

Sharenting and Children’s Privacy in the United States: Parenting Style, Practices, and Perspectives on Sharing Young Children’s Photos on Social Media

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Parents posting photos and other information about children on social media is increasingly common and a recent source of controversy. We investigated characteristics that predict parental sharing behavior by collecting information from 493 parents of young children in the United States on self-reported demographics, social media activity, parenting styles, children’s social media engagement, and parental sharing attitudes and behaviors. Our findings indicate that most social media active parents share photos of their children online and feel comfortable doing so without their child’s permission. The strongest predictor of parental sharing frequency was general social media posting frequency, suggesting that participants do not strongly differentiate between “regular” photo-sharing activities and parental sharing. Predictors of parental sharing frequency include greater social media engagement, larger social networks with norms encouraging parental sharing, more permissive and confident parenting styles, and greater social media engagement by their children. Contrasting previous research that often highlights benefits of parental sharing, our findings point to a number of risky online behaviors associated with parental sharing not previously uncovered. Implications for children’s privacy and early social media exposure are discussed, including future directions for influencing parental sharing attitudes and behaviors.

CCS Concepts: • Security and privacy; Human and societal aspects of security and privacy; Social aspects of security and privacy • Human-centered computing; Human computer interaction (HCI); HCI design and evaluation methods; User studies • Social and professional topics; User characteristics; Age; Children

KEYWORDS

Privacy, parent-child interaction, sharenting, social media, vulnerable population

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1 INTRODUCTION

In the current age of widespread social media usage, it is increasingly common for parents to post photos, videos, and stories of their children online, oftentimes without the child's explicit consent. This behavior is sometimes referred to as "sharenting," and has been a source of controversy in recent years (e.g., [1]; [2]; [3]). Prior research has examined the various psychosocial motivations behind this form of internet disclosure and has touched upon the potential positive and negative effects of this practice.

Parental sharing behavior appears to be driven by multiple pro-social motives and can often lead to positive outcomes. Indeed, there are a number of documented benefits of this practice. For instance, parental sharing can allow parents to show affection toward their children, to demonstrate their children's accomplishments to friends and family, to electronically store happy and memorable family moments, to receive valuable information, validation, and support from experts and fellow parents, and to develop and maintain social connections (e.g., [4]; [5]; [6]; [7]; [8]; [9]; [10]). As a result, this practice can help lower parental stress and increase levels of well-being ([4]; [11]). In addition to general photo sharing, some parents enjoy posting blogs about their children as a way to establish their new identity as a parent, earn extra income, and receive further support ([12]; [13]; [14]). However, it is worth noting that frequently visiting social media and repeatedly engaging in content management is associated with higher stress levels in new mothers [15]. There are additional potential benefits of parental sharing; for example, the growing popularity of 'Instadads' who demonstrate their fatherhood experiences on social media can help normalize male parenting and caregiving, thereby shifting traditional perceptions of gender roles and promoting greater gender equality [16]. Parental sharing behavior has even been used to help offset treatment for a sick family member [17], or advocate for children's issues around the world [18]. The Information Age provides platforms for rapidly shifting societal norms and offers educational and social opportunities that are indispensable to many parents.

The potential risks associated with sharing children's photos and other information online mean this practice is controversial. Potential risks include identity theft resulting from the leaking of private, identifiable information [19]; bullying from the child's peers [19]; possession and misuse of photographs by strangers, including for sexual or political motives (e.g., [20]); and even kidnapping by sexual predators [9]. In addition to overtly malicious actions and intentions, the nature of today's internet economy allows private corporations to liberally collect vast amounts of information from online users, including children, in the name of marketing [21]. As noted by Fox and Hoy (2019) [7], such risks pose a dilemma for parents. On the one hand, some parents can find support by using parental sharing to form social relationships on the internet, but such sharing may come with a cost for the child if their personally identifiable information is posted online.

In addition to these concerns, some instances of parental sharing pose a risk in terms of potential future embarrassment on the part of the child, which may lead to resentment and conflict in the parent-child relationship. Research suggests that most adolescents consider at least some parental sharing to be embarrassing and unnecessary (e.g., [22]; [23]; [24]), although additional research by Moser and colleagues (2017) [25] indicates that children typically agree that the frequency with which parents share pictures of them online is generally adequate. In addition, this practice can contribute to gender inequality starting at a very young age, as there is evidence to suggest that parents share more posts about sons than daughters on social media [26].

Parental sharing raises broader ethical concerns regarding children's autonomy and right to privacy. Material that is shared online may remain publicly available indefinitely, even if the original post is later removed. Oftentimes, the child whose photograph or information is shared is not old enough to consent or comprehend the nature of social media and its potential risks. In those cases, and particularly in countries such as the United States, parents have discretion as to which information to share and with whom to share it [9]. Some have expressed concern that such sharing may lead the child, unknowingly and without input on their part, to develop an

online identity, which may be permanent and at odds with their later identity and values as an adult [9]. Research suggests that such digital identities often begin at six months of age or even earlier [8]; [27]. For these reasons, literature on parental sharing intersects with that on interpersonal privacy, since both touch upon the act of sharing personal or potentially embarrassing information of other people. This intersection is made clear by countries such as France enacting legal ramifications for posting other people's photos without permission—including children [51]—fueling discussions on parental sharing and children's privacy (see Section 2 for review).

It appears that a considerable portion of parents who share photos of their children are at least somewhat aware of potential issues associated with parental sharing and make attempts to mitigate them, for example by not posting photos they see as embarrassing or that may portray their child in a negative light [4]. In addition, some parents view the relative permanency of material posted on social media as a benefit, since it allows them to reliably archive good memories such as photos of their children and corresponding positive reactions from family and friends [4]; [28].

Despite past research on the potential positive and negative effects of parental sharing, there remains much to be understood about this behavior, as well as the personal characteristics of parents who share children's information online versus those who choose not to. First, key questions remain regarding the context in which parental sharing occurs, including general parenting style (i.e., permissive, authoritarian, authoritative), as well as associations with parents' general internet use and disordered social media use (i.e., symptoms of addiction; [79]). Second, research has yet to examine associations between parental sharing and children's early online experiences, which is foundational to understanding the potential lasting effects of this practice on children. Third, given the increasing discussion about the costs and benefits surrounding parental sharing, more research is needed to understand parents' self-reported privacy standards with regard to this issue.

To begin to address these research questions, we surveyed 493 regular social media users with young children (\leq age 10) living in the United States on their self-reported demographics, social media activity, parenting styles, children's social media engagement, attitudes regarding the sharing of children's photos online, and self-reported sharing behaviors. In addition to providing a descriptive overview of parents' online sharing attitudes and behaviors, we examine results from a series of statistical models aimed at better understanding characteristics that predict the frequency of parental sharing, including characteristics of parents, young children's early online experiences, and social media privacy standards. Notably, most previous studies in this area utilize interview-based qualitative research (e.g., [12]; [13]; [16]; [29]; [30]; [25]; [31]; [32]). Adopting a quantitative approach enables us to sample a larger group of participants, model a broad set of variables and their relationship to parental sharing, and systematically compare parental sharing practices across different demographic groups. As such, we are able to test specific hypotheses and demonstrate higher levels of reliability and validity.

Our research also complements previous literature focused on adolescents by examining sharing attitudes and practices pertaining to young children under age ten (e.g., [22]; [23]; [24]). Our decision to narrow the age range to children under ten was motivated by important developmental changes that occur in children after their first decade, such as greater self-awareness, more lasting friendships (combined with emerging impression management with peers), more active social media involvement and online self-disclosure (e.g., [33]), and more independent participation in activities outside of the home. These changes often lead to parents appreciating the growing independence of their children and the influences of peers in their children's daily lives. In addition, due to adolescents' growing independence and more active social media engagement, the notions of privacy and autonomy develop different meanings. For adolescents, "autonomy" often entails having the freedom to post what they wish on social media without parental interference, and "privacy" includes freedom from excessive parental

surveillance (e.g., [34],[35]). This contrasts with issues of privacy and autonomy in young children, which are more directly tied to parental sharing. For these reasons, we assumed that parental decisions about photo sharing would begin to change as their children entered pre-adolescence, and combining parental attitudes of parents with children under 10 years of age with parents with children older than 10 years would introduce confounding variables. Along these lines, the age of 13 has been noted as a cutoff for needing to ask a child's permission before posting online [23]. Lastly, we focus on the sharing of children's photos specifically, which tend to include an identifiable image of the child themselves. This is in contrast to text-based posts from parents that may be about parenting in general without including identifiable information about their child. These are qualitatively different sharing behaviors, where the former is of interest due to its inclusion of children's identifiable information (i.e., their face) in tandem with information about their activities and characteristics. For these reasons, our approach is an important next step in the context of prior literature on parental sharing.

2 BACKGROUND

2.1 Interpersonal Privacy and Policy for Potentially Vulnerable Populations

Whereas users' self-reported *personal* privacy preferences have been extensively studied, less is understood about users' specific attitudes and behaviors surrounding *interpersonal* privacy. Interpersonal privacy violations may occur when an individual's right to have selective control over access to one's self is violated, compromising their autonomy or increasing their vulnerability [36]; [37]; [38]. Despite the fact that users generally report wanting to be asked for their consent prior to being posted about [39], internet users often fail to ask permission before creating posts that reference other people. This can leave the referenced individuals feeling helpless and at the whims of others in terms of their personal privacy [40]. In addition, text can be used to disseminate sensitive information and photographs can be easily altered and spread to unintended audiences, further violating the individual's privacy and autonomy [41]; [42]; [43]. Interpersonal privacy violations are often associated with internet "trolls" who direct their efforts toward upsetting or provoking others [44], but even well-intentioned users may post sensitive information about others without their consent, sometimes due to having insufficient information, misunderstandings, emotionally driven decision-making, or differences in individuals' social media privacy standards [45].

The degree to which children have a right to online privacy comparable to adults is a matter of ongoing debate, including in the context of parental sharing. Issues of consent or permission-to-post are blurred as children may be viewed as extensions of the parent [46], and parents may be seen as privacy stewards [4] or surveillants due to their role as caregivers [47]. In the case of parental sharing, this can mean making multifaceted decisions regarding which photos to share and whom to share them with, to balance the benefits of parental sharing with potential drawbacks. Within this context, parental sharing raises broader questions regarding children's autonomy and right to privacy. Vulnerabilities, including those related to age, have been implicated as core to understanding online risks and how they may disproportionately impact different groups of people [48]. Westin's (1967) [49] privacy concepts of intimacy and reserve may be especially relevant to parental sharing, where intimacy refers to the conditions under which people share with personal friends and family and reserve refers to the ability to limit communication and intrusion from others. That is, information the child intends to restrict to intimate relationships may be shared more broadly at the discretion of their caregiver and interfere with the child's preferred boundaries or reserves. Whereas caregivers typically have their child's best interests in mind, power differentials inherent to parent-child relationships can leave children with limited control over their online identity. The World Wide Web represents a cumulative and relatively permanent public repository of information, and it remains up for

debate the extent to which individuals—including those of various age groups—should have control over how their information is shared and transmitted.

The United Nations Convention on the Rights of the Child (UNCRC) recognizes children as an inherently vulnerable population, due to their lesser physical and psychological maturity. Similarly, the European Union's General Data Protection Regulation (GDPR), which seeks to protect the privacy rights of people (including children) online, states "Children merit specific protection with regard to their personal data, as they may be less aware of the risks, consequences and safeguards concerned and their rights in relation to the processing of personal data [50]."

In response to concerns associated with parental sharing and interpersonal privacy violations, some countries have imposed regulations to limit the sharing of children's information online. France, for instance, grants children the legal right to demand that photos posted by their parents be removed, and sharing private photos of children without their consent could cost parents up to 45,000 euros in fines or imprisonment for up to one year [51]. In the Netherlands, a court ruled that a grandmother had to take down photographs of her children from Facebook because their mother no longer wished for the photos to be posted there [52]. Internationally, the UNCRC explicitly acknowledges a child's right to privacy [9] and has recently adopted several general guidelines for ensuring children's rights online, emphasizing non-discrimination, child's best interests, the right to life, survival, and development, and respect for the views of the child [53], [54]. Such policies underscore the potentially controversial nature of parental sharing and the need to address concerns associated with the practice. In the United States, however, there are fewer laws or policies that protect children's right to privacy from their own guardians, which means that parents and other caregivers are free to share on the internet the material they see fit, so long as it does not violate a given social media platform's community guidelines [9]; [19]. It is worth noting that the United States is currently the only country in the world that has not ratified the UNCRC, which means that its guidelines have no effect in the country where we performed our study [55].

In addition, there is a growing concern around the collection, use, and sale of children's information by private companies online. According to the 5Rights Foundation, a London-based nonprofit organization focused on creating a safer and more beneficial internet experience for children and teenagers, extensive datasets containing children's information are being increasingly used for commercial purposes online [21]. This is especially problematic, given that children may be particularly susceptible to marketing ploys by companies who use data posted about them online to target advertisements to their demographic or influence their behavior. As a result, the organization has been pushing for additional government regulations to protect children's privacy on the Web. For instance, they are advocating for children's personal information to be made exempt from freedom of information requests, and for online databases containing children's information to be made anonymous.

Some countries have already started to take steps in that direction. Notably, the aforementioned GDPR, implemented by the European Union in 2018, requires children's rights to be protected by companies' privacy policies [56]. The UK has in turn issued the Age Appropriate Design Code (effective September 2020), which lays out the specifics of what this regulation means for users under the age of 18 [21]; [57]. In a similar vein, the United States Congress enacted the Children's Online Privacy Protection Act (COPPA) back in 1998, which seeks to limit the collection of personally identifiable information from children under the age of 13 online [58]; [59]. As of April 2000, websites that collect information from children under 13 are required to display a comprehensive privacy policy, notify parents about their information collection practices, and acquire parental consent before gathering their children's data or sharing it with others. However, companies have been inventive in circumventing these restrictions. For example, after certain websites in the EU were blocked under the GDPR, a number of international companies simply blocked access to their content for those living in that region to avoid having to change their policies to comply with GDPR's data protection requirements [21]. In addition,

neither of these regulations addresses the potential risks of parental sharing, instead leaving it up to the parents to decide what is best for the child [60]. Taken together, the status of children as a vulnerable population, their inability to fully consent to sharing their information online, and their heightened susceptibility to online influences is what differentiates parental sharing from other forms of online sharing (such as adults posting their own pictures or those of other adults on social media).

2.2 Parent-Child Interactions and Social Media

Variability in policies reflects, in part, a lack of consensus about the relative seriousness of parental sharing and its effects. Despite the popularity and increasing interest in the practice, research in this area is in its early stages. Thus, there remain fundamental open questions regarding the 1) general context in which parental sharing occurs and parents' acceptance of the practice, 2) associations between parental sharing and children's early internet exposure, and 3) users' standards for young children's privacy and autonomy. Here, we provide some preliminary data to address these three questions, which are grounded in previous research and theory.

First, parental sharing occurs within the *context of a broader parent-child dynamic*, where we expect it to be related to general parenting style, parents' social media use, and parents' disordered social media use. With regard to parenting style, Baumrind was the first to identify some important dimensions of parenting [61]. These dimensions include discipline, warmth and nurturing, communication, and expectations. Based on these dimensions, she suggested that the majority of parents display one of three parenting styles. *Authoritarian parents* are often thought of as disciplinarians. They use a strict discipline style with little room for negotiation. Punishment is common, and communication is mostly one way: from parent to child. Rules usually are not explained. Parents with this style are typically less nurturing, and expectations are high with limited flexibility. *Permissive parents* mostly let their children do what they wish and offer limited guidance or direction. They are more like friends than parents. Their discipline style is the opposite of strict. They have limited or no rules and mostly let children figure problems out on their own. Communication is open but these parents let children decide for themselves rather than giving direction. Parents in this category tend to be warm and nurturant, and rules are typically minimal or nonexistent. *Authoritative parents* are reasonable, nurturing, and set high, clear expectations. Children with parents who demonstrate this style tend to be self-disciplined and able to think for themselves. This style is thought to be the most beneficial to children. Disciplinary rules are clear and the reasons behind them are explained. Communication is frequent and appropriate to the child's level of understanding. In sum, each of these parenting styles differentially effects children's behavior. Although the relationship between parental sharing of children's information and parenting style has not been examined previously, prior research has examined parenting style as it relates to parental attitudes towards *children's* internet use. In particular, permissive parenting has been linked to less limits on children's online behavior and more maladaptive internet use ([62]; [63]; [64]). In light of these findings, we predict that parents with a permissive parenting style will demonstrate less inhibition when sharing photos of their children online, reflecting their more relaxed attitudes towards children's online presence.

We will also explore the maladaptive effects of disordered social media use, which is defined by compulsive and excessive use of social media that interferes with other areas of life (e.g. [65]; [66]; [67]). Disordered internet use, including internet addiction, has been shown to result in cognitive, emotional, interpersonal, and even physical problems (e.g., [65]; [68]; [69]). To our knowledge, no prior research has examined the association between disordered social media usage and parental sharing behaviors. We hypothesize that such an association is plausible, and there is research to suggest that content creation (i.e., creating and sharing videos) is related to YouTube addiction [70]. It is worth noting, however, that content creation on YouTube is generally more labor-intensive than posting content on social media platforms such as Facebook

and Instagram, so such findings may not readily carry over into our study. We further predict a similar pattern to emerge with regards to “typical” (i.e., not disordered) social media use, such that greater levels of parental social media engagement would predict higher levels of parental sharing. In particular, we predict that the more time parents spend on social media and the larger their social media networks (in terms of the number of individuals they follow and are followed by), the more likely they are to share photos of their children online. We also explore whether the composition of parents' social media networks (i.e., close connections, general public, or both) affect parental sharing behaviors, as well as whether the frequency of general photo sharing is associated with parental sharing. The latter can provide us with insight as to whether or not parents differentiate between “regular” photo sharing and sharing photos of children.

Second, our research aims to examine *associations between parental sharing and children's early internet exposure*. Our focus follows from previous commentaries that raise concern about the lasting consequences that parental sharing may have on children's personal online use and privacy preferences [2]. That is, it is possible that parental sharing is related to exposure, normalization, and acceptance of regular social media communication at younger ages in children. Although studies have not directly examined this relationship, related research reports that adolescents demonstrate less compulsive internet use when parents react to and restrict excessive internet time [71]. A more recent study [72] has revealed that parental rules are only effective when they are consistent with the parents' own internet use behaviors. These findings suggest that parental attitudes and internet use behaviors are important factors in how children are familiarized with and ultimately engage with the internet. We hypothesized that greater levels of parental sharing would be associated with higher levels of early internet exposure in children, as measured by the amount of time the child spends online and the extent to which they are interested in social media.

Finally, we build upon previous research on social media privacy standards to examine parents' perceptions of *children's autonomy, consent, and privacy rights* in the context of parental sharing [9]. Given that parental sharing appears to be an increasingly popular practice, one might assume that it is widely accepted without much consideration given to children's autonomy and consent. This would be expected in light of theoretical frameworks (e.g., [46]), where parents may view young children as extensions of themselves. However, it is also possible that parents demonstrate clear boundaries and acknowledgment regarding the risks of posting online, as well as children's autonomy and right to privacy, affecting both parents' behaviors and perceptions of social norms surrounding parental sharing. In fact, there is research to suggest that many parents are aware of the risks inherent in sharing photos of children online and see themselves as their children's “privacy stewards” or “surveillants,” carefully treading the tightrope between enjoying the benefits of this practice while avoiding its pitfalls ([6]; [4]; [47]). Thus, attitudes toward children's autonomy and behaviors of asking young children permission prior to posting are relevant to developing a deeper understanding of public privacy perceptions. We expect that parents will infrequently ask children's permission prior to posting their photos online.

Here, we surveyed a large sample of parents ($N = 493$) of young children (10 and under) who reported being regular social media users. In addition to describing general attitudes and behaviors related to online sharing of children's information, we used a series of multiple regression models to examine the predictors of parental sharing frequency relevant to three fundamental questions, including the context in which this sharing occurs (e.g., parental social media usage, size and composition of social media networks, parenting style, etc.), associations between parental sharing and children's early social media exposure (e.g., how much time child spends online, the extent to which they are interested in social media, etc.), and parents' standards for young children's privacy and autonomy. We also performed an exploratory analysis on a number of demographic variables (e.g., parents age, gender, race, etc.) to examine possible associations with parental sharing.

3 METHOD

3.1 Participants

Participants were recruited via Qualtrics' online participant panels. To qualify for our study, participants had to be living in the United States, over the age of 18, a parent of at least one child under the age of 10, and a regular social media user (i.e., visit social media account one or more times a week). We removed participants who did not pass attention checks, provided non-sensical responses to open-ended questions, or provided uniform responses to Likert-scale items. We also removed participants over the age of 60 due to a small number of unlikely reported ages and the possibility that older parents may have qualitatively different interactions with social media than their younger counterparts. After filtering participants, there were a remaining 493 respondents, consisting of 437 (89%) "parents who share" (photos of their children online) and 56 (11%) "parents who don't share." Participants were an average age of 35.67 years ($SD = 7.32$). Parents were asked to answer questions in reference to their oldest child under the age of ten, but parents were eligible even if they had children over age ten. Overall, the average age of participants' children was 7.13 ($SD = 5.05$) and the average age of oldest child under ten was 6.28 ($SD = 2.71$). The majority of participants reported identified as female (73.83%), 25.96% as male, and 0.20% as other/gender non-binary. In terms of racial composition, 70.59% identified as White or Caucasian; 8.72% as Black or African American; 8.11% as Hispanic, Latinx, or Spanish; 5.88% as Asian or Pacific Islander; 0.81% as American Indian or Alaska Native; 5.48% as mixed race; and 0.41% as other. Most participants (87.02%) were born in the United States, while 12.98% reported being born abroad. The education level of the participants ranged from less than high school (2.64%) to doctorate (1.42%), with the largest percentage of parents (31.24%) holding a Bachelor's degree. A large number of participants (41.99%) reported being a stay-at-home parent, suggesting that they may have participated in online surveys for extra income. In terms of relationship status, the majority of the parents (71.20%) reported being married, while an additional 13.59% were in a committed relationship. See Table 1 for a summary of social media platforms used by participants.

Table 1. Summary of social media platforms used by participants

Name of platform	Parents who have account on platform	Parents who share photos on platform
Facebook	96.75%	90.87%
Instagram	68.76%	58.62%
Twitter	45.64%	18.66%
Snapchat	42.19%	25.56%
Pinterest	50.30%	8.11%
TikTok	27.59%	10.34%
Myspace	8.11%	2.23%
Flickr	3.04%	1.22%
Total number of platforms	$M(SD)$: 3.45(1.67)	$M(SD)$: 2.17(1.34)

3.2 Measures

Our survey was approved by our institution's ethics review board and included demographic items summarized in the previous section, as well as questions about parent and child social media usage, perspectives on and practice of parental sharing, parenting style and personality, social media disorder symptoms, and fear of missing out online. We analyzed a subset of items from a larger survey on parent-child interactions and early social media exposure, and we report scales and items relevant to the present study below. See Supplementary Materials for scales outlined in sections 3.2.1 and 3.2.2.

3.2.1 Parent and Child Online Engagement Scale. As previously noted, participants were asked to reference their oldest child under the age of ten as they responded to survey items. Participants were asked to rate via Likert scales how much time they spend on the internet each day (1 = *never*; 9 = *11+ hours a day*), how often they visit social media websites (1 = *never*; 8 = *multiple times a day*), highest number of followers they have, highest number of people they follow (1 = *none*; 8 = *5000+*), the frequency with which they post photos in general, and the frequency with which they post photos of their child online (1 = *never*; 8 = *multiple times a day*). Participants were also asked to indicate who they share photos with online: Friends and connections, public and general viewers, or both.

With regard to their children's online and social media activity, participants were asked how much time their child is online each day (1 = *never*; 9 = *11+ hours a day*), the extent to which their child has seen photos of themselves online (1 = *never*; 5 = *always*), the extent to which the child is interested in social media (1 = *not at all interested*; 5 = *extremely interested*), the extent to which their child wanted to post photos of themselves online, the frequency with which the parent asks the child permission before posting photos of them (1 = *never*; 5 = *very frequently*), and a categorical question regarding whether the child has their own social media account (*no*; *yes, they have their own*; *yes, but I have control*). Note that parents had the option of indicating "not applicable—my child is not old enough" and "not applicable—there are no photos of my child online" when relevant to the question, with "not applicable" (NA) responses recoded to "1" for analysis, which is the equivalent of "never." For example, a parent who responded NA to the question "Does your child see the photos you post of them online?" would be recoded to "never." Thus, a child might not have a social media account or might not express interest in social media, and we assume that may be for a number of reasons, including the child's age or the parents' decision to not engage them with social media, for example. We consider these different explanations in the Results and Discussion sections accordingly.

3.2.2 Parental Sharing Perspectives and Practices Scale. Participants were also asked to complete a number of subscales pertaining to the sharing of children's information online. The first set of items pertained to general parental sharing practices, investigating how often other people share or reshare photos of their children, how often other people they know share photos of their children (1 = *never*; 5 = *very frequently*), the extent to which others encourage or discourage the participant to share photos of their child online (1 = *strongly discourage*; 5 = *strongly encourage*), and the frequency with which the participant objects to how strangers, friends, or family members share photos of their children (1 = *never*; 5 = *very frequently*). The latter item represents the mean of two questions: one question about objecting to friend and family member's posting of children's information online, and another about objecting to stranger's parental sharing. Given the high correlation between the two items ($r_s = .89, p < .001$), they were averaged into a single score.

Next, we asked participants a number of questions regarding their parental sharing concerns and perceived consequences, including how comfortable the participant is sharing photos of their child online, how comfortable they are with a family member or friend sharing their child's photos, and how comfortable they are with strangers viewing the photos (1 = *extremely uncomfortable*; 5 = *extremely comfortable*). Relevant to this subset of questions, participants also indicated the degree to which they anticipated strangers would view the photos (1 = *extremely unlikely*; 5 = *extremely likely*) and were concerned others may use or manipulate the photos (1 = *not at all concerned*; 5 = *extremely concerned*). We also asked parents the likelihood that—in the future—their child would enjoy seeing the photos that were posted of them online, as well as the likelihood that their child would be embarrassed or bothered by seeing them (1 = *extremely unlikely*; 5 = *extremely likely*). For the latter two questions regarding enjoyment and embarrassment, we provided parents who don't share with an option of indicating "not applicable—there are no photos of my child online," which was recoded to the neutral response of three or "neither likely nor unlikely." We anticipated that even those who report not engaging

in parental sharing might have posted photos of their child in the past, or that others (e.g., a spouse or relative) might have posted photos of the child, thus motivating us to allow all participants to respond to the questions.

3.2.3 Parenting Style and Personality Questionnaires. We included two parenting style questionnaires and a question regarding the parents' overall privacy preference. The Parenting Style Questionnaire measures the extent to which respondents report having authoritative, authoritarian, and permissive parenting styles ([73]; [74]). The authoritative subscale consists of 14 items such as "I take my child's wishes into consideration before I ask him/her to do something" and "I explain the reasons behind my expectations to my child." The authoritarian subscale includes 14 items such as "I yell when I disapprove of my child's behavior" and "I use criticism to make my child improve his/her behavior." Lastly, the permissive questionnaire consists of five questions, including "I spoil my child" and "I ignore my child's bad behavior." Participants responded on a five-point Likert scale from 1 (*never*) to 5 (*always*).

We also included the Me As a Parent Self-Regulation Scale to assess participants' confidence in parenting, which includes subdimensions on parenting self-efficacy, agency, self-sufficiency, and self-management [75]. Likert-scale items are scored from 1 (*strongly disagree*) to 5 (*strongly agree*) and include questions such as "I know how to solve most problems that arise with parenting" and "I have the skills to deal with new situations with my child as they arise." Given the high correlations between the subscales and the overall scale total (*rs range* = .71-.86), as well as the relatively high internal alpha reliability (α = .89), we opted to use the questionnaire total for subsequent modeling. Lastly, we included a single five-point Likert scale question asking, "Are you a private person who keeps to yourself or an open person who enjoys sharing with others?" (1 = *very private*; 5 = *very open*), as this privacy question has demonstrated predictive validity, as described by [76]; [77].

3.2.4 Social Media Disorder and Fear of Missing Out Scales. We included the Fear of Missing Out Scale [78] as well as the Social Media Disorder Scale [66] since both of these constructs have been found to correlate with excessive and addictive social media usage in previous research, and we were interested in the degree to which parental sharing frequency was associated with dysfunctional social media feelings and behaviors (e.g., [79]). The Fear of Missing Out scale consists of ten Likert-scale items such as "I get anxious when I don't know what my friends are up to" and "When I have a good time it is important for me to share the details on social media" (1 = *not at all true of me*; 5 = *extremely true of me*). The Social Media Disorder scale includes nine items such as "During the past year, have you tried to spend less time on social media but failed?" and "During the past year, have you had arguments with others because of your social media use?" (1 = *never*; 5 = *always*). The Fear of Missing Out and the Social Media Disorder scales were combined into a single scale for scoring purposes due to the high correlation between the scores (*rs* = .61) and internal reliability among the scales' collective items (α = .94).

4 RESULTS

The next section provides an overview of general attitudes toward parental sharing from participants who do and do not share information about their children on social media. We then report a series of linear multiple regression (MR) models used to examine the extent to which parental sharing frequency (1 = *never share photos of child*; 8 = *share photos of child multiple times a day*) is predicted by parents' self-reported parenting style and personality, online activities, social network characteristics, perceived consequences of this type of online sharing, child's online engagement, and parents' demographics. Variables for each MR model were selected based on theme as opposed to, for example, factor analysis, as we were interested in how variables within each themed cluster differentially predicted parental sharing frequency. Lastly, we include additional analyses of interest, including potential explanations for differential online sharing

practices between mothers and fathers, as well as differences in parental sharing due to external and current factors such as COVID-19.

4.1 Descriptive Statistics of Parental Sharing Attitudes

4.1.1 Parental Sharing Frequency and Comfort. First, we outline descriptive information about parents’ general attitudes towards posting about their children online, combining responses from those who do and do not engage in sharing photos of their children online (total $N = 493$). On a Likert-scale from never (1) to multiple times a day (8), participants’ mode parental sharing frequency was “multiple times a month” ($Mo = 4, M = 3.80, SD = 1.85$). The average age of the participants’ children exhibited a small but statistically significant correlation with parental sharing frequency, $r_s(493) = -.11, p = .01$, such that parental sharing was lower when children were older. Participants reported being relatively comfortable engaging in parental sharing ($Mo = 4, M = 3.65, SD = 1.16$), and fairly comfortable with family and friends sharing and re-sharing photos of their children ($Mo = 4, M = 3.16, SD = 1.26$; 1 = *extremely uncomfortable*; 5 = *extremely comfortable*). Using a paired-samples t -test to compare participants’ comfort with parental sharing versus comfort with others sharing photos of their children, we found a stable result indicating that participants were somewhat less comfortable with others sharing photos of their children, $t(492) = 10.42, p < .001, 95\% CI [.40, .59]$. Notably, participants reported that it is extremely rare that they object to other peoples’ parental sharing behaviors—strangers, friends, and family included—with the mode response being that participants “never” object to how other people share photos about their own children online ($M = 1.70, SD = .91$; 1 = *never object*; 5 = *always object*). The findings indicate that parents are comfortable posting photos of their children online, relatively comfortable with friends and family sharing photos of their children, and rarely object to others’ parental sharing practices. Despite their general comfort with the practice, participants are significantly more comfortable engaging in parental sharing themselves than they are with letting friends and family share images of their children online.

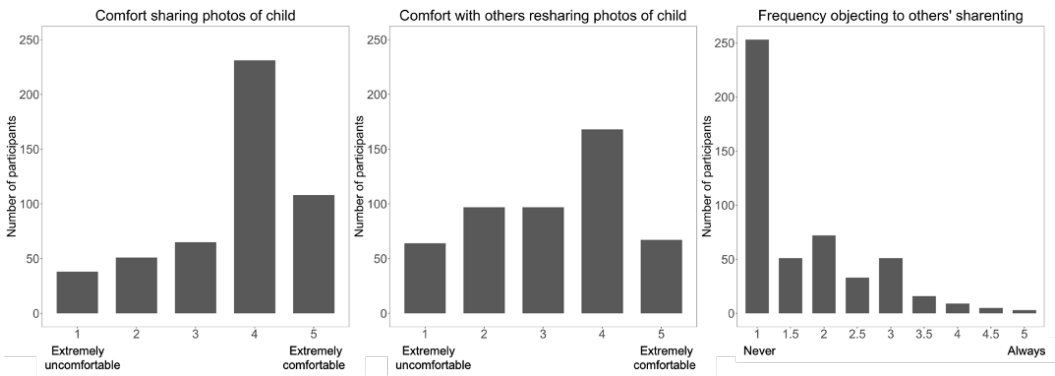


Fig. 1. Distribution of primary parental sharing frequency and comfort variables. The right-most plot representing frequency objecting to others’ parental sharing includes the average score of two questions: one referencing friends and families’ parental sharing and the other referencing strangers’ parental sharing.

4.1.2 Attitudes Toward Children’s Control, Consent, and Potential Consequences. Participants were asked to rate on a Likert-scale the extent to which children (1) versus parents (5) should have control over photos that are posted of the child online, with the mode response being that “parents should have control with input from the child (4)” ($M = 3.82, SD = 1.02$). Participants’ mode response regarding the frequency with which they ask their child permission before sharing their photos online was never ($Mo = 1, M = 2.26, SD = 1.44$). However, this result included parents

who don't share, who were instructed to answer "1" if they never posted photos of their children, meaning the question was not applicable to them. Removing parents who report not currently engaging in parental sharing, participants who do engage in this practice still reported asking permission with a mode of "never" ($Mo = 1, M = 2.37, SD = 1.44$), either due to the child not being old enough to provide consent or because the parent simply chooses not to ask permission. Findings indicate that parents generally believe they should have more control than their children over the photos that are posted of their children online, and most parents do not receive children's consent prior to posting.

We also asked parents to consider the likelihood that their child may one day be embarrassed by photos posted by the parent online, as well as the likelihood their child would enjoy seeing the photos one day ($1 = \textit{extremely unlikely}; 5 = \textit{extremely likely}$). Regarding the potential for embarrassment, the most frequently selected response was a neutral "neither likely nor unlikely" ($Mo = 3$), although the mean reported it as somewhat unlikely ($M = 2.60, SD = 1.17$). In terms of the potential for future enjoyment, parents reported a mean and mode response of "somewhat likely" ($Mo = 4, M = 4.03, SD = .86$). Comparing the two scores via a paired-samples t -test, results demonstrate that participants predict their children are more likely to enjoy, versus be embarrassed by, photos posted of them online by their parents, $t(492) = 20.63, p < .001, 95\% \textit{ CI} [1.30, 1.57]$.

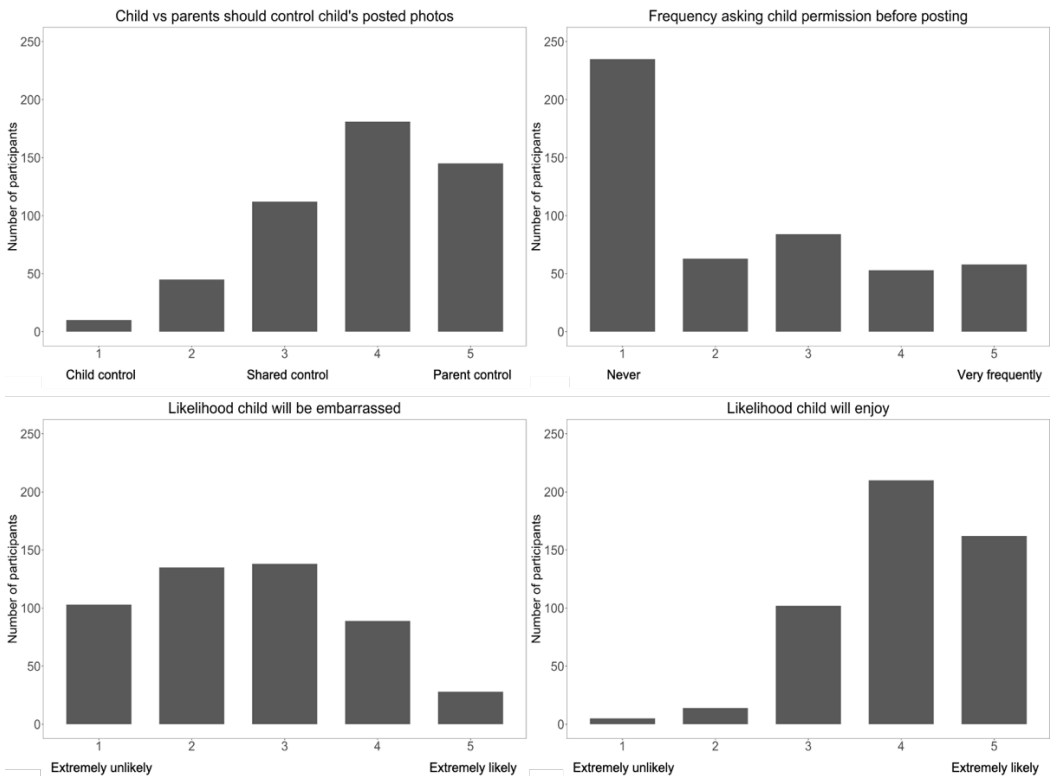


Fig. 2. Distribution of attitudes toward children's control, consent, and potential consequences.

4.2 Relationship Between Parental Sharing and Parents' Online Activities

In order to understand the degree to which internet activity predicts parental sharing, we regressed parental sharing frequency on participant's self-reported time on the internet,

frequency of social media visits, number of social media followers, types of people who can view the participant’s posted photos (connections, general public, both, or neither), and general photo sharing frequency on social media. Number of people participants were following on social media was excluded from the model due to its high correlation with number of followers, $r_s(493) = .68, p < .001$. Full results are reported in Table 2’s Model 1. We found that general photo sharing frequency explained the majority of variance in parental sharing frequency. A Spearman’s correlation—selected as a nonparametric test appropriate for Likert scale data—revealed a strong correlation between parental sharing frequency and general photo sharing frequency, $r_s(493) = .82, p < .001$.

Given the high correlation between general photo sharing frequency and parental sharing, we suspected that inclusion of the general sharing variable in the model may obscure other relationships of potential significance. For that reason, we conducted a second MR removing the general sharing frequency variable. The results indicated that higher parental sharing frequency was significantly associated with more time on the internet, more regular social media visits, more social media followers, and sharing photos with both connections and the general public (versus only sharing with connections or not sharing photos at all; see Table 2’s Model 2 for full results).

Thus, parents who post photos of their children online more are generally more engaged with social media and have larger social networks with access to their posts. Moreover, frequency of general photo sharing and sharing photos of children are among the most strongly related variables in the survey, suggesting that users do not differentiate between general online sharing and sharing photos of children.

Table 2. Standardized estimates, 95% confidence intervals, and p-values for MR models examining the relationship between parental sharing frequency and parents’ internet activity with (M1) and without (M2) general social media sharing in the model

Predictors	Sharenting frequency (M1)			Sharenting frequency (M2)				
	std.	Beta	standardized CI	p	std.	Beta	standardized CI	p
Intercept				0.820				0.003
Parent time on internet	0.00	-0.05	-0.06	0.885	0.18	0.10	-0.26	<0.001
Frequency of social media visits	0.02	-0.03	-0.08	0.391	0.11	0.03	-0.19	0.009
Number of followers	0.03	-0.03	-0.08	0.356	0.10	0.02	-0.18	0.016
Viewers of photos (only connections)	-0.03	-0.09	-0.03	0.324	-0.25	-0.34	-0.16	<0.001
Viewers of photos (general public)	0.02	-0.03	-0.08	0.394	-0.02	-0.11	-0.06	0.575
Viewers of photos (NA: Nonsharents do not post online)	-0.01	-0.07	-0.05	0.662	-0.31	-0.40	-0.23	<0.001
General photo sharing frequency	0.80	0.74	-0.86	<0.001				
Observations	493			493				
R ² / adjusted R ²	0.679 / 0.674			0.241 / 0.232				

4.3 Relationship Between Parental Sharing, Parenting Style, and Personality

Next, we examined the degree to which parental sharing is predicted by parents’ personality characteristics and parenting style. We regressed frequency of sharing children’s photos on parents’ personal privacy preference (1 = *very private*; 5 = *very open*), degree of control children versus parents should have over the posting of children’s photos, authoritarian parenting style, authoritative parenting style, permissive parenting style, and confidence in parenting. Given that the Social Media Disorder scale and Fear of Missing Out scale totals were highly correlated

($r_s(493) = .82, p < .001$) and had an alpha reliability of $\alpha = .93$, the scale items were combined into a single total and included in the MR model. Results in Table 3 Model 1 indicate that parental sharing frequency is positively associated with openness, with permissive parenting style, with confidence in parenting abilities, and with social media disorder and fear of missing out online. Similar to results reported in Section 4.2, those who post photos of children more often tend to be highly engaged with social media. In addition, parents who share tend to be open, permissive, and confident in their decisions as parents.

Predictors	Sharenting frequency (M1)			Sharenting frequency (M2)			Sharenting frequency (M3)		
	std. Beta	standardized CI	p	std. Beta	standardized CI	p	std. Beta	standardized CI	p
Intercept			0.046			0.693			0.838
Privacy preference (open vs private)	0.21	0.13 – 0.29	<0.001						
Degree child vs parent should have control of photo posting	-0.04	-0.12 – 0.04	0.288						
Authoritarian parenting style	-0.06	-0.16 – 0.03	0.198						
Authoritative parenting style	0.08	-0.01 – 0.18	0.092						
Permissive parenting style	0.10	0.02 – 0.19	0.019						
Confidence in parenting	0.13	0.03 – 0.23	0.011						
Social media disorder and fear of missing out online	0.38	0.29 – 0.48	<0.001						
Frequency others share/re-share child's photos				0.38	0.30 – 0.47	<0.001			
Frequency others in network sharent				0.08	0.01 – 0.16	0.027			
Degree others encourage sharenting				0.25	0.17 – 0.33	<0.001			
Frequency objecting to others' sharenting				0.08	0.01 – 0.16	0.025			
Likelihood child will enjoy							0.33	0.25 – 0.41	<0.001
Likelihood child will be embarrassed							0.08	-0.01 – 0.16	0.070
Likelihood strangers will view							0.22	0.13 – 0.30	<0.001
Concern others may use photos							-0.08	-0.16 – 0.01	0.069
Observations	493			493			493		
R ² / adjusted R ²		0.232 / 0.221			0.329 / 0.324			0.185 / 0.178	

Table 3. Standardized estimates, 95% confidence intervals, and p-values for MR models examining relationship between parental sharing frequency and parents' parenting style and personality (M1), social network characteristics (M2), and perceived positive and negative consequences of parental sharing

4.4 Relationship Between Parental Sharing and Social Network Characteristics

An MR model was used to examine the degree to which parents' social network characteristics predict parental sharing frequency, including frequency with which other people share photos of the participant's child, frequency with which others in their network share photos of their own children, degree to which others encourage the participant to engage in parental sharing, and the frequency with which the participant objects to other people's parental sharing practices. Frequency with which participants share photos of other people's children online was excluded due to its high correlation with the degree to which participants reported that other people share photos of their children, $r_s(493) = .63, p < .001$. We found that parents who shared photos of their children more regularly were significantly more likely to report that other people also shared photos of their children and that others in their network posted photos of their own children as well. Those who engaged in parental sharing more frequently were more likely to report that other people encouraged them to share photos of their children online. Notably, parents who shared more information about their children online were also more likely to

report objecting to other people's parental sharing practices, an unexpected finding we explore further in the Discussion (see Table 3 Model 2 for full results).

4.5 Relationship Between Parental Sharing and Perceived Positive and Negative Consequences

We examined the degree to which parental sharing frequency was predicted by perceptions of consequences that may follow from this practice, including perceived likelihood that one's child will one day enjoy seeing the photos that were posted of them, be embarrassed, have strangers view their photos, and that others may use the photos for their own purposes, broadly construed. Parental sharing frequency was positively associated with perceived likelihood that strangers will view their children's photos, but negatively associated with perceived likelihood that others may use and manipulate photos of their child. Frequency of sharing children's photos was also positively associated with projected enjoyment children might have seeing their photos online. To a lesser extent, the relationship between potential embarrassment and parental sharing frequency was positively associated, indicating that those who posted photos of their children more frequently conceded that their children may experience embarrassment upon seeing these photos online (see Table 3 Model 3). Thus, parents who shared photos of their children online more frequently acknowledged a number of consequences (both positive and negative) that may follow from this practice, including that other people may view photos of their children, that their children might one day enjoy seeing the photos online, and that it is also possible that their children may be embarrassed. At the same time, parents who shared more frequently did not acknowledge a heightened risk of their child's photos being used and manipulated by others, suggesting this is not a major concern for them.

4.6 Relationship Between Parental Sharing and Child's Online Engagement

We examined the extent to which measures of child online engagement were associated with frequency of sharing their photos online by regressing parental sharing frequency on parental reports of children's internet time, interest in social media, frequency with which children see photos that are posted of them on social media, frequency with which the child wants photos of themselves posted, and frequency with which parents report asking children permission before posting their photos. We also included information about children's social media accounts as a categorical predictor variable, with parents indicating either that their child is not old enough to have their own account, their child is old enough but does not have their own account, their child has an account controlled by the parent, or their child has an account that the child controls on their own. The degree to which parents reported that their children had opinions about what was posted of them online was excluded from the model due to its high correlation with the degree to which children reportedly expressed interest in social media, $r_s(493) = .69, p < .001$. Full results are displayed in Table 4 Model 1. Results indicated that parental sharing frequency is positively associated with children's engagement with social media in early childhood, including the likelihood that children see photos of themselves on social media, want to post photos of themselves online, and are asked permission before being posted about.

Table 4. Standardized estimates, 95% confidence intervals, and p-values for MR models examining relationship between parental sharing frequency and child's online engagement (M1) and parents' demographics (M2)

<i>Predictors</i>	Sharenting frequency (M1)			Sharenting frequency (M2)				
	<i>std.</i>	<i>Beta</i>	<i>standardized CI</i>	<i>p</i>	<i>std.</i>	<i>Beta</i>	<i>standardized CI</i>	<i>p</i>
Intercept				0.013				<0.001
Child's time on internet	0.06		-0.02 – 0.15	0.144				
Child's interest in social media	0.05		-0.07 – 0.16	0.447				
Frequency that child sees posted photos	0.20		0.10 – 0.31	<0.001				
Degree child wants to post photos of themselves online	0.25		0.16 – 0.33	<0.001				
Frequency of asking child permission before sharenting	0.07		-0.02 – 0.17	0.131				
Child has social media account (NA: child is not old enough)	0.11		0.02 – 0.21	0.022				
Child has social media account (yes, run by parent)	0.10		0.01 – 0.20	0.030				
Child has social media account (yes, run by child)	0.04		-0.05 – 0.13	0.384				
Parent age					-0.20	-0.30 – -0.11		<0.001
Parent gender (male)					0.13	0.04 – 0.23		0.004
Parent gender (non-binary)					0.10	0.01 – 0.18		0.028
Parent race (Black or African American)					-0.11	-0.20 – -0.02		0.018
Parent race (Hispanic or Latinx)					-0.14	-0.22 – -0.05		0.003
Parent race (American Indian or Alaska Native)					-0.03	-0.12 – 0.05		0.460
Parent race (Asian or Pacific Islander)					-0.08	-0.18 – 0.02		0.115
Parent race (Mixed Race)					-0.02	-0.10 – 0.07		0.707
Parent race (Other)					0.01	-0.07 – 0.10		0.805
Parent born in US (yes)					0.10	0.00 – 0.20		0.044
Stay at home parent (yes)					0.03	-0.06 – 0.12		0.495
Marital status (previously married)					-0.03	-0.11 – 0.06		0.544
Marital status (single)					-0.00	-0.10 – 0.09		0.950
Observations	493				493			
R ² / adjusted R ²	0.227	0.215			0.111	0.087		

4.7 Relationship Between Parental Sharing and Parents' Demographics and Gender Differences

Lastly, to understand how parents' demographic characteristics corresponded to frequency of posting children's photos, we regressed parental sharing frequency on parents' age, gender, relationship status (married, previously married, or single), and employment status (stay-at-home-parent or typically employed). Results outlined in Table 4 Model 2 indicate that parents' age was negatively associated with frequency of sharing children's photos online. In addition, men and the non-binary/third gender participant reported engaging in parental sharing more often than women participants. Parents born in the United States reported posting children's photos more often than those born outside of the country. There was also a significant effect of race, where participants who self-identified as Black or African American or Hispanic or Latinx were less likely to engage in parental sharing than those who reported being White or

Caucasian. The relationship between frequency of parental sharing and parents’ relationship and employment status was non-significant.

Given the exploratory nature of the project and limited research on parental sharing, we followed up on the unexpected finding that male participants reported sharing more frequently than female participants. Note that—due to the low number of participants indicating that they were non-binary/third gender—we were not able to follow-up on comparisons between all three gender groups. First, given the relationship between parenting style and frequency of parental sharing, we hypothesized that fathers may exhibit more permissive parenting styles or more confidence in their parenting compared to mothers. Welch two-sample *t*-tests comparing mothers and fathers on these three dimensions with Bonferroni corrections for multiple tests indicated that mothers and fathers did not differ in permissiveness ($p = .30$) or confidence in parenting ($p = .61$) but did differ in authoritative and authoritarian parenting. Mothers ($M = 57.47, SD = 6.45$) reported having a significantly higher authoritative parenting style compared to fathers ($M = 55.13, SD = 6.95$), $t(208.99) = 3.35, p < .001, 95\% CI [.97, 3.73]$, while fathers ($M = 33.62, SD = 10.05$) tended to be higher in authoritarian parenting styles than mothers ($M = 27.90, SD = 7.28$), $t(176.06) = -5.91, p < .001, 95\% CI [-7.62, -3.81]$. However, these parenting styles were not significantly associated with parental sharing in our sample, meaning that differences in these two parenting styles do not provide strong candidate explanations as to why fathers share children’s photos more often than mothers.

Next, we examined whether differences in mother and father’s default online behaviors and preferences could explain gender differences in parental sharing. We used *t*-tests with Bonferroni corrections for multiple comparisons to examine differences between mothers and fathers in terms of general privacy preference, general sharing frequency, and time on the internet. Female participants reported spending less time on the internet, being more private, and sharing less on social media in general than male participants, $p < .017$ (see Table 5 for full results). Findings indicate that fathers who are regularly engaged in social media (an eligibility requirement) are less private than mothers regularly engaged in social media, and fathers are more likely to share online in general and to share photos of their children.

Table 5. Differences between mothers and fathers in terms of general online behaviors, $N = 493$

	<i>t</i>	<i>p</i>	95% <i>CI</i>	Mothers M(<i>SD</i>)	Fathers M(<i>SD</i>)
Time on internet	-2.47	.01	-.73, -.08	4.43(1.69)	4.84(1.57)
Privacy preference	-3.37	<.001	-.69, -.18	2.59(1.16)	3.02(1.29)
General sharing frequency	-2.35	.01	-.41, -.04	1.64(1.06)	1.86(1.03)

4.8 Parental Sharing During COVID-19

Given the unique time during which the survey was administered—during the COVID-19 pandemic—we asked a single question regarding the degree to which participants’ parental sharing frequency has changed due to the current pandemic (1 = *I have shared much less*; 5 = *I have shared much more*). Overall, participants had a mode response of “my sharing has stayed the same” ($M = 3.02, SD = 1.02$). However, examining the correlation between self-reported parental sharing frequency and changes in frequency of sharing due to COVID-19, the variables were positively correlated, $r_s(493) = .42, p < .001$, indicating that those who shared more frequently to begin with were more likely to increase sharing in the face of external changes associated with COVID-19. That is, parental sharing may not be a fixed preference but malleable based on external constraints.

5 DISCUSSION AND IMPLICATIONS

The principal goals of this research were to evaluate the general context in which parental sharing occurs (including the size and composition of parents' social media networks, addictive social media use, and parenting style), associations between parental sharing and children's early social media exposure, and parents' standards for young children's privacy and autonomy. Based on the results, we were able to confirm a number of findings from prior research—supporting the validity of our approach—and uncover new results on the nature of parental sharing, which we elaborate on next.

5.1 Context of Parental Sharing

Our findings confirm the intuition that the practice of parental sharing is becoming widespread and socially acceptable, as the parents in our sample reported posting photos of their children quite frequently and being relatively comfortable with the practice. Similarly, very few parents reported ever objecting to other people engaging in parental sharing, even if they themselves choose not to partake in this practice. Further corroborating parents' general comfort with sharing photos of their children is our finding that—of all primary variables examined—general photo sharing frequency was the strongest predictor of parental sharing frequency ($r = .82$). In fact, general photo sharing predicted regularity of parental sharing over-and-above the other internet and social media use variables to the point that it subsumed the model variance and other factors were not significant predictors of this practice. The findings indicate that parents do not strongly differentiate between “regular” social media sharing and sharing photos of their children online. As such, they may not view it as inherently more risky or controversial than other forms of online sharing. In fact, research suggests that many of the motivations behind parental sharing (particularly archiving memories, forming and maintaining social connections, and expressing one's identity) are similar to those of general photo sharing [80]. This attitude towards parental sharing is notable given the aforementioned legal status of children as a vulnerable population, the heightened risks children face online compared to adults (i.e., misuse of photos by sexual predators, bullying from peers, potential for future embarrassment, “predatory” marketing techniques, etc.), and calls for increased government regulations and policies to restrict parental sharing.

Removing general photo-sharing frequency from the model, all other internet and social media use variables were significant positive predictors of parental sharing, including parents' time on internet, frequency of social media visits, and number of followers. Notably, parental sharing was more frequent among parents who shared photos with both personal connections and the general public. In the Introduction, we posited two possible scenarios in which parental sharing occurs: within the context of stricter boundaries that limit the spread of children's information (i.e., small social networks and limited sharing), or in the context of broader and more permissive sharing norms that allow for the greater spread of children's information. The present findings support the latter, indicating that higher parental sharing frequency is associated with larger social networks that include the general public.

Parents' social network characteristics were also predictive of parental sharing frequency, such that more frequent sharing was associated with others encouraging the parent to post photos of their child online, others in their network posting photos of their own children, and friends and family sharing and re-sharing photos of the parents' child. Though more research is needed to understand the nature of social network characteristics and sharing preferences, it is possible that parents find themselves in an “echo chamber” with others, where they bidirectionally encourage parental sharing through their own participation and affirmation of the practice. This also lends further support to the social capital perspective on parental sharing, where posting photos of children serves as a means of creating and strengthening social connections with family, friends, and other parents of young children ([15]; [6]).

One counterintuitive finding is that, although parents generally reported “never” or “rarely” objecting to others’ sharing practices, more frequent parental sharing was positively associated with frequency objecting to this behavior on the part of other parents. There are a number of potential explanations, including that parents who share are simply exposed to more parental sharing online, making it more likely the parent will view questionable sharing behavior from other parents. Because parental sharing was also associated with greater confidence in parenting, it is also possible that these parents are more confident in their particular style of sharing and are, by extension, less accepting of others.

To our knowledge, this study is the first to examine how parenting style is associated with parental sharing. We found that parents with more permissive parenting styles and who were more confident in their parenting shared photos of their children more regularly. Our findings align with a Pew Research Center Survey that revealed those who rate themselves as “good” or “very good” parents (i.e., exhibit high parental confidence) are less likely to feel societal pressure to only share content that makes them look good as a parent [5]. This could potentially explain why high parental confidence was associated with a higher frequency of parental sharing in our sample, with confident parents sharing frequently as a result of being less preoccupied with being seen as a perfect parent. An alternative explanation could be that more confident parents are driven to maintain their self-image as good parents by showing off their children and parenting skills on social media, thereby receiving positive validation from peers. This allows them to simultaneously engage in self-enhancement and self-verification, which occurs when positive feedback given to a person matches their existing view of themselves (e.g., [81]; [82]).

Moreover, higher scores in social media disorder and fear of missing out online were associated with greater parental sharing frequency. The findings suggest that frequent parental sharing may be driven by a general desire to engage within online social networks, versus motivations specific to parenting. In addition, given previous research indicating that permissive parenting is associated with more compulsive and age-inappropriate internet use ([62]; [63]; [64]), the predictive validity of permissive parenting in conjunction with greater disordered social media use suggest the potential for parental sharing to have lasting negative effects on children. Perhaps permissive parental attitudes regarding online behaviors instill more permissive attitudes in children. More research is needed to examine direct connections between parental sharing and development of children’s online sharing attitudes and behaviors.

In examining the context in which parental sharing occurs, we also modeled the degree to which parents’ demographic characteristics predicted parental sharing frequency. Similar to Moser and colleagues (2017) [25], we found that younger parents tended to share more frequently, likely due to generational differences in social media use and perhaps even generational differences in parenting style (e.g., [83]). Parents who reported being born in the United States also shared more frequently. Although more research is needed to examine why this might be the case, this preliminary finding suggests that cultural differences may modulate parental sharing activity. This is especially likely given the known differences in parenting styles across various cultures (e.g., [84]; [85]), as well as preliminary findings that members of different cultures may engage in parental sharing in distinct ways [86]. We also uncovered an unexpected finding that fathers tended to share more than mothers. This contradicts earlier findings that mothers of young children both use social media more often than fathers and are more likely to post children’s information on social media ([15]; [87]). We conducted a number of follow-up analyses to make sense of this finding. Our analyses indicated that mothers reported spending less time on the internet, being more private, and sharing less on social media than fathers. We do not have a definitive explanation for this paradoxical finding, but there are several possibilities.

First, it is possible that our sample may have contained fathers who are exceptionally high-sharing, which may have skewed our results. This may have occurred due to the nature of our sampling method, which relied on online panel participants. In particular, we explored whether

the number of stay-at-home fathers may have skewed the sample. Overall, 42% of participants in our sample indicated they are stay-at-home parents, including 19% of the male participants. Given that official statistics have not yet been released for the year 2020, we do not know if this percentage is greater than the percentage in the population [88]. However, there has been an increase in stay-at-home fathers over the years, with as much as 20.2 percent of male parents being stay-at-home dads in 2017 [89]. Thus, our sample might be representative of the population as a whole. Furthermore, it is conceivable that the phrasing of our questions may have led some parents to respond on behalf of themselves and their partner as a joint entity, rather than revealing their own individual parental sharing habits. It is also plausible that parental sharing patterns have shifted since the time the previous studies were conducted (e.g., [15]; [87]). This may be especially true in light of COVID-19, as there is evidence that this crisis exacerbated the already unbalanced distribution of childcare and household responsibilities (e.g., [90]), perhaps leaving mothers with even less time to visit and post on social media. Lastly, this finding might reflect an increasing convergence of gender roles as they relate to parenting, although more time and effort is likely needed for true gender equality to emerge in this regard [91]. In any case, our findings suggest a number of future research directions regarding the study of interpersonal privacy preferences, including based on cultural and gender differences in parental sharing. In particular, future research should investigate potential differences in *content* shared by mothers and fathers and examine whether the sharing patterns of mothers and fathers are changing over time.

We also found that participants who identified as Black, African American, Hispanic, or Latinx were less likely to engage in parental sharing than White participants. This work expands on previous research that points to cultural and socioeconomic differences in children's technology use. For example, recent work by Garg and Sengupta (2019) [86] has found that working class parents were more permissive in regard to their children's smart phone use as a result of working long hours and being unable to continuously monitor their children. Cultural differences played a role as well, with middle class Asian Indian immigrant parents exhibiting a more authoritarian parenting style in relation to their children's technology use compared to middle class White parents.

5.2 Associations Between Parental Sharing and Children's Early Internet Exposure

In addition to examining the broader context in which parental sharing occurs, we were interested in the extent to which sharing frequency was associated with children's early online exposure, experiences, and internet use. Although parental sharing was not associated with reported increases in children's general interest in the internet or social media, parental sharing was associated with: (1) young children having their own social media accounts controlled by a parent, (2) reports that children desired to post photos of themselves online, and (3) reports that children viewed photos posted of themselves online. To our knowledge, these findings are among the first to confirm that parents who share more frequently are also engaging their young children under the age of ten with social media.

The findings are important in light of prior theory that children's early exposure to social media may have long-term behavioral consequences. As children age, they may model their parents' behavior by sharing their own children's information online, leading to a cycle where the sharing of children's information becomes more and more common with each subsequent generation [2]). This may have implications for online privacy more generally, because children who grow up thinking that "everything is in the public domain" may consequently neglect the privacy rights of others online [2].

5.3 Children's Autonomy, Consent, and Privacy Risks

The last of our three areas of investigation concerned perspectives on children's autonomy and privacy in the context of parental sharing. In line with previous research suggesting parents can be viewed as privacy stewards [4] and surveillants [47], we found that parents assign themselves primary responsibility for decisions to post children's information on social media, rarely asking young children's consent before posting information about them, including for reasons that the child is too young to provide permission. The relatively low frequency with which parents ask children permission before sharing is complemented by research conducted by Moser and colleagues (2017) [25], which found that parents report asking children for permission less frequently than they believe they *should*. This behavior implies a certain level of cognitive dissonance on the part of the parents, presenting an opportunity for further research. The findings also intersect with prior research indicating that children generally believe their parents should ask for permission before posting online. However, most of these studies involve adolescents with an average age of around 13 (e.g., [25]; [23]; [24]), while the children of interest in the present study were under the age of 10. In fact, when asked about the child's age at which parents should ask for permission before posting online, the adolescents in Ouvrein & Verswijvel's (2019) [23] focus group study agreed on the age of 13 as their general consensus.

In terms of potential risks of parental sharing, we surveyed parents about potential for children's embarrassment, "spread" of photos (i.e., that the photos would no longer be in the control of parents), and views and misuse by strangers. The parents in our sample were generally not concerned that their children would one day be embarrassed by the photos posted of them online. Taken together with our findings that parental sharing is associated with higher confidence in parenting ability, implications are that parents are confident in their selection of photos to share, potentially underestimating the potential for embarrassment. In addition, parents who posted photos of their children more frequently indicated that it was relatively likely others would view their child's photos and were more likely to expect that friends and family would share or re-share photos of their child. At the same time, those who posted photos more frequently were not more concerned that others may "use or manipulate" these photos, as compared to those who shared less frequently. This finding suggests that the use of their children's photos by others is not a major concern for parents who share. Considering the significant overlap between general photo sharing and parental sharing discussed earlier, our collective findings indicate that parents do not see parental sharing as a uniquely risky behavior over other types of photos sharing.

5.4 Design Implications

We found that parental sharing is generally well-accepted and that some parents who share—especially those who do so more frequently—exhibit potentially problematic online behaviors (e.g., disordered social media behaviors) and behaviors that may influence their children's future online behaviors. Our results also indicate that parental sharing is often carried out in larger public forums, young children are rarely asked permission prior to posting photos of them online, and parents are not very concerned with possible misuse of their children's online information. Thus, while the benefits of parental sharing are significant, our research highlights a number of potential drawbacks. Consequently, interventions to ensure responsible sharing of children's information online require further investigation.

First, raising awareness of potential issues of parental sharing may be a relatively straightforward method for reducing potentially harmful consequences of parental sharing. Prior work has examined effective features of "risk communication," for example, in order to warn older adults of phishing attack ([92]; [93])—research that can be extended to the realm of parental sharing. In particular, concise articles or videos presenting potential risks of parental

sharing can be disseminated by researchers in conjunction with media, schools, or social media platforms. These materials may benefit parents by introducing them to diverse children's real-life opinions and consequences.

Second, the 5Rights Foundation emphasizes the importance of children's freedom of expression and right to reputation [21]. These stated principles support the notion that materials should be developed and geared toward facilitating parent-child conversations about parental sharing, providing prompts to facilitate—not only mutual education of parent and child on the risks and benefits of parental sharing—but children's sharing their feelings, opinions, and preferences on the matter. Our research confirms that children of parents who share are engaged with social media, suggesting the need for structured parent-child conversations at earlier ages (i.e., under age ten).

Third, prior research also demonstrates the efficacy of “privacy nudges” in reminding users to imagine the potential audience of a post and engage in more responsible social media sharing ([94]; [95]). For example, Minkus et al. (2015) [96] proposed the use of Facebook nudges to encourage parents to be more selective when posting photos of their children, while Nosko et al. (2012) [97] found that stories meant to prime individuals to think about the dangers of posting on Facebook led to less disclosure of sensitive information. Notably, prior research indicates that privacy prompts can backfire by increasing sharing of private photos, meaning that all interventions should be empirically studied prior to dissemination [76].

Fourth, social media sites and government policy must take seriously the risks of parental sharing and other circumstances under which children's information is spread in social media, where regulation and corporate change often go hand-in-hand. For example, after the United Kingdom began enforcing an age-appropriate design code in social media, companies like Facebook, TikTok, and YouTube were forced to reconsider privacy policies to better protect children from public exposure, commercial intrusions, and even notifications past bedtime. In this way, one country's policy created a global change in how children use social media [98]. Similarly, governments and social media corporations can institute restrictions to uphold children's right to expression and reputation, for example, by limiting photo and video reuse to minimize spread of children's images and other information online.

Fifth, user “workarounds” or personal strategies to manage privacy [43] may be relevant in the context of parental sharing, where privacy is negotiated through photo subjects, photographers, and bystanders through subtleties in interactions. That is, more research is needed to understand how parents take into account their child's personality or hesitance to be photographed when deciding whether or not to post a photo, specific contexts that are “off limits” in terms of parental sharing, and circumstances under which bystanders would object to parental sharing (e.g., seeing a photo meme where a child is crying). Given that college students have identified a variety of subtleties in their interactions with technology with the intention of protecting their privacy, it is possible that similar “workarounds” emerge within parent-child interactions, although it is an open question at what age a child can effectively understand the risks of social media and influence parental sharing. Understanding complex factors that drive sharing decisions is critical in being able to effectively influence users. Thus, more research is needed to examine how bottom-up, user-facilitated methods can alter sharing decisions, including how networks consisting of more diverse user opinions may alter sharing decisions and combat “echo chamber” effects.

5.5 Limitations and Future Directions

A primary limitation of the present study is its use of online participant panels. Although this is a common and viable approach for surveying large groups of people, and we carefully filtered data that did not meet our integrity checks, it is possible that our sample was skewed in representing certain types of people. For example, a large portion of our participants were stay-

at-home parents (41.99%), which may not be representative of the general population. However, our MR model examining the relationship between parents' demographic characteristics and parental sharing frequency revealed that employment status (stay-at-home parent or regularly employed) was not a significant predictor of parental sharing. Our survey approach is also limited in its reliance on parents' self-report information, such that future research will benefit from incorporating measures of real-world social media activity and decision-making.

We consider our quantitative approach an advancement in the literature, which complements most previous studies in this area that utilize interview-based and qualitative research (e.g., [12]; [13]; [16]; [29]; [30]; [25]; [31]; [32]). By adopting a quantitative approach, we identified the relative significance of a large variety of variables in predicting sharing information about children. Nevertheless, future research can complement our quantitative findings with additional qualitative measures, allowing participants to elaborate on their responses and help us gain deeper insight into the motivations behind their sharing practices.

Additionally, future research could inquire into how younger children (such as those aged 7-10) view parental sharing, and the types of content they are comfortable versus uncomfortable with their parents sharing. This would serve as an extension of prior research, which seems to suggest that although adolescents are generally tolerant of parental sharing, their attitude depends on the nature of the content being shared ([23]; [25]) as well as on the motivations behind their parents' sharing behavior [22]. Finally, all of our study participants were recruited in the United States, which raises the likely possibility that our findings may not generalize to individuals in other countries and cultures (despite the fact that not all of our study participants were born in the United States). It would thus be important for future studies to extend this research to other regions of the globe.

6 CONCLUSIONS

Extending the primarily qualitative literature on parental sharing, the present study surveyed 493 parents who were regular social media users with children ages ten and under in order to better understand the context in which parental sharing occurs, the association between parental sharing and children's early exposure to the internet, as well as parents' privacy standards in regard to this practice, including self-reported attitudes and behaviors. Contrasting prior research that emphasizes the significant benefits of parental sharing, our study reveals that parental sharing behaviors are associated with sharing in larger and more public social networks, permissive parenting styles, disordered social media use, and earlier social media engagement by children. Our findings also suggest that parents do not strongly differentiate between parental sharing and general photo sharing on social media, and may therefore underestimate the unique risks of sharing children's photos online. Moreover, connections with fear of missing out and disordered social media use indicate that frequent parental sharing may be driven by a general desire to engage within online social networks, versus motivations specific to parenting. Thus, our findings point to a number of risky online behaviors associated with parental sharing not previously uncovered and to a general disconnect between what privacy research suggests is risky behavior versus what parents consider risky. This in turn raises important design implications, given the need to ensure the comfort and privacy of young children as they are introduced to social media and to preserve the benefits of parental sharing, such as increased social support. Finally, our findings also have broader implications for the notion of interpersonal privacy, where a central question remains as to how much autonomy and control children, including children of different ages, should have over their photos and information online.

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A SUPPLEMENTARY MATERIALS

A.1 Parent and Child Online Engagement Scale

1. How frequently are you on the internet with computers, tablets, or phones (not for the purpose of completing work)? 1) Never 2) Less than 30 minutes a day 3) 30 minutes-1 hour a day 4) 1-2 hours a day 5) 3-5 hours a day 6) 5-7 hours a day 7) 7-9 hours a day 8) 9-11 hours a day 9) 11+ hours a day

2. How often do you visit social media websites? 1) Never 2) Less than once a month 3) Once a month 4) Multiple times in a month 5) Once a week 6) Multiple times in a week 7) Once a day 8) Multiple times a day 3. Consider the social media account you have with the most number of friends or followers.

3. How many followers do you have? 1) 0 2) 1-50 3) 51-100 4) 101-250 5) 251-500 6) 501-1000 7) 1000-5000 8) 5000+

4. Consider the social media account where you are following the most people. How many people are you following? 1) 0 2) 1-50 3) 51-100 4) 101-250 5) 251-500 6) 501-1000 7) 1000-5000 8) 5000+

5. When you share photos online, who do you typically share them with? 1) Friends/followers/connections 2) General viewers/public 3) Both 4) I do not share photos online

6. How often do you share photos you have taken on social media? 1) Never 2) Less than once a month 3) Once a month 4) Multiple times a month 5) Once a week 6) Multiple times in a week 7) Once a day 8) Multiple times a day

7. How often do you share photos of your child on social media? 1) Never 2) Less than once a month 3) Once a month 4) Multiple times a month 5) Once a week 6) Multiple times in a week 7) Once a day 8) Multiple times a day

8. How frequently does your child/children use or play on the internet with computers, tablets, or phones (not for the purpose of completing schoolwork)? 1) Never 2) Less than 30 minutes a day 3) 30 minutes-1 hour a day 4) 1-2 hours a day 5) 3-5 hours a day 6) 5-7 hours a day 7) 7-9 hours a day 8) 9-11 hours a day 9) 11+ hours a day 10) Not applicable—they are not old enough (*10 recoded to 1 = never*)

9. Does your child see the photos you post of them online? 1) Never 2) Rarely 3) Sometimes 4) Frequently 5) Always 6) Not applicable—they are not old enough 7) Not applicable—I do not post photos of my child (*6 and 7 recoded to 1 = never*)

10. To what extent is your child interested in social media? 1) Not at all interested 2) Not very interested 3) Somewhat interested 4) Quite interested 5) Extremely interested 6) Not applicable—they are not old enough (*6 recoded to 1 = not at all interested*)

11. Does your child/children have their own social media account/s that they contribute to? 1) No 2) Yes, they have their own social media account/s 3) Yes, but I have control of their social media account/s 4) Not applicable— they are not old enough (*4 recoded to 1 = no*)

12. How often does your child desire to post photos of themselves online? 1) Never 2) Rarely 3) Occasionally 4) Frequently 5) Very frequently 6) Not applicable – they are not old enough (*6 recoded to 1 = never*) 13. Do you currently ask your child permission before

sharing photos of them online? 1) Never 2) Rarely 3) Occasionally 4) Frequently 5) Very frequently 6) Not applicable - they are not old enough 7) Not applicable - there are no photos posted of them online (6 and 7 recoded to never)

A.2 Parental Sharing Perspectives and Practices Scale

1. How often do other people share or re-share photos of your child? 1) Never 2) Rarely 3) Occasionally 4) Frequently 5) Very frequently
2. How often do other people you know share photos of their children? 1) Never 2) Rarely 3) Occasionally 4) Frequently 5) Very frequently
3. In general, to what extent do people in your life encourage or discourage you from sharing photos of your child online? 1) Strongly discourage 2) Somewhat discourage 3) Neither discourage nor encourage 4) Somewhat encourage 5) Strongly encourage
4. Have you ever objected to photos that *people you don't know* shared of *their child* online? 1) Never 2) Rarely 3) Sometimes 4) Frequently 5) Always
5. Have you ever objected to photos that *people you know* (friends/family/acquaintances) shared of *their child* online? 1) Never 2) Rarely 3) Sometimes 4) Frequently 5) Always
6. How comfortable are you sharing photos of your child online? 1) Extremely uncomfortable 2) Somewhat uncomfortable 3) Neither comfortable nor uncomfortable 4) Somewhat comfortable 5) Extremely comfortable
7. How comfortable are you with a family member or friend sharing photos of your child online? 1) Extremely uncomfortable 2) Somewhat uncomfortable 3) Neither comfortable nor uncomfortable 4) Somewhat comfortable 5) Extremely comfortable
8. How comfortable are you with people online who you do not personally know viewing photos of your child? 1) Extremely uncomfortable 2) Somewhat uncomfortable 3) Neither comfortable nor uncomfortable 4) Somewhat comfortable 5) Extremely comfortable
9. How likely is it that photos of your child will be viewed by people online who you do not personally know? 1) Extremely unlikely 2) Somewhat unlikely 3) Neither likely nor unlikely 4) Somewhat likely 5) Extremely likely
10. How concerned are you that others may use and manipulate photos of your child? 1) Not at all concerned 2) Mostly unconcerned 3) Neither concerned nor unconcerned 4) Somewhat concerned 5) Extremely concerned
11. How likely is it that, in the future, your child will *enjoy* seeing the photos that were posted of themselves online? 1) Extremely unlikely 2) Somewhat unlikely 3) Neither likely nor unlikely 4) Somewhat likely 5) Extremely likely 6) Not applicable – there are no photos posted of them online (6 recoded to a neutral response of 3 = neither likely nor unlikely)
12. How likely is it that, in the future, your child will be *embarrassed or bothered* by seeing the photos that were posted of them online? 1) Extremely unlikely 2) Somewhat unlikely 3) Neither likely nor unlikely 4) Somewhat likely 5) Extremely likely 6) Not applicable – there are no photos posted of them online (6 recoded to a neutral response of 3 = neither likely nor unlikely)

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