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# American Parents' Perceptions of Child Explicit Image Sharing

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**Abstract.** Parents and other adult caregivers of biologically or sociologically related children (hereafter, “parents”) can play an important role in the online behavior of children in their care. In this study, we examined parental correlates of three outcomes—talking to their child about image sharing (66% yes); expecting their child had shared sexually explicit images (39% yes); and preparedness if their child’s sexually explicit images were leaked (38% yes)—in a survey of a nationally representative sample of 402 parents in the United States. Regression analyses revealed that talking to one’s child about sexually explicit image sharing was significantly associated with the parent being a mother, having a child in high school, enforcing a higher number of technology rules, knowing about secondary social media accounts, and expecting that their child’s friends share sexually explicit images of themselves. Expecting their child had sent sexually explicit images was significantly predicted by parents having fewer technology rules in place for their child, more permissive parental attitudes about resharing sexually explicit images, and the expectation that their child’s friends or schoolmates had sent sexually explicit images. Unexpectedly, perceived parental preparedness if their child’s sexually explicit images were leaked was significantly predicted by less—rather than more—parental comfort in talking to children about their child’s online activities.

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## 1 Introduction

There is growing attention to child<sup>1</sup> sexually explicit image sharing<sup>2</sup> as a risky online behavior. The onus has been on parents to educate, monitor, and respond if their children engage in sexually explicit image sharing behavior, consistent with parental

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1. For the purpose of this paper, “child” refers to any person under the age of 18 years old.

2. Sharing sexually explicit images is sometimes part of sexting, defined as the exchange of sexually explicit texts and/or images. In the present study, participants were specifically asked about sexually explicit image sharing rather than sexting more generally. However, we use the term “sext(ing)” when referring to other studies that have not made this differentiation. Sexting research has been reviewed by Madigan et al. (2018), Temple and Lu (2018), and Van Ouytsel et al. (2015)

mediation theory, which distinguishes between active mediation (e.g., talking to one's child about image sharing, risky behavior, and online safety practices), restrictive mediation (e.g., setting rules about the use of apps by one's child), and passive mediation (being aware of one's child's activities online, e.g., following their social media accounts) (see Clark (2011)). Little is known, however, about what is correlated with these different forms of mediation.

To identify potential correlates of active parental mediation, we examined data from a market panel survey of a nationally representative sample of parents in the United States with at least one child between the ages of 9 and 17. The survey included questions about parent demographics, the technology rules they had in place for their child, their level of technology awareness, their degree of communication with their child about their child's online activities, and their attitudes and expectations (norms) about their child's online behavior.

Regression analyses revealed that talking to one's child about sexually explicit image sharing was significantly associated with the parent being a mother, having more technology rules in place for their child, having awareness of secondary social media accounts, expecting that their child's friends had sent sexually explicit images, and having a child in a higher grade level. Expecting their child had sent sexually explicit images was significantly predicted by parents having fewer technology rules in place for their child, more permissive parental attitudes about resharing sexually explicit images, and the expectation that their child's friends or schoolmates had sent sexually explicit images. Of note, perceived parental preparedness if their child's sexually explicit images were leaked was significantly predicted by less—rather than more—parental comfort in talking to children about their child's online activities.

## 2 Literature Review

There has been growing attention to child sexting (sending sexually explicit images and/or texts through a digital medium) given the potential risks associated with sending nudes or other sexually explicit images in particular. These risks include nonconsensual resharing with others, which could lead to harassment, bullying, or sextortion, where minors are coerced into producing more sexual images or engaging in risky sexual behavior by the threat of sharing their images with their parents or peers (see Wolak et al. (2018)). Other risks include unwanted receiving of sexually explicit images and legal or other consequences given that some of these images might meet legal criteria for child sexual exploitation materials (CSEM), even if sent by a teen to a peer.<sup>3</sup> A recent systematic review of studies up to 2016 revealed the prevalence of sexting behavior in young people, with 15% overall having sent sexts, 27% having received sexts, 12% having forwarded sexts without consent, and 8% having their own sexts forwarded without consent (Madigan et al. 2018). Mori et al. (2020) found similar rates in more recent studies.

Parents are expected to monitor and advise their children about online safety; for example, many devices and some applications provide parental controls that can be set to limit screen time or access to sexually explicit or violent content. Parental mediation theory, originally developed to understand how parents can influence their children's media activities, has been applied to digital media (Clark 2011). Research on online parental mediation—briefly discussed below—suggests that active mediation (through more frequent and open parent-child communication) can be more effective

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3. See the Cyber Bullying Research Center for a list of states with youth/teen sexting laws: <https://cyberbullying.org/sexting-laws>

than restrictive mediation (involving the setting of more rules or limits), and this in turn will be more effective than passive mediation (keeping an eye on what the child does). Subsequent research discussed below has looked at the use of different mediation strategies, and some studies have also examined correlates of mediation. Sasson and Mesch (2014) found that restrictive parent involvement (more rules) was associated with more risky online behavior, though this was not specific to sexting. In contrast, other studies have shown that active involvement and positive parent-child communication and relationships are associated with less sexting (Adigwe and Walt 2020; Bianchi et al. 2019; Samuels 2015). Sonck, Nikken, and De Haan (2013) examined data from 1,004 Dutch parent-child dyads from the EU Kids Online study (children ages 9 to 16) and found that parents engaged in more active mediation with girls than with boys. In addition, parents monitored younger children more, and relied more on restriction of internet use in larger families.

A 2020 survey from the EU found that parents are the most common source of support for children who encounter problems online, with majorities of child participants in all the EU countries involved in the survey saying they went to parents “sometimes”; still, 37% of children reported their parents never or hardly ever talked to them about internet use (Smahel et al. 2020). Parental restrictions on their child’s technology are uncommon according to the survey by Smahel et al. (2020), which asked whether parents use parental control software, track online activities, and track location on their child’s devices. As expected, there were fewer parental restrictions for older children compared to younger children. A recent survey by Wachs et al. (2020) of almost 6,000 adolescents between the ages of 12 and 18 adds more context to our understanding of parental mediation. Wachs et al. (2020) found that restrictive parental involvement (e.g., monitoring social media profiles, using parental controls) was associated with more adolescent disclosure of personal information online and more online sexual solicitation experiences, rather than less. In contrast, instructive parental involvement (e.g., talking about online safety, potential risks, and how to mitigate these risks) was associated with less online disclosure and fewer online sexual solicitations. Rutkowski et al. (2021) looked at 215 parent-child dyads and found that for parents, active mediation and monitoring were positively associated with an overall level of parent-child communication. For comparison, Corcoran et al. (2022) collected data from 306 parent-child dyads and found active mediation was associated with less sexually explicit image sending by the children. Unlike other studies, restrictive mediation was also associated with less explicit image sending and receiving by children, whereas monitoring was ineffective (associated with increased sending) and technology controls had no effect.

## 2.1 The Present Study

In this study, we report results from a survey of parents and caregivers of biologically or sociolegally related children (“parents,” hereafter) regarding the technology rules they have for their children, their awareness of social media (e.g., use of secondary accounts), the extent of parent-child communication, and their attitudes and perceived norms about sexually explicit image sharing. We were particularly interested in how these variables were related to three outcomes: the likelihood that parents had talked to their child about sending explicit images, parental expectations that their child had sent sexually explicit images, and their perceived level of preparedness to respond if their child’s sexually explicit images were leaked. Though prior research has identified some correlates of parental likelihood to talk with children about sexting, such as the parent’s gender, the child’s gender, and the child’s age (Smahel et al. 2020; Sonck, Nikken, and De Haan 2013), we were not aware of prior research looking at parental expectations

regarding their child's behavior and their perceived level of preparedness if their child's sexually explicit images were leaked. As such, our analyses were exploratory.

### 3 Method

#### 3.1 Participants

The sample comprised 402 parents who were aged 18 or older and who had at least one child between the ages of 9 and 17 years old (these children were not involved in the companion survey reported by Seto et al. (n.d.)). These parents were recruited from a nationally representative marketing panel in the United States by two vendors, Precision Research and Branded Research, which were hired by the Benenson Strategy Group in partnership with Thorn. Quota sampling was used to ensure that participants were recruited from all four geographic regions of the United States: 18% Northeast, 21% Midwest, 23% West, and 38% South.

Care was taken to protect the welfare of participants, including an informed consent process, privacy protections, and provision of resource information to survey participants in case they were distressed by or concerned about the survey. Secondary analysis of the survey data was approved by the Research Ethics Board of the Royal Ottawa Health Care Group.

The survey was conducted over a two-week period, from October 14 to 25, 2019, and only those who answered all questions were included in the dataset. A total of 1,262 parents started the survey and 402 parents completed it, so the dropout rate was 68.1%. The first and second authors received this data from the final two authors for the purpose of conducting more detailed analyses.

#### 3.2 Study Variables

The survey questions used in this study are shown in the Appendix and described by domains in the following sections. The survey was created by Thorn for this research and did not include psychometrically evaluated scales, so information about internal consistency or other forms of reliability, and prior evidence of validity, was not available for the survey questions. We describe how variables were treated (i.e., dichotomized, totaled, averaged) where relevant.

#### 3.3 Demographics

Parents were asked about their age in years, sex (male/female), sexual orientation/identity (LGBTQ+/cis, heterosexual), ethnicity (white/racial or ethnic minority), household income, geographic location, religious service attendance, and relationship status. Information about the participants' children was also collected, including the number of children they had; their children's ages, gender, educational level; and the type of school the child attended. For the bivariate and multivariate analyses reported below, relationship status was dichotomized into single or in a relationship, and type of school child attended was dichotomized into public or other.

#### 3.4 Technology Rules

Parents were asked whether their children were required to follow a variety of rules for each of the following devices: cellphones, tablets, laptops, desktops, and gaming devices. Rules included limits on screen time, use in common areas only, permission

to download new apps, permission to join a new social media account, social media monitoring, limits on games, parental blocks on websites or apps, parental check-ins “other,” and “none of these.” Parents also distinguished between rules that they enforced (by monitoring their child), rules that were enforced by technology (e.g., setting parental controls on a device), and rules the child was expected to follow on their own (child-enforced rules). The number of rules imposed, out of nine possible rules, was counted, regardless of device involved.

### 3.5 Use and Awareness of Social Media

**Awareness of social media platforms.** Participants were asked about their awareness of a wide variety of social media platforms on a 4-point Likert scale from “Never heard of it” to “Very familiar.” Although parents were presented with 24 different platforms, this research focused on 10 in particular: Facebook, Instagram, Pinterest, Reddit, Snapchat, TikTok, Tumblr, Twitter, VSCO, and YouTube. These 10 platforms were selected because they were among the most frequently used by children in a companion survey (Seto et al., n.d.). We created an aggregate variable by averaging the awareness ratings of each platform.

**Frequency of social media engagement.** Parents were asked how often they engage in various social media activities: sharing a photo; sharing a video; sharing a status update, tweet, etc.; hosting a livestream; watching or participating in a livestream; sharing a blog post or article they wrote; sharing a blog post or article someone else wrote; sharing others’ photos; and sharing others’ videos. Participants rated how often they engaged in each of these activities on a 6-point Likert scale from “Never” to “Multiple times a day.” A bivariate correlation showed a high degree of correlations between items ( $r_s = .53$  to  $.89$ ), and a high degree of internal reliability ( $\alpha = .95$ ). We therefore treated this question as a scale of frequency of social media engagement and computed a total score, with higher scores indicating a greater degree of social media use.

**Awareness of secondary accounts.** The survey asked participants whether or not they were aware of a trend where children may create private, secondary social media accounts that are commonly accessible only to their friends.

**Connection to their child on social media.** Parents were asked about their level of connection to their children online. Options included “I follow them and they follow me”; “we follow each other but they have me on limited profile”; “I follow them, but they don’t follow me”; “I follow their accounts, but I suspect they have a private account I don’t know about”; “we don’t follow each other”; and “other.” For analyses, this variable was dichotomized into whether the parent followed their child or not.

### 3.6 Parental Awareness and Communication

**Comfort with talking to their child about online activities.** Parents were asked to rate how much they agreed with the statement, “I feel comfortable talking to my child about what they do online” on a 4-point Likert scale from “Strongly disagree” to “Strongly agree.”

**Knowledge of how their child spends time online.** Parents were asked to rate how much they agreed with the statement, “I know how my child spends their time online and what they do on social media” on a 4-point Likert scale from “Strongly disagree” to “Strongly agree.”

### 3.7 Attitudes and Norms Regarding Image Sharing

We then examined attitudes and (perceived) norms about sexually explicit image sharing. The attitude questions referred to the parents' views about sexually explicit image self-sharing and resharing, where parents were expected to vary in how permissible they thought sexually explicit image sharing was, depending on circumstances. The questions about norms referred to parents' expectations about the frequency or likelihood that sexually explicit image sharing was taking place. This expectation was related to the parents' own sexually explicit image sharing behavior (where parents who had shared sexually explicit images were expected to think that the behavior was more common) and their expectations about sexually explicit image sharing among their child's friends and school peers. Higher rates of parents' own sexually explicit image sharing or higher expectations about sexually explicit image sharing among their child's friends and school peers would indicate greater perceived norms about sexually explicit image sharing.

**Attitudes about self-sharing sexually explicit images.** Participants were given the prompt, "It is okay to share a nude or nearly nude photo or video of yourself with someone online as long as..." and were asked about their degree of agreement with 14 statements (e.g., "you are sending it to someone to show them how much you like them"; "you can't see your face in the photo or video"). Items were highly correlated with each other ( $r_s = .62$  to  $.83$ ) and thus there was a high degree of internal reliability ( $\alpha = .97$ ). We therefore treated this question like a scale of attitudes toward sending images and computed a total score, with higher scores indicating a greater degree of permissiveness about image sharing.

**Parents' own sending of sexually explicit images of themselves.** The survey also asked parents, "Have you ever sent or shared a nude photo or video of yourself either directly with someone else or with your social media followers?" Answers included "yes - on purpose," "yes - by accident," or "no." We selected out those who indicated they accidentally shared sexually explicit images, as we were only interested in those who had intentionally sent sexually explicit images of themselves.

**Expectation that their child's friends send sexually explicit images of themselves.** Parents were asked how often they thought their child's friends send or share nude or nearly nude images of themselves with others. Frequency was measured on a 4-point Likert scale from "Never" to "Often." For analyses, this variable was dichotomized into parents who believed their child's friends have shared sexually explicit images at all (i.e., more than "Never") and those who did not believe that their child's friends had ever sent a sexually explicit image of themselves.

**Expectation that their child's schoolmates send sexually explicit images of themselves.** Parents were asked how often they thought their child's schoolmates send or share nude or nearly nude images of themselves with others. Frequency was measured on a 4-point Likert scale from "Never" to "Often." For analyses, this variable was dichotomized into parents who believed their child's schoolmates have shared sexually explicit images at all (i.e., more than "Never") and those who did not believe that their child's schoolmates had ever sent a sexually explicit image of themselves.

### 3.8 Key Dependent Variables

Our three dependent variables were (1) whether parents had talked to their children about sexually explicit image sharing of themselves, (2) parent expectations of whether their child had shared sexually explicit images of themselves, and (3) the perceived level of parental preparedness to deal with a situation in which their child's sexually

explicit image was nonconsensually reshared. The survey defined images as “photos or videos people take of themselves when they are nude or nearly nude (for example, in their underwear).” This operationalization was narrower than prior studies on sexting, because sexting can include sexually suggestive or explicit text or audio, not only images or video. Our choice of dependent variables was limited by the fact that we conducted secondary analyses of data from a survey that had already been completed; therefore, we did not have information regarding whether children had *actually* previously sent sexually explicit images of themselves and/or others. However, even if parents had been asked whether their children had sent sexually explicit images of themselves and/or others, it is unlikely that most parents would know about their child’s image-sharing behaviors.

***Talking to their child about sending sexually explicit images of themselves.*** Parents were asked whether or not they had a conversation with their child about sending sexually explicit images of themselves.

***Expectations of their child having sent sexually explicit images of themselves.*** Parents were asked how often they thought their own children sent sexually explicit images of themselves on a 4-point Likert scale from “Never” to “Often.” For analyses, this variable was dichotomized into parents who believed their child had shared sexually explicit images of themselves at all (i.e., more than “Never”) and those who did not believe that their child had ever sent a sexually explicit image of themselves.

***Preparedness to deal with their child’s sexually explicit image being nonconsensually reshared.*** The survey further asked if parents would know what to do if their child informed them that a sexually explicit image of them had been nonconsensually reshared around their school or online. Responses included, “Yes, I know exactly how I would handle this situation; “I have some idea how I would handle this situation, but I’d need to get some help as well”; “I have no idea how I would handle this situation”; and “I have had to deal with the situation already.” This was dichotomized into whether parents felt they were prepared to handle such an incident and those who did not feel prepared. Those who had already dealt with their child’s sexually explicit image of themselves being nonconsensually shared were removed from this analysis ( $n = 32$ , 8% of the sample).

### 3.9 Procedure

Precision and Branded Research, which were hired by the Benenson Strategy Group, invited parents who were part of their marketing panel to complete an anonymous online survey about online behaviors. Participants were informed that there would be sensitive questions about potential relationships and online experiences. Participants were told they could leave the study at any time and were also provided with a list of resources including mental health information. Only those who answered all questions were included in the dataset. Near the beginning of the survey, participants were randomly assigned to answer questions while considering their youngest ( $n = 200$ ) or their oldest child ( $n = 202$ ) in the 9- to 17-year-old age range; those with a single child were asked to answer about that child. We compared the two subgroups across all variables of interest, and they mostly did not differ (see Tables S1 to S3 in the Supplementary Materials). Those asked to consider their oldest child in the age range were, on average, two years older than those asked to consider their youngest child, which was expected because older children are logically more likely to have older parents. Similarly, as expected, the groups differed in which school-age category their child belonged to, with those considering their oldest child indicating that their child was in high school more often than those considering their youngest child. When considering

rule enforcement, parents thinking of their youngest child reported significantly more parent-enforced tech rules; this is understandable as young children are less able to enforce their own rules. Given only three significant differences between the two subgroups, two of which were expected simply based on the obligatory difference in mean child age, we combined these two groups for a more powerful analysis.

### 3.10 Data Analysis

While there was some missing data in the dataset, this was due to our own removal of responses of “prefer not to answer.” We did not opt for any form of data imputation, as the variable with the most missing data had 388 responses (out of 402) and we had a sufficient number of participants for our final multivariate analyses (304 out of the 402 in the entire sample).

After conducting descriptive analyses, we looked at the correlations between demographic, technology, and attitudinal variables and our three dependent variables using Pearson and Spearman correlations and chi-square analyses, where appropriate. After checking assumptions, we ran three hierarchical binary logistic regressions—one for each of our dependent variables—inputting select parent demographics, technology variables, and attitudinal variables in three separate blocks.

## 4 Results

### 4.1 Description of Sample

Table S1 (see Supplementary Materials) summarizes the parent sample demographics. Parents were between the ages of 25 and 74 years old ( $M = 41.6$ ,  $SD = 7.9$ ). Majorities of parents identified as female (55%), White (72%) and cis, heterosexual (91%). Those who indicated a sexual identity other than cisgender and heterosexual (e.g., non-binary, lesbian, gay, bisexual, asexual, queer) were combined as a “gender/sexual minority group,” as there were too few individuals in each of these groups for further group analysis; participants who responded “prefer not to say” to this question were excluded from analyses of gender/sexual identity ( $n = 4$ ). The median income level was between 50 and 75 thousand dollars per year, and a majority (79%) lived in urban or suburban residences. Three-quarters (73%) were married. Participants had anywhere from 1 and 10 children, with an average of 2 children. On average, male children were 8.5 years old, female children were 8.9 years old, and non-binary children were 4.7 years old.

Tables S1 to S4 provide descriptive information about the study variables, organized by the following domains: parent demographics, technology rules and awareness, parental awareness and communication, and parental attitudes and norms. The results are further distinguished by parent gender given prior evidence that mothers and fathers can differ in parent communication and parental mediation (e.g., Scull et al. (2022)).

Considering first the bivariate associations between the three dependent variables, we found a significant association between parental expectation that their child sends sexually explicit images with their perceived level of parental preparedness to deal with a situation in which their child’s sexually explicit image of themselves is nonconsensually reshared (see Table 1 on the next page). Tables 2 to 4 show correlations of study variables, organized by domain, with the three key dependent variables: parents talking to their child about sending sexually explicit images of themselves; parental expectation their child had sent explicit images of themselves;

and the perceived level of parental preparedness if their child's sexually explicit image was reshared. We discuss the results in the following sections, again organized by outcome.

Table 1: Associations between talking to children, expectation that child sends images, and preparedness if child's image is reshared

	Talking to child			Expectation that child sends images		
	$\chi^2$	$\phi_c$	OR [95% CI]	$\chi^2$	$\phi_c$	OR [95% CI]
Expectation that child sends images	2.60	0.08	1.43 [0.93, 2.20]	–	–	–
Preparedness if child's image is reshared	2.76	0.09	1.47 [0.93, 2.31]	22.7	0.25	<b>2.87</b> <b>[1.84, 4.48]</b>

#### 4.2 Talking To Their Child About Sending Sexually Explicit Images of Themselves

Two-thirds of parents (66%) indicated that they had previously had a conversation with their child about sending explicit images of themselves. Talking to one's child was unrelated to parent age, gender, sexual/gender identity, and ethnicity. However, there was a significant difference in talking to children about sexually explicit image sharing based on the child's educational level. Parents had lower odds of discussing sending images with their elementary school-aged children than expected (SR = 1.3), and greater odds of discussing image sharing with their high school-aged children than expected (SR = 1.2) Of those with children in elementary school, 58% had conversations with their children about sexually explicit image sharing, while 62% had a conversation with their child in middle school, and 73% of parents had a conversation with their child in high school.

Technology rules, rule enforcement, and connection to children on social media were not associated with talking to children about sending images. However, parents who were aware of secondary social media accounts had nearly three times the odds of talking to their child about sending sexually explicit images (75% of those who knew about secondary accounts versus 53% of those who did not). In terms of perceived norms, parents who expected that their child's friends and school peers were sending sexually explicit images of themselves had around two times the odds of talking to their child about image sharing compared to parents without these expectations. In other words, 76% of parents who expected their child's friends to send images talked to their child, versus 56% of parents who did not expect their child's friends to send images. Further, 71% of parents who expected their child's school peers to send images talked to their child, versus 60% of parents who did not expect their child's school peers to send images.

#### 4.3 Expectation Their Child Had Sent Sexually Explicit Images of Themselves

Many parents (39%) thought their child had sent sexually explicit images of themselves. Looking first at demographic characteristics, younger parents expected that their child had sent sexually explicit images of themselves. Male parents had three times the odds of expecting that their child had shared explicit images of themselves when compared

to female parents (53% of male parents versus 26% of female parents). Parents with a partner had two times the odds of expecting that their children had sent sexually explicit images (43% of partnered parents versus 24% of single parents). LGBTQ+ parents had nearly four times the odds of expecting that their child had shared their own sexually explicit images when compared to cis-gender heterosexual parents (67% of LGBTQ+ parents vs 35% of cis, heterosexual parents). There was a significant though small positive association between higher household income and parental expectation that one's child had sent sexually explicit images of themselves. Parents who lived in urban or suburban locations had nearly four times the odds of expecting that their child had sent sexually explicit images of themselves, compared to those living in rural locations (44% of those living in urban or suburban locations versus 17% of those living in rural locations). There was a significant though small positive association between higher frequency of religious service attendance and parental expectation that one's child had sent sexually explicit images of themselves. The average number of children parents had was significantly associated with parental expectation that their child had sent sexually explicit images of themselves; parents having fewer children was associated with the expectation that their child had sent sexually explicit images of themselves. There was a negative association between average child age and parental expectation that their child had sent sexually explicit images of themselves, though both of these effects were small. Those with children in private school had almost twice the odds of expecting their child had sent sexually explicit images of themselves compared to those with a child in public school (50% with children in private school versus 35% of those with children in public school).

In terms of technology rules, parental expectation that one's child had sent sexually explicit images of themselves was significantly and negatively associated with number of rules enforced, and the effect size was small. Parental use of technology-enforced rules (e.g., use of parental controls on tablets) and child-enforced rules (rules imposed by parents that children are expected to follow on their own) were also associated with parental expectation that their child had shared sexually explicit images of themselves; parents using these types of rule enforcements had higher odds of expecting that their child had shared sexually explicit images of themselves. Effect sizes were small. Finally, parents who had awareness of secondary accounts had nearly three times the odds of expecting their child had shared sexually explicit images of themselves (48% of parents who were aware of secondary accounts versus 25% of parents who were unaware of secondary accounts).

Regarding parental communication, there was a significant, negative association between parental comfort in talking to their child about their child's online activities and parental expectation that their child had shared sexually explicit images of themselves, such that lower comfort was associated with greater expectation their child had shared sexually explicit images of themselves, with a small–moderate effect size. Further, parental perceived knowledge of their child's online activities was significantly positively associated with parental expectation that their child had shared sexually explicit images of themselves, though this effect was small.

Both parental attitudes about sending and resharing sexually explicit images were significantly and positively associated with parental expectation that their child had shared sexually explicit images of themselves, with small to moderate effect sizes. Parents who reported previously sending their own sexually explicit images had more than eight times the odds of expecting their child had shared sexually explicit images of themselves (69% of parents who had sent their own images compared to 21% of parents who did not send their own images). Parent engagement with social media was also significantly and positively associated with parental expectation that their child

had shared sexually explicit images of themselves. Finally, parental expectation that their child's friends and school peers shared sexually explicit images of themselves were significantly associated with parental expectation that their own child had shared sexually explicit images of themselves.

#### **4.4 Preparedness to Deal with Their Child's Sexually Explicit Image being Nonconsensually Reshared**

Thirty-five percent of parents indicated they felt prepared to handle the situation if their child told them that a sexually explicit image of themselves had been nonconsensually reshared around their school or online. There was a small but significant negative relationship between parent age and perceived level of preparedness; younger parents felt more prepared. Male parents had twice the odds of reporting feeling prepared to deal with their child's nonconsensually reshared image than female parents (46% of male parents compared to 30% of female parents). LGBTQ+ parents had twice the odds of feeling prepared than cis, heterosexual parents (57% of LGBTQ+ parents compared with 36% of cis, heterosexual parents). There was a significant though small positive association between higher household income and perceived level of parental preparedness. There was a significant though small positive association between higher frequency of religious service attendance and perceived level of preparedness to deal with nonconsensual sharing of their child's sexually explicit image. Parents with children in public school felt significantly less prepared to handle such a situation compared to those with children in private school.

There was no significant association between technology rules and enforcement and perceived level of parental preparedness. However, parents who were aware of secondary accounts had twice the odds of reporting feeling prepared to handle an incident involving the nonconsensually reshared sexually explicit image of their child (45% of parents who were aware of secondary accounts versus 28% of parents who were unaware of secondary accounts).

Both attitudes about sending and nonconsensual resharing were positively and significantly associated with parental level of preparedness, but with small effects. Parents who had shared their own sexually explicit images had twice the odds of self-reporting feelings of preparedness than parents who had not, and the effect size was small (51% of parents who had shared their own images versus 31% of parents who had not). Further, parents' own social media use was positively associated with preparedness, though the effect size was small. Parents who expected that their child's friends shared sexually explicit images had higher odds of indicating feelings of preparedness to deal with a nonconsensual resharing situation involving their own child's sexually explicit images (45% of parents who expect their child's friends to send images versus 31% who do not). This was not the case for the expectation that their child's school peers shared sexually explicit images of themselves.

#### **4.5 Regression Analyses**

Because of missing data, as well as the number of candidate variables to consider, we did not enter all variables into our three logistic regression analyses to predict the three outcomes. The following variables were selected based on prior research: parent age, gender, sexual identity, ethnicity, household income, and religious attendance; child education level; usage rules for their child's devices; parental frequency of engagement with social media, awareness of secondary accounts, and following of their child on social media; parental comfort in talking to their child about online activity; perceived knowledge of what their child does online; parental sexually explicit image sharing

Table 2: Parent demographic variables and associations with talking to children, expectation that child sends images, and preparedness if child's image is reshared ( $n = 402$ )

	Talking to child (66.2%, $n = 266$ )	Expectation that child sent (38.6%, $n = 155$ )	Prepared if child's image reshared (34.6%, $n = 139$ )
Age ( $n = 402$ )	.09	<b>-.28</b>	<b>-.18</b>
Gender ( $n = 395$ )			
Male (0)	$\phi_c = .07$	$\phi_c = .28$	$\phi_c = .16$
Female (1)	OR = 1.33	<b>OR = 0.31</b>	<b>OR = 0.50</b>
Sexual Identity ( $n = 398$ )			
Heterosexual (0)	$\phi_c = .06$	$\phi_c = .19$	$\phi_c = .12$
LGBTQ+ (1)	OR = 1.60	<b>OR = 3.66</b>	<b>OR = 2.39</b>
Ethnicity ( $n = 402$ )			
White (0)	$\phi_c = .09$	$\phi_c = .05$	$\phi_c = .06$
Non-White (1)	OR = 0.66	OR = 0.79	OR = 1.32
Household Income ( $n = 390$ )	-.004	<b>.24</b>	<b>.11</b>
Geographic Location ( $n = 402$ )			
City/Suburb (0)	$\phi_c = .05$	$\phi_c = .23$	$\phi_c = .05$
Rural (1)	OR = 1.33	<b>OR = 0.26</b>	OR = 0.77
Religious Attendance ( $n = 402$ )	.08	<b>.28</b>	<b>.24</b>
Relationship Status ( $n = 402$ )			
Single (0)	$\phi_c = .06$	$\phi_c = .16$	$\phi_c = .02$
Partnered (1)	OR = 0.75	<b>OR = 2.30</b>	OR = 1.09
Average number of children ( $n = 402$ )	-.02	<b>-.10</b>	.004
Average age of children (years)			
Male Children ( $k = 313$ )	-.07	<b>-.24</b>	0.5
Female Children ( $k = 283$ )	.03	<b>.16</b>	-0.2
Non-binary Children ( $k = 6$ )	-	-	-
Educational Level of Child ( $n = 388$ )			
Elementary School	$\chi^2 = 7.18$	$\chi^2 = 5.46$	$\chi^2 = 2.39$
Middle School	$\phi_c = .14$	$\phi_c = .12$	$\phi_c = .08$
High School			
Type of School Child Attends ( $n = 388$ )			
Private School, etc. (0)	$\phi_c = .06$	$\phi_c = .14$	$\phi_c = .11$
Public School (1)	OR = 0.74	<b>OR = 0.53</b>	<b>OR = 0.60</b>

Bolded values are significant,  $p < .05$ .  $\phi_c$  denotes "Cramer's phi." OR = Odds Ratio.

Table 3: Technology rules and awareness (reactive mediation) ( $n = 402$ )

	Talking to child (66.2%, $n = 266$ )	Expectation that child sent (38.6%, $n = 155$ )	Prepared if child's image reshared (37.6%, $n = 139$ )
Rules Enforced (score out of 9; $n = 402$ )	.06	-.12	.01
Rule Enforcement ( $n = 402$ )			
Parent-Enforced	$\phi_c = .04$ OR = 1.24	$\phi_c = .03$ OR = 1.20	$\phi_c = .02$ OR = 0.88
Tech-Enforced	$\phi_c = .01$ OR = 0.98	<b><math>\phi_c = .22</math></b> <b>OR = 2.46</b>	$\phi_c = .06$ OR = 1.27
Child-Enforced	$\phi_c = .06$ OR = 1.27	<b><math>\phi_c = .25</math></b> <b>OR = 2.82</b>	$\phi_c = .07$ OR = 1.33
Awareness of social media platforms (score out of 4) ( $n = 402$ )	.07	.05	.01
Awareness of Secondary Accounts ( $n = 402$ )			
Not aware (0)	<b><math>\phi_c = .23</math></b> <b>OR = 2.64</b>	<b><math>\phi_c = .24</math></b> <b>OR = 2.80</b>	<b><math>\phi_c = .07</math></b> <b>OR = 2.11</b>
Aware (1)			
Connection to children on Social Media ( $n = 402$ )			
Not following child (0)	$\phi_c = .07$ OR = 1.38	$\phi_c = .03$ OR = 0.89	$\phi_c = .08$ OR = 1.40
Following child (1)			

Bolded values are significant,  $p < .05$ .  $\phi_c$  denotes "Cramer's phi." OR = Odds Ratio.

Table 4: Parental communication, attitudes, and norms

	Talking to child (66.2%, $n = 266$ )	Expectation that child sent (38.6%, $n = 155$ )	Prepared if child's image reshared (37.6%, $n = 139$ )
Comfortable talking to children about their online activities ( $n = 402$ )	.06	-.35	-.04
Knowledge of how child spends time online ( $n = 402$ )	.002	.13	-.07
Self-sharing attitudes ( $n = 402$ )	.02	.62	.26
Resharing attitudes ( $n = 402$ )	.03	.65	.25
Parent has sent sexually explicit images ( $n = 369$ )			
Hasn't sent (0)	$\phi_c = .04$ OR = 1.19	<b><math>\phi_c = .46</math></b> <b>OR = 8.32</b>	<b><math>\phi_c = .18</math></b> <b>OR = 2.25</b>
Has sent (1)			
Frequency of engagement in social media ( $n = 402$ )	.06	.58	.29
Expectation that child's friends send images ( $n = 402$ )			
Doesn't expect (0)	<b><math>\phi_c = .11</math></b> <b>OR = 2.44</b>	<b><math>\phi_c = .71</math></b> <b>OR = 73.81</b>	<b><math>\phi_c = .14</math></b> <b>OR = 1.79</b>
Does expect (1)			
Expectation that child's school peers send images ( $n = 402$ )			
Doesn't expect (0)	<b><math>\phi_c = .11</math></b> <b>OR = 1.62</b>	<b><math>\phi_c = .57</math></b> <b>OR = 35.01</b>	$\phi_c = .05$ OR = 1.25
Does expect (1)			

Bolded values are significant,  $p < .05$ .  $\phi_c$  denotes "Cramer's phi." OR = Odds Ratio.

behavior; parental attitudes about resharing; and expectations about sexually explicit image sharing by their child's friends and school peers. In all three regression analyses, demographic variables were entered into the first step, technology rules and awareness variables were entered into the second step, and attitudes and norms variables in the final step.

Prior to running logistic regressions, we checked the following assumptions: collinearity, outliers and linear relation to log odds. A Spearman's correlation revealed that only two variables—attitudes toward self-sharing and attitudes toward resharing—were significantly and highly correlated ( $r = .83$ ), suggesting potential collinearity. We opted to keep the "attitude toward resharing" variable because it was more relevant to the outcome of feeling prepared if one's child's sexually explicit images of themselves had been nonconsensually reshared. With regard to outliers, Mahalanobis distance indicated that we had four outliers (probabilities  $\leq .001$ ). However, as none of these four outliers had a Cooks distance above .5, they were not unduly influencing our data. Finally, all continuous variables were linearly related to log odds.

The regression results are summarized in Table 5 on the next page. Talking to their child about sending sexually explicit images of themselves was predicted by the parent being a mother, having a child in high school, enforcing a higher number of technology rules, knowing about secondary social media accounts, and parental expectation that their child's friends shares sexually explicit images of themselves. All of these were moderate effects, with odds ratios of two or higher, with the exception of total technology rules. Parental expectation that their child had shared sexually explicit images of themselves was related to fewer total technology rules in place, more permissive parent attitudes about nonconsensually resharing someone else's sexually explicit images, and parental expectation that their child's friends and school peers had shared sexually explicit images of themselves. All of these were small effects, with the exception of parental expectation that their child's friends and school peers share sexually explicit images of themselves, both of which had odds ratios greater than 10. Perceived level of parental preparedness to handle a situation involving the nonconsensual resharing of their child's sexually explicit images was only significantly predicted by parental degree of comfort in talking with their child about the child's online activities. Interestingly, this was a negative association, such that being less comfortable talking to their child about their online activities predicted increased parental perceptions of preparedness. This effect was small to moderate in size, however.

## 5 Discussion

In this study, we examined parent survey data to identify bivariate and multivariate correlates of three key outcomes: (1) talking to one's child about sharing sexually explicit images of themselves; (2) parental expectations that one's child had shared sexually explicit images of themselves; and (3) perceived level of parental preparedness if sexually explicit images of one's child were nonconsensually reshared. Candidate correlates included parent demographics, technology use rules, parent's own social media use, as well as parental attitudes about sexually explicit image sharing and their perceived norms, informed by their own sexually explicit image sharing and expectations about sexually explicit image sharing among their child's friends and schoolmates. Because of the limited research on this topic, we viewed our analyses as exploratory. The following sections are organized by the three key outcomes. We reported both bivariate and multivariate associations, first to look at the overall pattern of correlations in the bivariate analyses, and then seeing which correlates explained unique variance in the multivariate analyses.

Table 5: Results of hierarchical binary logistic regression analyses for parental DVs ( $n = 304$ )

	Talking to child ( $n = 304$ )		Expectation that child sends images ( $n = 304$ )		Preparedness if child's image is reshared ( $n = 283$ )	
	<i>B</i>	Odds Ratio [95% CI]	<i>B</i>	Odds Ratio [95% CI]	<i>B</i>	Odds Ratio [95% CI]
Constant	-1.94	0.12	-3.75	0.02	-0.40	0.67
Age	0.02	1.02 [0.98, 1.05]	-0.06	0.95 [0.88, 1.02]	-0.03	0.97 [0.93, 1.01]
Gender (Female)	<b>0.93</b>	<b>2.53</b> <b>[1.33, 4.78]</b>	-.20	0.82 [0.28, 2.39]	-0.45	0.64 [0.36, 1.16]
Gender/sexual identity (LGBTQ+)	1.60	4.95 [0.99, 24.77]	0.68	1.98 [0.31, 12.61]	0.34	1.40 [0.46, 4.28]
Ethnicity (Non-white)	-0.46	0.63 [0.35, 1.15]	0.73	2.07 [0.77, 5.56]	0.09	1.09 [0.61, 1.94]
Household income	0.04	1.04 [0.90, 1.20]	-0.07	0.93 [0.73, 1.18]	0.04	1.04 [0.90, 1.19]
Religious attendance	0.13	1.14 [0.95, 1.37]	0.25	1.29 [0.94, 1.77]	0.17	1.19 [1.00, 1.41]
Age category of child*						
Middle School	0.19	1.21 [0.60, 2.54]	0.23	1.26 [0.35, 4.61]	-0.32	0.73 [0.36, 1.49]
High School	<b>0.84</b>	<b>2.33</b> <b>[1.12, 4.88]</b>	-0.15	0.86 [0.24, 3.12]	-0.27	0.76 [0.38, 1.55]
Total technology rules	<b>0.13</b>	<b>1.13</b> <b>[1.01, 1.27]</b>	<b>-0.31</b>	<b>0.73</b> <b>[0.60, 0.90]</b>	-.03	0.97 [0.87, 1.08]
Social media engagement	-0.02	0.98 [0.95, 1.01]	0.02	1.02 [0.97, 1.07]	0.02	1.02 [0.99, 1.05]
Knowledge of secondary accounts (has knowledge)	<b>1.14</b>	<b>3.14</b> <b>[1.71, 5.79]</b>	-0.36	0.70 [0.27, 1.81]	0.15	1.16 [0.65, 2.08]
Following child on social media (Following)	0.001	1.00 [0.54, 1.86]	0.23	1.25 [0.47, 3.34]	0.21	1.24 [0.68, 2.27]
Comfortable talking to children about their online activities	-0.26	0.77 [0.57, 1.05]	-0.09	0.92 [0.57, 1.47]	<b>-.34</b>	<b>0.72</b> <b>[0.53, 0.96]</b>
Knowledge of how child spends time online	0.08	1.09 [0.77, 1.54]	-.17	0.85 [0.50, 1.44]	.16	1.18 [0.84, 1.65]
Attitudes toward resharing images of others	.01	1.01 [0.97, 1.05]	<b>0.12</b>	<b>1.13</b> <b>[1.06, 1.20]</b>	0.01	1.01 [0.97, 1.05]
Parents' own image sharing (Has shared images)	-0.53	0.59 [0.26, 1.37]	-.01	0.99 [0.34, 2.91]	-0.07	0.93 [0.43, 2.03]
Expectation that child's friends send images	<b>1.35</b>	<b>3.85</b> <b>[1.58, 9.36]</b>	<b>3.00</b>	<b>20.14</b> <b>[5.61, 72.28]</b>	0.47	1.61 [0.74, 3.51]
Expectation that child's school peers send images	-0.18	0.84 [0.38, 1.86]	2.55	<b>12.85</b> <b>[2.65, 62.15]</b>	-0.29	0.75 [0.35, 1.63]

Reference categories for categorical variables are listed in parentheses. Bolded results indicate  $p < .05$ .

### 5.1 Talking To One's Child

Two-thirds of parents had talked to their child about sharing sexually explicit images of themselves, which can be compared to a small qualitative study by Ahern, Kemppainen, and Thacker (2016) that found only a third of parents had talked to their children. Looking first at the bivariate correlations in the parent demographic domain, only education level of the child was correlated with a parent having a conversation about sending sexually explicit images, such that parents had higher odds of having these conversations with high school children than with those in elementary or middle school. This is in line with the findings of the meta-analysis by Madigan et al. (2018), where parents were more likely to have the talk with an older child than a younger child.

With regard to significant correlates in the technology domain, parents who talked to their child about sharing sexually explicit images of themselves were more familiar with secondary social media accounts. Having confidence in their child's knowledge of staying safe online was correlated with talking to children about sharing sexually explicit image of themselves, though the effect size was small. Finally, parents who expected that their child's friends and/or school peers were sending sexually explicit images of themselves had higher odds of talking to their child about sexually explicit image sharing.

In the regression analysis, talking to one's child was significantly predicted by parent gender, such that female parents had higher odds of talking to their children, as well as the child being in high school, a higher number of technology rules in place for the child's device usage, parental awareness of secondary social media accounts, and parental expectations that their child's friends had shared sexually explicit images of themselves. The result for parent gender was consistent with past research that has found that mothers are more likely to engage in communication with their children about sexual topics (e.g., Scull et al. (2022)).

### 5.2 Expectations One's Child Had Shared Sexually Explicit Images of Themselves

The expectation that one's child had shared sexually explicit images of themselves had more significant correlates than talking to one's child about sharing sexually explicit images of themselves, including parent demographics, tech rules, attitudes, and the parent's own sexually explicit image sharing behavior. Parental expectation that their child had shared sexually explicit images of themselves was higher among younger, male, and non-heterosexual parents; parents with higher household incomes; parents living in urban areas; parents with higher religious attendance; parents with romantic partners; and parents with children in public school. Further, having fewer and younger children (overall average age) was positively associated with talking to their child about sharing sexually explicit images of themselves.

In the companion child survey, we found sexually explicit image sharing among youth (aged 9–17) was correlated with having a dating app, having a secondary account, and using apps that have encryption (Seto et al., n.d.). The present parent survey did not ask about dating apps specifically, but parents who were aware of secondary accounts did have greater expectations that their child had shared sexually explicit images of themselves. Expectation was strongly related to fewer technology rules in particular, including rules across different types of devices. With regard to parental communication and attitudes, all variables were correlated with parental expectation. Specifically, those who were less comfortable talking to their child about their child's online activities had higher odds of expecting their child had shared sexually explicit images of themselves; and parents who felt knowledgeable about how their child spends

time online had higher odds of expecting that their child had shared sexually explicit images of themselves. The strongest associations were found for parental attitudes about sending and resharing sexually explicit images, as well as parental behavior involving sharing sexually explicit images of themselves, and parental expectations that their child's friends and school peers had shared sexually explicit images of themselves.

In the regression analysis, parental expectation that their child had shared sexually explicit images of themselves was significantly predicted by having fewer technology rules in place for their child's device use, more permissive attitudes about resharing sexually explicit images, and the expectation that their child's friends and schoolmates had shared sexually explicit images of themselves.

### 5.3 Preparedness

A similar pattern was found for parental preparedness if one's child had sexually explicit images of themselves nonconsensually reshared, albeit with weaker associations. Preparedness was higher for younger, male, and nonheterosexual parents, parents with higher household incomes, parents who attended religious services, and parents whose children attended private school. It was also higher for those aware of secondary accounts. Again, parental preparedness regarding nonconsensual resharing was associated with more permissive attitudes about sexually explicit image sending and resharing, as well as parental behavior involving sexually explicit image sharing and the expectation that their child's friends share sexually explicit images of themselves. In the regression analysis, preparedness if their child's images were nonconsensually reshared was significantly predicted by less (rather than more) comfort in talking to their child about their child's online activities. This was a very surprising finding given that we might have expected greater preparedness to be associated with greater comfort with talking to children about their online (and offline) activities.

### 5.4 The Importance of Parent-Child Communication

Parent-child communication can be critical in promoting child safety online, which is why we were interested in identifying correlates of parents talking to their child about sexually explicit image sharing. Rudolph et al. (2018) found that about half of the parents in their sample talked to their children about child sexual abuse concerns. Parent-child communication is important because parents can influence their children's behavior (e.g., Aspy et al. (2007) and DiClemente et al. (2001)). For example, Aspy et al. (2007) surveyed over 1,000 teenagers and found that those whose parents talked to them about sex—including setting clear rules or expectations and talking about values and birth control—were less likely to have initiated sex or, if they were sexually active, were more likely to use birth control. Indeed, in a companion survey of children we conducted regarding the children's sexually explicit image-sharing attitudes and behaviors, respondents indicated their parents were important influences on their online behavior, as were other trusted adults such as other family relatives, like an aunt or uncle (Seto et al., n.d.). A large majority of the children surveyed in that research reported their parents taught them how to behave online and enforced rules such as access restrictions, observed use, and screen-time limits.

It can be important for children that parents be willing to have open conversations about online safety and sending sexually explicit or nude images of themselves; however, some parents are hesitant to have these conversations, whether because of a lack of knowledge about the topic, feelings of discomfort around discussing sexuality, or uncertainty about how to best help their children. An important

direction for intervention, then, is supporting parents to have these conversations, including providing knowledge and increasing self-efficacy to discuss these sensitive topics.

### 5.5 Limitations

Participants were recruited through an online marketing panel; therefore, parents who were not online, not literate, or concerned about responding to a market panel survey (e.g., undocumented migrant) are unlikely to be represented. There is also a selection bias for parents who are willing to complete a survey about image sharing, where parents who were uncomfortable with these kinds of questions would be more likely to decline to participate. Talking to one's child was more common in this survey than in previous studies: This may reflect growing understanding that this is an important topic to discuss, or again self-selection in this survey because parents who were more open about talking about this topic were also more willing to participate in the survey.

One of our key outcomes was parental expectation that one's child had shared sexually explicit images of themselves. Parents would not necessarily be aware of their children's behavior, however, and indeed there is ample research on the discrepancy between parent and child reports of behavior in general (e.g., Achenbach (2011) and Skilling, Doiron, and Seto (n.d.)), and online risk events in particular (Wisniewski et al. 2017). In this survey, over a third of parents thought their child had sent sexually explicit images, whereas in the companion child survey (Seto et al., n.d.), 15% of girls and 9% of boys had shared their own nudes/near-nudes (not linked to parents in this survey, however). Madigan et al. (2018) found that 15% of children, across 39 studies representing 110,380 participants, reporting sending nudes, so parents in this study may be overestimating the likelihood their child had sent explicit images, unless their children were a higher risk group for unknown reasons.

In addition, our single question about parental expectation that one's child had shared sexually explicit images of themselves did not provide any additional context about image sharing behavior, including whether the image sharing was done willingly or coerced, whether the image was a photo or video, and whether the image had been shared with a stranger or someone the child knew.

Indeed, many of the survey questions were about parental expectations, which may or may not be linked to reality. For example, parental expectations about sexually explicit image sharing by their child's friends or school peers may be entirely unrelated to actual image sharing by these groups. This survey did not include questions about disclosure or detection of child image sharing, that is, whether parents knew their child had engaged in sharing sexually explicit images of themselves. We suspect that many parents are unaware if their child has shared their own images because their child is unlikely to tell them (Seto et al., n.d.; Wolak et al. 2018).

Another important limitation of this study is that knowing whether parents had a conversation about sexually explicit image sharing with their child does not tell us if those conversations had an effect on their child's behavior. Similarly, asking parents about their perceived preparedness if their child's sexually explicit image were nonconsensually reshared does not tell us how parents would actually behave if this were to occur.

Because the survey had to be of a manageable length, many of the variables examined in this study—including the key dependent variables—relied on a single or only a few questions, rather than psychometrically robust measures. More focused surveys looking at fewer domains, but using more robust measures, would be valuable

extensions of the research described here.

Finally, this study was conducted through secondary analysis of a survey that was carried out to address practical concerns about parents regarding their children's online safety. The survey was not developed to test a specific theory or model about parental mediation. A more theoretically driven survey would provide opportunities for more specific hypothesis testing.

## 6 Future Directions

It would be extremely valuable, though more challenging, to conduct a linked survey of parents and their children regarding sexually explicit image sharing. This would allow us to look at discrepancies (e.g., parent expectations and child behavior; views about what would be most helpful) and correlates of that discrepancy.

As we have already mentioned, having a conversation about sexually explicit image sharing does not mean there is a tangible behavioral benefit from the conversation. We need to know what parents talk about, which could include specific advice related to online safety, technology rules, or sex education more generally. Returning to Wachs et al. (2020), we can think of parents having a conversation with their child as an example of instructive mediation, whereas parent- and tech-enforced rules can be viewed as restrictive mediation. Restrictive mediation is less likely to work—assuming it is not reactive, being put in place after image sharing has already taken place—because children who do not agree can and do circumvent rules. Possibly consistent with this idea, we found that digital rules were not related to talking to children about image sharing, or expectations that their child had shared sexually explicit images of themselves.

Future research could focus specifically on parent-child communication about sexually explicit image sharing and seeing how well what happens maps onto what can be effective. For example, Young and Tully (2022) looked at parent-child communication about sexting and found that children who perceived their parents as supportive of autonomy had more positive expectations about communication. Corcoran et al. (2022) looked at parent-child communication in 306 dyads and found that active mediation (e.g., talking about which websites are “good” or “bad”) was associated with a lower frequency of sending sexts. This research on parent-child communication could draw on related research that shows parent-child communication about sex in general is associated with less risky sexual behavior in the future (Widman et al. 2016).

Longitudinal research would shed light on temporal order, which is a necessary though not sufficient condition to infer causality. We tested the hypothesis that parental awareness of technology and familiarity with social media would predict talking to their child about sharing sexually explicit images of themselves. Our data were correlational, so it is not clear if parent awareness leads to parents being more willing to talk to their children or if parents who are more willing to talk to their children become more familiar with social media, as their child teaches them about popular apps, for example.

This evidence needs to be accompanied by research to examine how to increase and improve parent-child communication. In this survey, a majority of parents talked to their child; what could encourage those who had not talked to their child? We again could draw from the broader sex research literature; for example, Santa Maria et al. (2015) and Widman et al. (2019) describe brief, typically in-person interventions that can increase parent-child communication about sexuality and thus adolescent sexual health. In their systematic review, Widman et al. (2019) found that effects were larger for educational

interventions delivered to parents of younger compared to older adolescents, and that interventions were more effective when they involved the parent and child together, rather than primarily or exclusively delivered to parents.

Last, we are interested in child-to-parent mediation of technology use and image sharing. In particular, the EU 2020 survey (Smahel et al. 2020) showed that children often educate their parents about internet technologies, including the latest apps and how they are used. Even relatively knowledgeable parents are likely to be playing catch-up with their children's evolving and dynamic use of technology.

## 7 Conclusions

Parental expectations that their child's friends had shared sexually explicit images of themselves were correlated with talking to their child and parental expectations their child had shared sexually explicit images of themselves, suggesting perceived norms are important. In addition, bivariate correlations showed that attitudes about resharing images were correlated with all three key dependent variables. This suggests attitudes and perceived norms are an important focus for further inquiry given the large effect sizes for these variables, just as a companion survey found that attitudes and perceived norms were significant correlates of image behavior reported by children (Seto et al., n.d.). An important line of new research would be on the determinants of these attitudes and norms among parents, because attitudes and norms can be targeted using social marketing methods (e.g., Dunne et al. (2017)).

Potentially important interventions, then, would be to educate parents and encourage parents to implement more instructive rather than restrictive approaches, to foster communication and thus disclosure, and perhaps to encourage child resilience to pressure to share sexually explicit images of themselves or to nonconsensually reshare the sexually explicit images of another child. Much more research is needed on how to support parents in talking to their children about sexually explicit image sharing, engaging in an instructive way, and examining the impact of these parent-focused interventions on the behavior of their children.

## References

- Achenbach, Thomas M. 2011. "Commentary: Definitely more than measurement error: But how should we understand and deal with informant discrepancies?" *Journal of Clinical Child & Adolescent Psychology* 40 (1): 80–86. <https://doi.org/10.1080/15374416.2011.533416>.
- Adigwe, Ifeanyi, and Thomas van der Walt. 2020. "Parental mediation of online media activities of children in Nigeria: A parent-child approach." *Computers in Human Behavior Reports* 2:100041. <https://doi.org/10.1016/j.chbr.2020.100041>.
- Ahern, Nancy R, Jeanne Kemppainen, and Paige Thacker. 2016. "Awareness and knowledge of child and adolescent risky behaviors: A parent's perspective." *Journal of Child and Adolescent Psychiatric Nursing* 29 (1): 6–14. <https://doi.org/10.1111/jcap.12129>.
- Aspy, Cheryl B, Sara K Vesely, Roy F Oman, Sharon Rodine, LaDonna Marshall, and Ken McLeroy. 2007. "Parental communication and youth sexual behaviour." *Journal of Adolescence* 30, no. 3 (June): 449–66. <https://doi.org/10.1016/j.adolescence.2006.04.007>.
- Bianchi, Dora, Mara Morelli, Roberto Baiocco, Elena Cattelino, Fiorenzo Laghi, and Antonio Chirumbolo. 2019. "Family functioning patterns predict teenage girls' sexting." *International Journal of Behavioral Development* 43 (6): 507–14. <https://doi.org/10.1177/0165025419873037>.
- Clark, Lynn Schofield. 2011. "Parental Mediation Theory for the Digital Age." *Communication Theory* 21 (4): 323–43. <https://doi.org/10.1111/j.1468-2885.2011.01391.x>.
- Corcoran, Erin, Jennifer Doty, Pamela Wisniewski, and Joy Gabrielli. 2022. "Youth sexting and associations with parental media mediation." *Computers in Human Behavior* 132:107263. <https://doi.org/10.1016/j.chb.2022.107263>.
- DiClemente, Ralph J, Gina M Wingood, Richard Crosby, Catlainn Sionean, Brenda K Cobb, Kathy Harrington, Susan Davies, Edward W Hook III, and M Kim Oh. 2001. "Parental monitoring: Association with adolescents' risk behaviors." *Pediatrics* 107 (6): 1363–68. <https://doi.org/10.1542/peds.107.6.1363>.
- Dunne, Tom, Lisa Bishop, Susan Avery, and Stephen Darcy. 2017. "A review of effective youth engagement strategies for mental health and substance use interventions." *Journal of Adolescent Health* 60 (5): 487–512. <https://doi.org/10.1016/j.jadohealth.2016.11.019>.
- Madigan, Sheri, Anh Ly, Christina L Rash, Joris Van Ouytsel, and Jeff R Temple. 2018. "Prevalence of multiple forms of sexting behavior among youth: A systematic review and meta-analysis." *JAMA Pediatrics* 172 (4): 327–35. <https://doi.org/10.1001/jamapediatrics.2017.5314>.
- Mori, Camille, Jessica E. Cooke, Jeff R. Temple, Anh Ly, Yu Lu, Nina Anderson, Christina Rash, and Sheri Madigan. 2020. "The Prevalence of Sexting Behaviors Among Emerging Adults: A Meta-Analysis." *Archives of Sexual Behavior* 49 (4): 1103–19. <https://doi.org/10.1007/s10508-020-01656-4>.
- Rudolph, Julia, Melanie J Zimmer-Gembeck, Dianne C Shanley, and Russell Hawkins. 2018. "Child sexual abuse prevention opportunities: Parenting, programs, and the reduction of risk." *Child Maltreatment* 23, no. 1 (September): 96–106. <https://doi.org/10.1177/1077559517729479>.

- Rutkowski, Tara L, Heidi Hartikainen, Kirsten E Richards, and Pamela J Wisniewski. 2021. "Family Communication: Examining the Differing Perceptions of Parents and Teens Regarding Online Safety Communication." *Proceedings of the ACM on Human-Computer Interaction* 5 (CSCW2): 1–23. <https://doi.org/10.1145/3479517>.
- Samuels, Kimberly Celeste. 2015. "Relationship of Parental, Intergenerational, Peer, and Community Connections with Engagement in Risky Sexual Behaviors and Sexting among College Students." PhD diss., Oklahoma State University.
- Santa Maria, Diane, Christine Markham, Shirley Bluethmann, and Patricia Dolan Mullen. 2015. "Parent-based adolescent sexual health interventions and effect on communication outcomes: a systematic review and meta-analyses." *Perspectives on Sexual and Reproductive Health* 47, no. 1 (January): 37–50. <https://doi.org/10.1363/47e2415>.
- Sasson, Hagit, and Gustavo Mesch. 2014. "Parental mediation, peer norms and risky online behavior among adolescents." *Computers in Human Behavior* 33:32–38. <https://doi.org/10.1016/j.chb.2013.12.025>.
- Scull, Tracy M, Christina V Dodson, Jacob G Geller, Liz C Reeder, and Kathryn N Stump. 2022. "A Media Literacy Education Approach to High School Sexual Health Education: Immediate Effects of Media Aware on Adolescents' Media, Sexual Health, and Communication Outcomes." *Journal of Youth and Adolescence* 51 (4): 708–23. <https://doi.org/10.1007/s10964-021-01567-0>.
- Seto, M.C., K. Roche, M. Stroebel, K. Gonzalez-Pons, and A. Goharian. n.d. *Sending, receiving, and nonconsensually sharing nude or near nude images by children and youth [Manuscript submitted for publication]*. Royal Ottawa Health Care Group.
- Skilling, T.A., J.M. Doiron, and M.C. Seto. n.d. "Exploring differences in youth and parent reports of antisociality among adolescent sexual and nonsexual offenders." *Psychological Assessment* 23 (1): 153–63. <https://doi.org/10.1037/a0021229>.
- Smahel, David, Hana Machackova, Giovanna Mascheroni, Lenka Dedkova, Elisabeth Staksrud, Kjartan Ólafsson, Sonia Livingstone, and Uwe Hasebrink. 2020. "EU Kids Online 2020: Survey results from 19 countries."
- Sonck, Nathalie, Peter Nikken, and Jos De Haan. 2013. "Determinants of Internet mediation: A comparison of the reports by Dutch parents and children." *Journal of Children and Media* 7 (1): 96–113. <https://doi.org/10.1080/17482798.2012.739806>.
- Temple, Jeff R, and Yu Lu. 2018. "Sexting from a health perspective: Sexting, health, and risky sexual behaviour." *Sexting*, 53–61.
- Van Ouytsel, Joris, Michel Walrave, Koen Ponnet, and Wannes Heirman. 2015. "The Association Between Adolescent Sexting, Psychosocial Difficulties, and Risk Behavior: Integrative Review." *The Journal of School Nursing* 31, no. 1 (July): 54–69. <https://doi.org/10.1177/1059840514541964>.
- Wachs, Sebastian, Anna Michelsen, Michelle F Wright, Manuel Gámez-Guadix, Carmen Almendros, Yeji Kwon, Eun-Yeong Na, Ruthaychonnee Sittichai, Ritu Singh, Ramakrishna Biswal, et al. 2020. "A routine activity approach to understand cybergrooming victimization among adolescents from six countries." *Cyberpsychology, Behavior, and Social Networking* 23, no. 4 (April): 218–24. <https://doi.org/10.1089/cyber.2019.0426>.

- Widman, Laura, Sophia Choukas-Bradley, Seth M Noar, Jacqueline Nesi, and Kyla Garrett. 2016. "Parent-adolescent sexual communication and adolescent safer sex behavior: A meta-analysis." *JAMA Pediatrics* 170 (1): 52–61. <https://doi.org/10.1001/jamapediatrics.2015.2731>.
- Widman, Laura, Reina Evans, Hannah Javidi, and Sophia Choukas-Bradley. 2019. "Assessment of parent-based interventions for adolescent sexual health: A systematic review and meta-analysis." *JAMA Pediatrics* 173 (9): 866–77. <https://doi.org/10.1001/jamapediatrics.2019.2324>.
- Wisniewski, Pamela, Heng Xu, Mary Beth Rosson, and John M Carroll. 2017. "Parents just don't understand: Why teens don't talk to parents about their online risk experiences." In *Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing*, 523–40. <https://doi.org/10.1145/2998181.2998236>.
- Wolak, Janis, David Finkelhor, Wendy Walsh, and Leah Treitman. 2018. "Sextortion of minors: Characteristics and dynamics." *Journal of Adolescent Health* 62 (1): 72–79. <https://doi.org/10.1016/j.jadohealth.2017.08.014>.
- Young, Rachel, and Melissa Tully. 2022. "Autonomy vs. control: Associations among parental mediation, perceived parenting styles, and US adolescents' risky online experiences." *Cyberpsychology: Journal of Psychosocial Research on Cyberspace* 16 (2). <https://doi.org/10.5817/cp2022-2-5>.

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Due to ethical considerations, data for the present study are not available to the public.

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## Ethical Standards

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## Keywords

Sexting; child image sharing; parent preparedness; parental mediation