Parental Awareness and Monitoring of Adolescent Internet Use

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Abstract This study focused on four aspects of parental monitoring of Internet use by their children: parental supervision, communication and tracking, and adolescent disclosure. Data were obtained from a SAFT (Safety Awareness for Teens Project) national survey of Singapore youths and parents regarding Internet safety at home. Study 1 examined 1,124 adolescents and 1,002 parents; Study 2 examined a subsample of 169 dyads of adolescents and their parents. Frequency of use and engagement in risky Internet behaviors such as visiting inappropriate websites were analysed. The results indicated that parents tend to underestimate adolescents' engagement in risky Internet behaviors and overestimate the amount of parental monitoring regarding Internet safety that occurs at home. The study suggested that mothers have a better awareness of their adolescents' Internet use than fathers. The findings were explained in the context of parental monitoring. The results suggest that parental monitoring needs to be reconceptualized and that parents need to improve the communication with their adolescents regarding Internet use.

Research in numerous countries has indicated that large numbers of adolescents use the Internet on a regular basis (Bjornstad and Ellingsen 2004; Center for the Digital Future 2007; Liau et al. 2005; Livingstone and Bober 2004). Given adolescents increasing use of the Internet, there has been much concern about its impact on adolescent development. On the one hand, parents are supportive of the educational potentials of the Internet (Hitlin and Rainie 2005), and in fact, state education as

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their primary reason for investing in the Internet (Livingstone 2003). On the other hand, parents are also concerned about the risks of the Internet, which include issues relating to commercialism, privacy, security, sexual material, and social relationships (Lenhart 2005; Lim et al. 2003; Media-Awareness 2000).

Nevertheless, while numerous studies have examined parents' attitudes towards the Internet, less empirical research has been done to investigate parents' awareness and monitoring of adolescents' Internet use. This paper investigates parents' awareness of adolescents' Internet use by comparing parent-reports and adolescent self-reports of specific Internet behaviours such as frequency of use, types of websites visited, and engagement in risky Internet behaviours. The authors also compare the consistency of parent and adolescent reports in regards to the amount of parental monitoring of Internet use that occurs at home.

Parents' and Adolescents' Attitudes Towards the Internet

Surveys suggest that while parents may be anxious and insecure about the risks of the Internet, adolescents seem to be less concerned (Livingstone 2003). Livingstone and Bober (2004) found that although 73% of parents believe that the Internet can help their children do better at school and learn worthwhile things, many parents are concerned that the Internet may lead children to become isolated from others, expose children to sexual and/or violent images, displace more worthwhile activities, and risk their privacy. On the other hand, Lenhart and Madden (2007) found that adolescents were not particularly worried about being contacted by strangers online; 77% of adolescent Internet users said that they had never felt scared or uncomfortable when contacted by a stranger online. In Singapore, Lim et al. (2003) also found that parents have higher levels of concern about the risks of the Internet compared with adolescents aged 13 to 15.

Parental Supervision and Communication Regarding the Internet Safety

Given parents' concern about risks on the Internet, one would expect that parents practice high levels of supervision on their children's Internet use. Surveys indicate that most parents do set rules regarding their children's Internet use as well as monitor Internet use by checking bookmarks or browser history (Lenhart and Madden 2007). However, adolescent self-reports may not corroborate parental reports of supervision. In the Pew study (Lenhart 2005), while 62% of parents say they have checked up on where a child has gone online, only 33% of adolescents say that they believe their parents check up on the sites they have visited. Results from the SAFT project in Europe (Bjornstad and Ellingsen 2004) indicated that rules were only applicable in the first period following the family's acquisition of Internet access at home. Parental regulation disappeared once adolescents had used the Internet for some time. Based on their parent and youth surveys, Turow (2001) suggests that parent–child interactions about Web-privacy issues are fleeting at best, "perhaps in the form of 'don't give out your name' or 'don't talk to strangers'" (p. 82).

As a result, there is a gap between parents' and adolescents' accounts of supervision regarding Internet use. Livingstone and Bober (2004) reported that while 86% of parents do not allow their adolescents to give out personal information, only 49% of the adolescents say that they have not given out such information. The authors argue that perhaps "parents are more complacent than is wise, assuming that rules are being followed when they are not or assuming that rules are not needed when they are" (Livingstone and Bober 2004, p. 43).

A Reinterpretation of Parental Monitoring

The gap between parental reports and adolescents' self-reports of the monitoring of adolescents' Internet is a cause for concern because there is a large body of research over the past two decades documenting that parental monitoring of adolescents' activities and whereabouts is associated with positive adjustment during adolescence (for example, Crouter et al. 1990; Jacobson and Crockett 2000) and with fewer adolescent behavior problems such as delinquency, substance use, and sexual activity (for example, Flannery et al. 1994; Liau et al. 2003; Longmore et al. 2001). On the basis of this literature, parents of adolescents are often encouraged to keep track of and stay informed about their adolescents' activities, friends, and whereabouts in order to promote their positive development and prevent them from engaging in problem behaviors (for example, Montemayor 2001). However, recent studies have called into question the definition and conceptualization of parental monitoring (Kerr and Statin 2000; Statin and Kerr 2000).

Kerr and Statin (2000) argue that even though many studies have shown that "parental monitoring" is related to measures of adolescents' adjustment, these studies are actually measuring parental knowledge of adolescents' activities and not the parents' efforts in tracking and surveillance. Most of the research regarding parental monitoring has found a link between parental knowledge of adolescents' activities and positive adjustment in adolescents (Waizenhofer et al. 2004). Researchers have only recently begun to examine more closely how parents obtain information about their adolescents' activities. Kerr and Statin (2000), for instance, examined three sources of parental knowledge: adolescents' disclosure of information, parental solicitation (gathering information by asking adolescents themselves, and talking with their friends, and friends' parents), and parental control (controlling adolescents' freedom to simply come and go as they please). They found that parents' tracking and surveillance provided no explanation for the links between parental monitoring and adjustment. Instead, child disclosure of information provided a better explanation of the relationship. In other words, child disclosure provided a better explanation than tracking and surveillance of why parental knowledge is linked to adolescents' level of adjustment (Kerr and Statin 2000; Statin and Kerr 2000).

With regards to Internet use, Liau et al. (2005) found that active parent supervision techniques such as sitting with or checking in on the adolescent while they were online, using filters, and checking sites visited were not related to adolescent engagement in risky Internet behavior such as a face-to-face meeting with a stranger. Consistent with Kerr and Stattin's research, Liau et al. (2005) found that

adolescents who told their parents that they had received pornographic junk mail were less likely to have engaged in risky Internet behavior. Other researchers have also found that a variety of parental techniques such as having rules about the number of hours spent online, asking what youth do online, checking the history function, and using filters were not related to the risk of receiving sexual solicitations (Mitchell et al. 2001). However, Sun et al. (2005) found that less parental monitoring or more unsupervised time were related with more e-mail use, chat-room use, and home Internet use. Hence, more research needs to be done to gain a better understanding of parental awareness of adolescents' Internet use as well as the amount and types of parental monitoring of adolescents' Internet use.

Comparing Parent and Adolescent Reports of Adolescent Internet Use and Parental Monitoring

The above studies focused on adolescents' reports of their Internet behavior, and their parents' supervision. Little research has been done to compare parent reports with self-reports of adolescents' Internet use. One study by Wang et al. (2005) found that while 61% of parents said that they had rules about Internet use, only 38% of adolescents reported having such rules. However, that study only compared parent and adolescent reports on one aspect of parental monitoring of adolescent Internet use. This study investigates parents' awareness of adolescents' Internet use by comparing parent-reports and adolescent self-reports of a range of specific Internet behaviors.

As adolescents typically acquire Internet competence much faster than their parents (Bjornstad and Ellingsen 2004), the authors hypothesized that parents would underestimate the frequency of adolescents' use of the Internet, the frequency of visits to inappropriate websites such as pornographic sites, and frequency of engagement in risky Internet behaviors such as meeting someone face-to-face that the adolescents first met online. Also, given studies that suggest adolescent self-reports do not corroborate parent reports of parental monitoring, the authors hypothesized that parents would overestimate the amount of parental monitoring of Internet use at home.

The study also explored differences in mothers' and fathers' awareness of their adolescents' Internet use. On the one hand, research on parental knowledge of adolescents' activities have generally indicated that mothers know more about their adolescents' lives than their fathers (Bumpus et al. 2001; Waizenhofer et al. 2004). The greater knowledge of mothers compared to fathers is not surprising given that mothers spend more time in caregiving, joint activities, and conversation with their adolescents compared to fathers (for example, Crouter et al. 1993; Crouter and McHale 1993). On the other hand, in the domain of Internet use, Bjornstad and Ellingsen (2004) found that fathers tend to play a more active role compared to mothers; mothers were not seen as being involved in their adolescents' use of the Internet. Wang et al. (2005) found that fathers were more likely than mothers to check the web sites their children visited. Hence, a secondary aim of the study was to compare mothers' and fathers' awareness of their adolescents' Internet use.

Study One

The aim of Study 1 was to utilize a large-scale survey to explore descriptively parents' and adolescents' reports of Internet use, and reports of behaviors related to Internet use. In particular, parents and adolescents were asked parallel questions regarding the adolescents' frequency of use, the amount of parental monitoring of adolescents' Internet use, and parental awareness of adolescents' Internet use.

Method

Sample

Participants comprised of 1,124 adolescents and 1,002 parents. The adolescents had ages ranging from 12 to 17 (Mean age=14.32, SD=1.37). About half, 49.6%, of the adolescents were girls. The parents had ages ranging from 28 to 61 (mean age= 45.49, SD=4.68). The adolescents and parents were from nine secondary schools in Singapore. Of these nine schools, two were all-girls, two all-boys, and five were of mixed sex. The parents in the sample were not related to the adolescents except for a subsample of 169 adolescents and parents from two schools. This subsample was the focus of Study 2.

Instrument

The study utilized a 93-item child or adolescent survey and a parallel 63-item parent survey that was part of the SAFT (Safety, Awareness, Facts and Tools) Project (Bjornstad and Ellingsen 2004; Staksrud 2003). SAFT is an international collaboration of five countries: Denmark, Iceland, Ireland, Norway, and Sweden, and seeks to raise awareness of the positive potential and dangers of the Internet for youth and children. Singapore was invited as a partner in this cross-cultural collaborative study. The surveys were administered in all six countries.

The present study focused on parents' awareness of their adolescents' use of the Internet. Hence, the following sections of the survey instrument were relevant:

Frequency of Use Parents and adolescents were queried about the adolescents' frequency of use of the Internet at home or other places, assessed in the number of hours spent on the Internet in a week.

Visiting Inappropriate Websites Adolescents were asked whether they have ever accidentally or purposely ended up in the following types of websites: sites containing pornography, and sites containing violent or gruesome pictures. Parents were asked the same parallel questions about their adolescents.

Risky Internet Behavior Parents and adolescents were asked whether the adolescent had ever met anyone in real life that they first met on the Internet.

The authors focused on four aspects of parental monitoring: parental supervision, parental communication, parental tracking, and adolescent disclosure. Adolescents

responded to the parental monitoring questions on a scale of 1 to 3, with 1=“never”, 2=”sometimes” and 3=“often”.

Parental Supervision Parents and adolescents were queried about whether the parents sit with the adolescents when they are on the Internet. Parents responded to the question on a scale of 1 to 3, with 1=“never or don't know”, 2=“somewhat”, and 3=“often”.

Parental Communication Parents and adolescents were queried whether the parents talked to the adolescents about what they do on the Internet. Parents responded to the question on a scale of 1 to 4, with 1=“not at all”, 2=“very little”, 3=“a fair bit”, and 4=“a great deal”.

Parental Tracking Parents and adolescents were queried whether the parents check to see which websites the adolescents have visited. Parents responded to the question on a scale of 1 to 3, with 1=“never or don't know”, 2=“sometimes”, and 3=“often”.

Adolescent Disclosure Parents were asked whether their adolescents had ever talked to them about situations on the Internet that made them uncomfortable. Parents responded to the question on a scale of 1 to 3, with 1=“no or don't know”, 2= “somewhat”, and 3=“yes”.

Procedure

The students participated in the online survey during school, as it had been approved by the Ministry of Education, when they were having classes in the computer rooms. Students had to give their consent before they were given an ID code to log in to the online survey so that they could respond anonymously. The survey took 30 to 45 min to complete. Parents were given the survey by asking teachers to distribute the surveys to the parents through their students. Teachers helped collect the surveys from the students the following day.

Results

The results of Study 1 report descriptively parents' and adolescents' reports of Internet use, and reports of behaviors related to Internet use.

Adolescent Internet Use

Frequency of Use Adolescents reported a mean of 11.0 h, and a median of 5 h (SD= 17.48) of internet use a week. Parents reported that their adolescents spent a mean of 8.19, and median of 5 h (SD=9.85) per week on the Internet.

Visiting Inappropriate Websites Only 20.2% of parents thought their adolescents had visited pornographic websites, and 16.0% of parents thought their adolescents had visited websites with gory and violent material. In contrast, 53.5% of adolescents

reported they had visited a pornographic website accidentally and 45.4% of adolescents reported they had visited a website with gory and violent material.

Risky Internet Behaviour Only 4.1% of parents thought their adolescents had ever met anyone in real life that they first encountered on the Internet. However, 16.2% of adolescents reported that they had met someone in real life that they first encountered on the Internet.

Parental Monitoring

Parental Supervision More than half (54.2%) of parents say they have sat with their adolescents while they are on the Internet. Only 33.4% of adolescents reported their parents sit with them while they are on the Internet.

Communication with Parents Two thirds (66.5%) of parents said they have talked to their adolescents about safety on the Internet at least a fair bit. But only 37.2% of adolescents reported that their mothers talk to them about what they do on the Internet at least a fair bit, and 34.8% reported that their fathers talk to them about the Internet at least a fair bit.

Parental Tracking A third (35.3%) of parents say they have checked to see which websites their adolescents have visited. But only a quarter (26.4%) of adolescents reported that their parents have checked to see what websites they have visited.

Adolescent Disclosure A quarter (27.8%) of parents reported that their adolescents have talked to them about situations on the Internet that make them uncomfortable.

Study Two

Method

Sample

The parents in the sample of Study One were not related to the adolescents except for a subsample of 169 adolescents and parents. These 169 dyads of adolescents and their parents were the participants in Study Two. These adolescents and their parents were from two secondary schools—one an all-boys school and the other all-girls. A total of 109 (64.5%) of the adolescents were boys, and 88 (52.1%) out of the parents who filled up the survey were female. The adolescents had ages ranging from 12 to 16 (mean age=13.91, SD=1.14). Table 1 shows a cross-tabulation of the number of respondents by sex of parent and sex of adolescent.

Instrument and Procedure

The same instruments and procedure were used as in Study One.

Table 1 Cross-tabulation of the respondents by sex of adolescent and sex of parent

	Mother		Father	
	Daughter	Son	Daughter	Son
Number of adolescents	36	52	24	57

The table indicates the sex composition of the adolescent and parent dyads in Study Two.

Results

### Parental Awareness of Adolescent Internet Behavior

Analysis Plan In this section, the relationship between parents' awareness of their adolescents Internet use and their adolescents' self-report of their Internet use was examined. For the continuous variables such as frequency of use, correlations and paired *t*-tests were used to examine the relationships between parent-reported and adolescents' self-reported frequency of use. Analysis of variance and multiple regression were used to examine the sex differences in frequency of use. For the categorical variables such as visiting inappropriate websites, and risky internet behavior, chi-squared analyses were used to examine the association between parent-reported and adolescents' self-reported frequency of use.

Frequency of Use Parent-reported frequency of use was significantly correlated with adolescents self-reported frequency of Internet use ($r(165)=0.52$, $p<0.0001$). Adolescents reported a mean of 11.35 h of use a week, (SD=15.39) while parents reported that their adolescents spent a mean of 8.64 h (SD=11.37). A paired *t*-test indicated that compared with their parents, adolescents reported spending a significantly greater number of hours on the Internet ($t(159)=2.51$, $p<0.05$). For adolescent-reported frequency of use, a two-way analysis of variance (ANOVA) by adolescent sex and parent sex indicated no significant relationship. Similarly, for parent-reported frequency of use, a two-way ANOVA by adolescent sex and parent sex indicated no significant relationship.

Multiple regression analysis was used to examine whether parent sex and adolescent sex moderated the relationship between parent-reported and adolescent self-reported frequency of use. With parent-reported frequency of use as the outcome variable, the following were entered into the regression model as predictor variables: parent sex, adolescent sex, adolescent self-reported frequency of use, and the following interaction terms: parent sex by frequency of use, adolescent sex by frequency of use, and parent sex by adolescent sex by frequency of use (three-way interaction term). The three-way interaction term was significant indicating that the combination of parent sex and adolescent sex was a significant moderator between parent-reported and adolescent self-reported frequency of use ($t(153)=-3.41$, $p<0.001$). Figure 1 illustrates the moderating effect of parent sex and adolescent sex. The nature of the interaction was such that the association between fathers and sons in reporting frequency of use was lower compared with the associations between the other combinations of parents and their adolescents —that is, mothers with sons, mothers and daughters, as well as fathers and daughters.

Fig. 1 The moderating effect of sex of parent and sex of adolescent on the relationship between parent-reported and adolescent self-reported frequency of Internet use. Note. The figures illustrate the three-way interaction indicating how parent sex and adolescent sex moderate the relationship between parent-reported and adolescent-reported frequency of Internet use
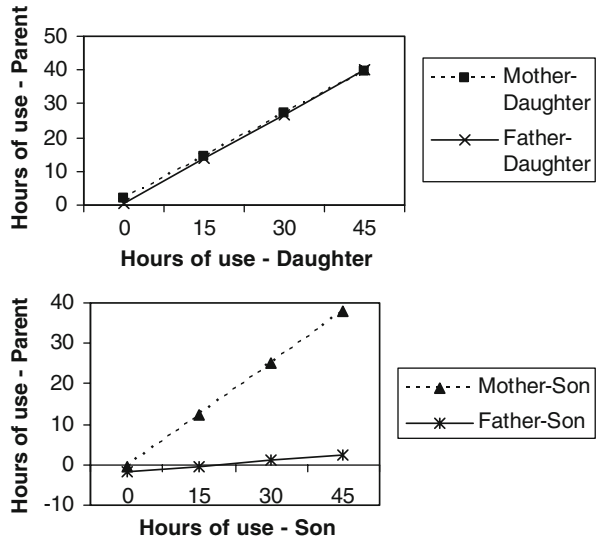
Visiting Inappropriate Websites A total of 69 (65.1%) out of the 106 boys, and 30 (50.8%) out of 59 girls reported that they had accidentally visited pornographic sites. A chi-squared analysis indicated that adolescent sex was not associated with likelihood of reporting have visited such pornographic sites (χ^2 (1)=3.21, p=0.073). Fifty-two (49.1%) out of 106 boys and 16 (27.1%) out of 59 girls reported having accidentally visited a violent or gory website. A chi-squared analysis indicated that boys were more likely to have visited such sites than girls (χ^2(1)=7.53, p<0.01).

As the number of subjects within cells was too low to allow categorical analyses by adolescent sex and parent sex, the following analyses examined the association between parent reports and adolescent reports of visiting inappropriate sites by parent sex. Table 2 shows the cross-tabulation of parents reporting that their adolescents have visited pornographic websites vs. adolescents reporting they have accidentally visited such sites. Mothers identified 21 (39.6%) out of the 53 teenagers

Table 2 Cross-tabulation of mothers and fathers reporting that their adolescents have visited pornographic (porn) websites vs. adolescents reporting they have accidentally visited such sites

		Adolescents who have visited pornographic sites		Total
		No	Yes	
Mothers	Yes	3	21	24
Reporting adolescents have visited porn sites	No	29	32	53
	Total	32	53	85
Fathers	Yes	4	18	22
Reporting adolescents have visited porn sites	No	30	28	58
	Total	34	46	80

The table examines the association between parent reports and adolescent reports of visiting pornographic websites by parent sex in Study Two.

Table 3 Cross-tabulation of mothers and fathers reporting that their adolescents have visited violent and gory websites vs. adolescents reporting they have accidentally visited such sites

| | | Adolescents who have visited violent/gory sites | | Total |
		No	Yes	
Mothers	Yes	6	13	19
Reporting adolescents have visited violent/gory sites	No	45	21	66
	Total	51	34	85
Fathers	Yes	7	5	12
Reporting adolescents have visited violent/gory sites	No	39	29	68
	Total	46	34	80

The table examines the association between parent reports and adolescent reports of visiting violent or gory websites by parent sex in Study Two.

who reported having visited pornographic sites. Fathers identified 18 (39.1%) of the 46 teenagers who reported having visited such sites. For both mothers and fathers the association between parent-report and adolescent reports of visiting such sites was significant ($\chi^2(1)=9.01$, $p<0.001$, and $\chi^2(1)=7.34$, $p<0.01$, respectively).

Table 3 shows the cross-tabulation of parents reporting that their adolescents have visited violent and gory websites vs. adolescents reporting they have accidentally visited such sites. Mothers identified 13 (38.2%) out of the 34 teenagers who reported having visited pornographic sites. Fathers identified 5 (14.7%) of the 34 teenagers who reported having visited such sites. The association between parent-report and adolescent reports of visiting such sites was significant for mothers ($\chi^2(1)=8.24$, $p<0.01$) but not for fathers.

Risky Internet Behavior A total of 13 (17.8%) out of 73 boys and five (13.5%) out of 42 girls, who have chatted online, reported having met someone in person they first encountered online. A chi-squared analysis suggests that adolescent sex was not associated with the likelihood of having such a face-to-face meeting. Table 4 shows the cross-tabulation of parents reporting that their adolescents reporting that their adolescents have met someone in person they first encountered online vs.

Table 4 Cross-tabulation of mothers and fathers reporting that their adolescents have met someone in person they first encountered online vs. adolescents reporting they have engaged in such behaviour

| | | Adolescents who have met someone first met online | | Total |
		No	Yes	
Mothers	Yes	0	2	2
Reporting adolescents have met someone first met online	No	51	8	59
	Total	51	10	61
Fathers	Yes	3	0	3
Reporting adolescents have met someone first met online	No	43	8	51
	Total	46	8	54

The table examines the association between parent reports and adolescent reports of meeting someone in person they first encountered online in Study Two.

adolescents reporting they have engaged in such behaviour. Mothers identified two (20%) out of the ten teenagers who reported have met someone in person they first encountered online. Fathers identified none of the eight teenagers who reported having had such meetings. For mothers, the association between parent-report and adolescent reports of such meetings was significant ($\chi^2(1)=10.55$, $p<0.01$), but not for fathers.

Parental Monitoring

Analysis Plan Multivariate analysis of variance was used to examine the sex differences in the parental monitoring variables. Paired *t*-tests were used to compare the levels of parent-reported and adolescents' self-reported parental monitoring.

Sex Differences The means and standard deviations of the parental monitoring variables by parent sex and adolescent sex are shown in Table 5. In order to examine differences in parent sex and adolescent sex in terms of parent-reports of the parental monitoring variables, the authors performed a 2 (parent sex) X 2 (adolescent sex) multivariate analysis of variance (MANOVA) on four outcome variables: parental supervision, parental communication, parental tracking, and adolescent disclosure. The multivariate main effects of parent sex ($F(4,159)=2.93$, $p<0.05$) and adolescent sex ($F(4,159)=5.04$, $p<0.01$) were significant. Subsequent univariate analyses indicated that parents reported greater levels of parental supervision ($F(1,165)=7.11$, $p<0.01$), and parental tracking ($F(1,165)=12.14$, $p<0.01$) for boys compared with girls. Mothers reported greater levels of adolescent disclosure than fathers ($F(1,165)=4.24$, $p<0.05$). For adolescent-reported parental monitoring variables, multivariate analysis of variance for the outcome variables—parental communication for mother, parental communication for father, parental supervision, and parental tracking—did not indicate any differences by adolescent sex.

Table 5 Means and standard deviations for parental monitoring variables

	Parent report				Adolescent report	
	Mother		Father		Girl	Boy
	Girl	Boy	Girl	Boy		
Parental supervision	1.42 (0.60)	1.72 (0.53)	1.63 (0.49)	1.80 (0.55)		
Parental communication	2.81 (0.79)	2.86 (0.88)	3.04 (0.69)	2.89 (0.73)		
Parental tracking	1.31 (0.67)	1.64 (0.66)	1.29 (0.46)	1.69 (0.69)		
Adolescent disclosure	1.58 (0.84)	1.34 (0.69)	1.17 (0.38)	1.30 (0.63)		
Parental communication—mother					2.37 (0.92)	2.30 (0.88)
Parental communication—father					2.26 (0.90)	2.33 (0.93)
Parental supervision					1.24 (0.43)	1.34 (0.52)
Parental tracking					1.29 (0.55)	1.46 (0.57)

Descriptive statistics of the parental monitoring variables in Study Two.

Table 6 Zero-order correlations among the parental supervision variables comparing adolescent reports (AR) and parental reports (PR)

	1.	2.	3.	4.	5.	6.	7.
1. Parental Communication-Mother (AR)							
2. Parental Communication-Father (AR)	0.83**						
3. Parental Supervision (AR)	0.27**	0.28**					
4. Parent Tracking (AR)	0.23*	0.31**	0.21*				
5. Parental Communication (PR)	0.26*	0.23**	0.17*	0.12			
6. Parental Supervision (PR)	0.08	0.14	0.29**	0.16	0.26**		
7. Parental Tracking (PR)	0.10	0.11	0.13	0.40**	0.39**	0.38**	
8. Adolescent Disclosure (PR)	0.16*	0.17*	0.26**	0.13	0.29**	0.23**	0.11

The association between parental communication, parental supervision, and parental monitoring variables in Study Two.
$**p < 0.01$; $*p < 0.05$

Relationships Among Parental Monitoring Variables The relationships among parent-reports and adolescent-reports on the parental communication, parental supervision and parental monitoring variables are shown in Table 6. Significant but low to moderate correlations were found between the parent-reports and adolescent reports for all these parenting variables—communication with mothers: $r(158) = 0.26$, $p < 0.01$; communication with fathers: $r(157) = 0.23$, $p < 0.01$; parental supervision: $r(156) = 0.29$, $p < 0.01$; parental monitoring: $r(129) = 0.40$, $p < 0.01$.

Parental Supervision A paired *t*-test indicated that parents reported sitting with their adolescents while they were on the Internet significantly more often that adolescents reporting whether their parents sat with them while they were on the Internet ($t(155) = 6.03$, $p < 0.0001$).

Communication with Parents A paired *t*-test indicated that both mothers ($t(81) = 5.21$, $p < 0.0001$) and fathers ($t(76) = 4.30$, $p < 0.0001$) reported talking to their adolescents about the internet significantly more often than adolescents reporting whether their parents talked to them about the Internet.

Parental Tracking A paired *t*-test indicated that there was a trend towards parents reported checking the bookmarks or browser history more often than adolescents reporting that their parents checked the history of sites visited ($t(129) = -1.71$, $p < 0.10$).

Discussion

The results from both Study One and Study Two suggest that parents tend to underestimate adolescents engagement in visiting inappropriate websites such as pornographic sites, and engagement in risky Internet behaviours such as meeting face-to-face someone first met online. In addition, parents tend to overestimate the amount of parental supervision, and communication regarding Internet safety that occurs at home. The study also indicated that mothers are better than fathers in predicting their adolescents' frequency of Internet use.

The results of this study are consistent with findings from a recent survey of children in the United Kingdom (Livingstone and Bober 2004). In the UK study, parents were found to substantially underestimate their children's negative experiences online and appear unaware of their children's potential need for guidance. In particular, while 7% of parents thought that their child had received sexual comments, 31% of 9 to 19 year olds who go online at least once a week reported having received sexual comments via e-mail, chat rooms, instant message or text message.

One possible reason that parents might be unaware of their adolescents' Internet use is that adolescents try to protect their privacy from parents. Livingstone and Bober (2004) found that two thirds of 12- to 19-year-old home Internet users have taken some action to protect their privacy online. In the present study, the authors found that 63.2% of adolescents who use the Internet reported that it is possible for them to use the Internet somewhere without their parents knowing about it.

The need for privacy is a characteristic of adolescence, a transitional period in the progression towards self-reliance. Psychologists have described this development of emotional autonomy as a stepping stone towards true self-reliance and responsible decision making (Lamborn and Steinberg 1993). Emotional autonomy is the process that allows adolescents to come to rely on their own internal resources and take responsibility for their actions, that is, to become mature, competent young adults (Silverberg and Gondoli 1996). During this developmental stage, parents and adolescents have to strike a balance between promoting individuality and granting decision making privileges for adolescents on the one hand, while monitoring and guiding their behaviour, on the other hand. Adolescents may view the Internet as a domain where they can develop their own individuality and make their own decisions. In fact, researchers in the SAFT study found that adolescents reported experiencing the Internet as a "liberating free zone where teenagers' own logic and set of rules reign" (Bjornstad and Ellingsen 2004, p. 32).

Nevertheless, there are many risks on the Internet that warrant the concern and supervision of parents. For instance, as reported elsewhere (Liau et al. 2005), this survey indicated that 16% of adolescent Internet users have had a face-to-face meeting with someone first encountered online, and 18% were willing to give out their postal address in order to win a prize in a contest. Parents themselves realize the importance of Internet safety and are concerned about their children and adolescents' Internet use (Lim et al. 2003). However, this study suggests that parents are overestimating their monitoring of their adolescents' Internet use.

The disagreement between parents and adolescents regarding the monitoring of adolescents' Internet use is consistent with family research studies that indicate that parents and children have overlapping but discrete perceptions of each other's behavior (for example, Phares et al. 1989; Tein et al. 1994). For instance, Tein et al. (1994) found a low level of agreement between parents and children on reports of parental behavior (0.13 to 0.36 for mother–child agreement and 0.19 to 0.31 for father–child agreement). The authors suggest that disagreement between reporters does not necessarily imply that one is "right" and the other is "wrong." In fact, it is possible that adolescents are not aware of the strategies that parents are undertaking to monitor their adolescents Internet use, such as checking the website log to monitor the sites that they have visited. Nevertheless, given that adolescents usually consider

themselves more expert at computers than their parents (for example, Livingstone and Bober 2004), it seems unlikely that adolescents are unaware of their parents' monitoring activities. Qualitative studies regarding computer use at home have also shown that although parents may have strong aspirations that household computers should support their children's learning, and although parents' main software purchases were educationally oriented, children spent most of their time on non-educational games (Kerawalla and Crook 2002). Instead, parents did not seem to regulate the content of children's computer activity and rarely became involved in the activities themselves.

A more likely reason for the gap between parent and adolescent reporting of parental monitoring is that parents perceive that they are supervising their adolescents when in reality what they are doing is minimal. For instance, parents may consider "looking over the shoulder" as a form of parental monitoring. Such methods may not be very effective. In fact, numerous studies have shown that parental monitoring techniques such as checking the screen and checking the history log are not effective in lowering the risk involved with adolescent Internet use. Mitchell et al. (2001) found that a variety of parental techniques such as having rules about the number of hours spent online, asking what youth do online, checking the history function, and using filters were not related to the risk of receiving sexual solicitations. Hence, the ineffectiveness of such active parental monitoring is consistent with Kerr and Statin's (2000) research on parental monitoring mentioned earlier in that parents' tracking and surveillance provide no explanation for the links between parental monitoring and adjustment.

In fact, Kerr and Statin (2000) suggest that "controlling adolescents' freedom to come and go as they please is a questionable strategy" (p. 377) for finding out about their whereabouts, and promoting good adjustment. If there are too many rules and restrictions regarding Internet use at home, it is likely that adolescents will access the Internet at other places such as a friend's home or at a cyber-cafe (Khoo et al. 2006). Instead, perhaps parents should encourage open communication with their children regarding their Internet use, and use participative decision making to set specific rules about the limits of their Internet behavior. Various studies have indicated that poor communication between parents and adolescents is often related to problematic Internet use (Mesch 2003). For instance, Wolak et al. (2003) found that adolescent difficulties such as depression, and alienation from their parents were prominent as characteristics among adolescents that predicted close online relationships. Perhaps tongue-in-cheek, Kerr and Statin (2000) suggested that "the most important monitoring and controlling that parents can do is to monitor their own behavior and control their own words and actions that discourage children from being open and communicative" (p. 378).

This study suggests that mothers have a better awareness of their adolescents' Internet use than fathers. Mothers were more likely to be aware of their adolescents' problematic Internet use such as visiting pornographic websites or having a face-to-face meeting with someone first met online. As reported by parents, adolescents were more likely to disclose to mothers that they have encountered situations on the Internet that made them feel uncomfortable compared with fathers. These findings are inconsistent with Wang et al. (2005) finding that fathers are more likely than mothers to check the websites visited by their adolescents. However, the findings are

consistent with various studies that have indicated that mothers know more about their adolescents' lives than fathers (Bumpus et al. 2001; Waizenhofer et al. 2004). Waizenhofer et al. (2004) found that mothers were more likely to gain information about their adolescents through both active (for example, asking) and passive (for example, adolescent disclosure) means than were their fathers. In Singapore, Khoo et al. (2003) found that compared with fathers, mothers were more worried about not knowing enough about the Internet.

With regards to the agreement between parents and adolescents in reporting adolescents' frequency of Internet use, the largest gap was between fathers and sons. In other words, both mothers and fathers were able to predict their daughters' frequency of use, and mothers were able to predict their sons' frequency of use; but fathers seem to be unable to predict their son's frequency of use. This finding is inconsistent with research showing that parents have more knowledge of their same-sex children's activities (Crouter et al. 1999; Koh and Tan 2000) but is consistent with other research indicating that fathers know more about their daughters than their sons (Waizenhofer et al. 2004); perhaps, "if fathers tend to rely on their spouses for information about their adolescents, particularly their daughters, then fathers might know more about their daughters than about their sons merely because their wives do" (Waizenhofer et al. 2004, p. 358).

Limitations and Future Directions

As many studies on Internet use have surveyed adolescents and parents separately, this study has made an important contribution in comparing dyads of adolescents and their parents in gaining a better understanding of the Internet generation gap. One limitation of the study is that the survey consists of many single-item constructs that have not been validated. Nevertheless, research about youth Internet use is a new undertaking, and the procedures for inquire in this area have not been standardized or validated (Wolak et al. 2002). In addition, our study utilized an international survey that has been administered in five European countries (Staksrud 2003). The present study could also be strengthened if there had been a qualitative component to examine more closely parents' and adolescents' perceptions of Internet use. Future research should include interviews as well as observations to further clarify this discordance between parents' and adolescents' reports of Internet use at home.

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