Peers, Predators, and Porn: Predicting Parental Underestimation of Children’s Risky Online Experiences

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Parents often underestimate the degree to which their children engage in risky online activities such as cyberbullying, worrisome interactions with strangers, and exposure to sexual content. This study attempts to identify the underlying predictors of such parental misconceptions. A national sample survey (nonrandom) of 456 matched parent–child pairs revealed that a permissive parenting style, difficulty communicating about online risks, and household environmental variables such as having access to a private computing space play a role in parental underestimation of risky social interactions that their children encounter and experience online. Implications for scholars and caregivers are discussed.

Key words: Youth, Internet, Parents, Family Communication, Risk, Cyberbullying, Sexual Content

doi:10.1111/jcc4.12040

Introduction

Children are spending more time than ever online (Rideout, Foehr, & Roberts, 2010). Parents, however, are not always aware of how much of that time is spent engaging in potentially risky online behaviors and interactions. Many parents admit to having no knowledge about what their children do online, and children are aware that their parents lack this knowledge (Norton Online Family Report, 2010). For example, the majority of online solicitations directed toward youth and a third of incidents of online harassment remain undisclosed to parents (Wolak, Mitchell & Finkelhor, 2006). Indeed, according to

This research was supported in part by the Cornell University Agricultural Experiment Station federal formula funds, Project No. NYC-1317428 received from the National Institutes for Food and Agriculture (NIFA) U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture.
the Norton Online Family Report, 62% of children worldwide report having a “negative experience online, whereas only 45% of parents realize this” (p. 3, 2010). The research presented here examines variables within the family environment that predict parental underestimation of whether or not their child has engaged in risky online experiences.

**Bioecological Systems Theory**

While previous work has looked at the frequency of risky online behaviors, we attempt to systematically examine specific variables within the larger context of bioecological systems theory in order to predict instances where parents are likely to underestimate children’s risky online behavior. The bioecological approach focuses on five nested systems that influence the child’s relationship with the outside world (Bronfenbrenner, 1979, 2005; Johnson & Puplampu, 2008): 1) the “microsystem” or immediate environment, including home and school; 2) the “mesosystem,” encompassing the interactions between the elements of the microsystem; 3) the “exosystem” of environmental settings that indirectly influence the child; 4) the “macrosystem” of larger societal and institutional values; and 5) the “chronosystem,” including time-oriented factors that affect development (Bronfenbrenner, 1979, 2005; Johnson & Puplampu, 2008).

Interactions and behaviors on the internet occur within a separate ecological techno-subsystem that is capable of exerting influence on the developmental trajectory of a child (Johnson, 2010). Johnson (2010) has situated the ecological techno-subsystem within the child’s microsystem. However, given the ubiquity of the internet and its potential to be present in all areas of one’s life, as well as the ability of the child to connect to the outside world while online, we argue that human-technology interaction can best be thought of as spanning all five of Bronfenbrenner’s (1979) systems. For example, the techno-subsystem can be thought of as operating in the mesosystem, as it is present in both home and school environments.

We argue that the ecological techno-subsystem bridges the nested systems and therefore has the capability of influencing children and their parents at all levels of Bronfenbrenner’s framework. Variables at each of these levels may be important for understanding parental underestimation of their child’s connections to and actions on the internet. At the micro level, variables include parenting style and the level of communicative difficulty between parents and children. Additionally, patterns of home computer use are part of the microsystem, such as children having access to a private computing space. At the exosystem level, it is important to assess household perceptions of media uses and effects generally, including beliefs such as third person perceptions and parental attitudes toward the internet. The concept of the chronosystem suggests that the amount of time a child spends online is an important consideration. Therefore, a closer consideration of critical variables at these subsystem levels is important to understanding this phenomenon.

**Predicting Parent–Child Disagreement of Behavioral Frequency**

As parents help their children negotiate the various levels of the ecological techno-subsystem, they may not know when potentially troubling experiences are imminent, currently occurring, or have already occurred. Several variables within each subsystem may play a part in parental awareness of their child’s behaviors and interactions online.

**Parenting Style**

Research has shown that parenting style is associated with the selection of household-level mediation strategies, e.g. house rules and critical thinking approaches (Eastin, Greenberg, & Hofschire, 2006). As
children grow, familial relationships foster their cognitive, social, moral, and emotional development (Gittleman, Klein, Smider & Essex, 1998). Parents are generally categorized as inclined toward one of three parenting styles – permissive, authoritarian, and authoritative (Baumrind, 1991; Maccoby & Martin, 1983). Permissive parents tend to be more lenient and indulgent in order to avoid confrontation with their children – allowing considerable self-regulation; in some households, children set the rules. In contrast, authoritarian parents expect high levels of obedience, sometimes without explanation, and provide strict nonnegotiable rules. Authoritative parents juggle being responsive to their children’s thoughts and ideas, yet firm about expectations in the household (Baumrind, 1991). Often, in an authoritative household, the rules are mutually agreed upon by both parent and child. All three are considered “normal” ways of parenting, but each style has been associated with different outcomes. In keeping with past research (Baumrind, 1991; Byrne & Lee, 2011), we argue that because a permissive parenting style is conflict avoidant, parents adopting a permissive style will underestimate risky activities on the part of their children. Furthermore, we argue that because authoritarian parents expect higher levels of obedience, their children are more likely to conceal risky online experiences, leading the parents to underestimate them.

**Communicating about the internet**

Communication patterns specifically regarding media use have been shown to predict child well-being and parent—child relational function (Buijzen, Rozendaal, Moorman, & Tanis, 2008; Byrne & Lee, 2011; Fujioka & Austin, 2003). Communication problems between children and their parents have been linked to multiple negative outcomes including physical and mental health issues (Al Sabbah et al, 2009; Berndt & Hestenes 1996; Ewell, Smith, Karmel, & Hart, 1996), and even social and academic problems (Allen & Hauser, 1996; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Conversely, parent—child relationships with an open and communicative atmosphere have been associated with compliance, mutual respect, and agreement on the presence of mediation strategies (Maccoby & Martin, 1983). Recent work by Byrne & Lee (2011) provides additional support for the idea that communicative difficulty about online experiences may result in disagreement between parents and children over implementation of internet protection strategies. Law et al. (2010) illustrate how parental behavior is associated with the likelihood of a child being the aggressor, noting that children who voluntarily self-disclose their online behavior to their parents are less likely to cyberbully others. Therefore, we argue reports of difficulty communicating about the Internet may be associated with parental underestimation of risky behaviors online.

**Private computing and time online**

Young people are spending more time online and have greater privacy in their computer usage. According to Rideout, et al. (2010), 33% of youth have internet access in their bedroom. As youth spend more time online and have more privacy, parents may be more likely to have inaccurate estimates of their internet usage patterns.

**Third-person perceptions**

The third-person hypothesis proposes that people think that media messages are more harmful to others than themselves (Paul, Salwen, & Dupagne, 2000). Scholars have extended this idea to include social distance variables, such as the belief that other people’s children are more at risk for negative media effects than one’s own children (Hoffner & Buchanan, 2002). If parents believe that their own children are less at risk, or are more capable of protecting themselves than other people’s children,
they may not be as likely to closely monitor their own child’s online behaviors or inquire about risky activities.

Demographics

Demographic differences may play an important part in determining if youth report when they are having problems online. For example, parents tend to allow boys more independence and to be more protective of girls (Buijzen, et al., 2008; Cowan & Avants, 1988; Desmond, Hirsch, Singer & Singer, 1987), and boys spend more time on computers than girls (Rideout, et al, 2010). This is further complicated because boys’ responses to parental mediation efforts are more pronounced than girls’ (Desmond et al., 1987). However, there is not a clear pattern on how age affects reports of parent–child dyad information (Desmond et al., 1987). As children grow into adolescents, one might expect them to underreport negative experiences to their parents for several reasons. First, they may feel that these experiences are not atypical and simply part of growing up today (Palfrey & Gasser, 2008). In addition, adolescents tend to confide more in their friends than in their parents as they age (Freeman & Brown, 2001; Hunter & Youniss, 1982).

Peers, Predators, and Pornography

Defining the types of online behaviors that inherently qualify as risky is difficult, being personal to each family and somewhat morally bound. However, the most frequently cited parental concerns tend to include instances where children deal with negative interactions with others online and exposure to unsavory content (Internet Safety Technical Task Force, 2009). These interactions include hostile interactions with peers and strangers, unwanted solicitations from strangers, and exposure to sexual content (Schrock & boyd, 2011).

Cyberbullying refers to hostile behavior utilizing information technology, such as e-mail, IM and social networking sites, with the intention to attack or embarrass a peer (Law, Shapka, & Olson, 2010; Kiriakidis & Kavoura, 2010; Palfrey & Gasser 2008). Reports as to the prevalence of cyberbullying vary, depending on the operational definition, the size of the samples, and various parameters of the populations. However, there is general agreement that it is a significant and growing problem (David-Ferdon & Hertz, 2007; Kiriakidis & Kavoura, 2010; Mishna, Cook, Gadalla, Daciuk, & Solomon, 2010; Mesch, 2009). Specifically, reports on the frequency of hostile interactions range from 9% to 25% (Mishna et al., 2010; Wolak et al., 2006; Dehue, Bolman, & Vollink, 2008). As teens are increasingly using mobile devices to go online, they have also been bullied in that medium (Lenhart, Ling, Campbell, & Purcell, 2010).

Despite the frequency of such behaviors, parents are often unaware that it is taking place. For example, Dehue, et al. (2008) found that only 4.8% of parents reported that their child had cyberbullied others (compared to 16% of children who had reported doing so), and only 11.8% reported their child was a victim of cyberbullying (compared to 23% who were). To this end, this study looks at factors that increase the likelihood parents are underestimating whether their child has been mean or hostile toward others online.

Online predators engage youth in inappropriate conversations and sometimes make overt sexual advances. Thankfully, the number of children who were approached or sexually solicited online decreased from 19% to 13% over a 5-year period, but 4% were the victims of aggressive sexual solicitations, which means that the predator suggested meeting in person or tried to contact the child in some other way (Wolak, et al., 2006). It is important to acknowledge that the majority of sexual advances were not made by offline friends and over a third of solicitors were legal adults. Sexual advances by adults, no matter how rare, are of concern.
The key question with respect to parent/child disagreement is whether the youth are telling their parents about these incidents. While the majority of youth report handling unwanted solicitations by removing themselves from the site or blocking the person, only 12% of situations were actually handled by parents. Similarly, while most parents report warning their children about talking online to people they do not know, only about half of these children recalled the warnings (Wolak, et al., 2006). To this end, this study looks at factors that increase the likelihood that parents are underestimating whether their child has been approached by a worrisome stranger.

Pornography on the internet presents two concerns: that children might stumble upon it accidentally and that they might purposefully search and find sexually explicit content. Indeed, the percentage of youth exposed to unwanted sexual material online increased to 34%, up from 25% measured 5 years previously (Wolak, et al., 2006). This increase occurred despite significant growth in the use of blocking software. While over half of youth report they have been exposed to sexual imagery online, few parents report that their children have been exposed (Livingstone & Bober, 2006). Additionally, parents tend to focus on the offensiveness of this material, rather than on the psychological effects of exposure (Wilson, Linz, & Randall, 1990). Predicting factors that increase the likelihood that parents will underestimate whether their child has been exposed accidentally or purposely to sexual imagery online is valuable. This information can enhance understanding of how to protect children from unintended sexual exposure, as well as how to properly educate them.

Hypotheses
In consideration of the above research review and theoretical framework, we present the following hypotheses and research questions:

H1a: An authoritarian (H1a) and permissive (H1b) parenting style will increase the likelihood of parental underestimation of their children’s risky online activities, whereas an authoritative style will not.

H2a: Parental reports of difficulty communicating with their children about online risks will increase the likelihood of parental underestimation of risky activities.

H2b: Youth reports of difficulty communicating with their parents about online risks will increase the likelihood of parental underestimation of risky activities.

H3: Third-person perceptions will increase the likelihood of parental underestimation of risky activities.

H4: Private computing time will increase the likelihood of parental underestimation of risky activities.

H5: Time online will increase the likelihood of parental underestimation of risky activities.

H6: Parents of older children will be more likely to underestimate risky activities.

Method

Participants
A total of 454 matched parent and child pairs were retained by C+R Research, a professional research firm in Chicago that specializes in collecting data from parents and their children. Parent participants were reminded twice that the study was not commercial in nature and that their honest and thoughtful responses were important for understanding the difficulties of raising children today. Parents and children were also repeatedly reminded that there were no right or wrong answers.
Of the adult respondents, 94.1% were women, and nearly the same percentage classified themselves as White/Caucasian. Therefore, our parent sample is mostly generalizable to mothers, who also are most likely to be responsible for setting household rules for their children’s behavior (Sayer, Bianchi & Robinson, 2004; Harakeh, Scholte, de Vries, & Engles, 2005; Walsh, Laczniak, Carlson, 1998). Seventy-five percent of the parent sample reported being married and living with their partner. Average mother and father education levels were between “some college” and a “technical degree.” Average household income was $60,000 to 69,999, slightly above the national median of $50,740, and the range was reported as less than $10,000 to $250,000 (U.S. Census Bureau, 2007). Respondents were 63.7% Protestant, 20.5% Catholic, and 2.3% Jewish. Respondents were spread fairly evenly across all nine census regions of the United States.

Parents and their children were paid $6 per pair, and parents allowed their children to participate 79% of the time. No identifying information was collected and the survey was conducted online to reduce social desirability issues (Nikken & Jansz, 2006). The child sample was nearly evenly split by gender, with 51% reporting being female. The average age of the child sample was 12.9 years (SD = 1.99), ranging from 10 to 16. Although national in scale, the sample is relatively homogeneous. However, it is consistent with other studies in this area. In particular, our sample closely resembles that of Buri (1991), whose PAQ-R scale is used to measure parenting style in this article.

Procedure
Parents were emailed an invitation to participate in the study, described as a research project on youth and internet behaviors. Parents who signed an electronic consent form were asked to consider one specific child, chosen randomly, after reporting the ages and genders of each child in the household. The stem of questions directed to the parent sample regarding the target child was programmed to refer to the gender and age of that specific child. Questions were displayed randomly within groups of questions, and groups were randomly displayed in blocks. All responses were provided on a 5-point scale. Once the parent was finished completing the survey, he or she was asked if the child was present and ready to complete the survey and, if so, to give their child complete privacy while participating. The youth participants also provided assent before beginning the survey. Two children (and their matched parents) were omitted after admitting to being dishonest somewhere on the survey.

Measures
To ascertain the parental perception of the frequency of antisocial peer interactions (cyberbullying), parents were asked how often your [age, gender of child] has been a victim of cyberbullying (M = 1.19, SD = .58). Response choices included (1) Never (2) Rarely (3) Sometimes (4) Often and (5) Always. Children were asked two corresponding questions, how often people at school were mean to you online and how often people you have never met were mean to you online. Response choices for the youth sample were the same as the choices for the parent sample. A new variable was created by taking the child’s highest score on either of the two measures as an indication of the degree to which they had been a victim of cyberbullying (M = 1.48, SD = .84).

To measure how often youth were the perpetrators of antisocial peer interactions, we asked parents how often your [age, gender of child] has cyberbullied other kids (M = 1.11, SD = .50). Response choices included (1) Never (2) Rarely (3) Sometimes (4) Often and (5) Always. The youth in our study were asked how often you have been mean to other kids online, with the same response choices (M = 1.23, SD = .59).

Parents were asked to report their perception of the frequency your [age, gender of child] has been approached online by a worrisome stranger (M = 1.15, SD = .53). Response choices included (1) Never (2) Rarely (3) Sometimes (4) Often and (5) Always. Similar to the logic above, children were asked three
questions to better encapsulate what would count as a stranger: adult stranger that seemed interested in a sexual or romantic relationship, that wanted to meet you in real life, or was just weird. Response choices for the youth sample were the same as the choices for the parent sample. A new variable was created by taking the child’s highest score on any of the three measures as an indication of the degree to which they had been approached by a stranger ($M = 1.28, SD = .67$).

Parents were asked about their perception of the frequency your [age, gender of child] has been exposed to sexual content by accident ($M = 1.58, SD = .81$) and the frequency your [age, gender of child] has been exposed to sexual content on purpose ($M = 1.26, SD = .62$). Response choices included (1) Never (2) Rarely (3) Sometimes (4) Often and (5) Always. Children were asked how often they accidentally encountered sexual stuff online ($M = 1.70, SD = .85$) and looked for sexual stuff online ($M = 1.28, SD = .70$). Response choices for the youth sample were the same as the choices for the parent sample.

Parenting style was calculated using the PAQ-R (Buri, J.R. 1991; Reitman, D., et al. 2002). The PAQ-R consists of three different scales resulting in a separate score for each parenting style for each participant. The three scales are combined and randomly presented to participants. The measures included items such as in a well-run home, children should have their way as often as parents do and other parents should use more force to get their children to behave. Responses were indicated on a 5-point Likert scale from (1) Disagree Strongly to (5) Agree Strongly. Sample statistics were: Authoritarian ($M = 35.86, SD = 6.01, \alpha = .80$), Authoritative ($M = 41.35, SD = 4.92, \alpha = .78$), and Permissive ($M = 20.60, SD = 6.63, \alpha = .84$).

Communication difficulty with respect to the internet was assessed by asking parents to indicate how much they agree, on a 5-point Likert scale with the statement it is difficult to communicate the risks of being online with my child (adapted from Byrne & Lee, 2011), with responses ranging from (1) Disagree Strongly to (7) Agree Strongly ($M = 2.14, SD = 1.22$). A higher score indicates having more difficulty communicating. Children were asked to indicate agreement with the statement it is hard to talk to my parents about bad things that might happen when I am online ($M = 2.19, SD = 1.19$). Response choices for the youth sample were the same as the choices for the parent sample.

Third-person effect was evaluated by asking parents the extent to which they agreed with the statement my child is smarter than most other kids when he or she is online. Response choices ranged from (1) Disagree Strongly to (5) Agree strongly ($M = 3.50, SD = .98$).

Minutes online was measured by asking the youth sample to report the number of minutes they usually spent online in a typical day at school during school hours, on school nights, on a typical Saturday, and on a typical Sunday. Responses were multiplied as appropriate to account for a typical week’s worth of time online ($M = 468.24, SD = 550.14$). This is consistent with the heavy computer usage reported by Rideout et al. (2010) who found that youth 8–18 were on computers for an average of 959 minutes a week, though the authors did not specify how much of that time was spent online as opposed to offline.

Parents were asked how often your [age, child gender of child] is ever on a computer in a private place like their bedroom or a separate office ($M = 2.24, SD, 1.29$). Response choices included (1) Never (2) Rarely (3) Sometimes (4) Often and (5) Always.

Results

Descriptive Statistics
Before testing our hypotheses and research questions, we first present descriptive statistics to illustrate whether our parent sample tended to underestimate the frequency of the behaviors under investigation. To demonstrate these differences we created dichotomous variables for each behavior to indicate if a child had never engaged in a behavior (value = 1) or had ever (value > 1) engaged in a behavior.
Similarly, we created dichotomous variables to indicate whether parents thought their individual child had never (value = 1) or had ever (value > 1) experienced these risky online situations. We present these differences for all behaviors in Figure 1. As the figure indicates, with the exception of purposefully seeking sexual material, parents report that children have experienced the behaviors less often than the children themselves report. Next we turn our attention to variables that may predict this underestimation based on the paired sample.

**Parent–Child Underestimation Analysis**

The data from parent–child pairs fit into four possible categories based on reports of each of the four behaviors. Parents either had accurate perceptions that a risky online situation had previously occurred (both the parent and the child reported that the behavior has happened at least once), underestimated a risky online experience (the parent indicated that it has never happened, while the child indicated the behavior has happened at least once), had accurate perceptions it did not happen (both the parent and the child reported that the behavior has never happened), or overestimated a risky online experience (the parent reported that the behavior has occurred while the child indicated that it has not). The frequency of classification is presented in Table 1.

The primary focus of this paper is on the two groups where the child admitted to engaging in the behaviors in question (see “Agree Happened” and “Parents Underestimate” in Table 1). To this end, we aim to compare households where parents are unaware of their child’s experiences to households where parents report accurate perceptions. In other words, in both groups, the
child has reported that the risky online experiences have occurred, and the explanatory variables are used to indicate ways of predicting the odds that parents will have accurate or inaccurate perceptions.

**Analyses of Models**
A binary logistic regression analysis was performed to assess if the explanatory variables under investigation increase the odds of membership in one of two categories of outcome (Allison, 1991; Gray & Kinnear, 2012). Parent–child pairs were classified as either 1) *underestimating pairs* whereby the parent indicated that it never happened, while the child indicated the behavior has happened at least once, or 2) *accurate pairs* whereby both the parent and the child reported that the behavior has happened at least once. Ten explanatory predictors, parenting style (three types), time online, third-person perceptions, communication difficulty with respect to the Internet (parent perspective and child perspective), private computing time, age and gender, were centered and entered into step 1. Based on the expected frequencies, there was no need to restrict model goodness-of-fit tests, and no major violations of linearity in the logit was observed (Tabachnick & Fidell, 2007).

We first analyzed data from pairs where youth reported that they had “been cyberbullied” by others. Data from 135 matched pairs, including 91 *underestimating pairs* were available for analysis. Utilizing the 10 predictor variables, the model for “been cyberbullied” is able to accurately discriminate between the two groups, $\chi^2 (10, N = 135) = 25.37, p < .005$. The correct classification rate for *underestimating pairs* is 92.3%. The correct classification rate for *accurate pairs* is lower, 40.9%, indicating the model is more effective at predicting when parents underestimate this behavior than when they have accurate perceptions.

For pairs where youth reported that they had “cyberbullied others,” data from 74 pairs, including 54 *underestimating pairs*, were available for analysis. The model fit for “bullied others” with the same ten predictors was also able to accurately discriminate between the two categories of outcome, $\chi^2 (10, N = 74) = 18.26, p = .05$. The model is able to correctly classify a large percentage of *underestimating pairs*, 92.6%. The explanatory variables are less effective at classifying *accurate pairs*, as the correct classification rate is only 35% for these pairs.

We also analyzed data from pairs where the youth reported that they had experienced accidental exposure to sexual imagery. Data from 219 dyads, including 77 *underestimating pairs*, were available for analysis. The model for “accidental exposure to sexual imagery” is partially significant, $\chi^2 (10, N = 219) = 16.570, p < .084$. The explanatory predictors are not as effective at predicting classification for *underestimating pairs*, as the correct classification rate is only 27.3%. The correct classification rate for *accurate pairs* is much higher, 92.3%.

Next, we analyzed data from pairs where the youth reported that they had purposely searched for sexual imagery online. Data from 80 pairs, including 39 *underestimating pairs*, were available for analysis. With the ten predictors, the model is able to accurately discriminate between the two categories of outcome, $\chi^2 (10, N = 80) = 21.299, p < .019$. The correct classification rate for *underestimating pairs* is 76.9%. For purposeful exposure to sexual imagery online, the explanatory variables are almost just as effective at classifying *accurate pairs*, with a 70.7% correct classification rate.

Finally, we analyzed data from pairs where the youth reported that they had experienced a “stranger approach.” Data from 84 pairs, including 55 *underestimating pairs*, were available for analysis. Utilizing the 10 predictor variables, the model for “stranger approach” is able to accurately discriminate between the two groups, $\chi^2 (10, N=84) = 41.887, p < .000$. The correct classification rate for *underestimating pairs* is 89.1%, and the correct classification rate for *accurate pairs* is 62.1%.
Hypotheses and Research Questions

Hypotheses 1a predicted that an authoritarian parenting style will increase the likelihood of underestimation of their children’s risky online activities, whereas an authoritative style will not. As Table 2 indicates, an authoritarian parenting style has a significant but not a substantial contribution in decreasing the odds that parents underestimate whether or not the child has been involved with one outcome variable, cyberbullying others (Exp B = .90, \( \beta = -.11, p = .05 \)), whereas an authoritative parenting style does not affect the odds of being an underestimating parent across all behaviors. Therefore, while H1a accurately predicted no effects for authoritative parents, authoritarian parents are slightly better than predicted at judging when their children have been mean to others online.

Hypothesis 1b predicted that a permissive parenting style will increase the likelihood of parental underestimation of risky activities online. As Table 2 indicates, a permissive parenting style has a significant, but not a substantial contribution in increasing the odds that a parent underestimates whether or not their child has been accidentally exposed to sexual imagery online (Exp B = 1.05, \( \beta = .05, p = .05 \)). On the other hand, a permissive parenting style decreases the odds that a parent underestimates whether or not their child has been cyberbullied (Exp B = .91, \( \beta = -.10, p = .004 \)), has cyberbullied others (Exp B = .91, \( \beta = -.10, p = .037 \)), and has been approached by a worrisome stranger online (Exp B = .89, \( \beta = -.12, p = .025 \)). Therefore, Hypothesis 1b is supported only for the effect of a permissive parenting style on underestimating exposure to sexual material accidentally and the lack of effects (reported in H1a above) for an authoritative parenting style.

Hypotheses 2a and 2b predicted that difficulty communicating about the risks of being online will increase the likelihood of parental underestimation of whether their child has been involved in risky activities online. Child reports that it is hard to talk to their parents about bad things that might happen online significantly and substantially increased the odds of parental underestimation as to whether or not the child has been approached online by a worrisome stranger (Exp B = 2.46, \( \beta = .90 p = .005 \)). Parents are two and a half times more likely to underestimate whether their child has been approached by a worrisome stranger for every one unit increase in their child’s reports that it is hard to talk to them about bad things that might happen online. Parental reports of difficulty talking to their children were not predictive of underestimation for any of the behaviors under inquiry. Difficulty communicating about the internet was not a significant predictor of underestimation of any other risky online experience.

Hypothesis 3 predicted that third person perceptions will increase the likelihood of parental underestimation of risky activities. Parental third person perceptions significantly and substantially increased the odds that parents underestimate whether their child has been cyberbullied (Exp B = 1.84, \( \beta = .61, p = .019 \)) and has been approached by a worrisome stranger (Exp B = 3.18, \( \beta = 1.16, p = .009 \)). In other words, for every one unit increase in parental reports of third person perceptions, parents are almost two times more likely to underestimate whether their child has been cyberbullied and three times more likely to underestimate whether their child has been approached by a worrisome stranger. Therefore, third-person perceptions increase the likelihood that parents will underestimate whether their child has been involved in these two risky online experiences.

Hypothesis 4 predicted that youth having private computing space will increase the likelihood of parental underestimation of the behaviors under inquiry. Private computing significantly and substantially increases the odds that parents underestimate whether their child has been cyberbullied (Exp B = 1.41, \( \beta = .35, p = .047 \)). This variable also has a significant and substantial impact on whether or not parents underestimate that their child has been accidentally exposed to sexual imagery online (Exp B = .75, \( \beta = -.29 p = .018 \)) and has purposely searched for sexual imagery online (Exp B = .61, \( \beta = -.50, p = .016 \)), decreasing the odds that parents underestimate both of these behaviors.
Table 2  Logistic Regression Analysis of Parental Underestimation

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<th>Purposeful Exposure to Sexual Imagery</th>
<th>Approached by Stranger</th>
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<tr>
<td>Hard to Talk to Parent</td>
<td>-.02</td>
<td>0.02</td>
<td>0.98</td>
<td>.33</td>
<td>1.41</td>
</tr>
<tr>
<td>Difficult to Talk to Child</td>
<td>-.24</td>
<td>2.07</td>
<td>0.80</td>
<td>-.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Time Online</td>
<td>.00</td>
<td>1.11</td>
<td>1.00</td>
<td>.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Third Person</td>
<td>.61*</td>
<td>5.54</td>
<td>1.84</td>
<td>.18</td>
<td>0.22</td>
</tr>
<tr>
<td>Private Computing</td>
<td>.35*</td>
<td>3.94</td>
<td>1.41</td>
<td>-.15</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Significance is abbreviated: +p < .10; *p < .05; **p < .01.
Hypothesis 5 posited that youth spending time online will increase the likelihood of parental underestimation of risky activities. We find that time online does not significantly or substantially relate to parents underestimating the behaviors under observation.

Hypothesis 6 predicted that having an older child will increase the likelihood of parental underestimation of that child’s risky activities online. Age has a modest impact on the odds that parents underestimate, but in the opposite direction than predicted. As the child in the parent–child pair increases in age, the odds of parental underestimation decreases for having been cyberbullied (Exp B = .787, $\beta = -.24$, $p = .055$), having been exposed accidentally to online sexual imagery (Exp B = .863; $\beta = -.15$, $p = .068$), and having been approached online by a worrisome stranger (Exp B = .563, $\beta = -.57$, $p = .017$). Our data indicate that gender does not significantly or substantially increase the likelihood that parents underestimate the behaviors under observation.

**Discussion**

**Summary of Findings**

According to bioecological systems theory, the setting and relationships in which a child lives interacts with the techno-subsystem to influence the daily life of the developing child. This study draws attention to some underlying variables that might explain parental underestimation of children’s risky online experiences, revealing patterns that have numerous implications for scholars, caregivers, and youth.

**Patterns by Behavior**

*Been cyberbullied*

Parental third-person perceptions and private computing time greatly increase the likelihood that parents underestimate that their child has been cyberbullied. For every one unit increase in third-person perceptions, parents are almost two times more likely to underestimate whether their child has been cyberbullied. Also, parents were almost one and a half times more likely to underestimate cyberbullying for every one unit increase in private computing time. Parents who believe their child is smarter than others online or who are not viewing their computer use are likely to underestimate cyberbullying.

*Stranger approaches*

Parental third-person perceptions and child reports of communicative difficulty greatly increase the odds of parental underestimation of stranger approaches. For every one unit increase in parental reports of third person perceptions, the odds are three times greater that parents will underestimate stranger approaches. Furthermore, parents are almost two and a half times more likely to underestimate this risky online experience for every one unit increase in children’s reports of communicative difficulty. However, the older the child, the less likely that parents will underestimate this risky experience.

*Exposure to sexual imagery*

Some parents assume that accidental exposure to sexual imagery happens when their child is alone with a computer and of a certain age. Private computing time and age mildly decreases the likelihood that parents will underestimate accidental exposure, while private computing time mildly decreases underestimation of purposeful exposure.
Child as a victim
Parental third-person perceptions greatly increase the likelihood that parents underestimate whether or not their child has been cyberbullied or approached by a worrisome stranger. Both of these interactions are situations where the child is the victim in the interaction. Particularly disturbing is the finding that children who find it hard to talk to their parents are unlikely to tell them about stranger approaches. This means that in the case of stranger approaches, parents who are not hearing from their child, may also believe that their child is smarter than other kids and, therefore, less at risk.

Child as an aggressor
None of the explanatory variables tested here substantially increased the likelihood that parents underestimate whether their child has cyberbullied others. It is possible that a different set of explanatory variables predict being aggressive toward others. Discussions of off-line antagonists suggest that they have a strong desire to have power over others (Olweus, 1991) as well as the skills to do so (Sutton, Smith, & Sweetenham, 1999). Neither of these variables apply to the techno-subsystem and were therefore not measured here.

Implications of findings
Conceptual implications
This study reveals some larger conceptual themes. First, while parenting categories previously have been found to be effective indicators of internet protective strategies (Byrne & Lee, 2011), our findings show that broad parenting styles are not powerful predictors of whether parents underestimate risky online situations. Third-person perceptions, or thinking ones child is smarter than others while online, does contribute to increasing the likelihood that parents underestimate some risky online behaviors.

Household implications
A major implication of this work is that it highlights direct steps that parents can take to protect their children online. As noted in Palfrey and Gasser (2008), parents should involve their children in internet safety efforts to “start a positive conversation about what’s going on online” (p. 90). This study highlights that establishing open communication is a key step, as the inability to effectively communicate enhances the likelihood that parents underestimate whether their child has been approached online by a stranger.

Our data fall closely in line with decades of research on youth and more traditional media in that the use of media in a private place may undermine parental awareness and lead to negative effects (Paavonen et al., 2006; Rideout, et al., 2010). Parents are urged to be aware that if their children are online in a private place, it probably indicates that they do not know exactly what they are doing. Moving the computer to a public place in the home seems prudent, however this strategy is difficult to enforce, as the more strictly a parent controls Internet use, the more likely the youth are to find their way around such rules (Byrne & Lee, 2011), such as using a friend’s computer or a mobile phone. Therefore, an open line of communication and decreasing third-person perceptions may be the most reasonable solution to improve parental awareness of their children’s risks while online, especially in situations where the child is the victim.

Measurement implications
One implication for future research is that when asking youth about risky behavior, we provided a range of responses, which facilitated reports of low-frequency behaviors. This is important, as even a rare
report can have serious consequences. Another implication for future research is the effectiveness of matched parent/child samples, especially national samples. Research in this area can provide conceptual analyses that are not evident when simply surveying parents and children separately.

Limitations
This study has several limitations that are important to make explicit. First, while we asked participants to report falsities, we are subject to the same risks as many other large sample surveys, such as social desirability and response sets. Second, we make no confident claim about causality due to the correlational design of this study. Third, while parent–child paired samples have many strengths, the exact question wording is slightly different for an adult versus child sample and may lead to variations in reporting. Finally, while we were able to explain a percent of variance that closely resembles many social scientific inquiries employing this type of design, we clearly have more work to do before we determine the majority of factors involved.

Future research
This study examined five different behaviors that concern parents today. However, we do not claim that these are the most important five and we acknowledge that others may be even more important. We did not report, for example, behaviors such as online gambling and the purchase of prescription pills online, both of which are growing in frequency (Livingstone & Haddon, 2009). We also did not report here on more positive behaviors. Perhaps parents have inaccurate perceptions of how often children use the internet to do homework, engage in prosocial identity activities, or search for personal health information. In addition, some of these behaviors are more complex than they appear on the surface. For example, additional analysis revealed that of the 29.7% (n = 135) of our sample of youth who reported that they have been victims of cyberbullying, 13.7% (n = 62) also admitted to cyberbullying others. Future research should aim, therefore, to explain more of the variance across a greater variety of complex behaviors in an effort to better explain when and why parents have misconceptions about what their kids are doing when they are online.

Note
1 Exp B score under 1 indicates a decrease in odds of underestimation.

References


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