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This article examines parental regulation of children and teenagers' online activities. A national survey of 1511 children and 906 parents found that 12–17-year-olds encounter a range of online risks. Parents implement a range of strategies, favoring active co-use and interaction rules over technical restrictions using filters or monitoring software, but these were not necessarily effective in reducing risk. Parental restriction of online peer-to-peer interactions was associated with reduced risk but other mediation strategies, including the widely practiced active co-use, were not. These findings challenge researchers to identify effective strategies without impeding teenagers' freedom to interact with their peers online.

Media surround children and young people in the modern household. At times, parents seem engaged in a constant battle with their children as they seek to balance the educational and social advantages of media use and the negative effects that some content or mediated contact might have on children's attitudes, behavior, or safety. Though parents assume media affect other people's children more than their own (Nathanson, Eveland, Park, & Paul, 2002), they try to regulate their children's media use, hoping to maximize the advantages of today's media-rich environment for their children and to minimize the disadvantages, as examined in this article. Strategies include rule-making and restrictions, both positive (e.g., explaining, discussing) and negative (e.g., disagreeing, criticizing) forms of mediation, and social co-viewing (Austin, 1990). Terminology varies, but the notion of ''mediation'' is widely seen to capture the parental management of the relation between children and media; usefully, it extends the parental role beyond simple restrictions to encompass also conversational and interpretive strategies (e.g., Nathanson, 1999; Valkenburg, Krcmar, Peeters, & Marseille, 1999) as well as parental monitoring

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activities (Kerr & Stattin, 2000). However, it is noted that some use ''mediation'' more narrowly to refer to parental discussion without also including rule-making or co-viewing (e.g., Austin, 1990).

As the media and communication environment becomes increasingly difficult for governments to regulate, these hitherto private activities of parents are becoming more valued within public policy frameworks, especially those concerned with protecting children from media-related harm (Kunkel & Wilcox, 2001; Livingstone & Bober, 2006; Oswell, 2008). This is, broadly, consistent with the theorization of parental mediation in terms of the family system, for on this view, parental mediation strategies represent ways in which the family reproduces its values in the face of external meaning systems (e.g., Goodman, 1983; Hoover, Clark, & Alters, 2004; Livingstone, 2002). Not only do parents seek to prevent unwanted influences but also, as proposed by Warren's (2005) ecological approach to the parent-child interaction, parents use the media to facilitate desired values, for example, by using media to support shared family activities (via co-viewing, the construction of common interests, talking about media; c.f. Fujioka & Austin, 2002). This line of inquiry directs researchers to the importance of family communication patterns (Ritchie & Fitzpatrick, 1990) or parenting styles (Eastin, Greenberg, & Hofschire, 2006). Other researchers take a socio-cognitive approach, regarding parental mediation as stimulating the development of children's media literacy which may, again, mitigate harmful media effects (Austin, 1993; Kunkel & Wilcox, 2001; Nathanson, 2004). Although largely developed in parallel, these approaches may be considered complementary: Parental mediation both results from processes of family dynamics and child socialization and contributes to the shaping of family values, practices, and media literacy.

In regulating their children's media use, parents face several challenges. These include the proliferation of media goods in the home, especially in children's bedrooms, and the growing complexity of media and communication technologies. Especially for new media, lack of technical expertise may hinder implementation of parental mediation at home (Facer, Furlong, Furlong, & Sutherland, 2003; Livingstone & Bober, 2006). Yet as domestic Internet use becomes more commonplace, even overtaking time spent with television in some countries (Lenhart, Madden, & Hitlin, 2005), the bewildering array of online content accessible to young people occasions concern among parents, academics, and policy-makers (Criddle, 2006). In the United Kingdom, 75% of 9–19-year-olds have Internet access at home (Livingstone & Bober, 2005). In the United States in 2004, 87% of 12–17-year-olds were Internet users, and 49% have home access to broadband (Fox, 2005; see also Roberts, Foehr, & Rideout, 2005). Notwithstanding the growing evidence of online risks (Berson & Berson, 2005; Liau, Khoo, & Ang, 2005; Livingstone & Bober, 2006; Mitchell, Finkelhor, & Wolak, 2003; Peter & Valkenburg, 2006; Wolak, Mitchell, & Finkelhor, 2007), little is yet known of the strategies parents employ regarding their children's Internet use, and still less is known of their effectiveness (although see Eastin et al., 2006; Lenhart, 2005; von Feilitzen & Carlsson, 2004).

In the research literature, most attention has been paid to parental mediation of children's television use, this typically including practices designed to influence the child's response to television content through joint discussion or through simply watching together with the child as well as more controlling practices designed to restrict or manage overall time spent watching television or the particular programs viewed (Austin, 1993; Van den Bulck & Van den Bergh, 2000). The use of various rules and practices varies according to the child's gender (more for girls) and age (more for younger children) as well as, in some research, parenting style (Eastin et al., 2006) and household socio-economic status (SES) (Nathanson, 2001b; Warren, 2005).

Nathanson (1999, 2001a) draws together the research literature by proposing three broad strategies of parental regulation, namely active, restrictive, and co-viewing mediation. Valkenburg et al. (1999) similarly group mediation strategies for television into the categories of active or instructive mediation, rule making or restrictive mediation, and parental modeling or co-viewing (van der Voort, Nikken, & van Lil, 1992). These strategies may be stated in a more general form to apply to all media: (1) *Active mediation* consists of talking about media content while the child is engaging with (watching, reading, listening to) the medium (hence, this includes both positive/instructional and negative/critical forms of mediation); (2) *Restrictive mediation* involves setting rules that restrict use of the medium, including restrictions on time spent, location of use or content (e.g., restricting exposure to violent or sexual content), without necessarily discussing the meaning or effects of such content; (3) *Co-using* signifies that the parent remains present while the child is engaged with the medium (as for co-viewing), thus sharing in the experience but without commenting on the content or its effects.

Do parents employ similar mediation strategies for the Internet? It is noteworthy that in relation to parental mediation of video games, three similar types of strategies have been found—''restrictive mediation,'' ''active mediation,'' and ''co-playing'' (Nikken & Jansz, 2006). Hence, it is possible that parents will apply familiar strategies to the Internet also, thus showing consistency in their parenting approach. On the other hand, it is also possible that they will seek new strategies, given the highly publicized array of online risks. Moreover, by comparison with television (and even video games), it is difficult to make Internet use a shared activity (because of screen size, sitting position, reliance on the mouse, and common location in a small or private room). Also, online activities are less easily monitored with a casual glance at the screen, given multitasking across multiple open windows. Most important, online risks to children are greater than are television-related risks (regarding the extremes of violent or pornographic content, privacy or contact risks from strangers, etc.), giving rise in turn to greater anxieties among parents (Peter & Valkenburg, 2006; Wolak et al., 2007). Hence the first research question is:

RQ_1: What strategies of mediation, if any, do parents practice in regulating their children's Internet use?

Addressing this question should reveal the degree to which parents use similar mediation strategies to those developed for television for their child's use of the Internet and whether, given the difficulties of monitoring and the limitations of parental expertise, they prefer restrictive to active mediation or co-use strategies of mediation. Although the literature to date does not bear the construction of specific hypotheses, the measures used (see below) were designed, within practical limits, to cover the range of likely strategies, drawing on both the television mediation literature and widespread guidelines to parents (e.g., Criddle, 2006). Since research on television mediation shows few differences by child's gender but greater mediation for younger children, it is expected to find this pattern also for Internet mediation.

Is parental mediation effective? In relation to television, this question has not proved straightforward to answer. However, it can be concluded that different strategies of parental regulation of television have varying effects (Austin, 1990; Nathanson, 1999; van der Voort et al., 1992). Active mediation can have socially desirable consequences, leading children to become more skeptical towards television content and more knowledgeable about its production (Nathanson, 2001a) as well as reducing the likelihood of behavior or attitudes that might damage others (e.g., violence or racism; Nathanson, 1999). Co-viewing has been shown to be as or even more effective, but only in some, not all, circumstances (Messaris & Kerr, 1984; Nathanson, 1999). Restrictive mediation varies in effectiveness depending on the degree of restriction applied (Nathanson et al., 2002), though some suggest that restrictive television regulation does reduce risks, albeit by dint of reducing media use overall (Van den Bulck & Van den Bergh, 2000).

Research on parental mediation of children's Internet use is now beginning to consider the effectiveness of parental strategies. It seems that parents hope that restricting teenagers' Internet use will reduce online risky experiences (Turow & Nir, 2000). Berson and Berson (2005) found that if parents talk to their teenage daughters, this reduced the likelihood of contact risks; by implication, a positive parental attitude to sharing and supporting their child's Internet use may enhance take-up of online opportunities (Facer et al., 2003), although Jackson et al. (2006) did not find parental support to encourage Internet use. However, Mitchell et al. (2003) found that software restrictions rather than parental monitoring reduced risks. Further investigation is clearly needed, and hence the second research question is:

RQ_2: Is parental mediation associated with a reduction in teenagers' online risks?

This question will be addressed both by examining the association between the overall degree of parental mediation implemented and by examining the association between different types of risk and different types of mediation. As noted above, it is widely hoped that increasing parental mediation will reduce the incidence of risks online, although this has not been clearly and convincingly demonstrated as yet. Moreover, many factors may enter into the relationship between mediation and online risks, including child's expertise online and parental expertise.

The approach here is exploratory, for research regarding which parents adopt different forms of mediation or which children encounter different risks online remains sparse. Questions of frequency of use, attitudes towards technology, and skills associated with use, which seem of little relevance in mediating television, are popularly supposed to influence both children's risky experiences online and parental competence in framing rules and regulations. Whether parents wish to encourage or discourage their children's Internet use might also play a role, though little is yet known of their attitudes towards the Internet (although see Livingstone, 2007; Turow & Nir, 2000). In what follows, these possibilities will be examined.

Method

Survey Sample and Recruitment

A national survey was conducted through an in-home, 40-minute face-to-face interview with children and young people aged 9–19, using random location sampling across the United Kingdom. Following the design and piloting of the survey questionnaire by the research team, fieldwork was carried out between January and March 2004 using multimedia computer-assisted personal interviewing (CAPI) with children. A self-completion questionnaire was given to one parent of the 9–17-year-olds. Sensitive questions in the young people's questionnaire (e.g., those relating to viewing pornographic and hate Web sites or meeting people through the Internet) were administered in a self-completion section to ensure privacy. In total, 1,511 interviews with 9–19-year-olds were completed. Further, 1,077 parents of children aged 9–17 agreed to complete the questionnaire; of these, 920 paper questionnaires were received and 906 were usable. Percentages were weighted to data in the British Market Research Bureau's Target Group Index and Youth surveys. The weighting efficiency was 91% and the effective sample size was 1,375. Raw sample sizes and statistical analyses are based on unweighted data.

Questions about online risks and parental mediation were asked of the 84% of the children who used the Internet at least once per week. This article analyzes data for 12–17-year-olds ($N = 879$), made up of 605 12–15-year-olds and 274 16–17-year-olds; 478 were boys and 401 were girls; the sample also varied by socioeconomic status (402 middle class, 477 working class).[1] For the parent sample ($N = 631$; 382 18–44-year-olds, 219 44–65+-year-olds, and 30 did not give their age; 447 mothers, 174 fathers, and 10 unspecified). Informed consent was obtained from all teenagers and parents. Questions asked of both parents and children are distinguished in the analysis as either ''child's view'' or ''parent's view.'' Many of the items used, below, are similar to those used in previous research on television mediation, on Internet use; some parallel those asked in the European Safety Awareness Facts and Tools (SAFT) project (Staksrud, 2005).

Survey Measures

Frequency of Use. This was measured, for parents and children, as responses to the question, ''How often do you use the Internet?'' on an 8-point scale: 1 (*never)* to 8 (*several times per day*).

Nature of Use. The child was asked how often they used the Internet for sending and receiving e-mails, chat rooms, instant messaging, playing games online, looking for products or shopping online, and downloading music (frequencies were converted into dichotomous variables by distinguishing those who had *never* done the activity from those who had done the activity between *less than monthly* and *several times per day*).

Skills (Perceived). This was measured, for parents and children, as the response to the question, ''Which of the following are you good at?'' The scale measured how many of seven Internet-related activities respondents said they were good at (Cronbach's $\alpha = 0.71$ for teenagers; 0.82 for parents).

Attitudes. Using a 5-point Likert-type scale, parents rated how much they agreed with 14 statements about the Internet (measuring both positive and negative attitudes towards the effects of Internet use on children). Responses were combined to create a scale of 1 (*very negative attitude toward the Internet*) to 5 (*very positive attitude toward the Internet);* Cronbach's $\alpha = 0.59$.

Parental Mediation. Parents and children reported, using a binary response, which included a list of rules and practices used by parents (see Table 1 for response items). A composite scale was constructed for the different types of rules and practices implemented by parents (range 0–24; Cronbach's α for parents' responses = 0.88, for teenagers' responses = 0.67), and a factor analysis conducted to identify subscales (reported under Results).

Risks. Parents and children reported, using a binary response, whether ''you/your child has done these things on the Internet?'' A composite scale recorded the number of risks encountered (for teenagers' responses, the range was 0–15, $\alpha = 0.76$; for parents' responses, the range was 0–10, $\alpha = 0.78$). Since risks vary in nature, they were subdivided into four categories, consistent with the research literature and supported by a factor analysis. The findings reveal the percentages of 12–17-year-olds, who use the Internet at least once a week ($N = 789$), who reported having experienced each risk: *pornographic* (seen pop-up advertisements for pornography while doing something else—44%, ended up on a porn site accidentally when looking for something else—41%, received pornographic junk mail—28%, have been sent pornography from someone they know—9%, visited a porn site on purpose—9%, and have been sent porn from someone met online—3%); *violence* (have accidentally ended up on a site with violent or gruesome pictures—

27%, visited such a site on purpose—14%, ended up accidentally on a site that was hostile or hateful to a group of people—10%, and visited such a site on purpose—3%); *privacy* (have given out personal information online—46%, would do this to win a prize in a quiz—72%); and *contact risks* (know someone that they only talk to online—36%, have met face-to-face someone first met online—9%, have received nasty or hurtful comments online—33%).

In addition, the survey included further questions regarding Internet use and non-use; basic findings, by demographics, are reported in detail in Livingstone and Bober (2005).

Results and Discussion

RQ_1: Strategies of Parental Mediation of the Internet

Parents attempt a fair degree of regulation for teenagers (Table 1), unsurprising given the above noted incidence of online risk (though they tend to perceive a lower level of risk than reported by children; Livingstone & Bober, 2006). On average, parents sought to implement 7 or 8 out of 24 different kinds of mediation. These were first combined into a single composite scale for parental mediation (Cronbach's $\alpha = 0.88$) so as to conduct analyses of variance to determine the effect of sociodemographic factors. These showed that, as expected, age is important: Parents implemented significantly more rules and regulations for younger than older teens, $F(1,634) = 18.43$, $p < 0.01$. However, there were no significant differences in the regulation of sons and daughters, $F(1,634) = 0.01$, $p = 0.98$. Socioeconomic status made a difference: Higher SES parents implemented more rules and practices, $F(1,634) = 28.34$, $p < 0.01$, possibly reflecting middle class parents' greater familiarity with the Internet (see below).

Do parental strategies for Internet use match those already practiced for television? Though data were not collected for the mediation of television in this study, a meaningful comparison was sought by entering the items in Table 1 into an exploratory factor analysis. This revealed four factors which were labeled as follows: active co-use, interaction restrictions, technical restrictions, and monitoring (see Table 1). The correlations between the four mediation styles ranged from 0.30 (between *interaction restrictions* and *monitoring*) to 0.63 (between *active co-use* and *interaction restrictions*). These mediation styles share some features with those previously identified for television viewing, while also revealing some differences that suggest parents are adapting existing strategies to meet the new challenge posed by the Internet.

The factor labeled *active co-use* combines activities that, for television, are generally distinguished as either active/evaluative or co-use. Although Eastin et al. (2006) reproduced the distinction between parental ''co-viewing'' and ''interpretive'' mediation for children's use of Web sites, their integration in the present study is

Table 1
Factor Analysis of Mediating Rules and Practices (Parent's View)

	Active Co-use	Technical Restrictions	Interaction Restrictions	Monitoring
Rules about time spent online (53%)	**0.34**			
Parent stays nearby when child is online (34%)	**0.53**			
Parent watches screen when child online (46%)	**0.65**			
Parent helps when child uses the Internet (38%)	**0.52**			
Parent talks to child about Internet use (64%)	**0.74**			
Parent sits with child when online (18%)	**0.33**		0.44	
Child not allowed to ...				
Give out personal info (67%)	**0.78**			
Buy anything online (59%)	**0.70**			
Fill out online forms/quizzes (44%)	**0.57**			
Use e-mail (43%)			**0.51**	
Use chat rooms (13%)	0.56		**0.35**	
Use instant messaging (7%)			**0.71**	
Play games on the Internet (4%)			**0.27**	
Download things (17%)			**0.37**	
Filtering software installed (33%)	0.32	**0.69**		
Monitoring software installed (23%)		**0.46**		0.34
Filters/monitoring software installed for ...				
E-mail (4%)		**0.31**	0.31	
Chat rooms (13%)		**0.64**		
Instant Messaging (4%)		**0.40**	0.45	
Porn sites (34%)	0.32	**0.77**		
Junk mail (20%)		**0.62**		
Adverts (12%)		**0.57**		
Parent checks sites child visited later (30%)				**0.63**
Parent checks child's e-mail messages (17%)		0.31		**0.51**
Alpha for scales based on items >0.30	0.87	0.83	0.72	0.68
Alpha for interpretable scales (in boldface)	0.87	0.83	0.67	0.65
Eigen values	7.56	2.28	1.64	1.09
Variance explained	32%	10%	7%	5%

Note. Only factor loadings >0.30 are indicated above. Percentages after response items refer to parents of 12–17-year-olds who, according to their parents, have home access and use the Internet ($N = 634$).

readily interpretable, pointing to the different contexts in which television and the Internet are used. Parents and children may watch television together with little conversation (i.e., co-use), perhaps with the parent also reading the paper while the child does their homework in front of the screen. However, to sit together in front of the computer while the child goes online, or even to be in the same room, makes co-use more active, for conversation about the online activity, including interpretive or evaluative comments or guidance, is more likely. Such active co-use also, according to the factor analysis, includes restricting the child in relation to personal information, buying online or completing forms and quizzes, perhaps through such rules as, ''you may only do X when I am with you.'' Future qualitative research could usefully examine the emerging social norms and practices regarding co-use of the Internet in the family context.

A second difference from television mediation is that parents may implement both social rules (banning or restricting activities) and technical restrictions (filtering or blocking certain activities). These were clearly distinguished in the factor analysis, unsurprisingly since interactivity is integral to the Internet but not (yet) to television. McMillan (2006) distinguishes user-system interactivity (e.g., games, shopping, voting), user-documents interactivity (e.g., searching) and user-user interactivity (e.g., chat, e-mail, peer-to-peer networking). These are associated, in reality and as perceived by parents, with different forms and degrees of risk. Thus, the active co-use factor included restrictions on user-system interactivity (as noted above, such restrictions may be explained and enforced during parent-child co-use). User-user (or peer-to-peer) interactivity was subject to a distinct set of restrictions, being the object of considerable parental anxieties. This second factor was labeled *interaction restrictions*; here, e-mail, chat, and instant messaging are banned, along with game playing (possibly peer-to-peer games) and downloading (another problematic activity much in the public eye).

The use of *technical restrictions* represents a third factor, this being applied variously to diverse forms of risky activity, and is one of two forms of parental mediation unique to the Internet (Eastin et al., 2006). The fourth factor, also Internet-specific, is parental *monitoring* or checking up on the child's activity, covertly or overtly, after use. Considerable public safety advice has recommended such monitoring to parents as a nonintrusive strategy; only more recently has this attracted criticism as a potential infringement of children's privacy (Livingstone & Bober, 2006).

Active co-use was fairly widespread: Two thirds of parents talk to their child about Internet use, nearly half watch the screen, and one third stay nearby when their child is online. Further, a sizeable minority of parents apply various interaction restrictions, banning their children from using e-mail (43%), downloading (17%), or using chat rooms (13%). Technical restrictions were also implemented by a fair minority, including 33% with filtering software installed and 23% with monitoring software; however, 20% did not know or were not sure whether a filter was installed, suggesting some limitations on parental skill. Last, some monitor the computer after the child has finished using it, with 30% checking sites visited and 17% checking

e-mails. Active co-use is, it seems, the favored strategy among parents, though restricting teenagers' activities is also common.

These conclusions, and the classification of mediation strategies, merit further research, especially given the considerable public policy effort seeking to formulate and disseminate parental guidance and safety advice. However, there are some limitations to the present research. The factor loadings were not entirely consistent with the above interpretation (e.g., ''sit with your child and go online together'' loaded higher on *interaction restrictions* than on *active co-use*); however, as the alphas calculated for the scales as interpreted above (boldfaced in Table 1) closely resembled those calculated for scales based on all items whose loadings exceeded 0.3, the former factor structure was selected, the subscales being more interpretable and statistically independent. It is also noted that the selection of items was not sufficiently fine-grained to distinguish positive from negative mediation, again a valuable topic for future research.

RQ_2: Relating Parental Mediation to Children's Online Risk

One way of addressing this question is to compare the incidence of a specific activity as reported by the child and the existence of a parental rule that bans it. The survey included questions regarding the incidence of several online activities that, in the present context, may be considered potentially risky forms of interactivity; certainly they are regarded in this way by some parents, for banning them is included in two forms of mediation: active co-use and interaction restrictions. Nine of these risky activities could be matched to specific parental bans (as shown in Table 1, these bans were associated with both active co-use and interaction restrictions). Table 2 shows the correlations between the likelihood of each activity and the presence of a ban on that same activity, as perceived by both children and parents. These suggest that instituting such a ban is broadly effective.

The noteworthy exception is that for giving out personal information online. Parental bans, as perceived by the parent, were associated with a greater not lesser likelihood of the child giving out such information. One possibility here is that parents ban (or, become aware of banning) divulging personal information after, not before they discover their child to have done such a thing. Indeed, whether parental regulation is instituted before or after the fact (i.e., in response to the anticipated or actual experience of online risk) is worthy of further investigation. Beyond this exception, the application of restrictive rules correlated negatively with the risk activity to which they referred. Taking the child's view of the presence of a rule, this was the case for all activities. Taking the parent's view, this was the case for all except buying, and filling out forms and quizzes.

These exceptions (that is buying, and filling out forms and quizzes) are worthy of an explanation. Note that they are cases of user-system rather than user-user interaction, in McMillan's (2006) terms, and that rules restricting them were classified earlier under active co-use rather than interaction restrictions (which focused on

Table 2
Correlation Between Activity and Rule Banning the Activity (Child's and Parent's View)

Activity Undertaken by Child (Child's View)	Rule Present (Parent's View)	Rule Present (Child's View)
Email	−0.25**	−0.27**
Chat rooms	−0.23**	−0.31**
Instant messaging	−0.25**	−0.28**
Playing games	−0.13**	−0.09**
Downloading	−0.23**	−0.27**
Giving out personal info	0.11**	−0.18**
Buying things	−0.01	−0.32**
Filling out forms	0.01	−0.11**
Filling out quizzes	−0.04	−0.19**

Note. Parent's view: Responses based on parents' survey for parents of 12–17-year-olds who, according to their parents, use the Internet and have home access ($N = 634$). Child's view: Responses based on children's survey for 12–17-year-olds who use the Internet at least once a week ($N = 789$).
The activities of filling out forms and filling out quizzes online were asked about as separate items, but the existence of a rule that the child is not allowed to fill out forms or quizzes online was asked as a single item.
* $p < 0.05$. ** $p < 0.01$.

user-user interaction). Two alternatives are possible. First, it may be that parents think they have restricted these activities through conversations held when sitting with or otherwise sharing the online experience with their child, though the child may not recognize this and so still engage in user-system activities. Second, it may be that if warned about user-system interactivity, teenagers see this as relatively unimportant by contrast with warnings about peer-to-peer interaction (here parental warnings are supported by considerable media publicity). It may also be the case, of course, that parents overestimate the degree to which they mediate their children's Internet use, especially given the social desirability of appearing to regulate when asked by a researcher. Whichever is the case, it appears that whether children themselves recognize a rule to be in place matters more than the parents' view that they have issued such a prohibition (c.f. Fujioka & Austin, 2003; Nathanson, 2001a). Further qualitative research on how children actually interpret parental guidance would be helpful.

Since both rules and risks are stratified by the child's age, gender, and social class, the possibility remains that the correlation between risky activities and a ban on these is due to a third factor—child's age or class, for instance. Or, as suggested earlier, more expert parents, or parents more positive about the Internet, may implement more rules or active co-use and so have children who more successfully

avoid risks. In pursuing RQ_2, the researchers return to the longer list of rules and risks initiated in order to ask, Can teenagers' experience of online risks be predicted according to the combined influence of child/parent characteristics and mediation practices? These questions were addressed statistically in two stages, in order first to examine the predictors of parental mediation (in terms of characteristics of the parent and child) and then, second, to examine whether parental mediation, taking into account these characteristics of parent and child, together account for the risks teenagers encounter online. In understanding how mediation might influence online risk taking by the child, it is important to control for the effect of other variables that might be related to both online risk taking and parental mediation. Earlier research shows that age, gender, skills, and experience all influence a child's risk taking. It is likely that similar characteristics are related to the parent's mediation style and that a parent's characteristics have a similar influence. To understand the independent effect of mediation, further analyses were conducted to control for the effects of these other variables and the outcomes are discussed below.

First, multivariate linear regressions were conducted to determine whether child and parent characteristics account for the degree of parental mediation. These regressions were repeated using both the composite scale for parental mediation as perceived by the parent and the composite scale as perceived by the child. This showed that the only child characteristic that influenced parental mediation (according to the parent), was the child's age: Parents saw themselves as mediating their child's Internet use less as the child gets older (Table 3). Additionally, parental frequency of Internet use and level of skill also mattered: Parents who used the Internet more, or who claimed more skills in using it, were more likely to mediate their child's use.

The parallel analysis for parental mediation according to the child produced very similar results. As for parents, age matters, with older teenagers perceiving themselves to receive less parental mediation. Gender matters too, with girls perceiving themselves to receive more mediation than do boys (though parents did not perceive a gender difference in their approach). As before, more Internet-skilled parents were more active mediators of their child's Internet use. There is no evidence that parental mediation varies by socioeconomic status or according to parental attitudes (positive or negative) to the Internet. Nor does it appear to depend on the child's own level of perceived online skills. Rather, parental perceptions of the child's overall maturity (i.e., their understanding of the significance of age) are crucial. Also important are parents' own experience of and perceived skills with the Internet, this presumably giving them the knowledge and/or confidence to mediate and a clearer awareness of the risks that can be encountered online.

Second, hierarchical linear regressions were used to explain online risks (according to the child's view), to determine whether these are influenced by parental mediation (parent's view and child's view) when controlling for characteristics of the child and parent (see Table 4). First, the child characteristics (age, gender, frequency of Internet use, online skills) were entered into the equation to explain online risk (child's view). Second, the characteristics of the parent (socioeconomic

Table 3
Linear Regression of Child and Parent Characteristics on Parental Mediation

Parent's View of Parental Mediation (Regression equation $R^2 = 0.15$, $F_{(10)} = 9.81$, $p < 0.01$)				
Variable	*B*	SE B	β	*P*
(Constant)	12.26	2.42		0.00
Child characteristics (Child's survey)				
Age	−0.71	0.12	−0.24	0.00
Gender	0.17	0.38	0.02	0.66
Frequency of use	0.15	0.24	0.03	0.54
Skills	0.15	0.12	0.05	0.21
Parent characteristics (Parent's survey)				
SES	0.28	0.19	0.06	0.14
Frequency of use	0.53	0.10	0.28	0.00
Skills	0.29	0.13	0.11	0.02
Internet attitudes	−0.09	0.39	−0.01	0.81
Child's View of Parental Mediation (Regression equation $R^2 = 0.16$, $F_{(10)} = 10.83$, $p < 0.01$)				
Variable	*B*	SE B	β	*p*
(Constant)	10.38	1.57		0.00
Child characteristics (Child's survey)				
Age	−0.52	0.08	−0.29	0.00
Gender	0.55	0.25	0.09	0.03
Frequency of use	0.13	0.16	0.04	0.40
Skills	−0.02	0.08	−0.01	0.79
Parent characteristics (Parent's survey)				
SES	0.08	0.12	0.03	0.50
Frequency of use	0.12	0.06	0.10	0.05
Skills	0.17	0.08	0.11	0.04
Internet attitudes	−0.29	0.25	−0.05	0.25

Note. Responses for the child's view are based on 12–17-year-olds who, according to their parents, use the Internet and have home access and for whom their parent answered the survey ($N = 634$). Responses for the parent's view are based on parents of 12–17-year-olds who, according to their parents, use the Internet and have home access ($N = 632$).

status, frequency of Internet use, online skills, attitudes to the Internet) were entered. Last, parental mediation (both parent's view and child's view) was entered to see if it could add to the variance explained in online risk. Given the complexity of this equation, the overall scale for parental mediation was used (though, as presented below, this proved unhelpful, necessitating a reanalysis based on the four strategies of parental mediation). The regression was, further, conducted both for all risks and also repeated for each of the four categories of risk.

As an explanation of overall online risk encountered by teenagers, the first block of variables (child's characteristics) explained 28% of the variance, $F(1,560) = 54.39$, $p < 0.001$. When each type of risk was examined separately, the findings were that: For violent risks, only 8% of the variance was explained by the child's characteristics, $F(4,560) = 12.85$, $p < 0.001$; for pornographic risks, 13% of the variance was explained, $F(4,560) = 20.70$, $p < 0.001$; for privacy risks, 8% of the variance was explained, $F(4,560) = 12.82$, $p < 0.001$; and for contact risks, 19% of the variance was explained, $F(4,560) = 32.24$, $p < 0.001$. For each of these regressions, neither of the two subsequent blocks (parent characteristics and parental mediation) significantly increased the variance explained (for parent characteristics R^2 changes ranged from .00 to .01 with p values between .20 and .80; for parental mediation R^2 changes ranged from .00 to .01 with p values between .12 and .76).

Thus, it is the characteristics of the child that matter in accounting for the incidence of online risks, for both overall risk and for each category of risk. Specifically, age (older), gender (boys), and online skills (more) are all predictors of online risk. Characteristics of the parent did not add significantly to the explanation of online risk. Crucially, nor did parental mediation. Thus, while certain parents (e.g., those more experienced in Internet use) implement more mediation, this does not translate into risk reduction. Nor does more parental mediation mean less risk or vice versa. This relative ineffectiveness of parental mediation in reducing risks is consistent with other recent research on children's Internet use (Liau et al., 2005; Mitchell et al., 2003). Liau et al. note the relations among risky behaviors (e.g., those who give out personal information online are also more likely to meet online friends offline; Livingstone & Helsper, 2007), suggesting that successful interventions for one kind of behavior, once identified, may have wider benefits. Before concluding that there is no explanatory role for parental mediation in relation to teens' online risk, one should consider the detailed relations among child and parent characteristics, parental mediation, and online risk, as revealed by these regression analyses. This reveals several significant findings of interest.

First, the findings in Table 4 qualify the earlier finding that older teenagers, especially boys, and those who are more skilled, are significantly more likely to encounter risk. By separating findings for different types of risk, Table 4 suggests that there is a relation between age and pornographic and privacy risks, but not between age and violent or contact risks (contrary to the popular view that younger teens encounter more such risks). It also suggests that the relation between gender and risks holds for all risks except privacy risks (contrary to the popular view that girls encounter more such risks).

Table 4
Hierarchical Linear Regression of Child's and Parental Characteristics and Mediating Practices (Parent's and Child's View) on Online Risks (Child's View)

	All Risks			Violent Content			Pornographic Content			Privacy Risks			Contact Risks		
Variable	*B*	*β*	*p*	*B*	*β*	*p*	*B*	*β*	*p*	*B*	*β*	*p*	*B*	*β*	*p*
(Constant)	−2.16		0.10	0.11		0.66	−0.09		0.73	−0.15		0.73	−0.95		0.03
	Characteristics of the Child (Block 1)														
Age	0.27	0.17	0.00	0.02	0.06	0.20	0.05	0.16	0.00	0.05	0.11	0.02	0.03	0.06	0.19
Gender	−0.55	−0.10	0.01	−0.10	−0.10	0.01	−0.13	−0.14	0.00	−0.07	−0.05	0.26	0.21	0.12	0.00
Frequency of use	0.23	0.07	0.08	0.01	0.01	0.81	0.02	0.03	0.51	0.05	0.05	0.24	0.08	0.08	0.05
Skills	0.59	0.40	0.00	0.07	0.26	0.00	0.06	0.22	0.00	0.08	0.20	0.00	0.17	0.36	0.00
	Characteristics of the Parent (Block 2)														
SES	0.00	0.00	0.96	−0.02	−0.05	0.29	0.01	0.02	0.60	−0.02	−0.04	0.43	−0.02	−0.03	0.46
Frequency of use	−0.05	−0.05	0.34	−0.01	−0.06	0.27	0.01	0.05	0.38	−0.01	−0.02	0.75	−0.04	−0.11	0.04
Skills	0.03	0.02	0.71	−0.01	−0.02	0.68	−0.01	−0.03	0.63	0.01	0.02	0.73	0.03	0.07	0.16
Internet attitudes	−0.08	−0.01	0.70	0.00	0.00	0.95	−0.03	−0.03	0.40	0.11	0.07	0.09	0.01	0.00	0.93
	Parental Mediation (Parent's View) (Block 3)														
Active co-use	0.50	0.05	0.27	−0.01	−0.01	0.90	0.04	0.02	0.66	0.13	0.05	0.37	0.20	0.07	0.18
Technical restrictions	0.25	0.02	0.64	0.01	0.01	0.91	0.00	0.00	0.98	−0.06	−0.02	0.71	0.01	0.00	0.94
Interaction restrictions	−1.60	−0.12	0.01	−0.15	−0.07	0.18	−0.19	−0.08	0.08	−0.23	−0.06	0.21	−0.34	−0.08	0.08
Monitoring	0.12	0.02	0.72	0.10	0.08	0.12	0.06	0.04	0.37	0.01	0.00	0.93	0.12	0.05	0.27
	Parental Mediation (Child's View)														
Total mediation	0.03	0.04	0.37	0.01	0.06	0.22	0.01	0.07	0.15	−0.01	−0.03	0.52	0.02	0.06	0.22

Note. Responses for the child's view are based on 12–17-year-olds who, according to their parents, use the Internet and have home access and for whom their parent answered the survey ($N = 634$). Responses for the parent's view are based on parents of 12–17-year-olds who, according to their parents, use the Internet and have home access ($N = 632$).
Risks were measured by the child's perception of whether they had experienced this risk. There were discrepancies between the risks as perceived by parents and the risks as perceived by the child, and the child's view was assumed to be a better indicator of the risks the child encounters.

It is further noted that the positive association between children's perceived online skills and online risk is thought-provoking, for children can be expected to become more expert online in the coming years. This finding contradicts any easy assumption that as teenagers become more expert, they will get better at avoiding online risks.

Third, Table 4 shows that parents who use the Internet less have children who encounter more contact risks, controlling for characteristics of the child. This may, perhaps, provide a pointer towards explaining the general apparent ineffectiveness of active co-use, suggesting a general issue concerning parental inexperience with the Internet (especially compared with their critical television literacy)—indeed, their active co-use may possibly exacerbate as much as resolve problems of use; certainly it does not appear to ameliorate them.

Last, and consistent with the earlier reported finding regarding the link between interaction restrictions and the corresponding online activity, it seems that instituting interaction restrictions (as perceived by parents, this including a ban on e-mail, chat rooms, instant messaging, online games, and downloading) predicts a lower level of overall risk online. Although this was not specifically a means of reducing privacy or contact risks, as might have been expected from a banning of user-user interactions, it is nonetheless encouraging for the attempt to reduce teenagers' online risks.

Conclusions

Contrary to the hopes of policy makers and parents, getting parental regulation of the Internet right, so that children and teenagers understand it and, more important, so that the supposed harmful consequences of certain online activities are actually reduced, is proving difficult. The present findings have shown that teenagers are encountering a range of online risks. Parents, consequently, are attempting a range of mediation strategies, these partly drawing on but also adapting the strategies long developed for television. Parents have a preference for social over technical forms of mediation, preferring active co-use over technical restrictions, interaction restrictions, and monitoring practices (see Table 1).[2]

However, the expectation that increasing mediation would reduce risks was not supported, as has been found also for parental control and monitoring of other areas of risk in adolescence (Kerr & Stattin, 2000). The exception, however, was that a significant reduction in online risks was found to be associated with the parental restriction of user-user interaction. The role of those other users (in peer-to-peer interaction) suggests a line of inquiry for future research: Writing about television, Nathanson (2001a) reports that while parental mediation can inhibit negative effects, peer mediation may facilitate them. Neither active co-use, though widely practiced, nor software-based strategies (filtering and monitoring) were found to be effective in reducing risk, challenging future research to identify the benefits, if any, of such practices. Further, although it is encouraging that restricting online interactions has some benefits, the costs in terms of reducing teenagers' freedom to interact

with peers online must be weighed against the advantages in developing safety guidance directed at parents and teenagers. For teenagers, after all, e-mail, chat, instant messaging, games, and downloading are among the benefits of the Internet, so that restricting them keeps teenagers safer at a cost.

In order to understand the conditions of risk in relation to children's use of the Internet, and so as to advise policy makers and parents, further research addressing the questions raised and findings presented in this article is needed. The simple assumption that introducing forms of parental mediation will reduce the risks young people encounter online, especially while protecting their opportunities, is misguided. Moreover, learning the lessons of parental mediation of television provides a useful starting point but this is insufficient, for the Internet poses some very specific challenges, both regarding the nature of risk and for those seeking to protect children and young people while supporting their online activities more generally.

Notes

[1]Social class is measured according to the standard market research categories: A—Upper middle class (Higher managerial administrative or professional occupations, top-level civil servants); B—Middle class (Intermediate managerial administrative or professional people, senior officers in local government and civil service); C1—Lower middle class (Supervisory or clerical and junior managerial administrative or professional occupations); C2—Skilled working class (Skilled manual workers); D—Working class (Semi and unskilled manual workers); E—Those at lowest levels of subsistence (All those entirely dependent on the State long term, casual workers, those without regular income). ABC1 is here labeled "middle class" and C2DE is labeled "working class."

[2]Paired *t* tests show that, on standardized scales (from 0–1), "active co-use" is more popular than "technical restrictions" ($t_{(911)} = 28.84$, $p < 0.001$), "interaction restrictions" ($t_{(911)} = 32.87$, $p < 0.001$), and "monitoring" ($t_{(911)} = 19.39$, $p < 0.001$).

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