Computers in Human Behavior 125 (2021) 106939

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Combating sharenting: Interventions to alter parents' attitudes toward posting about their children online

Sterling Williams-Ceci [a,*], Gillian E. Grose [b,1], Annika C. Pinch [a,2], Rene F. Kizilcec [c], Neil A. Lewis Jr. [d]

[a] Department of Psychology, Cornell University, Ithaca, NY, 14853, USA
[b] Department of Human Development, Cornell University, Ithaca, NY, 14853, USA
[c] Department of Information Science, Cornell University, Ithaca, NY, 14853, USA
[d] Department of Communication, Cornell University, Ithaca, NY, 14853, USA

ARTICLE INFO

Keywords:
Parents
Sharenting
Inappropriate posts
Behavioral interventions
Child development

ABSTRACT

Sharenting is a recent phenomenon in which parents disclose detailed information about their children online, which can risk their children's long-term safety and parental relationships. To mitigate these risks and discourage the sharing of inappropriate content, we developed and tested two interventions to deter sharenting in a randomized controlled experiment with 246 parents. Parents watched a video about the dangers of sharenting (Intervention 1) with some assigned to write a summary of this video (Intervention 2) while the remaining participants watched a video unrelated to sharenting (Control). We found that the intervention reduced parents' willingness to post both inappropriate and appropriate content about children, but only if parents reflected on the video message in writing. The interventions did not, however, change parents' attitudes about asking their children for permission before posting. The results advance our understanding of sharenting and offer insights about potential brief and scalable approaches to mitigate sharenting and its consequences. In particular, we demonstrate that a purely informational intervention is not as effective as one that encourages substantive reflection.

1. Introduction

Facebook has become the "modern day baby book" (Kumar & Schoenebeck, 2015); over 90% of new parents on Facebook post photos of their children online (Moser et al., 2017). Because of this practice, children who are too young to even know that social media exists, and thus are unable to make their own decisions about whether to create social media accounts, are nevertheless increasingly developing digital footprints through their parents' posting behavior. In 2014, a survey found about 40% of mothers aged 18–34 have created social media accounts for their babies (Brown, 2019). In fact, 90% of American babies already have a digital footprint by age two (AVG, 2010). Parents have many reasons for using social media, such as finding social support online, being able to present themselves and their families, and feeling validated in the positive feedback they get through likes and comments (Moser et al., 2017). But parents' decisions to use social media matter not only for the parents. Since posts last forever–because the internet is archived (on the Internet Archive: https://archive.org/)–those decisions have long term implications for their children (Fox & Grubbs Hoy, 2019).

Increasingly, research has focused on parents' social media use, particularly what parents post about their children. While there are many benefits parents glean from posting about their children (Moser et al., 2017; Ouvrein & Verswijvel, 2019), there are also important issues to be aware of. A trend that has raised significant concerns in recent years is that of *Sharenting*, which characterizes "the ways many parents share details about their children's lives online" (Steinberg, 2017, p. 842). Sharenting can put children at risk for harms ranging from physical abductions to identity fraud, and can detrimentally impact their relationships with their parents by violating trust (Hersh, 2001; Ouvrein & Verswijvel, 2019). To mitigate some of these risks and consequences, this study investigates behavioral interventions to discourage sharenting

* Corresponding author.
E-mail address: scw222@cornell.edu (S. Williams-Ceci).
[1] Present Address: Department of Human Development and Quantitative Methodology, University of Maryland, College Park, MD, 20742, United States of America.
[2] Present Address: Department of Media, Technology, and Society, Northwestern University, Evanston, IL, 60208, United States of America.

https://doi.org/10.1016/j.chb.2021.106939
Received 10 February 2021; Received in revised form 27 May 2021; Accepted 29 June 2021
Available online 5 July 2021

by making parents more aware of the dangers of posting certain content about their children online. Specifically, we explored whether two brief interventions could shift parents' sharenting behaviors, and whether the effects of those interventions depended on their prior attitudes and experiences.

2. Literature review

While posting information about children may seem harmless to parents, it comes with several risks. Predatory individuals with a variety of motives can take advantage of the information shared by parents online. For example, abductors can use information about a child's whereabouts to attempt a kidnapping (Minkus et al., 2015). It is worth noting that parents do not only have to worry about strangers learning too much information, but also friends and acquaintances: abductions by strangers are rare, whereas abductions by relatives are much more common (Allen, 2019; Steinberg, 2017). Even with more stringent privacy settings, such as posts on Facebook being shared only with "Friends"; posts are not necessarily safe (Minkus et al., 2015). Posters are likely unaware of all the different audiences on Facebook due to issues such as context collapse, in which multiple audiences are flattened into one, making it harder for users to imagine who their audience on social media really is (Marwick & boyd, 2011). People often have a diverse range of friends on Facebook, from friends and family to acquaintances and co-workers, and often privacy settings alone are not enough to control access from these different audiences (Marwick & boyd, 2011).

In addition to physical abduction, children become susceptible to more discreet harms, such as data brokers who create profiles of them and sell their information to advertisers, marketers, or other third parties (Minkus et al., 2015). Sharenting also raises concerns about identity theft, with Barclays Bank warning that parents' oversharing information about their children could lead to an annual 7.4 million incidents of identity fraud by 2030 and cost millions of dollars (Coughlan, 2018). Posting about children adds to their digital footprint, and information online is not easily erased once posted (Steinberg, 2017, p. 844). Sharing information about one's own child thus creates the potential for irreversible consequences years down the line.

From a psychological standpoint, sharenting may have adverse effects on children's relationships with their parents. Past studies have detailed children's own qualms with their parents' sharing information about them (Moser et al., 2017; Ouvrein & Verswijvel, 2019; Steinberg, 2017). While parents might believe that they are sharing acceptable content about their children online, the reality is that over half of parents post information about their children that could be embarrassing or identifying in nature (Steinberg, 2017). Older children, aged 10–17, report being uncomfortable with their parents sharing information about them that presents them negatively. This includes anything embarrassing like "naked butt baby pictures," pictures where they are partially undressed or are unflattering, or information about them getting in trouble (Moser et al., 2017, p. 5224). They also do not want private information shared, such as their romantic interests (p. 5224). They expressed that their parents can share "cute pictures," "fun family pics," or pictures that make them look good (p. 5224). There can also be benefits resulting from parents sharing positive information online about their children: in some cases, this helps to build a child's self-esteem and strengthen trust in a parent-child relationship (Moser et al., 2017).

Just like adults who want to present themselves in a positive light on social media, children want to do the same (Moser et al., 2017; Steinberg, 2017). Often people online engage in what Goffman termed "impression management" by posting pieces of information strategically to influence others' impressions of themselves (Goffman, 1959; Krämer & Winter, 2008). Yet young children subjected to sharenting are not afforded the opportunity to do this; when they get older, they might feel a lack of agency (and even anger) because they were unable to approve the information their parents shared about them (Ouvrein & Verswijvel, 2019). These findings suggest that parents should think carefully when posting about their children and avoid posting information that their child would disapprove of.

While the importance of responsible posting about one's child has been established in the literature, the question of how to convey this insight to parents to change their attitudes and behaviors warrants further investigation. Increasingly, there are courses developed to help children make responsible choices as they enter the online space (DiFranzo et al., 2019), but there is a lack of education for adults who are trying to navigate social media, particularly its potential dangers. In an increasingly digital world, teaching people about the online world becomes evermore important.

For these reasons, designing behavioral interventions to change parents' attitudes toward sharenting is an important step in reducing its negative outcomes for children. In the past, video interventions have proven effective in changing racial attitudes (Soble et al., 2011), altering health beliefs (Abbaszadeh et al., 2011), and preventing problematic Internet use (Turel et al., 2014). Thus it is possible video interventions could be an effective way of changing parents' opinions of sharenting and its appropriateness. Videos have been especially effective techniques for attitude change when paired with summarization tasks, as watching videos while reflecting on their content has proven to be a positive tool in producing overall attitude change (Osipova et al., 2011). This added summarization has been linked to higher stimulus comprehension (Gao, 2013) and can more strongly impact resulting attitudes about a topic (Radmacher & Latosi-Sawin, 1995).

3. The present study

Past work has mapped the dangers and future parent-child conflicts that can arise when parents overshare on social media, highlighting the need for interventions (Ouvrein & Verswijvel, 2019; Steinberg, 2017). In this study, we explore a potential intervention approach using a video about sharenting's risks to target parental attitudes towards posting about children on social media. Our investigation is guided by three preregistered hypotheses (https://osf.io/wxf2d). Our first hypothesis (1) is that *compared to people in the control condition, those in the experimental conditions who watch the intervention video will (a) be less willing to post inappropriate potential posts and (b) give lower appropriateness ratings to inappropriate posts*. We expect that the intervention video might elicit an attitude shift in parents' inclination to post inappropriately about children, given its effectiveness in changing attitudes toward Internet usage more generally (Turel et al., 2014). The second hypothesis (2) is that *compared to those in the experimental condition with just the intervention video, people in the experimental condition with the intervention video plus the summarization task will be (a) less willing to post inappropriate potential posts and (b) give lower appropriateness ratings to inappropriate posts after watching their intervention video and writing the summary of it.* We hypothesized this due to the literature showing added effects of summarization tasks on attitudes (Gao, 2013; Osipova et al., 2011; Radmacher & Latosi-Sawin, 1995).

Our third hypothesis (3) is that *people in all three conditions will not differ significantly after watching their assigned video in their (a) willingness to post appropriate potential posts and (b) appropriateness ratings of appropriate posts.* The informational video makes it clear that parents should not cease their posting, but merely post responsibly. Lastly, our fourth hypothesis (4) is that *compared to those in the control condition, people in the experimental conditions will place greater importance on asking their child's permission to post about them after watching the intervention video.* The video shows children expressing that they don't always like when parents share information about them online, and we expect that after parents watch the video they will acknowledge the importance of asking permission when sharing information about their kids.

In addition to our *a priori* hypotheses, we are also interested in exploring two additional questions that have interesting theoretical

implications. First, we were interested in whether there were significant moderators of any relationships uncovered in our confirmatory tests analyzing effects of the intervention conditions. We were particularly interested in whether parents' own experience with sharenting would be a significant moderator. Given that our interventions would be most useful for parents who actually engage in sharenting, it is important to explore whether our interventions affected parents' attitudes differently depending on whether they engage in sharenting on social media.

Secondly, we were driven to look at the strength of the relationships between self-reported attitudes and behaviors relevant to sharenting. Decades of research in social psychology has documented an attitude-behavior gap in which participants' intentions do not always closely predict their actual, observed behaviors (Ajzen & Fishbein, 1977; Glasman & Albarracín, 2006). We were interested to see whether such gaps existed in two important measures related to sharenting: seeking permission from children before posting, and concern about online privacy.

4. Methods

4.1. Participants

We recruited 252 parents to participate in the study via Turkprime, which enables sub-population-specific recruitment (e.g., parents) from the Amazon Mechanical Turk platform's pool of participants (Litman et al., 2016).[3] We used the platform to recruit adults who lived in the United States and had at least one child. Participants were compensated $1.80 for their participation. Six participants were excluded from the final sample: five responded at the end of the survey that they believed their data should not be used and one reported not watching a video. The final sample of 246 parents was balanced in terms of gender (49.5% male, 48.7% female, 1.6% unspecified) and was well-educated (91.02% completed schooling past high school), but predominantly White/-Caucasian (78.86%) with a minority of African American (9.76%), Latino/a (4.07%), Asian (5.28%) and Mixed Race or Other Race (2.03%) individuals. Participant ages ranged from 18 to 63 years ($M = 38.09$, $SD = 8.30$; excluding one outlier who misreported their age as 4) and all participants had at least one child currently below the age of 18. Specifically, a quarter of participants had a baby (aged 0–2), around a third of participants had a toddler (aged 3–5) or a teenager (aged 13–17), and almost half the participants had a child in the elementary/middle school age range (6-12).

The most commonly used social media platform in our sample was Facebook. Ninety-eight percent of participants had used Facebook in the past, and 54% of participants used it several times a day (See Appendix A). Throughout our intervention, we used Facebook as our model in that the posts participants were asked to judge were designed to resemble Facebook posts. The high usage of this platform indicates that participants were familiar with the format we used for these posts.

4.2. Procedure

All participants took a 15-min survey which assessed their attitudes and beliefs related to social media. We used a general pre- and post-test design to measure how attitudes toward inappropriate and appropriate sharenting could change as a result of watching the intervention video with or without the summary exercise. At the onset, we measured parents' frequency of and reasons for social media use. We then asked parents to judge whether they would share specific social media posts, how appropriate they find different sharenting situations, and how important it is to ask their child's permission before posting about them. We measured parents' decisions when faced with specific social media posts as well as what general appropriateness ratings they give to different scenarios. Participants were then randomly assigned to one of three conditions: 79 in the Video with Summary intervention condition, 82 in the Video Only condition, and 85 in the Control condition. After the intervention activity, they were then asked the exact same questions as above for the second time and in a randomized order. We were interested in the change between the pre- and post-intervention measures and how these vary across assigned conditions. Participants answered demographic and verification questions at the end.

The survey was administered entirely online for a sample of parents recruited from TurkPrime. We collected participants' unique Mechanical Turk worker IDs only in order to reimburse them, and we deleted this data before doing analyses. No other identifying information was collected to ensure anonymity of responses.

In all three conditions, participants were instructed to watch a video.

Video Only condition: Participants were shown a 3-min video made up of clips from the Atlantic (The Atlantic, 2019). The video details information about parents' sharing online, how children feel about it, the permanency of online information, and a call to post responsibly. The full video can be found at (https://www.youtube.com/watch?v=dpirtXdzkII&feature=emb_logo). The shortened version used in the interventions can be found at (https://www.youtube.com/watch?v=k_D9i1dPvnc).

Video and Summarization condition: Participants were shown the same video as in the Video Only condition. After the video, they were asked to summarize their thoughts on the video with the following instruction: "Please summarize what you took away from this video."

Control condition: Participants were shown a 2.5-min control video about parents trying to deal with kids being picky-eaters, which has nothing to do with our topic of interest (Sunnybrook Hospital, 2014). The video can be found at (https://www.youtube.com/watch?v=5jFSaLcFeGw&t=14s).

We used two methods to increase our confidence that participants genuinely watched the video they were assigned. First, we implemented a delayed progress button on the page where each video appeared, so that participants would only be allowed to move forward in the survey after the duration of the video had passed. At the end of the survey, we also asked participants whether they had watched a video and whether they felt their data should be used: the responses led us to exclude six participants who answered "no" to either question (only one of these reported not watching a video).

4.3. Measures

4.3.1. Social media usage

Participants began by answering questions that gauged their own social media usage. They indicated on an 8-point scale how often, if at all, they used each of the following platforms: Facebook, Instagram, Snapchat, Youtube, Tik Tok, and Twitter. The scale points were labeled as follows: 1 = "Less than once a month," 2 = "Once a month," 3 = "Once every two weeks," 4 = "Once a week," 5 = "Every few days," 6 = "About once a day," 7 = "Several times a day," 8 = "I do not use this platform." This 8-item scale is a variant of that used by Moser et al. (2017) and the Pew Research Center Duggan et al. (2015), with slight rewording of some scale points for clarity. We also added one more option to the original scale to capture respondents who used social media platforms at least once a month, but not consistently enough to be a weekly user.

4.3.2. Posting behavior

After reporting their social media usage, participants answered two questions to gauge how often (if at all) they engaged in sharenting. We asked participants how often they posted pictures of their children online, and how often they posted about their children without using pictures online. For both questions, participants indicated on an 8-point scale how often they engaged in these posting behaviors, with an option

[3] Note that between the time we conducted the study and the time we wrote this manuscript, the name of the platform shifted from "Turkprime" to "Cloud Research" (see Litman & Robinson, 2020).

for those who don't post anything about their children (0 = "I never post about my child/children," 1 = "Less than once a month," 2 = "Once a month," 3 = "Once ever two weeks," 4 = "Once a week," 5 = "Every few days," 6 = "About once a day," 7 = "Several times a day").

4.3.3. Willingness to share posts

Three researchers on our team worked together using Google Images to find eight photos of children, four of which were designated as appropriate and four of which were designated as inappropriate. We also designed eight textual posts to look like parents had shared a Facebook status about their children: four of these statuses were designated as appropriate and four of them were designated as inappropriate. These decisions were based on past work looking at what children approved or disapproved of being posted about/of themselves (Moser et al., 2017). Moser et al. (2017) interviewed children about sharenting, specifically asking children what they felt "okay and not okay with" their parents posting about them online (p. 5221). These children felt "not okay with" photos of them being naked, potty training, or being messy; they were also not okay with posts about their romantic interests or times when they got into trouble (Moser et al., 2017). Meanwhile, these children reported feeling "okay with" posed photos of themselves and posts that depicted their hobbies or happy moments (Moser et al., 2017). Thus, we selected photos and designed posts depicting each of these scenarios, using the views expressed by children to classify them as appropriate (Fig. 2) or inappropriate (Fig. 1) instead of our own judgment. In addition, we checked the validity of our stimulus categorization through an informal pilot in which eleven undergraduate and master's student volunteers rated stimuli; the pilot results confirmed our categorization.

The photos varied in gender and race of the child and were designated with a "free to use and share" license. Similar criteria were used to create both types of Facebook posts: inappropriate posts mentioned children's behavioral problems and embarrassing accidents, while appropriate posts mentioned children engaging in everyday activities like playing with toys. All participants saw the same child-approved (appropriate) and child-unapproved (inappropriate) photos and posts pre- and post-intervention, which were presented to them in a randomized order: participants were not told which categories the items fell into. By including both appropriate and inappropriate photos and posts, we can examine if our intervention altered all social media posting behavior or just inappropriate posting behavior. Participants were asked to select 'yes' (coded as 1) if they thought the photo or post was appropriate to publish on social media and 'no' (coded as 0) if they thought it was inappropriate.

We summed each participant's score during the pre- and post-test to find the total number of items they would post, then subtracted respondents' pre-test scores from their post-test scores to determine the overall change in willingness to post each type of media. Negative values indicated a decrease in willingness to post media after the intervention.

4.3.4. Appropriateness ratings of sharenting situations

Three researchers on our team worked together to choose four appropriate situations and eight inappropriate situations in which parents post content about their children (See Appendix B). Again, we chose and classified these situations based on children's testimonials in Moser and colleagues' study (2017) about content they were "okay" or "not okay" with their parents posting. For example, children in this study felt it was inappropriate for parents to post about their romantic interests, so one of our inappropriate sharenting situations was "A parent makes a post about their child's crush." In addition, we checked the validity of our stimulus categorization through an informal pilot in which eleven undergraduate and master's student volunteers rated stimuli; the pilot results confirmed our categorization. The photos and posts were not labeled as appropriate or inappropriate to participants. For each situation (described with a sentence), participants answered a seven-point Likert scale ranging from 1 "Absolutely Inappropriate" to 7 "Absolutely Appropriate." All situations were judged by participants pre- and post-intervention. We averaged each participant's ratings across each type of situation and then subtracted pre-test averages from post-test averages to measure the interventions' impact. Negative values indicated drops in appropriateness ratings after the intervention.

4.3.5. Permission asking

Participants were asked how important it is to ask their child's permission before posting about them on a 7-point Likert scale ranging from "Not At All Important" to "Extremely Important," both pre- and post-intervention. Additionally, we asked them how often they actually ask their child's permission pre-intervention, and how likely they were to ask their child's permission in the future post-intervention. These questions were on a 5-point scale from "Never" to "Everytime." We used a numeric coding scheme with numbers matching the scale points of each answer option for analyses. Both scales were developed by Vagias (2006) and a similar frequency scale was used by Moser et al. (2017).

4.3.6. Concern with privacy on social media

At the end of the survey, participants were asked to indicate their level of concern about privacy issues on social media. Participants ranked their levels of concern on a 5-point scale from "Not at all concerned" to "Extremely concerned." This scale was developed by Vagias (2006).

Fig. 1. Examples of inappropriate potential posts.

Fig. 2. Examples of appropriate potential posts.

4.4. Analytic approach

We did all analyses and plots using R Studio, using the tidyverse family of packages (Wickham et al., 2019). To observe the impacts of the interventions on willingness to post and appropriateness ratings of inappropriate and appropriate content about children, we used mixed method anova models with condition as a between-subjects factor and time of measurement as a within-subjects factor with two levels: pre- and post-test. While we initially preregistered a one-way anova, we realized a repeated-measures anova made more sense given the repeated measurement design employed in the study; results were consistent regardless of analytic approach. To observe which conditions, if any, differed from each other, we used pairwise comparisons with bonferroni adjustments of the p values. We then used a one-way anova to look at how the interventions may have impacted the perceived importance of permission seeking, and Spearman's correlation tests to look at the relationships between other measures of interest in the exploratory analyses.

4.5. Open science

This study was preregistered and the preregistration is available at (https://osf.io/wxf2d). Additionally, this study was deemed exempt by our university's Institutional Review Board.

5. Results

5.1. Confirmatory analyses

5.1.1. Willingness to share posts

Our analyses indicated a statistically significant main effect of the intervention condition on the change in number of inappropriate items people would post online (F (2,240) = 3.60, p = .029). We found that the only significant change in willingness to post inappropriate media between pre- and post-test occurred between the Control and the Video with Summary conditions (adjusted p = .025). The resulting plots showed that the Video with Summary condition decreased parents' willingness to post inappropriate child-centered photos and posts by an average of half an item (see Fig. 3).

We also found that the intervention condition significantly affected parents' willingness to share appropriate child-centered photos and posts online (F (2,240) = 8.61, p < .001). Again, the Video with Summary condition's effects differed significantly from the Control's; this time, they also differed significantly from the Video Only condition's results. Our plots show that the Video with Summary made parents less willing to post appropriate media about their children online (see Fig. 3), which contradicted our hypothesis that none of the conditions would cause change in this measure.

5.1.2. Appropriateness ratings of sharenting situations

We also asked participants for their opinions of how appropriate it would be to post inappropriate types of content about children pre- and post-intervention. Our model showed that the type of intervention significantly affected participants' attitudes here (F (2,243) = 5.75, p = .004). Again, we found a significant effect of only the Video with Summary condition on the attitude change observed (adjusted p = .004); however, the Video Only condition this time approached significance at p = .050 and its effect did not significantly differ from that of the Video with Summary condition. From plotting our results, we found that the Video with Summary condition significantly decreased people's average appropriateness ratings of inappropriate types of media by almost a third of a scale point (see Fig. 4).

When looking at how the interventions affected appropriateness ratings of appropriate sharenting scenarios, we likewise discovered that the intervention condition significantly impacted parents' attitudes (F (2,243) = 3.72, p = .026). Specifically, the Video with Summary condition was driving this effect compared to the Control (adjusted p = .031), while the Video Only condition did not significantly differ from the Control or Video with Summary conditions. Our plots show the Video with Summary intervention made parents give lower appropriateness ratings to appropriate examples of sharenting by a quarter of a scale point (see Fig. 4).

5.1.3. Permission seeking

Lastly, we looked at the pre- and post-intervention change in rated importance of seeking a child's permission before posting about them online as a function of the condition. Using a one-way ANOVA, we found that none of the interventions significantly altered how important people felt it was to get their children's permission before posting on social media (F (2,241) = 1.90, p = .15) (See Appendix C for a graphical representation of this finding).

5.2. Exploratory analyses

5.2.1. Moderators of the interventions' effects

To examine whether our confirmatory results differed based on

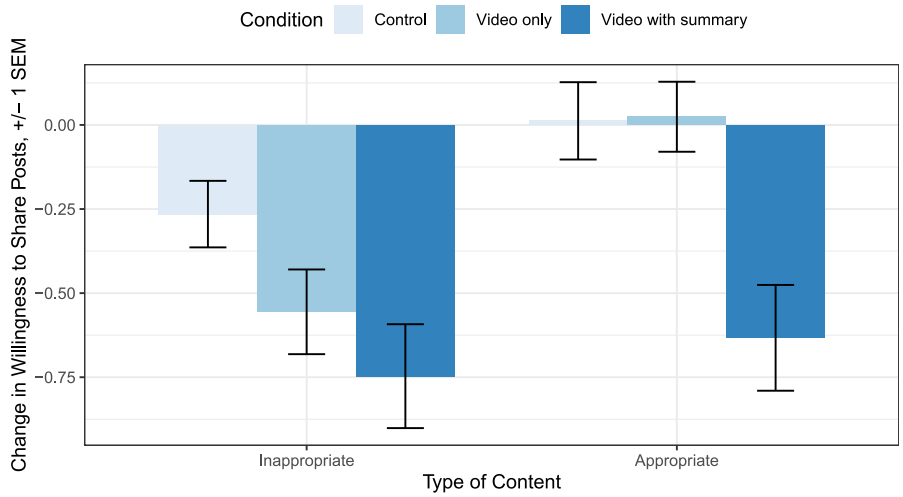


Fig. 3. The relationship between intervention condition and participants' change in comfort in posting potential posts. Negative values on the y-axis represent decreases in willingness to post them after the intervention. Error bars represent 1 Standard Error of the Mean.

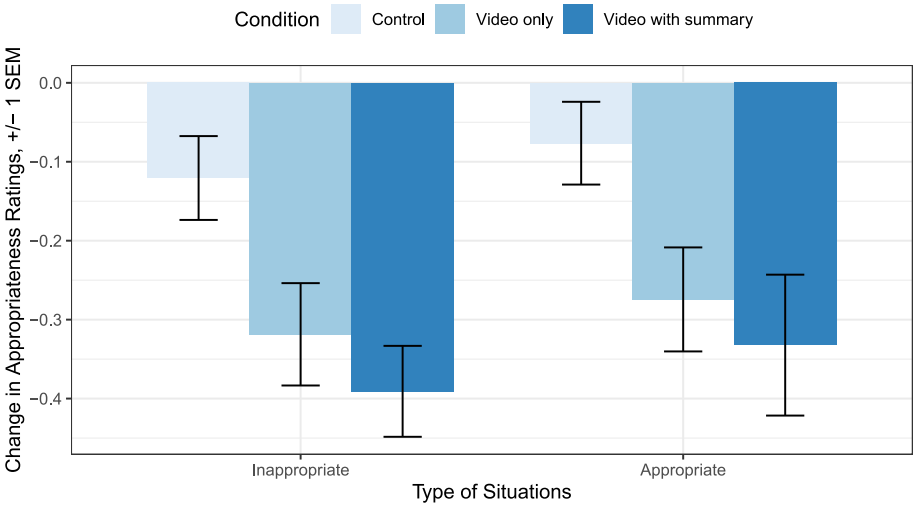


Fig. 4. The relationship between intervention condition and participants' change in rating the appropriateness of certain types of content. Negative y-axis values represent decreases in ratings of appropriateness of the content after the intervention. Error bars represent 1 Standard Error of the Mean.

whether a parent engaged in sharenting, we created an indicator variable for each parent's sharenting status. We asked parents two questions to gauge how often they posted about their child/children online; those that said they "never posted about their child/children" for both questions were coded as 0 for this variable, whereas all the other participants (those who reported posting about their children at all) were coded as 1. We included this variable in our regression analyses to test for moderation and found that it did not significantly change willingness to post or appropriateness ratings of inappropriate and appropriate types of child media. That is, the results of our interventions did not differ for parents engaged in sharenting. However, this study was not designed to have sufficient statistical power for detecting three-way interactions, so it is possible that sharenting status is a moderator that we could not observe in this study.

5.2.2. Pre-test relationship between importance and actual frequency of permission seeking

Participants' self-reported attitudes (how important it was to seek their child/children's permission before posting about them on social media) and behaviors (how often they actually sought permission) were measured prior to the interventions. Using Spearman's method, the correlation was 0.58 ($p < .0001$). (We made the choice to use Spearman's method for the analyses because one of our measures, willingness to share inappropriate content, was skewed with several outliers). This relationship was moderately strong, showing that there was no substantial attitude-behavior gap here: participants' attitudes generally predicted their behaviors with regard to seeking permission from their children.

5.2.3. Post-test relationship between online privacy concern and willingness to post content

Participants reported at the end of the survey how concerned they were about privacy on social media. The mean response was a 3.6, indicating a level of concern between "somewhat concerned" and "moderately concerned," with a standard deviation of 1.1 scale points. We first calculated Spearman's correlation between this measure and participants' willingness to post content about children, broken down by appropriateness of content. There was a negative correlation between concern about online privacy and willingness to post inappropriate photos and posts about children ($r = -0.37$, $p < .01$): therefore, people who were more concerned about social media privacy were slightly less inclined to post inappropriate items about children. A similar

relationship was found between privacy concern and appropriateness ratings of inappropriate types of social media content about children ($r = -.32$, $p < .01$). On the other hand, there were only weak or insignificant correlations between privacy concern and these dependent measures for appropriate types of child-based content. While it seems that concern about online privacy predicts reluctance toward sharing inappropriate content about children, it does not influence attitudes toward appropriate sharenting to the same extent.

6. Discussion

This study investigated a novel intervention approach to influence parents' attitudes toward posting about their children. Our first hypothesis said that both intervention conditions would make participants less willing to post inappropriate content about children and give it lower appropriateness ratings compared to the Control condition. We found this effect, but only for the condition where participants watched the intervention video and did the summarization task in which they reflected on what they watched. This supports previous findings that summarizing a video can be effective in creating attitude change. The Video Only condition approached significance in decreasing parents' appropriateness ratings of such content ($p = .050$). This indicates that a video by itself could be an effective tool, but might not be completely successful in changing parents' attitudes relative to a video with the summarization task. The second hypothesis was that the Video and Summarization condition would make participants less willing to post inappropriate potential posts and give lower appropriateness ratings to them than the Video Only condition. This, however, was not supported by our data as we did not find a significant difference between the two experimental conditions for inappropriate content.

Our third hypothesis was that none of the three conditions would lead to significant differences in participants' willingness to post appropriate potential posts and appropriateness ratings thereof. However, this was not supported as watching the video plus doing the summarization task caused participants to become less willing to share appropriate posts and give them lower appropriateness ratings, much like the effects seen for attitudes toward inappropriate content. Thus, our intervention made parents more averse toward posting anything about children, not just inappropriate posts. This is a valuable finding: interventions such as this one can make people less inclined toward posting in general. Our intention was not to shame parents who are posting pictures of their children or to try to get parents to completely cease posting about their children, but rather, to help make them aware of how to post responsibly given the many dangers that their children may be exposed to.

Our fourth hypothesis was that parents would place greater importance on asking their child's permission to post about them in the two experimental conditions than in the control. However, we did not find support for this hypothesis. There are several reasons why this might be so: firstly, the intervention video did not emphasize the importance of asking children's permission. Moreover, parents with very young kids cannot ask their kids for permission, as they are not at an age where they can mentally and physically give permission. 25% of parents in our sample had at least one child between the ages of 0–2, and 35% had at least one child between the ages of three to five. Thus, many children were not old enough to give permission.

6.1. Limitations and further directions

The intentions of this study were to understand what types of online interventions alter parental short-term attitudes about their own social media behaviors when posting about their children. One important limitation of this experiment is that we could not examine actual behavior changes or long-term attitude shifts regarding posting behavior, which would require a longitudinal design. In future research, it is important to examine how a video intervention could impact parents' own posting behavior in the long run. Relatedly, this online panel study provided a high degree of internal validity at the expense of external validity: follow-up studies need to confirm how widely generalizable the resulting attitude shifts of our intervention may be or whether the findings would hold if parents did the intervention task in an everyday setting. There are also concerns about the representativeness of the samples recruited through TurkPrime, which allows for more targeted recruitment from Mechanical Turk's participant pool. While studies have shown that TurkPrime's samples tend to be more representative of the United States population than Mechanical Turk's (Chandler et al., 2019), these samples still may not be representative of U.S. parents at large. In this particular study, the participants were majority White and well-educated, showing a further need to test these interventions on more diverse groups of people.

There are several future directions this research could take. One direction is to look at gender differences in information sharing online. Ammari and colleagues found mothers are more often responsible for sharing social media content about their children than fathers (Ammari et al., 2015). There might be more specific interventions that could be used to target each gender separately in order to be most effective. Lastly, more research needs to be done on how video interventions could best be implemented in more ecologically valid settings. For example, being shown a video when first joining a social media platform could be an effective way of teaching parents the dangers of posting information about their kids. It could also be taught in parenting classes in order to make parents aware and increase their media literacy. Another way this could be implemented is in a classroom setting on high school and college campuses so that students learn the perils of sharenting and can hopefully have conversations with their own parents about this, and if they are already a parent (or if they become one), they will be aware of this phenomenon.

Due to the dearth of research on sharenting, we used a paper in which preteens and adolescents voiced their opinions of content that parents post online as our basis for categorizing the photos of and posts about children as appropriate or inappropriate (Moser et al., 2017). However, a more recent study revealed that children spanning ages 4 to 15 generally had negative views of sharenting, believing that parents should always ask permission before posting photos of them online (Sarkadi et al., 2020). These studies suggest that children of different ages may have different comfort levels with sharenting, and there is no "one size fits all" intervention. Further research could assess the interventions' efficacy for parents with children in different age groups to see whether the interventions' effects differ.

This study laid the groundwork on potential intervention strategies for sharenting; however, more empirical research should be done on long-term effects before implementing this tool in parental education programs or online targeted interventions (see also, IJzerman et al., 2020; Premachandra & Lewis, 2021).

7. Conclusions

The present study sought to test two types of video-based interventions in an attempt to make parents conscious of the dangers of sharenting. We found that having parents watch a video about the potential harms of sharenting, and reflecting on those implications by summarizing the video, changed the way they thought about their sharenting behaviors such that they were less willing to post inappropriate content about their children on social media. In the modern digital world in which the actions of parents leave lasting digital traces that can follow their children for the rest of their lives, it is important to have parents reflect on the implications of their actions. The intervention presented in this paper is one example of a strategy that can help parents and their children navigate and manage their presence in the digital world.

Author note

This research was funded by the State University of New York Open Education Research Initiative (PI: Lewis). Correspondence concerning this manuscript can be addressed to Sterling Williams-Ceci (scw222@cornell.edu), Rene Kizilcec (kizilcec@cornell.edu) or Neil Lewis, Jr. (nlewisjr@cornell.edu).

Credit author statement

Sterling Williams-Ceci: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Gillian E. Grose: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing – original draft, Annika C. Pinch: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing – original draft, Rene F. Kizilcec: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Writing – review & editing, Supervision, Project administration, Funding acquisition, Neil A. Lewis, Jr.: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Writing – review & editing, Supervision, Project administration, Funding acquisition.

Declaration of competing interest

None.

Appendix A

Percent of Respondents Who Use Social Media Platforms and how Often They Use Them:

	I do not use this platform	Less than once a month	Once a month	Once every two weeks	Once a week	Every few days	About once a day	Several times a day
Facebook	2.4%	3.7%	1.6%	2.8%	5.3%	10.2%	19.9%	54.1%
Instagram	15%	7.3%	3.7%	3.3%	6.5%	14.6%	18.3%	31.3%
Snapchat	38.6%	15%	4.1%	4.1%	7.7%	11.8%	8.5%	10.2%
Tik Tok	49.2%	15.9%	3.7%	1.2%	4.1%	8.9%	11%	6.1%
Twitter	19.1%	8.9%	6.9%	2.8%	7.7%	15%	17.5%	22%
Youtube	2.8%	2.8%	1.2%	2.4%	8.9%	17.9%	19.5%	44.3%
Other	65%	4.9%	0.8%	0.8%	2.8%	2.4%	7.3%	12.2%

Appendix B

Appropriateness Ratings:

	Please rate the following statements on the scale below						
	Absolutely Inappropriate	Inappropriate	Slightly inappropriate	Neutral	Slightly appropriate	Appropriate	Absolutely appropriate
A parent posts a picture of their child doing something embarrassing	○	○	○	○	○	○	○
A parent posts a picture of their child doing something embarrassing-but it is really funny!	○	○	○	○	○	○	○
A parent posts a picture of their child celebrating a happy moment	○	○	○	○	○	○	○
A parent makes a post about their child being difficult/misbehaving in some way	○	○	○	○	○	○	○
A parent posts a picture of their child undressed in some manner	○	○	○	○	○	○	○
A parent posts a picture of their child in their pajamas	○	○	○	○	○	○	○
A parent posts a picture of a professional headshot done of their child	○	○	○	○	○	○	○
A parent makes a post about their child's crush	○	○	○	○	○	○	○

(*continued on next page*)

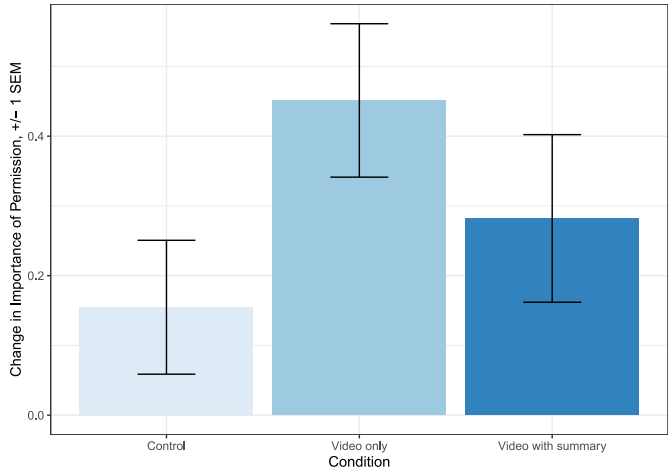
(*continued*)

	Please rate the following statements on the scale below						
	Absolutely Inappropriate	Inappropriate	Slightly inappropriate	Neutral	Slightly appropriate	Appropriate	Absolutely appropriate
A parent makes a post detailing where their child is going for a playdate	○	○	○	○	○	○	○
A parent makes a post about their child winning a sports game	○	○	○	○	○	○	○
A parent makes a post about their child's hobbies	○	○	○	○	○	○	○
A parent posts a picture of their child in their underwear	○	○	○	○	○	○	○

Appendix C

Permission Seeking

The relationship between intervention condition and participants' change in importance of seeking children's permission before posting about them online, from pre- and post-intervention. Positive values on the y-axes represent increased importance of seeking permission as a result of the intervention given. Error bars represent ± 1 Standard Error of the Mean. No significant changes occurred between any of the three conditions.



References

Abbaszadeh, A., Borhani, F., & Asadi, N. (2011). Effects of health belief model-based video training about risk factors on knowledge and attitude of myocardial infarction patients after discharge. *Journal of Research in Medical Sciences, 16*(2), 195–199.

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84*(5), 888–918. https://doi.org/10.1037/0033-2909.84.5.888

Allen, J. (2019, January 11). Kidnapped children make headlines, but abduction is rare in U.S.Reuters. https://www.reuters.com/article/us-wisconsin-missinggirl-data/kidnapped-children-make- headlines-but-abduction-is-rare-in-u-s-idUSKCN1P52BJ.

Ammari, T., Kumar, P., Lampe, C., & Schoenebeck, S. (2015). Managing children's online identities: How parents decide what to disclose about their children online. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems* (pp. 1895–1904).

AVG. (2010, October 6). Study finds 92% of kids are online by age 2, baby dating site valuations soar. *Endgadget*. https://www.engadget.com/2010-10-08-study-finds-92-of-kids-are-online-by-age-2-baby- dating-site-va.html.

Brown, J. (2019, September 24). *'Sharenting': How to safeguard your kids' personal information on social media*. NBC News. https://www.nbcnews.com/better/lifestyle/sharenting-how-safeguard-your-kids-personal-information-social-media-ncna1058006.

Chandler, J., Rosenzweig, C., Moss, A. J., Robinson, J., & Litman, L. (2019). Online panels in social science research: Expanding sampling methods beyond Mechanical Turk. *Behavior Research Methods, 51*(5), 2022–2038. https://link.springer.com/article/10.3758/s13428-019-01273-7.

Coughlan, S. (2018). *Sharenting' puts young at risk of online fraud*. BBC News. https://www.bbc.com/news/education-44153754. May 21.

Difranzo, D., Choi, Y. H., Purington, A., Taft, J. G., Whitlock, J., & Bazarova, N. N. (2019). Social media TestDrive. In *Proceedings of the 2019 CHI Conference on human Factors in computing systems - CHI* (Vol. 19). https://doi.org/10.1145/3290605.3300533

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015, January 9). *Social media update 2014*. Pew Research Center. https://www.pewresearch.org/internet/2015/01/09/social-media-update-2014/.

Fox, A. K., & Grubbs Hoy, M. (2019). Smart devices, smart decisions? Implications of parents' sharenting for children's online privacy: An investigation of mothers. *Journal of Public Policy and Marketing, 38*(4), 414–432. https://doi.org/10.1177/0743915619858290

Gao, Y. (2013). The effect of summary writing on reading comprehension: The role of mediation in EFL classroom. *Reading Improvement, 50*(2), 43–47.

Glasman, L. R., & Albarracín, D. (2006). Forming attitudes that predict future behavior: A meta-analysis of the attitude-behavior relation. *Psychological Bulletin, 132*(5), 778–822. https://doi.org/10.1037/0033-2909.132.5.778

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York, NY: Anchor Books.

Hersh, M. L. (2001). Is COPPA a cop out? The child online privacy protection act as proof that parents, not government, should Be protecting children's interests on the

internet. *Fordham Urban Law Journal, 28*(6), 1831–1878. https://ir.lawnet.fordham.edu/ulj/vol28/iss6/4/.

IJzerman, H., Lewis, N. A., Jr., Przybylski, A. K., Weinstein, N., DeBruine, L., Ritchie, S. J., Vazire, S., Forscher, P. S., Morey, R. D., Ivory, J. D., & Anvari, F. (2020). Use caution when applying behavioural science to policy. *Nature Human Behavior, 4*, 1092–1094. https://doi.org/10.1038/s41562-020-00990-w

Krämer, N. C., & Winter, S. (2008). Impression management 2.0. *Journal of Media Psychology, 20*(3), 106–116. https://doi.org/10.1027/1864-1105.20.3.106

Kumar, P., & Schoenebeck, S. (2015). The modern day baby book. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing - CSCW* (Vol. 15). https://doi.org/10.1145/2675133.2675149

Litman, L., & Robinson, J. (2020). *Conducting online research on Amazon mechanical Turk and beyond*. Sage Publications.

Litman, L., Robinson, J., & Abberbock, T. (2016). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods, 1–10*. https://link.springer.com/article/10.3758/s13428-016-0727-z.

Marwick, A. E., & boyd, D. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society, 13*(1), 114–133. https://doi.org/10.1177/1461444810365313

Minkus, T., Liu, K., & Ross, K. W. (2015). Children seen but not heard. In *Proceedings of the 24th international Conference on world wide web - WWW* (Vol. 15). https://doi.org/10.1145/2736277.2741124

Moser, C., Chen, T., & Schoenebeck, S. Y. (2017). Parents' and children's preferences about parents sharing about children on social media. In *Proceedings of the 2017 CHI conference on human factors in computing systems*. https://doi.org/10.1145/3025453.3025587

Osipova, A., Prichard, B., Boardman, A. G., Kiely, M. T., & Carroll, P. E. (2011). Refocusing the lens: Enhancing elementary special education reading instruction through video self-reflection. *Learning Disabilities Research & Practice, 26*(3), 158–171. https://doi.org/10.1111/j.1540-5826.2011.00335.x

Ouvrein, G., & Verswijvel, K. (2019). Sharenting: Parental adoration or public humiliation? A focus group study on adolescents' experiences with sharenting against the background of their own impression management. *Children and Youth Services Review, 99*, 319–327. https://doi.org/10.1016/j.childyouth.2019.02.011

Premachandra, B., & Lewis, N. A., Jr. (2021). *Do we report the information that is necessary to give psychology away? A scoping review of the psychological intervention literature 2000-2018. Perspectives on psychological science*. https://doi.org/10.1177/1745691620974774

Radmacher, S. A., & Latosi-Sawin, E. (1995). Summary writing: A tool to improve student comprehension and writing in psychology. *Teaching of Psychology, 22*(2), 113–115. https://doi.org/10.1207/s15328023top2202_4

Sarkadi, A., Dahlberg, A., Fangstrom, K., & Warner, G. (2020). Children want parents to ask for permission before 'sharenting. *Journal of Paediatrics and Child Health, 56*(6), 981–983. https://doi.org/10.1111/jpc.14945

Soble, J. R., Spanierman, L. B., & Liao, H. (2011). Effects of a brief video intervention on White university students' racial attitudes. *Journal of Counseling Psychology, 58*(1), 151–157. https://doi.org/10.1037/a0021158

Steinberg, S. (2017). Sharenting: Children's privacy in the age of social media. *Emory Law Journal*, 839–884. https://scholarship.law.ufl.edu/cgi/viewcontent.cgi?referer=http://scholar.google.com/&httpsredir=1&article=1796&context=facultypub.

Sunnybrook Hospital. (2014, Dec. 16). Tips for parents of picky eaters [Video]. YouTube.com https://www.youtube.com/watch?v=5jFSaLcFeGw&t=16s.

The Atlantic. (2019, May 21). Are parents exploiting their kids on social media? [Video]. YouTube.com https://www.youtube.com/watch?v=dpirtXdzkII&feature=emb_logo.

Turel, O., Mouttapa, M., & Donato, E. (2014). Preventing problematic internet use through video-based interventions: A theoretical model and empirical test. *Behaviour & Information Technology, 34*(4), 349–362. https://doi.org/10.1080/0144929x.2014.936041

Vagias, W. M. (2006). *Likert-type scale response anchors*. Clemson International Institute for Tourism and Research Development. https://www.vumc.org/oor/sites/vumc.org.oor/files/public_files/Survey-%20Likert-Type%20Scale-Examples.pdf.

Wickham, H., Averick, M., Bryan, J., Chang, W., D'Agostino McGowan, L., Francois, R., Grolemund, G., Hayes, A., Henry, L., Hester, J., Kuhn, M., Lin Pedersen, T., Miller, E., Milton Bache, S., Müller, K., Ooms, J., Robinson, D., Paige Seidel, D., Spinu, V., … Yutani, H. (2019). Welcome to the tidyverse. *The Journal of Open Source Software, 4*(43), 1686. https://doi.org/10.21105/joss.01686