Lead Us Not Into Temptation:
Predictors of Inappropriate Behavior and Dangerous Situations in Teen Internet Use

JAMES D. IVORY
Assistant Professor
Department of Communication
111 Shanks Hall (0311)
Virginia Polytechnic Institute and State University
Blacksburg, VA 24060
E-Mail: jivory@vt.edu
(This research was presented while Dr. Ivory was a Ph.D. student at the School of Journalism and Mass Communication, University of North Carolina at Chapel Hill.)

As teenagers' access to the Internet increases, concerns about inappropriate behavior and exposure to dangerous situations grow accordingly. While many strategies are recommended to reduce these risks, it is unclear which are effective. This research uses data from a telephone survey of 754 parents and their adolescent children to explore relationships between parental attitudes toward the Internet, parental protection strategies, and children's access environment on children's indulgence in inappropriate behavior and exposure to dangerous situations. Results indicate only two statistically significant relationships: a negative relationship between filtering and inappropriate behavior and a positive relationship between privacy and dangerous situations. These results, however, should be interpreted with caution, and implications for application are difficult to ascertain.

For most of the past century, the emergence of each new medium has been consistently followed by academic scrutiny regarding the novel offering's effects on children (Wartella & Reeves, 1985). The Internet is no exception. This is appropriate, as the information superhighway is well-traveled by members of the currently maturing generation. Eighty-three percent of U. S. 13- to 17-year-olds had Internet access in 2002, compared to only 60 to 70 percent of their adult counterparts (Palser, 2003). The promise of this burgeoning information access is not without drawbacks, however. Even as youths benefit from the exhaustive and rapidly available information supply provided by the Internet, dangerous content, interactions, and temptations await them. Some consternation surrounding these dangers may be overwrought: In a 1996 dialogue, Newhagen criticizes the widespread concerns associated with children's Internet use almost immediately upon the medium's growth into mainstream acceptance:

> The popular press is already depicting the Net as having the power to snatch our babies right from the cradle and poison their minds. Based on virtually no empirical evidence, the power to mesmerize and seduce our youth is being attributed to the Net, just as it was to television and film before (Newhagen & Rafaeli, 1996, p. 12).

Despite Newhagen's derision, however, dangers and potential for inappropriate behavior are inarguably present and real in today's Internet environment. When teenagers' familiarity with the Internet and its potential strength as a socializing agent (La Ferle, Edwards, & Lee, 2000) are taken into consideration, this age group's vulnerability is of special interest. What measures can be taken to ensure that Internet use by adolescents maximizes the medium's positive potential while minimizing exposure to less admirable features? Of course, the answer to this question is an elusive one. Encouraging Internet use among children seems to be a necessary criterion in preparing them for the challenges of adulthood in the current information- and technology-laden environment, but it is difficult to provide such positive encouragement and access without exposing them to dangerous situations and furnishing them with the opportunity to misbehave online. How can the former be maximized while the latter is minimized, and what strategies can reduce negative outcomes without hindering benefits? In addition to concerns as to what measures might limit benefits as well as risks, a lack of clarity regarding the efficacy of measures in reducing risks at all can frustrate efforts to identify worthwhile strategies to ensure safety and appropriate behavior online. In an effort to reduce this obscurity, this research uses a 2000 survey of parents and children aged 12-17 to investigate the effect of parental attitudes, parental protection strategies, and children's access environments with regard to the Internet on adolescents' indulgence in inappropriate behavior and exposure to dangerous situations online.

Exploring and Improving Children's Internet Experiences

Researching the Internet

While the Internet clearly merits a research focus as a mass medium (Morris & Ogan, 1996), investigation methods should not always mirror those used with preceding media. The Internet is a dynamic medium, often characterized by interactivity and decentralized content production to such an extent that it defies preexisting views of mass communication (Chaffee & Metzger, 2001, p. 369). While

the unidirectional nature of much media consumption by children justifies the paradigmatic use of media messages as a primary independent variable in exploring the impact of the media on users, the multifaceted, involved, and interactive nature of Internet use is not fully captured by such a view. In investigating online behaviors, factors describing use must be taken in consideration in addition to the messages themselves to observe the impact of the medium (Newhagen & Rafaeli, 1996, p. 9-13).

Therefore, illumination regarding Internet use conditions, contexts and behaviors is at least as important as studies focused solely on Internet content and its unidirectional effects on users in controlled environments. While this type of environmental study is evasive to the empirical social scientist, survey research can provide cursory information about relationships between adolescents' Internet use context and online behavior in their everyday environments.

Reducing Danger and Misbehavior

If the context of children's Internet use is of such importance, what contextual factors should be explored as potential influences on children's online behavior and safety? Of late, technological restraints such as filters have received endorsement, including a 2003 Supreme Court decision supporting the 2000 Children's Online Protection Act's mandate that public libraries and schools use filters or risk losing funding (Schwartz, 2003). Support for filter use is not universal, however, as critics argue that filters both fail to block targeted content and restrict access to content that is not intended to be withheld from Internet users (Wolinsky, 2003). For example, a study by the Kaiser Family Foundation showed filters failed to block 13 percent of pornographic content, while incorrectly blocking as much of half of innocuous content under restrictive settings ("Education, Not Filters," 2003, p. 58).

Alternate strategies recommended to parents in limiting risky and inappropriate Internet use include placement of computers in non-private areas, monitoring children's online habits, and providing rules regarding Internet use (Bushong, 2002, p. 13). However, implementation of these strategies is often confounded by inadequate familiarity with the Internet among parents (Quigley & Blashki, 2003)

and teachers (Orlans, 2003). In the presence of such an unclear and contentious picture of how to best guide children's online experience, more research into the efficacy of all of these factors is merited to allow more focused development of tools and procedures to maximize the quality of children's Internet use.

Research Questions

RQ1: What parental attitudes toward the Internet, if any, have a measurable effect on the prevalence of inappropriate behavior and involvement in dangerous situations among teen Internet users?

RQ2: What parental strategies regarding Internet use, if any, have a measurable effect on the prevalence of inappropriate behavior and involvement in dangerous situations among teen Internet users?

RQ3: Does access to an individually used and/or private computer have a measurable effect on the prevalence of inappropriate behavior and involvement in dangerous situations among teen Internet users?

Method

Independent Variables

From the data set provided, the present research used several relevant items to create independent and dependent variables to investigate the potential effects of parental attitudes toward the Internet, parental protection strategies regarding Internet use, and the nature of teens' computer access on the prevalence of inappropriate behavior and involvement in dangerous situations among teen Internet users. The parental attitudes variable was created using a survey question asking parents how important Internet skills are to a young person's success in life, using four response options ranging from "Essential" to "Not at all important." This response was recoded on a zero ("Not at all Important") to one ("Essential") scale with intermediate responses assigned the equidistant values of .33 and .66. Missing values were excluded from

analysis for this and all independent variables.

The parental protection strategy variables were obtained from responses to questions asked to both parents and children. Parental responses used regarded whether they had ever checked their what sites their children had visited after their children had gone online, whether they had household rules regarding when and for how long their children could go online, and whether they used monitoring software or a filter on their home computer or home Internet account. Children's responses used regarded whether their parents had checked what sites they had visited after they had gone online and whether their parents had household rules regarding when and for how long they could go online.[1] Computer access variables were derived from questions asked to children regarding whether they had access to a computer in private for any of their Internet use and whether they had sole use of any computer in the household. Dichotomous responses for all items addressing parental protection strategies and access were dummy coded from zero (never practiced) to one (practiced). The child's age and gender were also used as control variables in analysis.[2]

Results

Simple Regressions

Simple regression tests between each independent variable and each dependent index (Table 1) invariably reported positive beta scores for relationships between the indices and the parental attitude variable, as well as between the indices and both child access variables. Negative relationships were also observed between nearly every parental

---

[1] Despite significant correlations between parents' and children's responses regarding the presence of household rules (r=.275, p<.001), and Internet checking (r=.208, p<.001) responses within cases often varied enough that both responses of both case members were analyzed here for each question.

[2] While reported gender of the children did not vary between parent and child responses, parents' and children's reported age for the child varied slightly despite close correlation (r=.978, p<.001). To address this discrepancy, the average of parent and child responses was used in this analysis to define child age.

Table 1. Simple Regression Results for Potential Predictors.

	Inappropriate Behavior		Dangerous Situations	
	β	Sig.	β	Sig.
Independent Variable				
Attitudes				
Parent's Rating of Internet Use Importance	.032	.392	.057	.117
Protection				
Parent's Reported Checking of Use	-.004	.905	.037	.314
Parent's Report of Use Rules	-.072	.054	-.048	.186
Parent's Report of Filter Use	-.128	.001**	-.049	.197
Child's Report of Parental Checking	-.018	.662	-.010	.812
Child's Report of Use Rules	-.069	.067	-.024	.507
Access				
Child's Report of Sole Access	.004	.928	.006	.879
Child's Report of Private Access	.046	.243	.110	.004**
Controls				
Age	.155	.000**	.228	.000**
Gender	-.114	.002**	-.031	.391

(Table header spanning: Dependent Index)

** p<.01   *Positive relationships indicate that presence of conditions contributes to higher index scores and vice versa, except for age (reported age) and gender (where 0=male, 1=female).*

protection variable and both indices. (i.e., higher rated importance of the Internet by parents, individual access by children, and private access by children all contribute to more inappropriate behavior and dangerous situations, while protection strategies reduced inappropriate behavior and dangerous situations).

However, significance testing revealed surprisingly few statistically significant relationships between potential predictors and the indices: while many variables showed relationships to the indices that were near significance, only one predictor for each index had a statistically significant effect. Interestingly, these predictors also differed between indices. For the inappropriate behavior index, only parent's reported filtering affected the index at a statistically significant level (β = -.128, p = .001). For the dangerous situations index, the only significant effect was from the child's report of private access (β = .110, p = .004). The implications of these results on the research questions are therefore mixed. Parental attitude, as operationalized here, has no sta-

tistically significant effect on either child's inappropriate behavior or involvement in dangerous situations. On the other hand, one parental protection strategy (filtering) and one access condition (privacy) exhibit relationships with inappropriate behavior and involvement in dangerous situations, respectively.

The control variables significantly affected both indices almost without exception. With both indices, age had a positive relationship with scores, while gender had a negative relationship (i.e., females tended toward lower scores than males). The age relationship was statistically significant with both indices, but the gender relationship was statistically significant with only the inappropriate behavior index.

Multiple Regressions with Controls

Both statistically significant predictors remained so when entered into hierarchical multiple regressions with gender and age as controls (Table 2). The weight (β = .-.107) and significance (p = .006)

Table 2. Hierarchical Regression Results for Predictors with Gender and Age as Controls.

	β	Sig.
Filter Use (IV) and Inappropriate Behavior (DV)		
Gender	-.089	.020*
Age	.110	.004**
Parent's Report of Filter Use	-.107	.006**
Private Access (IV) and Dangerous Situations (DV)		
Gender	-.031	.403
Age	.207	.000**
Child's Report of Private Access	.087	.021*

* p<.05   ** p<.01   *Results are for entire model. Positive relationships indicate that presence of conditions contributes to higher index scores and vice versa, except for age (reported age) and gender (where 0=male, 1=female).*

for the effect of parental report of filtering on inappropriate child behavior was reduced only negligibly by the addition of both controls to the model. While there was a greater reduction in the strength of the relationship between private computer access and dangerous situations with the addition of the controls, the relationship remained notably strong and highly significant (β = .087, *p* = .021). These results suggest that while most independent variables used here do not predict inappropriate behavior or dangerous situations at a statistically significant level, both the negative relationship between the presence of filtering software and inappropriate behavior and the positive relationship between private computer use and exposure to dangerous situations is strong regardless of the child's age (at least, within the range of this sample) and gender.

Discussion

Ostensibly, these results bear troubling news for parents, with but two hopeful exceptions. Are there only two measures parents can take in hopes of keeping their teens safe and well-behaved on the Internet? The data do not support such a deterministic claim. Despite the frequent lack of significance, most directional relationships observed here remain somewhat promising: nearly all parental strategies, including filtering, checking children's Web use, and establishment of rules, may limit inappropriate behavior and involvement in dangerous situations despite their conclusive support here.

It is quite possible that further research more closely examining the effect of these strategies might produce more empirically sound relationships, especially for those predictors that showed relationships very near the somewhat arbitrary standard for statistical significance. Meanwhile, the observed negative impact of filtering on inappropriate behavior seems to support use of this strategy to a degree.

Findings with regard to parental attitudes and the nature of computer access can also be viewed as comforting, as most of the positive relationships between these variables and the indices are not statistically significant. The evidence here does not strongly suggest that parental belief in the importance of the Internet in children's success (which, one reasons, is likely to precipitate higher encouraged use), privacy or individual access to not typically contribute to more common instances of inappropriate behavior nor involvement in dangerous situations. However, the exception of the relationship between privacy and dangerous behavior suggests that solitary access is not without its concerns for children. Nor should one assume that the lack of significance in other relationships indicates that these conditions are innocuous with regard to online safety and behavior; on the contrary, the lone statistically significant result linking privacy to danger encourages caution regarding individual computer use and all undesirable outcomes.

Application even those findings with strong statistical support are also difficult to apply, as they must be considered in the context of the parent-child relationship. At what point do the positive effects of practices like filtering and eliminating privacy outweigh the limitation of the adolescent's right to privacy and access to information? While it is clear that there are extremes at both ends of the spectrum with regard to these practices, these results cannot suggest how they should be applied in a real-world context. This is likely an issue beyond the grasp of empirical research, and perhaps that of scholarship altogether.

This research, then, perhaps provides more questions than answers. While there is some evidence here that practices such as filtering can limit negative situations for teens and privacy can increase them, the efficacy of other measures is still in doubt. All the while, effective application remains a mystery. Clearly more research using different methodologies, populations, and operationalized variables, is needed to better articulate measures that will keep teens safe and well-behaved online without reducing the quality of their online experience. Meanwhile, these findings suggest that the benefits of filtering and the dangers of private online access, in addition to other strategies and use conditions, should not go unconsidered.

References

Bushong, S. (June 2002). Parenting the Internet: Resources for parents and children. *Teacher Librarian, 29* (5), 12-16.

Chaffee, S. H., & Metzger, M. J. (2001). The end of mass communication? *Mass Communication and Society, 4* (4), 365-379.

Education, not filters, protects kids online. (April 2003). *Teacher Librarian, 30* (4), 58

La Ferle, C. Edwards, S. M., & Lee, W. N. (May 2000). Teens' use of traditional media and the Internet. *Journal of Advertising Research, 40* (3), 55-65.

Morris, M., & Ogan, C. (Winter 1996). The Internet as mass medium. *Journal of Communication, 46* (1), 39-50.

Newhagen, J. E., & Rafaeli, S. (Winter 1996). Why communication researchers should study the Internet: A dialogue. *Journal of Communication, 46* (1), 4-13.

Orlans, H. (May-June 2003). Schools limit Internet use. *Change, 35* (3), 9.

Palser, B. (May 2003). The scoop on kids: How will today's kids access news when they grow up? Look at how they use the Web. *American Journalism Review, 25* (4), 66.

Pew Internet and American Life Project (February 8, 2002). *Teens and Parents 2000 Survey Data.* Retrieved December 3, 2003 from http://www.pewinternet.org

Quigley, M., & Blashki, K. (2003). Beyond the boundaries of the sacred garden: Children and the Internet. *Information Technology in Childhood Education Annual*, 309-316.

Schwartz, J. (July 3, 2003). Libraries planning a meeting on filters. *The New York Times*, A19.

Wartella, E., & Reeves, B. (1985). Historical trends in research on children and the media. *Journal of Communication, 35*, 118-135.

Wolinsky, A. (October 2001). Mandating the wrong filters. *Teacher Librarian, 29* (1), 26.