The Modern Day Baby Book: Enacting Good Mothering and Stewarding Privacy on Facebook

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ABSTRACT

The practice of sharing family photographs is as old as the camera itself. Many mothers now share baby photos online, yet little is known about what kinds of baby photos they share and their motivations for doing so. Drawing on semi-structured interviews with 22 new mothers, we find that they share cute, funny, milestone, and family and friend photos but refrain from sharing crying and naked photos. While some mothers harbor concerns about controlling information, oversharing, and digital footprints, the benefits of receiving validation outweigh their concerns. Sharing baby photos on Facebook helps new mothers enact and receive validation of "good mothering." However, mothers are charged with the responsibility of stewarding their children's privacy and identities online. We introduce the concept of *privacy stewardship* to describe the responsibility parents take on when deciding what is appropriate to share about their children online *and* ensuring that family and friends respect and maintain the integrity of those rules. As a result, mothers must exchange benefits of sharing baby photos with risks of creating digital footprints for their child.

Author Keywords

Motherhood; photo sharing; babies; Facebook; social media.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

In the Fall of 2013, Amy Webb wrote a column in Slate explaining how she refused to post photos of her daughter online. Doing so, she said, would create a trove of data that college admissions counselors and future homecoming dates could scour [3]. She argued that posting photos online prevented her daughter from having any future hope of anonymity. Webb's behaviors were extreme—she even chose her daughter's name based on Gmail availability—but her narrative was shared heavily by mainstream media sources. The story highlighted a tension between new parents' desire to share baby photos online and the risks that might arise through this sharing. Though we originally conceived of this research as a study of privacy violations of sharing baby photos on Facebook, our analysis of interview transcripts revealed a complex set of decisions new mothers made about the nuanced tradeoffs and benefits available through sharing baby photos.

Taking and sharing family photos is a common practice. Pregnancy and childbirth are periods of "snapshot significance," where the expectant mother and then the newborn are primary "on-camera participant[s]" [10]. Family photography increases when couples have children [10,16,45] and first-time parents are particularly prolific photographers [10,16]. Evidence suggests similar patterns are playing out online. Among Facebook users, 98% of new mothers upload pictures to the site [5]. Mothers tend to post more multimedia content after having a child and mothers who use Facebook report posting baby pictures more often than baby-related status updates [34]. We focus on mothers because women tend to be more active social network site users, mothers are the fastest growing demographic of social media users, and mothers post to Facebook more than fathers do [5,29,34]. Though roles are changing, women are often still the primary child caregivers [22].

The transition to motherhood can be rewarding but can also be demanding, and can cause women to feel isolated and alone [4]. Sharing online offers a variety of possible benefits to new mothers, including information and social support, which can help to alleviate stress and increase wellbeing [5,14,34,46]. However, these benefits have been documented primarily in text-based communication platforms like blogs, forums, and social networking sites. Our research questions were: 1) What baby pictures do new mothers share on Facebook? and 2) What factors do new mothers consider when sharing baby pictures on Facebook? To investigate these questions, we conducted semi-structured interviews with 22 new mothers about how they share baby photos on Facebook. This study reveals mothers' decision-making processes about sharing baby photos online and puts forth the argument that sharing baby photos online allows mothers to enact and receive validation of "good mothering." We introduce the concept of *privacy stewardship* to describe the responsibility

mothers take on as they consider what kinds of baby photos are appropriate to share and the implications for their children's digital footprint. Results also extend literature on family photo sharing as a small group activity and reconsider it in the context of broadcasting to a large and diverse online audience.

RELATED WORK

Family Photography

The widespread adoption of inexpensive cameras throughout the twentieth century gave rise to what Chalfen (1987) called "Kodak culture," referring to the taking, organizing, and sharing of family pictures [10]. These pictures are types of "home mode" communication, which Chalfen defined as "a pattern of interpersonal and small group communication centered around the home" [10]. Pictures of children are a staple of family photography [10,16,48,51], and the birth of a child has been among the most common reasons for families to buy a camera [10]. People share pictures with family members and friends to foster connection and maintain relationships [13,19,33,45,48]. Family members particularly enjoy seeing pictures of young children [2,13,45,48], though parents may feel "pressure from extended families to keep a steady stream of images coming" [2]. Though family photograph collections may contain many pictures, certain types of pictures are more prevalent: births more than deaths, young children more than older children, and firstborn children more than their younger siblings [10,50].

Pictures of "firsts" begin soon after the birth and continue as documentation of major milestones: going home, meeting family, eating, sleeping, playing, smiling, bathing, crawling, or walking. Such pictures "tug on people's emotions" [51], transport viewers into another place and time, and play significant roles in memory and storytelling [10,16,43]. Certain facets of a child's early life do not appear in pictures, such as crying, distressed facial expressions, breastfeeding, dirty diapers, rashes, or health problems [10]. Thus, family pictures portray limited, structured depictions of the way people want their lives to appear [10]. Families "strive to construct and present idealised images of the family, both through careful selection of occasions and rigorous staging of events [39]. These self-presentation considerations also occur with digital photography. People typically delete low-quality or unattractive pictures [23,54]. Affordances of social networking sites, such as the ability to untag or delete pictures, further enable users to modify the way they present themselves to their audience [32].

Audience, Information Disclosure, and Privacy

Privacy and photography are deeply intertwined. Early concern over the dissemination of pictures prompted Warren and Brandeis (1890) to call for a right to privacy:

"Instantaneous photographs and newspaper enterprise have invaded the sacred precincts of private and domestic life; and numerous mechanical devices threaten to make good the prediction that `what is whispered in the closet shall be proclaimed from the house-tops.' For years there has been a feeling that the law must afford some remedy for the unauthorized circulation of portraits of private persons" [53].

The right to privacy debate is magnified online. While physically displaying a photo reflects a person's decision that the time, place, and audience are suitable for photo sharing, online audiences are often unknown, forcing people to consider an "imagined audience" [6,26,30]. For example, Facebook users underestimate their audience size by a factor of three [6]. Vitak and Kim present six self-disclosure goals on Facebook: social approval, social control, intimacy, identity clarification, relief of distress, and personal record [52]. They also describe how participants manage self-disclosure risks, including regulating their Friend networks, targeting messages, or censoring themselves [52]. These types of strategies help Facebook users to manage multiple groups ("group co-presence") and navigate multiple audiences ("context collapse") [24,30]. Hogan suggests that people envision a lowest common denominator, only posting content that would be appropriate for any Facebook Friend to see [15].

Privacy scholars have emphasized the need for privacy to be contextual and proportional, where technical designs are appropriate to the social settings and risks a user might experience [12,18,37]. Communication Privacy Management (CPM) offers a lens for understanding how people manage privacy boundaries and disclose private information through five principles: ownership, control, privacy rules, shared ownership, and boundary turbulence [40]. Petronio argues that people take on the responsibility of guarding other people's private information when it is put into their trust, which can lead to betrayal, errors in judgment, deception, gossip, and privacy dilemmas [40]. Photo owners can experience boundary turbulence when the desired level of privacy or exposure is inconsistent with that of those who gain shared ownership, creating a need for "discursive practice" in how privacy is framed. In American culture, "infants and babies tend not to be accorded much privacy… because they are not cognitively aware of such privacy needs" [40]. Nonetheless, people are protective of how pictures of children can be shared. Parents typically express concern over sharing pictures of children or information that reveals the location of children online [1,2,33]. Privacy concerns are expanded with the introduction of new ways of interacting with pictures online, such as tagging [7], challenging parents to incorporate an increasingly complex and vast set of considerations about how they share content online.

Motherhood, Identity, and Internet Use

The transition to motherhood can be a challenging experience (e.g. [4,25,41,47]). This adjustment may be

complicated by social factors like "unrealistic expectations, and cultural stereotypes of motherhood as easy, natural, and fulfilling, and of the mother-child relationship as immediately and unambiguously positive" [25]. As a result, mothers face social pressures to enact and perform good mothering [11]. One way of doing this is to present themselves to others using their children as "props" and showcasing their children's manners, clothes, and activities as reflections of their mothering [11]. Online, mothers can present a constructed view of themselves via photos of their children that they choose to share. Among new parents who use Facebook, 98% of new mothers had posted pictures of their children to Facebook, compared to 83% of fathers [5]. Pictures can be powerful tools to help women navigate their transition to motherhood [44]. Photo sharing on Facebook can highlight relationships and foster social connection [32,38]. Mothers may prefer sharing photos online because it is easier and faster than telling a story [21]. Both Morris and Bartholomew et al.'s survey studies find that over 95% of mothers on Facebook have shared photos of their children on Facebook and these posts attract more attention [5,34]; but neither investigates motivations for sharing and perceived benefits, risks, and implications, a gap addressed in the current research.

Mothers use the Internet to seek information, advice, and support [14,34,42,46]. Sharing information about one's children online provides social capital benefits [20]. Women who participate in "mommy blogging" enjoy validation and solidarity [28], develop a sense of community with others [35], and may experience greater wellbeing and increased feelings of connectedness [31]. Almost 40% of Facebook users have a parent or child relationship on their profile, and parent-child communication is common, including parent-grandparent discussions about grandchildren [9]. However, Gibson and Hanson suggest that new mothers preferred not to use Facebook as a "baby diary" but rather as a place to share information about themselves, revealing a desire to "preserve their identity as a person in their own right" [14]. Self-presentation and impression management on Facebook are well-documented (e.g., [5,11,52]); our study extends this work to show how identity performance allows mothers to enact—and receive validation of—good mothering, both important processes for the wellbeing of new parents. It further focuses on privacy considerations new mothers take on when sharing photos of their children online.

METHODS
We conducted an interview study with 22 new mothers to gather their narratives and experiences about sharing baby photos on Facebook. To recruit participants, we posted paper fliers to local daycare centers and wellness centers, and posted online recruitment text to Meetup.com, a local Yahoo! group for parents, and a local university graduate student group. We also used snowball recruiting among personal networks. Most participants were first time mothers (n=19) with at least 1 child ages 0-2 (n=21). All participants either lived in the United States (n=20) or had lived in the United States in the past (n=2). Participants ranged in age from mid-20s to late-30s. All were married to men and lived with their husbands and children. Seven participants were stay-at-home mothers and 15 worked out of the home. The 26 children ranged in age from three months to five years. Eighteen children were male and 8 were female. All participants had Facebook accounts.

We conducted interviews in the Fall of 2013 and the Winter of 2014. Interviews lasted about one hour, and ranged from 50 to 80 minutes. We conducted interviews until we reached data saturation in the stories we were hearing from participants. Nine interviews were conducted face-to-face, 11 over the phone, and two on Skype. Three in-person interviews were in their home and six outside of their home. Babies were present at four of the face-to-face interviews. After walking through the consent process, participants logged into their Facebook profile to refer to it during the interview. We looked at participants' Facebook profiles during the interview either in-person or remotely but did not have access to them outside of the interview period. We chose not to collect pictures to protect participants' privacy.

We began with warm-up demographics questions to build rapport with participants. We then asked participants to tell us about how they used Facebook and their experiences seeing baby-related content on Facebook. We asked them about experiences with photos they had taken, shared, or removed (e.g., did they share an ultrasound image online; had they ever taken down a baby picture they shared online; had anyone else ever posted a picture of their child online). We also asked them to share their attitudes and opinions about sharing baby photos of Facebook (e.g., while they were pregnant, did they think they would share photos of their babies on Facebook once they became a mother; did they envision one day showing their child the pictures they shared of the child online?). We asked participants about their opinions of Facebook, Inc. as a company. We also asked them about other sites they shared baby photos on and why. Because of our original focus on privacy, we did not use the term "privacy" in the recruitment materials, consent form, or interview questions to avoid priming their responses. If they introduced the term in the course of the interview, we used it subsequently in the context of how they framed it.

We transcribed the interviews and used an inductive approach to develop codes [49]. In a first pass, we hand-wrote codes while reading through the interviews. In a second pass, we created a more detailed list of codes. We discussed the codes as a research team then used NVivo to code transcripts. Drawing on codes and related literature, we organized our results around categories of pictures that participants did or did not share, why they shared them or not, and factors that influenced these decision-making processes. We use the term "picture" to refer to the objects and "photography" to refer to the act of taking a picture.

Mother*	Child*	Child Age	Work**
Ella	Neil	7 mos	SAHM
Clara	Ryan	1 yr	SAHM
Emily	Randall	6 mos	SAHM
Karen	Brooke, Brendan	5 yrs, 13 mos	SAHM
Christine	Oliver	2 yrs, 2 mos	WOHM
Rebecca	Louise	1 year	GS
Sabrina	Owen	2 years	SAHM
Jimena	Andres	4 years	GS
Lee Ann	Hunter	16 mos	WOHM
Judy	Quinn	14 mos	WOHM
Brianna	Abigail	4 mos	WOHM
Marina	Cooper	10 mos	WOHM
Jessica	Matthew	5 mos	WOHM
Shelby	Finn	8 mos	SAHM
Lindsey	Charlotte	16 mos	GS
Rita	Ava, Michael	2.5 yrs, 9 mos	WOHM
Melissa	Connor, Thomas	2.5 yrs, 3 mos	WOHM
Cara	Ye-jun	2 yrs	WOHM
Carrie	Gabriel, Grace	1 yr, 1 yr	WOHM
Wendy	Ashley	4 mos	SAHM
Isabel	Emiliano	1 yr	WOHM
Zainab	Nailah	8 mos	WOHM

Table 1. *Pseudonyms. **WOHM=Work out of Home, SAHM=Stay at Home, GS=Grad Student.

We use "posting" when focusing on participants' actions and "sharing" when focusing on their motivation.

Limitations

This study's sample primarily included educated, married, heterosexual white women in the United States or who had lived in the United States at some point. Participants' ages ranged from mid-twenties to late-thirties. This study does not address the role of fathers—an important gap to address. Although we viewed participants' Facebook profiles during the interview and took care to uncover impression management behaviors they may have been engaging with us as researchers, we relied on participants' self-reports and perceptions of their own behavior. We did not interview Facebook non-users or Facebook resistors; their attitudes are likely to be different than those reported here. Our recruitment process is likely to have yielded mothers who have had generally positive experiences on Facebook. A downside of not mentioning privacy in the recruitment is that we may have omitted a demographic of mothers who are reluctant Facebook users or have had negative privacy experiences.

RESULTS

Results are organized into four sections. The first two sections set the stage by describing what types of baby photos mothers choose to share. The third and fourth sections describe benefits and risks perceived from sharing baby photos and strategies for managing those tradeoffs.

Types of Baby Photos Shared on Facebook

Participants typically shared four types of photographs: cute, funny, with family or friends, and milestones. Most participants shared pictures directly from their mobile phones. Nearly all (21) participants felt at least somewhat comfortable sharing pictures online; one voiced strong reservations despite having shared a few pictures on Facebook. Another five participants felt comfortable sharing online but expressed some hesitation at sharing on Facebook.

Cute: All but one participant offered the word "cute" to describe the kinds of baby pictures they had shared online. Participants shared a variety of stories, such as "chubby-cheeked and open-mouthed while watching Sesame Street," "wearing adult glasses with wind blowing his hair around his face," or "wrapped in a towel and sitting in a swing." Several participants shared pictures of their children asleep as "cute" photos. They also shared pictures of their baby with the family dog, with other family members, or placed side-by-side with pictures of themselves as babies. Food and clothing featured prominently in cute photos.

Funny: Many participants said they posted "funny" pictures, such as of their children blowing bubbles, putting crayons in their mouth, eating dirt, crawling into cupboards, and expressions of confusion while being weighed at the doctor's office or chewing on their fingers after their teeth started coming in. Food and clothing also featured prominently in funny photos. Participants posted pictures of their children with Cheerios, chocolate, and other food on their faces and spaghetti on their head. Some participants shared pictures of their children wearing outfits such as a bear suit, a fedora, a superhero cape, and Elmo pajamas.

With and for Family or Friends: Participants posted pictures of their babies with family or friends in a variety of settings, such as at the beach, during a winter walk, in Halloween costumes, and in matching sports gear. Many pictures of spontaneous moments occurred when children were relaxing or napping with a family member. Several participants also shared pictures of their children with the children of friends, especially over reunions, holidays, and group outings. All participants described sharing pictures as a way to connect with family and friends, especially when family lived far away. This helped them to maintain a sense of community and enable their family to watch their baby grow up. Participants also used Facebook photos to publicly thank someone for a gift by tagging the gift-giver in the photo with the baby wearing or playing with the gift.

Milestones: More than half of participants took and shared pictures of developmental milestones and other "firsts." This included children making different facial expressions, getting teeth, and learning new skills (e.g., holding head up, sitting up, clapping, saying bye, crawling, walking). Nearly half of participants shared their ultrasound images on Facebook. Most participants posted pictures online shortly after the birth of their child, depicting the newborn wrapped in a blanket, sometimes in the mother or father's arms. Additional milestone pictures included children meeting new people, experiencing new activities (e.g., swimming, meeting Santa), and participating in events (e.g., Christmas). Several participants took "progress pictures" on the day their children turned another month older, typically in the same place each time and with a sign displaying the month. As their children got older, especially after the one-year mark, milestone pictures started to decline.

Types of Baby Photos Not Shared on Facebook
Participants were reluctant to share three types of pictures: pictures that were low quality or blurry, that exposed the child, or that portrayed negativity.

Low Quality: Participants did not share low quality pictures that were blurry and unfocused or hard to see. For example, Judy did not share pictures where her son was "not smiling or his eyes aren't bright or he doesn't look like he's paying attention." Lindsey only shared pictures that were in focus and her daughter was looking at the camera. Emily deleted unflattering pictures entirely, because she would never be using them for anything. Participants typically took several pictures at a time and shared the best one online.

Exposing the Baby and Mother: Most participants took pictures of their babies naked, but felt these were not appropriate for an online audience. Some shared them if babies' private areas were obscured, such as in the bath. Appropriateness of sharing also decreased as the baby became a toddler. A few participants surfaced concerns about what unknown audiences might do with those photos. Sabrina referenced that her Facebook profile was public and "there are a lot of creepers on the Internet, so I don't need people creeping naked pictures of my baby." Participants also avoided sharing photos of the birth process (e.g., during labor, in pain, or immediately after delivery), which typically exposed both the mother and baby in intimate and vulnerable contexts. They also refrained from sharing pictures of the umbilical cord, the placenta, or the newborn baby immediately after delivery.

Negativity: Participants generally did not share pictures that portrayed their children or themselves in a humiliating light or that revealed health concerns. Participants refrained from sharing pictures of children crying or throwing tantrums. Rita referred to these as "private moments," where what children need at that moment is for "somebody to make you feel better, not for somebody to document it for posterity." Their desire to protect their children's dignity influenced how they shared pictures of their children's birth. Clara's

son had to be ventilated immediately after birth, and Melissa's son was born three months premature. Neither shared the first picture they took of their sons online, but instead shared ones that showed their children as healthy. After posting an ultrasound to Facebook while in the doctor's office, Shelby learned something might be wrong with the fetus and immediately regretted posting. When she learned the baby would be okay, she updated Facebook to share the good news.

Benefits of Sharing Baby Photos on Facebook
Archiving Childhood: Participants found themselves beginning to use Facebook as an archive because it was an easy way to store and share photos.

> Marina: "I have a modern day baby book. I can go back to my Facebook profile and tell you the exact day that Cooper took his first step... If I asked my mom for pictures of me the first time I took a step, she would laugh in my face."

Clara had not planned to post pictures of her baby online before he was born. She later shared them and created a montage of his Facebook pictures for his first birthday.

> Clara: "[The montage] was so emotional to me…You think it's silly to weigh that against what you're conceding with your privacy, but if I lost that stuff, I don't know what I would do."

Participants felt it was important that this online archive would be available if anything were to happen to them. Online photo archiving displaced physical albums, but did not entirely replace them. About half of participants created physical photo albums for themselves or to give to family members. Participants who created physical photo albums valued having a tangible representation of their child's life, and planned to show those albums to their children as their children grew older.

Identifying as a Mother: Participants considered how pictures they posted would reflect them and their parenting skills and styles. Participants told us they shared pictures to portray their children or themselves in a certain light. Christine posted a picture of her husband and son at a museum because she wanted to show her Facebook Friends that they did cultural activities. She described posting pictures on Facebook as a "display" where people "intentionally pick and choose" what they show of themselves, a sentiment echoed by Isabel:

> Isabel: "I think Facebook in general has a lot to do with showing off and showcasing, like, who you are and the life you lead and however...self-absorbed that it is, I think it's just kind of the culture and the generation we live in right now."

At the time of the interviews, nine participants' profile photos contained them with their child and six contained only the child (the remaining seven had a photo of the mother). Five participants' cover photos contained them

with their child and eight contained only the child (the remaining nine had other content in their photos). For Isabel, whose profile picture showed only her son's face, being a mother became "a central focus for my identity."

> Isabel: "I like showcasing that...He represents me right now. You know, he represents what makes me the happiest, what my daily life is all about."

Marina called herself, "that mom that if my profile picture isn't of my baby, I have to have him up, him up somewhere. Or else I feel like a failure." Marina shared a picture of her son sitting on the ground eating dirt because she wanted to show people that she was the type of mother who liked that her son was playing in dirt. Marina chose not to post pictures of her son crying because she wanted him "to be seen as a happy-go-lucky kid." Lee Ann did not plan to share photos online while she was pregnant, but after having her child she realized it was too difficult to leave her role as a mother off of Facebook.

However, not all participants shared this view. Some participants told us they felt irritated when they saw a baby picture as a profile picture. Melissa and Christine perceived that showing only the child in the profile picture indicated that the child had taken over the mother's entire life. Brianna similarly felt that Facebook was a space to document her life, not her daughter's.

> Brianna: "It's not her Facebook. It's my Facebook. Yes, she's a big part of my life, obviously. But, I think that my Facebook should be about me."

Rebecca, who also felt her Facebook profile should reflect information about her, was critical of Facebook content that solely focuses on the child's behavior instead of the mother. Emily felt frustrated when she saw Facebook Friends post only about their children, saying it felt like "you're hiding behind your kid and their accomplishments." Though all participants identified with their role as a mother, the extent to which they felt it was appropriate to express their identity as a mother on Facebook varied widely.

Receiving Validation of Motherhood: Participants received many likes and comments on the baby photos they shared on Facebook, generally far more than they would receive on other photos and statuses that they posted.

> Judy: "It was rare before Quinn for a random picture to get 97 likes unless it was, like, our wedding picture. I mean, this is a kid eating breakfast."

The photos of Melissa's son Thomas, who was born three months premature, were among the most liked and commented pictures she had ever posted. She felt gratified to receive messages of support on Facebook and through private messages. Isabel's picture of her new family in the hospital room received nearly 140 likes and 30 comments. She took a screenshot of the picture with the feedback to show Emiliano "how many people knew when he entered the world." Christine similarly received "hundreds" of comments on the photo she posted after giving birth, an arduous process that involved several trips to the hospital. She had not heard from some of those people in years but appreciated the feedback, saying "the warmth... it's so artificial, but it's kind of not." Both Clara and Carrie highlighted that seeing other people's baby photos and receiving feedback on her own felt validating, as if they were a part of a community:

> Carrie: "You know that you're doing a good job, but it feels better when somebody else confirms that...I don't post to feel validated, but I do after I post."

Participants sometimes wondered whether they were posting too many pictures, but they received so many positive responses in the form of likes and comments that they continued to post. They also wanted to save these instances for their children to receive in the future. The tangible and immediate benefits of receiving positive support and feedback outweighed concerns about sharing on Facebook for almost all participants. Participants worried about what might happen to their data but told us that they "tried not to dwell on it" and took steps to share baby photos in ways that aligned with their privacy views.

Risks of Sharing Baby Photos on Facebook

Controlling Information: More than half of participants received requests from family or friends to see baby pictures, especially from their children's grandparents. Participants who preferred not to share baby pictures online felt pressured by the constant requests for pictures. Brianna originally intended to keep her daughter Abigail off social media entirely, saying she "felt more private about her than I've ever felt about anything else in my life." Brianna wanted the only people who saw Abigail's face to be the people who actually see her face every day. However, to satisfy her family's requests, she created a private Facebook group and posted an album of ten pictures of Abigail.

> Brianna: "It highlighted for me the inevitability of the fact that [Abigail] was going to be on Facebook. And so that's when I really started thinking about, well how can I control this as much as possible... Privacy is having control over who has information relevant to me and my life. When I realized I could make that closed group...I said, fine, I'll just put some pictures up even though I'm still uncomfortable with it."

Participants engaged in strategies to control how information about their babies was shared. Judy and Rebecca sent emails to family and friends announcing the birth and asking them to keep their child's name and pictures, respectively, off of Facebook. Wendy asked her mother to change her privacy settings after strangers from her mothers' online games commented on photos of Wendy's baby. Though Clara did not like the naked photo her mother shared on Facebook of her son's first bath, she decided to not to ask her mother to remove it to honor her

mother's decision. Christine found that her baby was on her babysitter's cover photo, but similarly decided not to say anything because they appreciated that the nanny loved and cared for their child and she did not want to disrupt that harmony.

Most participants said they set their Facebook profile to Friends only, though some set them to Friends-of-Friends and Public. One participant believed her profile was set to Friends-only and discovered during the interview that it was Public. Many participants perceived Facebook's privacy settings and group management features to be difficult to use and felt frustrated by Facebook's evolving privacy settings. Lee Ann had not realized that people who were not her Friend could see which Facebook groups she had joined, "which ended up basically being identifying information because, you know, I'm part of the [town name] Kids group, the [town name] Moms group."

Participants took steps to manage their and their child's privacy by creating private groups, changing visibility of individual posts that contained sensitive information, or created limited groups who could see baby content. Some participants mentioned concern about losing technical control via location-tracking, advertising, or facial recognition. Three participants turned off location-tracking on their phones and five more expressed caution about revealing real-time location information, their baby's names, or their baby's facial features in the content they shared. Some planned to share photos less as their children got older when their faces might be more permanently identifiable by facial recognition technology. Ella and Brianna, who were generally the most concerned about privacy, used privacy preserving strategies such as obscuring the child's face and allowing group photos but not individual photos.

Limiting Oversharing: Thirteen participants were concerned about oversharing, or posting too many pictures of their children online. They used vivid metaphors to describe this activity, saying they did not want to "overwhelm," "inundate," "barrage," "saturate," "bombard," or "blow up" Facebook with pictures. Participants typically said they could not help but post pictures of their children, especially in the first few weeks of their child's life. Clara told us she "went nuts" posting baby pictures during her son's first few weeks. Melissa had planned to give herself six months "to just go full-bore and then I was going to try and get it under control." Participants adopted rules for managing the frequency of their own sharing behaviors. Karen and Shelby tried to gauge what would annoy people.

> Karen: "I feel like there has to be some sort of a reason or some sort of special thing that it's marking... I don't need to put something on every day of just her sitting there."

> Shelby: "People are not going to want to be your Friend if you post every picture of your child."

Participants were sensitive that people in their friend networks might be struggling to conceive. Seeing an abundance of Facebook posts and pictures about pregnancies and babies was "really painful" for Emily, who had been trying to have children for several years and had suffered interrupted adoptions. She stopped using Facebook for 10 months, saying that was better than "getting bitter about something I can't control." Carrie had had difficulty conceiving, and she endured a miscarriage before becoming pregnant with twins. Before she had children, she also found it, "extremely painful to watch everybody else post about their baby" and recognized that seeing these photos might be difficult for others. However, she posted pictures of her children to make people smile and also to honor her own personal growth.

> Carrie: "So many people were with me through the struggle of conceiving...And then my pregnancy was rough. So then I feel like, if you stuck with me through that, you should reap the benefits of seeing how cute these babies are… I've finally [gotten] to that place where I can be the people I was so jealous of, and now I'm not apologizing for that."

Participants also turned to other forms of communication to limit oversharing on Facebook. Some participants used Instagram and a small number used Google+, Dropbox, WhatsApp, or Snapfish to share photos. Zainab and Lindsay shared photos on Instagram where their friend networks were smaller. Ella, Rita, and Emily posted pictures to Google+ for the same reason. Karen sent photos by email in addition to Facebook because "sometimes I'll get shit if something's on Facebook and my mom doesn't see it but her sister does."

Managing Children's Digital Footprints: Participants expressed hesitation and uncertainty about how their photo-sharing behavior now might impact their child's online identity later. Clara recognized that by posting pictures on Facebook, she was making a decision for her son Ryan that could not be easily reversed and wondered if she was making the right decisions for him. Brianna and Shelby felt they had a responsibility to "protect" their children, and many participants felt their children had rights to privacy themselves.

> Emily: "I feel like I'm kind of stewarding his privacy, and he doesn't have a chance yet to say, 'Hey Mom, could you not put that on Facebook?'"

Like many participants, Wendy avoided posting pictures that might humiliate her daughter.

> Wendy: "I don't post pictures of like, poop explosions... I mean, I'm not going to embarrass her on Facebook."

Melissa did not share early photos of her son, born three months premature, because she wanted to "preserve [his] dignity a little bit." The first picture she shared on

Facebook was when he was one month old, fully clothed and with healthy coloring. He still had a feeding tube in his nose but a viewer could not see how small he was.

> Melissa: "I more wanted people to see him and not all the equipment… I didn't want a pity party; I wanted joy that he was doing so well."

Cara's son Ye-jun had his own Facebook profile with over 320 friends. She did not post naked pictures, but she posted pictures and videos that showed different facets of his personality, such as laying down in a cardboard box to throw a temper tantrum. It was important to Cara that Ye-jun grew up learning how to navigate himself in a public world both offline and online:

> Cara: "He's going to be sweet, and he's going to be a little turd sometimes. And so I post that…. I want him to know that everything he does, regardless if he posts it on Facebook, people will know about."

Participants who were more reserved about sharing photos on Facebook expressed concern about how their children would feel about their information being online. Brianna explained, "It's not my right to make the decision about what of hers goes online." Ella echoed this sentiment, saying her son had the right to decide what information about himself he wanted to be online. If he decided he wanted to post aspects of his life online, she would have the records to give him. However, Brianna and Ella's sentiments were the minority among our participants; most were thoughtful about their children's perspectives but did not heavily constrain their photo-sharing based on their child's future rights.

DISCUSSION
We find that mothers share certain types of baby photos to present themselves as a particular type of mother to their online audience. Furthermore, they reap benefits from this online audience that can offer validation of their roles as mothers. Finally, mothers face a complex decision-making process that involves considering privacy, identity, and children's rights both at the current moment as well as 10-20 years in the future when children are old enough to look back on their own online footprints.

Enacting Good Mothering through Baby Photos
Echoing prior work [17,52], mothers viewed Facebook as a place to share positive or happy information. Through sharing photos of their babies, mothers portrayed their identities as good mothers, conveying attractive children, embracing humor, and showing evidence of milestones—all indicators of a healthy and happy family. Sharing photos helped participants accomplish several self-disclosure goals described by Vitak and Kim [52]. Participants shared baby pictures as a way to gain social approval (i.e., share information they thought Friends would find interesting), increase intimacy (i.e., maintain a connection with people important to them) and create a personal archive. Participants also surfaced different kinds of self-disclosure

risks than identified by Vitak and Kim [52], perhaps because they were making decisions on behalf of their babies rather than themselves. Though mothers self-censored what kinds of photos to share, as documented in [52], these behaviors were guided by a complex combination of self-presentation goals and projections about what was appropriate to share about their babies. Parents were especially cognizant of security and identity concerns [1], but they could not easily anticipate how sharing baby photos now would affect their children's online identity later, an open question for future work.

Our work contrasts Gibson and Hanson, who found that new mothers wanted to use technology to be more than "just" a mother [14]. However, both studies find validation of good motherhood is critical, echoing other work [4,25,41,41,47]. Neither our work nor Gibson and Hanson's addressed the role of online audiences and what they want to see online. In particular, online audiences may feel obligated to "like" a baby photo because they want to identify as the kind of person who likes babies. As a result, the inflated audience experienced by new mothers might come at the cost of the audience's experience, with some people potentially giving positive feedback grudgingly. A smarter news feed would 1) show baby photos to receptive audiences and minimize baby photos for audiences who prefer to see fewer or none of them; and 2) provide clearer signals to mothers about what kinds of content their audience actually wants to see.

Unanticipated Benefits of Imagined Audiences
Though imagined audiences have often been portrayed as presenting a challenge for people trying to craft a message for these multiple or unknown audiences [30], these audiences appear to offer unintended benefits to new mothers. Participants were motivated to share photos with family and close friends; however, Facebook's news feed promotes sharing with a wider audience of online friends. As a result, several participants said they received more feedback, typically in the form of likes or comments, on baby pictures compared to other types of content they posted online, confirming recent quantitative results [34]. Chalfen's "home mode" communication theory [10] described family photo sharing among interpersonal small groups in the home. Our results suggest new theories are needed to explain the expanded nature of family photo-sharing on social networking sites. The act of broadcasting a baby picture online for an audience of hundreds or more moves that communication beyond the realm of small groups into a broad, "imagined audience" [26,30].

Participants reporting feeling validated by the numerous likes and comments they received from their Facebook networks, even when they came from weak ties (e.g. high school acquaintances) who were not part of participants' originally intended audience. Furthermore, even though participants knew that receiving "likes" was a weak signal that required little effort to perform, they still felt positive

about receiving validation from this broad audience. These results suggest that over time, weak ties like high school acquaintances may in fact continue to offer some benefit in a Facebook network. Women will typically be the same age as their high school acquaintances, and thus share the same (broad) range of child-bearing years, perhaps offering a forum for reintroduction of shared experiences.

Privacy Stewardship

How will this generation of young children feel when they become old enough to find out that their digital footprint has been shaped since before their birth? From a privacy perspective, we might fear that pictures will not disappear, but from an archival perspective, we worry that they will. Many participants described using Facebook as a digital archive, taking comfort in knowing that Facebook was storing their "modern-day shoebox." But what would happen if Facebook disappeared? For mothers who valued the archive of support from their geographically dispersed online community, losing records could be devastating. Thus, parents face an almost impossible tension between the expectation that they will document and archive their children's social lives, while simultaneously ensuring that their child's privacy is protected and identity is carefully stewarded. Brubaker et al. introduce the concept of stewardship to explain the responsibility for managing a digital legacy that is taken on when a family member passes away [8]. New mothers take on a similar responsibility of stewarding their children's digital footprint before their children are able to say, as Emily articulated: 'Hey Mom, could you not put that on Facebook?'

We introduce the concept of *privacy stewardship* to describe the responsibility parents take on when deciding what is appropriate to share about their children online *and* ensuring that family and friends respect and maintain the integrity of those rules. Among our participants, extended family members and caregivers violated parents' desires, resulting in uncomfortable tensions about whether to address the violation or not. This complements other privacy frameworks like contextual integrity [37] and proportionality [18] which look to determine appropriate privacy levels within social and technical contexts. Here, parents must determine appropriate privacy behaviors on behalf of their children; a daunting task when risks are unknown and where impact extends years into the future.

Surprisingly, participants had little to say about how Facebook, Inc., the company, managed its data. They were instead focused on broad audiences, unknown audiences, and lack of control about what these audiences might do with their children's content, echoing CPM's five privacy dimensions [40]. Perhaps ironically, some mothers switched to platforms like Google+ and Instagram (which is owned by Facebook), not because the privacy policies were necessarily better, but because audiences were smaller and more easily controlled. Similar to Ames et al's findings [2], none of our participants described experiencing direct harm

from posting baby pictures online, but they experienced boundary turbulence. Privacy is not a binary [27,52] and participants considered a range of self-disclosure risks and strategies before deciding what kinds of baby photos to share. Individual privacy concerns (i.e., making sure only people who are supposed to see content see it) are critically important, and are something that Facebook itself is working to address [36]; however, shared ownership and corresponding privacy concerns (i.e., making sure people who are supposed to see content maintain the integrity of the original owners' privacy preferences) remains unaddressed. This challenge becomes even more pronounced when considering the global Facebook network; for example, childhood nudity tends to be more acceptable in some cultures than in others, a difference that is collapsed online [30].

CONCLUSION

Participants shared cute, funny, and milestone photos with family and friends but refrained from showing pictures that portray negativity or nakedness. Mothers were able to enact "good mothering" through their photo-sharing behaviors, to indicate a happy and healthy family. However, the responsibility of stewarding children's privacy presents new challenges for parents to maintain their children's privacy at the time the photo is shared and to anticipate how children will feel about their identity being formed online without their consent. Facebook and other online social platforms offer a new and promising platform for new mothers to enact and receive validation of good mothering, both critical processes in the early months of new motherhood; however, future research will need to explore the long-term privacy and archival implications for families.

REFERENCES

[1] Ahern, S., Eckles, D., Good, N.S., King, S., Naaman, M., and Nair, R. Over-exposed?: Privacy Patterns and Considerations in Online and Mobile Photo Sharing. In *Proc. CHI, ACM* (2007), 357–366.

[2] Ames, M., Eckles, D., Naaman, M., Spasojevic, M., and House, N.V. Requirements for mobile photoware. *Personal and Ubiquitous Comp. 14*, 2 (2010), 95–109.

[3] Amy Webb. We Post Nothing About Our Daughter Online. *Slate*, 2013.

[4] Barclay, L., Everitt, L., Rogan, F., Schmied, V., and Wyllie, A. Becoming a mother — an analysis of women's experience of early motherhood. *Journal of Advanced Nursing 25*, 4 (1997), 719–728.

[5] Bartholomew, M.K., Schoppe-Sullivan, S.J., Glassman, M., Kamp Dush, C.M., and Sullivan, J.M. New Parents' Facebook Use at the Transition to Parenthood. *Family Relations 61*, 3 (2012), 455–469.

[6] Bernstein, M.S., Bakshy, E., Burke, M., and Karrer, B. Quantifying the Invisible Audience in Social Networks. In *Proc. CHI, ACM* (2013), 21–30.

[7] Besmer, A. and Richter Lipford, H. Moving Beyond Untagging: Photo Privacy in a Tagged World. In *Proc. CHI, ACM* (2010), 1563–1572.

[8] Brubaker, J.R., Dombrowski, L.S., Gilbert, A.M., Kusumakaulika, N., and Hayes, G.R. Stewarding a Legacy: Responsibilities and Relationships in the Management of Post-mortem Data. In *Proc. CHI, ACM* (2014), 4157–4166.

[9] Burke, Moira, Lada A. Adamic, and Karyn Marciniak. Families on Facebook. ICWSM 2013, *AAAI Press*.

[10] Chalfen, Richard. *Snapshot Versions of Life*. The Popular Press, Bowling Green, OH, 1987.

[11] Collett, J.L. What Kind of Mother Am I? Impression Management and the Social Construction of Motherhood. *Symbolic Interaction 28*, 3 (2005), 327–347.

[12] Dourish, P. and Anderson, K. Collective Information Practice: Emploring Privacy and Security As Social and Cultural Phenomena. Hum.-Comput. Interact. 21, 3 (2006), 319–342.

[13] Frohlich, D., Kuchinsky, A., Pering, C., Don, A., and Ariss, S. Requirements for Photoware. In *Proc. CSCW, ACM* (2002), 166–175.

[14] Gibson, L. and Hanson, V.L. Digital motherhood: how does technology help new mothers? In *Proc. CHI, ACM* (2013), 313–322.

[15] Hogan, B. The presentation of self in the age of social media: Distinguishing performances and exhibitions online. *Bulletin of Science, Technology & Society 30*, 6 (2010), 377–386.

[16] Holland, P. History, memory and the family album. *Family snaps: The meanings of domestic photography* 3, (1991).

[17] Hutto, C.J., Yardi, S., and Gilbert, E. A longitudinal study of follow predictors on twitter. In *Proc. CHI*, ACM (2013), 821–830.

[18] Iachello, G. and Abowd, G.D. Privacy and proportionality: adapting legal evaluation techniques to inform design in ubiquitous computing. In *Proc. CHI*, ACM (2005), 91-100.

[19] Jacobs, D. Domestic Snapshots: Toward a Grammar of Motives. *J. of American Culture 4*, 1 (1981), 93–105.

[20] Jang, J. and Dworkin, J. 2004. Does social network site use matter for mothers? Implications for bonding and bridging capital. *Computers in Human Behavior, 35*, 489-495.

[21] N. Jomhari, V. M. Gonzalez, and S. H. Kurniawan. 2009. See the apple of my eye: baby storytelling in social space. In *Proc. British HCI*, (2009), 238-243.

[22] Parker, K. and Wang, W. *Modern Parenthood*. Pew Research Social & Demographic Trends, 2013   .

[23] Kirk, D., Sellen, A., Rother, C., and Wood, K. Understanding Photowork. In *Proc. CHI, ACM* (2006), 761–770.

[24] Lampinen, A., Tamminen, S., and Oulasvirta, A. "All my people right here, right now": Management of group co-presence on a social networking site. In *Proc. of GROUP'09*, (2009), 281–290.

[25] Lee, C. Social context, depression, and the transition to motherhood. *British Journal of Health Psychology 2*, 2 (1997), 93–108.

[26] Litt, E. and Hargittai, E. Smile, snap, and share? A nuanced approach to privacy and online photo-sharing. *Poetics 42*, (2014), 1–21.

[27] Litt, E. Knock, Knock. Who's There? The Imagined Audience. *Journal of Broadcasting & Electronic Media 56*, 3 (2012), 330–345.

[28] Lopez, L.K. The radical act of 'mommy blogging': redefining motherhood through the blogosphere. *New Media & Society 11*, 5 (2009), 729–747.

[29] Maeve Duggan and Joanna Brenner. The Demographics of Social Media Users — 2012. *Pew Internet*, 2013.

[30] Marwick, A.E. and boyd, d. I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society 13*, 1 (2010), 114–133.

[31] McDaniel, B.T., Coyne, S.M., and Holmes, E.K. New Mothers and Media Use: Associations Between Blogging, Social Networking, and Maternal Well-Being. *Maternal and Child Health Journal 16*, 7 (2012), 1509–1517.

[32] Mendelson, A. and Papacharissi, Z. *A Networked Self: Identity, Community, and Culture on Social Network Sites*. Routledge, 2010.

[33] Miller, A.D. and Edwards, W.K. Give and Take: A Study of Consumer Photo-sharing Culture and Practice. In *Proc. CHI, ACM*, ACM (2007), 347–356.

[34] Morris, M.R. Social Networking Site Use by Mothers of Young Children. In *Proc. CSCW*, ACM (2014), 1272-1282.

[35] Morrison, A. "Suffused by Feeling and Affect": The Intimate Public of Personal Mommy Blogging. *Biography 34*, 1 (2011), 37–55.

[36] Munson, L. The 'Privacy Dinosaur' urges Facebook users to check their privacy settings. *naked security*, 2014.

[37] Nissenbaum, H. *Privacy in Context: Technology, Policy, and the Integrity of Social Life*. Stanford University Press, 2009.

[38] Oeldorf-Hirsch, A. and Sundar, S.S. Online photo sharing as mediated communication. Paper presented at ICA (2010).

[39] Pauwels, L. A private visual practice going public? Social functions and sociological research opportunities of Web-based family photography. *Visual Studies 23*, 1 (2008), 34–49.

[40] Petronio, S. *Boundaries of Privacy: Dialectics of Disclosure*. SUNY Press, 2002.

[41] Phoenix, A. and Woollett, A. Motherhood: Social construction, politics and psychology. In A. Phoenix, A. Woollett and E. Lloyd, eds., *Motherhood: Meanings, practices and ideologies*. Sage Publications, Inc, Thousand Oaks, CA, US, 1991, 13–27.

[42] Plantin, L. and Daneback, K. Parenthood, information and support on the internet. A literature review of research on parents and professionals online. *BMC Family Practice 10*, 1 (2009), 34.

[43] Rose, G. Family photographs and domestic spacings: a case study. *Transactions of the Institute of British Geographers 28*, 1 (2003), 5–18.

[44] Rose, G. 'Everyone's cuddled up and it just looks really nice': an emotional geography of some mums and their family photos. *Social & Cultural Geography 5*, 4 (2004), 549–564.

[45] Rose, P.G. *Doing Family Photography: The Domestic, The Public and The Politics of Sentiment*. Ashgate Publishing, Ltd., 2012.

[46] Schoenebeck, S.Y. The Secret Life of Online Moms: Anonymity and Disinhibition on YouBeMom.com. In *Proc. ICWSM*, AAAI Press, (2013).

[47] Tardy, R.W. "But I Am a Good Mom" The Social Construction of Motherhood through Health-Care Conversations. *Journal of Contemporary Ethnography 29*, 4 (2000), 433–473.

[48] Tee, K., Brush, A.J.B., and Inkpen, K.M. Exploring communication and sharing between extended families. *Int. J. Hum.-Comput. Stud. 67*, 2 (2009), 128–138.

[49] Thomas, D.R. A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation 27*, 2 (2006), 237–246.

[50] Titus, S.L. Family Photographs and Transition to Parenthood. *Journal of Marriage and the Family 38*, 3 (1976), 525.

[51] Van House, N. Collocated photo sharing, story-telling, and the performance of self. International *Journal of Human-Computer Studies 67*, 12 (2009), 1073–1086.

[52] Vitak, J. and Kim, J. "You Can't Block People Offline": Examining How Facebook's Affordances Shape the Disclosure Process. In *Proc. CSCW, ACM* (2014), 461–474.

[53] Warren, S.D. and Brandeis, L.D. The Right to Privacy. *Harvard Law Review 4*, 5 (1890), 193–220.

[54] Whittaker, S., Bergman, O., and Clough, P. Easy on That Trigger Dad: A Study of Long Term Family Photo Retrieval. *Personal Ubiquitous Computing 14*, 1 (2010), 31–43.