 age bracket (Lwin, Stanaland & Miyazaki, 2008).

The first goal of the present study is theoretical. We aim to contribute to the emerging theory on different types of parental mediation by critically discussing previous contributions and applying that knowledge to parental mediation of the youngest group of Internet users. We will inform our theoretical account by the results of a large survey among a representative sample of 792 parents investigating what kind of mediation they apply to the online activities of their children aged 2-12 years. The second goal is to develop an instrument to assess parental mediation of young children's Internet use. Former instruments empirically constructed by Livingstone and Helsper (2008) and Nikken and Jansz (2006) measuring parental guidance of adolescent's new media practices provide a good starting point and will be transformed to younger users. Finally, we aim to explore links between parental mediation and the family's media ecology by measuring parental *attitudes* with respect to new media and by asking parents to assess their *digital skills*. We expect their attitudes and their own position as expert or novice to be important determinants of their interventions.

### ***Types of parental mediation***

Both the conceptualization of parental mediation in earlier studies and the empirical results of previous television and game research among parents and children provide us with elements of a concise mediation theory (Mendoza, 2009). 'Parental mediation' refers to the interactions that parents have with children about their media use. It is divided in three types (restrictive mediation, active mediation and co-use of media) that were validated empirically and turned out to be applicable to both television and videogames (Austin, 1993; Bybee, Robinson & Turow, 1982; Koolstra & Lucassen, 2004; Nikken & Jansz, 2006; Van der Voort, Van Lil & Peeters, 1998). *Restrictive mediation* concerns exercising control on the amount of time children spend on media and on the contents they are allowed to use. *Active mediation* is instructive or normative and amounts to sharing critical comments including the explanation of complex content (Austin, Bolls, Fujioka & Engelbertson, 1999; Valkenburg, Krmar, Peeters & Marseille, 1999). *Co-use* amounts to watching or playing together as a deliberate strategy to share children's media use (Van der Voort, Nikken & Van Lil, 1992; Nikken & Jansz, 2006). Former research and theory has thus established that parents can use at least three different types of mediation to guide their children spending time on television and videogames.

### ***Mediation of online activities***

It is yet undecided whether the concise theory of parental mediation is as much applicable to Internet use as it is to watching television and playing videogames.

Using media has increasingly turned into a solitary activity for all members of the networked household; either in separate spaces, including children's bedrooms, or on mobile platforms (Kennedy & Wellman, 2007). Among adolescents this pattern is discernable with respect to surfing the web, as well as using other (mobile) media (Holloway & Valentine, 2003; Livingstone & Bovill, 2001; Rideout et al., 2010). This individualization, however, problematizes mediation as it is difficult if not impossible for parents to apply active mediation or to engage in co-use under these circumstances. Applying restrictive mediation also is less straightforward in the case of private online access. Following Livingstone and Helsper (2008), parents however, may be more involved to guide their children's Internet use, because online risks (e.g., pornography, cyberbullying, direct contacts with strangers) are highly publicized. This may determine parental attitudes towards the Internet and increase their worries including personal concerns about their children lacking the skills to cope with the risks. Also, it may decrease their expectations about positive effects of the Internet for children. Therefore, parents may lose confidence in the types of mediation they habitually apply and start looking for new strategies.

A first set of studies investigating parental mediation of the Internet indicates that traditional parental mediation styles are also applicable to Internet use (Kirwil, 2009; Lee & Chae, 2007; Lwin et al., 2008; Warren & Bluma, 2002). The researchers generally followed a deductive approach in which they drew items or scales from television research and used these in an adjusted form to measure a priori defined styles of Internet mediation. The results showed that parents applied the familiar types of restrictive and active mediation also to online activities and that a few parents were engaged as well in co-using the Internet with their children.

The results from Livingstone and Helsper (2008) suggest that the theory on parental mediation must be expanded in order to cover mediation of Internet use. In an exploratory factor analysis, Livingstone and Helsper found four types of parental mediation that differed from the three types that were distinguished earlier on the basis of television and games research. The first type of Internet mediation was labeled 'Active co-use'. It consisted of nine activities that would have been categorized as active mediation, restrictive mediation, or co-viewing / co-playing in the previous concise theory. The researchers surmised that co-use for the Internet is by definition active or restrictive, because conversations with the child are more probable than when viewing television or playing games together. Livingstone and Helsper's second type of mediation, 'Interaction restrictions', encompassed bans on five activities by which children keep in touch with others (in particular peer-to-peer online interactivity). The third type of mediation was using 'Technical restrictions' including the installation of various filters and monitoring software on the computer. Finally, the fourth type was labeled 'Monitoring'. This strategy involved that parents check the teenagers' online activities afterwards, such as the

e-mail messages that they had send or the websites they had visited. Livingstone and Helsper used the factor analysis to construct scales for measuring the four types of parental Internet mediation that were discussed above. At the same time, however, the authors noted that further research is necessary because their factor loadings were not entirely consistent.

Previous research indicated on the one hand that the theory of parental mediation must be developed beyond a differentiation between restrictive mediation, active mediation and co-use. On the other hand, a few studies showed that these three types of mediation were as applicable to the Internet as they were to television and videogames. Our first research question intends to gather a new set of empirical data as a contribution to further developing the theory on parental mediation styles of the Internet.

RQ<sub>1</sub>: Which types of mediation do parents practice when guiding their children's Internet use?

### ***Parental mediation embedded in the family context***

Previous research on television, video games and the Internet so far provided insights into which characteristics are related to parental mediation, such as the family's demographics, the family's communication style, the parents' own media experience and related skills, their attitudes towards media, the context of using media in the family and, finally, the actual media content that the child uses. However, how these characteristics are interrelated has not been studied extensively yet.

Following Austin (1993), we assume that the view of parents on media effects, as well as their own experience with the media, is a prerequisite for the mediation of the child's media consumption. The guiding of children's media use has indeed been found to be related to the frequency and quality of the parent's own media use. Parents who were heavier users of the Internet or who devoted more time to gaming themselves were more convinced about positive and about negative effects of the media on their children (Nikken, Jansz & Schouwstra, 2007; Livingstone & Helsper, 2008). In addition, parents embracing a positive attitude towards the effects of media on children more often applied active mediation and more often engaged in co-viewing and co-playing (Austin et al., 1999; Bybee et al., 1982; Nathanson, 2001b; Nikken & Jansz, 2006; Nikken et al., 2007; Van der Voort et al., 1992). Worried parents, on the other hand, were inclined to restrict television watching or video gaming more often, although they often also combined it with actively discussing program or game contents with their children (Nathanson, 2001b; Nikken & Jansz, 2006; Nikken et al., 2007; Valkenburg et al., 1999; Van der Voort et al., 1992, 1998). Furthermore, parents reported lower

levels of perceived risks for their children with respect to online pornography and undesired online contacts when they had installed monitoring software (Livingstone & Helsper, 2008; Kirwil, 2009), and showed a higher interest in videogame ratings when they feared the negative impact of videogames (Nikken et al., 2007). Finally, it is conceivable that the parent's attitude on media effects translates from one medium to the other. Parents, who were more worried about negative effects of television not only often discussed that medium with the child, but also more often talked about websites on the Internet and more often went online together with the child (Warren & Bluma, 2002).

With respect to demographics it was found that all forms of parental mediation were more often directed towards younger children and girls than towards older children and boys (Austin et al., 1999; Nathanson, 2001b; Nikken & Jansz, 2006; Van der Voort et al., 1992, 1998). In addition, mothers applied most types of mediation more frequently than fathers (Nikken & Jansz, 2006; Valkenburg et al., 1999). Higher educated parents more often reported to regulate their children's media activities, but this turned out to be applicable only to television as the reverse was true for games (Austin et al., 1999; Nathanson, 2001b; Nikken et al., 2007; Valkenburg et al., 1999). This was most probably due to the higher prevalence of videogaming in lower social economic households (Nikken et al., 2007).

The actual content of websites children visit was found to have consequences for parental mediation as well. Children predominantly visiting educational sites more often experienced co-use and website recommendations by their parents, whereas children who were highly involved in online peer-to-peer activities were more often guided by co-use (Lee & Chae, 2007).

Finally, previous research suggested that situational characteristics of the family context at home are relevant for parents' mediation practices as well. First, paying attention to the child's whereabouts is more difficult for single mothers and fathers than for married parents (Brown, 2010). This may apply to the child's media use as well: Koolstra and Lucassen (2004) noted that especially mothers had less knowledge of their children's television viewing behavior when they worked more hours per week and when there were more television sets in the home. According Rideout et al. (2010) this might also apply to both the number of computers in the networked household, and their location: locating (mobile) devices outside the living room complicates parental regulation.

We used the results from previous research to formulate the next set of research questions to guide this study.

RQ<sub>2</sub>: How do parents' guidance practices relate to their perceptions of online risks and positive influences of the Internet on children?

RQ<sub>3</sub>: Do Internet mediation practices differ among parents with regard to their own and their child's demographics, their use and knowledge of the Internet, and the place and amount of computers in the house?

RQ<sub>4</sub>: How are parent's guidance practices related to the types of content that children visit on the Internet?

## **Method**

### ***Sample and procedure***

An online survey was submitted to a sample of Dutch parents with one or more in living children. The representative sample was drawn from a large panel of people willing to participate in research (> 20.000 members). In all, 3.675 parents agreed to cooperate of which 1.079 parents fell within our criteria as they had at least one child between 2 and 12 years. Of these respondents 287 parents (26.6%) had children that hardly ever visited the Internet, whereas 792 parents (73.4%) reported that their child was online on a regular basis. These 792 parents constituted the representative sample in this study.

The sample included slightly more mothers (53.2%) than fathers; the parents had an average age of 40.1 years (varying from 20 up to 55 years). Parents reported a little more often about their daughters (51.1%) than about their sons. The average age of the children with Internet experience was 8.8 years. We compared the demographics of our sample with the 287 parents that had indicated that their child never was online. The parents' level of education and the gender of the parents and the children were similar in both samples. The notable difference concerned age. In the sample of Internet users both parents and children were on average 4 years older than in the non-Internet group.

The decision to address parents through an online survey was made because of the advantages of this method (Das, Ester & Kaczmirek, 2010; Evans & Mathur, 2005). First, an online survey is a cost efficient way to question large groups of respondents and the chances that participants submit the completed questionnaire are far higher compared to traditional mail surveys as a result of the immediate interactive question-answer procedure. Second, participants complete the questions at their own pace and can reread questions when in doubt about the actual meaning, something which is not possible during a telephone interview. Finally, an online survey grants the privacy of the respondents because answers are fed individually to the computer, which reduces interviewer effects and the risk of social desirability in answering.

But some of the advantages of online surveys are also potential liabilities (Evans & Mathur, 2005). A possible disadvantage is the uneven distribution of Internet

connections. This problem, however, hardly holds stake in the Netherlands, because almost all households with children are connected to the Internet (Duimel & De Haan, 2007; CBS, 2011). A second possible disadvantage is that online questioning inevitably results in uncertainty about who is actually answering the questions. This could only be obviated by face-to-face interviews, or possibly a telephone survey. However, we thought it unlikely that parents would be motivated to change their identities. We therefore concluded that the possible disadvantages of misconstrued identities were outweighed by the advantages of an online survey.

### **Measures**

The parents were first asked some questions about themselves followed by several questions about their child. The parents were asked to keep their oldest child in mind that was in the age category of 2 to 12 years.

*Types of parental guidance.* The first set of questions was concerned with technical measures to create a safer online environment. Parents were asked for 9 different software applications whether they used these. The presence of an application was coded as 1, the absence as 0.

The second set of questions related to parental mediation. Based on Livingstone and Helsper's (2008) result on monitoring, we included two items to measure this type of mediation, whereas another 27 items measured restrictive and active mediation, and co-use (as the logical corollary of co-playing and co-viewing). For each activity the parents were asked to indicate on a five-point scale ranging from 'never' to 'very often' to what extent they used that kind of guidance. All questions were asked in a random order.

*Use of the Internet.* Parents indicated both for themselves and their children how many hours in an average week they were online (0-2 hours, 2-4, 4-8, 8-12, 12-16, 16-24, and 24+ hours). Almost a third of the parents used the computer 4 to 8 hours per week (27.4%), whereas 21.0 per cent said they were online for 8 to 12 hours. The rest of the parents were equally divided in heavier or lighter users of the computer. The children were significantly less often online than their parents. According to the parents in a regular week most children were online for up to 2 hours (29.5%), 2 to 4 hours (29.5%) or 4 to 8 hours (26.6%). A minority of the children (9.1%) used the computer between 8 and 12 hours. Even less children were online for more than 12 hours per week.

*Length of children's Internet sessions.* The parents estimated the amount of time spend on each session. The possible answers varied with intervals of 15 minutes from 'less than 15 minutes' to '90 minutes or longer'. It turned out that 1 out of 5 children went online for up to 15 minutes per session. Somewhat more



than 1 out of 3 children (34.3%) were between 15 and 30 minutes online per session, followed by 27.5% of the children that were up to 45 minutes online, and 21.8 per cent of the children that used the computer between 45 and 60 minutes per session. About 1 out of 9 children (11.1%), according to their parent, used the computer more than 60 minutes every time they visited the Internet.

*Online activities.* For eight different online activities the parents reported on a five-point scale from 'never' to 'very often', how often their child used the computer. The items pertained to activities for personal use as compared to using the computer for school. The activities were presented to each parent in a randomized order. Principal components analysis showed three types of online activities. The factors explained 30.6, 26.8, and 13.1 per cent of the variance. Based on the analysis three scales were constructed by averaging the items of the corresponding factor: (1) 'Social interaction' (visiting social networking sites, keeping in touch via MSN, using Hotmail or Gmail, and visiting virtual worlds such as Habbo, World of Warcraft or Stardoll;  $\alpha = 0.83$ ); (2) 'Casual gaming' (the very short and fast-paced browser games; measured by one item); and (3) 'Consuming entertainment' (listening to music, downloading music, and watching video clips on YouTube;  $\alpha = 0.70$ ). Children on average used the Internet mostly to play casual games ( $M = 3.72$ ;  $SD = 1.08$ ), followed by Consuming entertainment ( $M = 2.31$ ;  $SD = 0.97$ ), and Social interaction ( $M = 2.11$ ;  $SD = 1.12$ ); Student's  $t(971) = -29.72$  and  $-6.24$ , respectively;  $p < 0.001$ .

*Computer / Internet skills.* Parents' skills using the computer were measured as the response on two questions: "How do you see yourself as a user of computers in general?" and "as a user of the Internet?" Parents were first instructed to think of 'their proficiency to type, know-how of Windows, and applying computer software', and then of 'searching for online information, downloading, making websites, chatting, using e-mail, and playing games online'. On both questions they rated themselves on scales from 1 ('very bad') to 10 ('very good'). The questions correlated highly ( $r = 0.88$ ) and were averaged into one scale ( $M = 7.18$ ;  $SD = 1.37$ ).

*Perceived impact of the Internet.* The perceptions of parents regarding the impact of Internet on children were assessed by asking them to express their opinion about 18 statements on a five-point scale ranging from 'fully disagree' to 'fully agree'. The statements regarded nine negative effects of Internet use (e.g.: encountering 'wrong' people on the Internet, getting addicted to the Internet, being online too long, being confronted with misleading advertisement, being bullied, and visiting inappropriate websites) and nine positive effects of using the Internet (e.g.: learning new things via the Internet, increasing knowledge about other countries, learning about nature, improving knowledge of words, getting more critical about the media, increasing social abilities, and getting acquainted with new friends).

Computerized rotation was used to present the statements in a random order to each parent.

By means of a Principal component analysis with varimax rotation on the eighteen effect statements two factors were obtained that represented positive and negative effects; the two factors accounting for respectively 28.8 and 24.3 per cent of the variance explained. On the basis of the factor solution two scales were constructed by averaging the scores of the items that loaded on that factor. Cronbach's alpha was respectively 0.91 (negative effects) and 0.86 (positive effects). Comparing the extent to which parents agreed with both types of effects showed that parents were more convinced of the positive effects of the Internet on the child ( $M = 3.06$ ;  $SD = 0.60$ ) than of the risks associated with the Internet ( $M = 2.51$ ;  $SD = 0.76$ ); Student's  $t(791) = 16.61$ ;  $p < 0.001$ .

*Place of the computer.* The parents indicated where the computer that the child usually used was situated in the house. The response categories were: 'In the living room, where I can see the child' (74.9%), 'In the child's bedroom' (11.0%), 'In a separate study room' (10.0%) or 'Somewhere else' (4.2%). The categories were dichotomized into: 'Out of sight' (score = 0) and 'Within the parent's sight' (1);  $M = 0.75$ ;  $SD = .43$ . In addition, parents indicated the number of computers or laptops in the home that were regularly used by family members to go online ( $M = 2.3$ ;  $SD = 1.06$ ).

*Demographics.* All parents gave information on their own age and gender and that of the child, their family situation (double or single parent), and on the highest level of education the parent had attained according to the Dutch educational system. The parents were classified as 'lower educational level' (15.2%), 'average educational level' (40.8%), 'higher educational level' (33.3%) and 'academic educational level' (10.4%).

## Results

### ***Parental guidance of online behaviour***

Two separate analyses were conducted to establish the types of parental mediation that are used by parents to guide the online behaviors of their children between 2 and 12 years (RQ<sub>1</sub>).

*Technical safety guidance.* On a binary scale, the parents had indicated if they used or did not use nine different technical measures on the computer for the online safety of their child. Principal component analysis applied to the nine items showed that these measures referred to two types. The first factor incorporated the presence of four general safety applications, such as using a firewall, an anti-virus program, a pop-up- or ad-killer, and a spam filter. These general safety

applications were used frequently, varying from a spam filter (31%) to an anti-virus program (56%). The second factor was defined by five applications that can be used specifically by the parent for the child's safety, such as the presence of a chatroom/MSN filter, filters for unsuitable (blacklist) or suitable (whitelist) websites, a time limiter, or a monitor to register the child's online behavior. Since only blacklist website filters were used frequently (30% of the parents) and all other child specific applications were hardly ever used (8% or less), it was not possible to construct a reliable scale that measured 'Child oriented technical safety guidance'. Therefore, we decided to construct one overall scale that averaged all nine items to measure 'Technical safety

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cy of individual behaviors. Because of an expected correlation between the factors (Nathanson, 2001b; Valkenburg et al., 1999; Nikken & Jansz, 2006) the Oblimin option of SPSS was used.

In the first run, five factors appeared with an eigenvalue larger than 1.0, pointing to the following concepts: two types of restrictive guidance (factor 1 and 2), co-use (3), supervision (4), and active guidance including monitoring (5). This solution was far from perfect: All factors contained one or more items that loaded higher than 0.30 on two factors and most of these items measured active mediation practices. To improve the solution, nine items were removed in a subsequent analysis. First, two items – ‘talk with the child’ and ‘ask the child about online experiences’ - were deleted because upon closer examination they could have been ambiguous for the parents since it is unclear what the parent can talk or ask about. Next, five items that had a high loading on one factor and a low loading on the factor with the best theoretical fit were removed. Subsequently, the two items that were intended to measure monitoring practices were also deleted, because in the five factor solution they coincided confusingly with active mediation items despite the differences between monitoring and active mediation.

The final analysis on 20 mediation items resulted in an acceptable solution with five factors that accounted for 70.96 per cent of the variance (Table 1). On the basis of this analysis for each parent scale scores were calculated by averaging the items with primary loadings on a factor. Five scales were constructed, each representing a unique type of parental mediation.

---- Insert Table 1 about here ----

The first scale based on factor I was formed by the seven items that measured the extent to which parents actively guided the social experiences of their child on the Internet. It involves helping the child to behave safely when meeting strangers online or when being harassed or bullied, and teaching them the rules of conduct on social networking sites. This kind of parental guidance is ‘Active mediation’ ( $\alpha = 0.94$ ;  $SD = 1.23$ ).

The second type of mediation is formed by three items that pertain to co-using the Internet by the parent and the child together and sharing experiences. Two items specifically measured the extent to which parents and children intentionally go

online together. The other item asked how often parents talked with the child about what is fun on the Internet. This scale is labeled 'Co-use' ( $\alpha = 0.80$ ;  $SD = 0.99$ ).

The third type of parental guidance is 'Restrictive mediation'. The analysis indicated a subdivision into two types of restrictions. Factor III covers parental restrictions on a general level, for example, banning online games altogether or only allowing a subgenre of online games. It also includes the item specifying how long and when the child can go online. Factor IV is concerned with specific content the child is allowed to visit, download or use on the Internet. Scales were computed for both subtypes of restrictive mediation, representing 'General restrictions' ( $\alpha = 0.78$ ;  $SD = 1.06$ ) and 'Content restrictions' ( $\alpha = 0.83$ ;  $SD = 0.98$ ).

The fifth factor consisted of three items connected to 'Supervising'. The items in this scale pertained to parental activities by which the child is allowed to go online by itself but with the comforting idea that it is under the direct supervision of a nearby parent ( $\alpha = 0.75$ ;  $SD = 1.14$ ).

*Prevalence of parental mediation.* As can be seen in Table 2, which presents the prevalence of the different types of mediation, both fathers and mothers of children aged 2-12 years mostly supervise their child from a nearby distance, allowing the child its own freedom on the computer. This type of mediation is more often applied than setting general restrictions. Co-use, where the father or mother and the child are online together is ranked third, followed by Active mediation where the parent explains to the child how to act safely on the Internet. Restrictive mediation applied to specific online contents, finally, is on average the least applied type of guidance.

Mothers in general are more apt to mediate children's online behavior than fathers. Mothers are particularly more involved in supervising the child and putting general restrictions on the child's online activities. In addition, they also somewhat more often go online together with the child than fathers do. With regard to active mediation, specific content restrictions, and technical safety guidance, there are no significant differences between the mothers and fathers.

---- Insert Table 2 about here ----

### ***Mediation in the family context***

Hierarchical multiple regression-analyses were used to determine the relationship between the extent to which parents mediate the child's online behavior on the one hand, and parental perceptions on Internet risks and chances (RQ<sub>2</sub>), child, parent, and situational characteristics (RQ<sub>3</sub>), and children's online activities (RQ<sub>4</sub>),

on the other. As Table 3 shows a moderate to high amount of the variance was explained, varying from 5 per cent for the measure of Technical safety guidance to 47 per cent for Active mediation.

---- Insert Table 3 about here ----

With regard to the characteristics of the parent it is clear again that mothers are more prominent mediators: basically all types of parental mediation are more often applied by the mothers. Furthermore, lower educated parents set more content restrictions on the child's Internet use and more often apply active mediation. The parents' own experience with the Internet had a parallel in the amount of general restrictions they put on the child's web surfing: parents that went less often online more often tried to restrict the child's online behavior. Furthermore, parents with more computer or Internet skills more often installed technical applications on the computer for online safety. Single parents did not differ from parents in nucleus families with regard to their mediation practices.

With regard to the child characteristics, the following results appeared.

First, parents make only one distinction in their parental mediation of sons and daughters. For boys significantly more general rules are set than for girls. Next, for older children parents are also more apt to put general and content specific restrictions on their online behavior as well as to apply active mediation. With older children the parents are, however, less inclined to supervise what the child is doing on the computer.

Second, longer use of the Internet by the child per week is not related to how often the parent applies restrictive or active mediation, technical measures or engages in co-using the Internet. Children who are more hours online per week are, however, less supervised by their parents. Furthermore, co-using has a significant relationship with the duration of web surfing. The Internet sessions tend to be considerably shorter.

Third, parental mediation strategies are clearly related to the types of children's online activities. Children that more often play casual games more often do so together with the parent. Heavier use of casual games also translates in more specific rules on Internet content. Parents who reported more social online activities by the child were less inclined to keep an eye on the child. These parents were, however, also more restrictive on the specific contents that the child was allowed to visit and much more apt to tell the child about responsible online behavior as a form of active mediation.



Having more computers in the house is related to less parental supervision. Also, placing the computer in the living room not only has its logical counterpart in more supervision, but is also related to more general and specific restrictive mediation.

Finally, parental perceptions on Internet risks and chances for their child are also clearly related to the parent's mediation. Parents worrying about the risks of going online reported that they applied all types of mediation more often than parents that were less worried. They did not make more use of technical applications, however. Positive expectations about the Internet's influences on cognitive and social outcomes were more common among parents using active mediation and content specific restrictive mediation, and particularly among parents applying co-use as a mediation strategy

## **Discussion**

### ***Measuring parental mediation***

Despite the fact that the media landscape of most children has changed drastically in the last two decades, the present study established that parents of children between 2 and 12 years are still actively involved in guiding the child's Internet use. Moreover, our study established that parental mediation of children's Internet use is a multidimensional concept that highly concurs with mediation of television and videogames. Principal components analysis showed that five styles of Internet mediation can be reliably measured: co-use, active mediation, restrictive mediation – both in a general and in a content specific form – and supervision. Furthermore, parents appeared to guide the child's Internet use by applying filters and other technical applications.

A new style of Internet mediation, 'monitoring' as found by Livingstone and Helsper (2008), did not emerge in our work. The two items that pertained to monitoring activities, i.e.: checking children's Hyves pages and MSN histories afterwards, did not fit theoretically logical in any of the factors, nor did they define a factor of its own in the Principal component analyses. We think it is too early to ignore monitoring as a mediation style in future studies, since Livingstone and Helsper focused their study on families with older children, whereas we investigated parents with much younger children. It is conceivable that parents develop different views on monitoring children's online activities when their child gets older.

### ***Parental mediation in the household context***

A second aim of the study was to discover how parental Internet mediation styles are connected to perceptions of online risks and benefits, characteristics of the household and family members, and to the child's online activities. Supervision

which appeared as a new type of mediation was the most frequently used type of guidance. With the abundance of 24/7 media outlets for children it is highly conceivable that parents are engaged in frequent supervision. The strict enactment of gatekeeping is less probable and so is sitting down with the child to discuss Internet's content. Instead, in the modern media household parents combine housekeeping activities with supervision and rely on the child's own responsibility for using the media. Logically, the prevalence of supervision had a parallel in having the computer within sight in the living room or having fewer computers at home, which both actually by itself can be seen as forms of supervision. Furthermore, supervision was also predicted by perceived negative effects of Internet use, indicating that supervision is a deliberate type of mediation partly prompted by worries about the Internet and the child's wellbeing. Children that were supervised were younger, spend fewer hours per week on the computer and also significantly less often went online for social activities. Future studies should replicate the existence of supervision as a unique type of mediation and probe if it does also apply to children's use of other media platforms, such as television or game consoles.

Co-use appeared not to include active or restrictive practices as Livingstone and Helsper (2008) surmised. Instead, co-use rather resembled social co-viewing as Valkenburg et al. (1999) established; sharing the medium with the child and exchanging positive emotional experiences. The fact that parents perceived talking about nice, agreeable websites and intentionally web surfing with the child together as one factor underlines that co-use is a deliberate kind of practice by which parents may seek suitable media productions to enjoy with their children. Co-use, indeed, was somewhat more prevalent among children that played casual online games or consumed online video clips or music and also translated in shorter visits of the Internet per session. Furthermore, co-use was highly predicted by both positive and negative perceived effects of online behavior. This too indicates that parents actively go online together with the child with the intent to dampen online risks such as computer addiction, and to foster positive experiences, for example with educational websites (Lee & Chae, 2007), at the same time.

The second type of mediation which also was found for television and gaming was Active mediation. Discussing the content of websites with the child proved to be specified to user-user-interactivity (McMillan, 2006), i.e.: helping the child what to do for their own safety when contacting others via chat rooms, Instant Messaging, mails or in virtual spaces. Active mediation was especially more prevalent among lower educated parents, parents with older children, parents who noticed that their child more often used the Internet for social contacts, and who expected both positive effects and foresaw risks connected to the child's online behaviour. These relationships seem in contrast with Livingstone and Helsper (2008) who noticed that parents guided teens' Internet contacts primarily by restrictive mediation. It is

possible that with younger children parents still more often rely on discussing social networking as they want their children to become more media-literate and aware of responsible online behavior. Perhaps with older children parents come to the conclusion that these strategies do not work anymore and therefore more often fall back on restrictions. Future studies should address this issue.

Restrictive mediation pertained both to general rules such as when and how long a child was allowed to go online and to specific content rules by which the parent declared which types of content were allowed to be used, visited or downloaded. Logically both types were more prevalent among parents that had placed the computer within sight, since that makes it easier for them to intervene whenever necessary. In addition, parents also more often restricted the child's Internet use in a general and a specific manner when they were more worried about Internet risks, and when the children were older. These findings may speak for themselves, because when children get older and more autonomous in their computer use they may encounter more risks on the web.

There were, however, also differences between the two types of restrictive mediation. General regulations were significantly more often used than specific bans and more often applied to boys and to children who played casual games online. Content specific restrictions on the other hand more often were applied to children that visited social interaction websites and entertainment sites with music or video clips and by lower educated parents, and parents with a positive attitude towards the Internet. This indicates that when parents were more worried about addiction risks of online gaming among boys they therefore more often set general rules for these children, whereas parents with children on social networking sites or music sites preferred to apply specific bans on what the children were allowed to do on these sites. This kind of mediation thus relates both to user-system-interactivity and user-user-interactivity (McMillan, 2006).

Finally, next to the five forms of parental mediation, parents – and in particular computer skilled ones - also used two types of software for a safer online environment. General applications, like anti-virus programs, were relatively often used. Software and programs specifically intended to improve the child's online safety, such as blacklist filters, monitoring applications or time limiters, were not. The results of our study unfortunately give no insight as to why parents made hardly any use of these child oriented safety applications.

The extent to which parents guided their children's Internet use not only depended on the type of child and it's media use, but also differed systematically for fathers and mothers, with the latter reporting significantly more guidance for their children. In former research on television and game mediation similar differences were found for fathers and mothers. Nikken and Jansz (2006) surmised that parental mediation is mostly done by the parent who feels most comfortable and obliged to be involved in the upbringing of children, which is not by definition the mother. The

results of the present study, however, do not fully support this assumption. First, we found no relationships for parenting in single or nuclear families. In addition, the parents' own Internet experience, measured as hours online per week, was not systematically related to parental mediation. Furthermore, the parents' own skills and experiences with surfing and using computers, which usually differs for fathers and mothers (Duimel & De Haan, 2007) also was not related to the extent parents mediated their children's Internet behaviour. This could be related to the age group of the present study; perhaps with younger children both fathers and mothers still feel relatively comfortable about their knowledge of the Internet as compared to their child's experience and competence. Among teens parental mediation did depend on the parents' computer skills and experiences (Livingstone & Helsper, 2008).

### ***Parental mediation and child development***

The age of the child, proved an important factor for the prevalence of four mediation strategies. Setting limits on the child's online behavior in a general way was particularly more prevalent for older children. This result compares to findings among parents in 27 European countries (Livingstone & Haddon, 2009). The present study, however, also shows that as the child gets older, parents increase their active mediation and at the same time refrain from supervision. This indicates that parental mediation is far from static and that parents change their mediation styles according to the phase of development and the online behaviors of their children. Livingstone & Helsper (2007) stated that going online is a staged process for children and teens from 9 to 19 years with consecutive phases: basic users mostly only start seeking information, moderate users then expand their activities with email and gaming, and broad users will add Instant Messaging and music. Finally, all-rounders complete their online activities with active interaction, production and creativity. As appears from the present study parents also actively guide such online steps among younger children. For example, as long as supervision takes place children are less involved in social contacting. Supervision, however, declines when children get older and start to spend more time on contacting others online. It appears then that active mediation combined with specific restrictions, is taken up by the parent to make sure the child can behave safely in the online environment.

### ***Limitations***

Two final notes should be made here. First, the data collected in this study are of a cross-sectional nature. Therefore, parental mediation strategies may be the result of the child's online activities or they may guide and stimulate the child in exploring new types of content on the web. Both processes may be at stake. Secondly, the data in this study pertain only to parents that had indicated that their child went online on a regular basis. Younger parents with younger children, especially 2-6-year-olds, were underrepresented in the sample. It is possible that these parents

had more anxieties about the Internet for their children and therefore did not allow their children to go online. Future research should address this possibility and test if parents of young children that do not go online differ from the parents we studied with respect to their opinions about the Internet and the types of mediation they practice.

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Table 1. Factor matrix<sup>a</sup> for parental mediation of children's Internet use

Factors	I	II	III	IV	V
How often do you ...					
<u>Active mediation</u>					
- explain your child what to do with online strangers (2.75) <sup>b</sup>	<b>.92<sup>c</sup></b>	.03	-.02	-.00	-.01
- tell to be confidential with personal information (2.97)	<b>.87</b>	.03	.12	-.11	-.05
- tell what to do if you're bullied or harassed (2.52)	<b>.86</b>	.01	-.03	.10	.02
- talk with your child about rules of conduct to follow (2.70)	<b>.84</b>	.00	.07	.04	.01
- explain how to behave on social networking sites (2.59)	<b>.80</b>	-.04	.04	.08	.05
- explain your child what it may do on IM websites (2.32)	<b>.66</b>	.05	-.02	.28	-.02
- explain to your child how to use webmail (2.14)	<b>.59</b>	.06	.04	.27	-.09
<u>Co-use</u>					
- surf together, because the child wants to (2.87)	-.01	<b>.87</b>	-.08	.05	.05
- surf together, because you want to (2.82)	-.10	<b>.86</b>	.02	.08	.04
- talk with your child about what is fun on the Internet (3.13)	.17	<b>.75</b>	.07	-.12	-.02
<u>Restrictive mediation general</u>					
- say that online games are unsuitable (3.09)	.03	.04	<b>.84</b>	.02	-.04
- tell which online game genres are allowed (2.89)	-.10	.06	<b>.80</b>	.23	-.09
- tell your child when / how long to use Internet (3.39)	.14	-.07	<b>.77</b>	-.12	.17
<u>Restrictive mediation content specific</u>					
- tell which films may be downloaded (1.68)	-.02	-.01	.05	<b>.86</b>	-.01
- tell which products may be bought online (1.86)	.09	.01	-.01	<b>.73</b>	-.06
- say what kind of avatar is allowed (1.67)	.16	.01	.02	<b>.67</b>	.12
- say what music may be listened to/downloaded (1.97)	.13	.04	.17	<b>.64</b>	.02
<u>Supervision</u>					
- keep an eye on the child and the computer (3.76)	.12	-.10	-.01	-.00	<b>.87</b>
- allow the child to web surf only when you're present (3.24)	-.25	.11	.05	.08	<b>.75</b>
- stay close to the computer to help if necessary (3.75)	-.01	.31	.02	-.06	<b>.66</b>

Note. <sup>a</sup>Principal component analyses with Oblimin-rotation (delta = 0.0) has been used (N = 792).

<sup>b</sup>Mean item scores between parentheses. <sup>c</sup>Bold coefficients reflect primary loadings.

Items not used in the final analysis: - talk with the child about online experiences; - ask the child what it is doing online; - tell why certain chat rooms are allowed; - explain how to use a search engine; - warn your child for websites that are no fun - specify which websites are allowed; - give the child all freedom on the computer; - visit Hyves to monitor your child afterwards; - read conversations in the MSN logs.



Table 2. Mean scores for mediation types, and for the use of technical safety guidance, as reported by fathers and mothers<sup>a</sup>

Type of mediation	Fathers N = 371	SD	Mothers N = 421	SD	t(790)
Supervision	3.36 <sup>z</sup>	1.19	3.78 <sup>z</sup>	1.06	5.27***
Restrictive mediation general	2.99 <sup>y</sup>	1.09	3.24 <sup>y</sup>	1.02	3.39***
Co-use	2.89 <sup>y</sup>	.91	3.05 <sup>x</sup>	.94	2.47*
Active mediation	2.43 <sup>x</sup>	1.18	2.57 <sup>w</sup>	1.31	1.48
Restrictive mediation specific	1.74 <sup>w</sup>	.88	1.84 <sup>v</sup>	.90	1.45
Technical safety guidance	.29	.25	.26	.24	1.53

Note: <sup>a</sup>Scores in the upper part of the table vary from 1 (= rarely or never) to 5 (= very often) and in the lower part of the table from 0 (absent) to 1 (present); <sup>v,w,x,y,z</sup>Scores per column with different superscripts differ significantly,  $p < .001$ ; asterisks indicate a significant row-difference between the scores found for fathers and for mothers, \* $p < .050$ ; \*\*\* $p < .001$ .

Table 3. Hierarchical regressions predicting six types of parental media guidance (standardized coefficients)

	Supervision	Co-use	Active	Restrictive general	Restrictive specific	Technical safety guidance
<u>Parent characteristics</u>						
- Gender (mother +)	.15***	.10**	.11***	.13***	.07*	-.01
- Educational level	-.02	-.04	-.10***	-.03	-.13***	.01
- Hours online	.04	.03	.01	-.07*	-.04	.00
- Computer/Internet skills	.04	.04	.03	.05	.00	.14***
- Single parent	.01	-.01	.01	.01	.01	-.01
<u>Child characteristics</u>						
- Gender (girl +)	.02	-.04	.03	-.10**	-.03	.02
- Age	-.14***	-.08	.29***	.16***	.09*	.01
- Length sessions	-.01	-.17***	-.05	.02	-.06	.02
- Hours online	-.10*	-.02	-.03	.03	.05	-.01
- Social interaction	-.17***	-.06	.39***	.01	.15**	.07
- Entertainment consumption	-.01	.10*	.02	.01	.12**	.04
- Casual gaming	.05	.08*	-.02	.16***	-.00	.05
<u>Situational characteristics</u>						
- computer within sight	.43***	.06	.03	.09**	.08*	-.01
- Number of computers	-.09**	-.06	.02	-.01	-.01	.03
<u>Perceived effects</u>						
- Negative	.09**	.23***	.20***	.24***	.25***	.02
- Positive	.02.22***	.10***	.02	.08*	.03	
R <sup>2</sup>	.40	.16	.47	.18	.22	.05
F(16, 775)	32.48***	9.18***	43.51***	10.61***	13.63***	2.42**

Note: \* $p < 0.050$ ; \*\* $p < 0.010$ ; \*\*\* $p < 0.001$