

Risk vs. Restriction: The Tension between Providing a Sense of Normalcy and Keeping Foster Teens Safe Online

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ABSTRACT

Foster youth are particularly vulnerable to offline risks; yet, little is known about their online risk experiences or how foster parents mediate technology use in the home. We conducted 29 interviews with foster parents of 42 teens (ages 13-17) who were part of the child welfare system. Foster parents faced significant challenges relating to technology mediation in the home. Based on parental accounts, over half of the foster teens encountered high-risk situations that involved interacting with unsafe people online, resulting in rape, sex trafficking, and/or psychological harm. Overall, foster parents were at a loss for how to balance online safety with technology access in a way that engendered positive relationships with their foster teens. Instead, parents often resorted to outright restriction. Our research highlights the importance of considering the unique needs of foster families and designing technologies to address the challenges faced by this vulnerable population of teens and parents.

CCS CONCEPTS

• Human-centered computing~Empirical studies in HCI

KEYWORDS: Adolescent Online Safety; Foster Care System; Foster Parents; Parental Mediation Strategies

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1 INTRODUCTION

Foster parents play a critical role in our society. They strengthen our communities by providing a stable (and sometimes permanent) home to the over 400,000 children that are placed into foster care each year [47]. These children often enter foster homes after having experienced tremendous amounts of trauma, including neglect, physical abuse, sexual abuse, parental substance abuse, behavioral problems, incarceration, and more [47]. These difficult circumstances present several challenges for foster parents as they are charged with attending to the behavioral and psychological well-being of their foster children [5]. Furthermore, foster parents are challenged by lack of support from the foster care agency and with having to manage relationships with the biological family [17,23]. Yet, there has been little empirical research in the space of foster families, adolescent online safety, and technology mediation in the home [2]. To better understand the role of technology within foster families, we pose the following research questions to examine how foster parents mediate technology use of their foster teens (ages 13-17) in the home:

- **RQ1:** *According to parents, what types of risks do foster youth encounter online?*
- **RQ2:** *How do foster parents attempt to mediate these online risks? Are these strategies effective?*
- **RQ3:** *What are the unique challenges associated with parental mediation of technology use in the home for foster families?*

To answer these questions, we conducted semi-structured interviews with 29 U.S. foster parents of 42 teens (ages 13-17). We used qualitative approaches to analyze the interview transcripts and found that most parents fostered teens who had engaged in highly risky online behaviors

that facilitated emotional and physical harm (e.g., sex trafficking). Our results also revealed considerable differences between foster families and conventional families in terms of online risks and technology restriction in the home. Foster parents who had high-risk teens and were inexperienced with technology themselves were most likely to revoke access to technology in the home. Parents with more technology expertise were more likely to leverage parental control software to monitor technology use. In all cases, foster parents struggled with mediating technology use in a way that ensured the online safety of their foster teens. We elucidate on these struggles and the online risks teens encountered while under the care of their foster parent. Through this research, we urge researchers to consider the unique needs of foster families when designing new technologies for keeping foster teens safe from online risks.

2 BACKGROUND

We situate our research at the intersection of technology mediation, adolescent online safety, and foster families.

2.1 Mediating Technology Use within Families

The HCI community has generated a growing body of literature on family dynamics and technology use. For instance, research within the SIGCHI community has studied parental mediation in regards to teen technology use within the context of families (c.f., [3,6,21,38,43]). Hiniker et al. [21] found that parents find it challenging to enforce more contextual rules instead of restricting certain technologies at certain times. They also found that parents and children shared similar expectations about technology use (e.g., no phones at the dinner table). Blackwell et al. [3] reinforce these findings and recommend open dialogue as an effective strategy for parents and teens to understand their mutual expectations of technology use. Their research also aligns with Hartikainen et al., who recommend building trust as a way to facilitate a parent's ability to empower teens to make good decisions [20].

Beyond the HCI community, effective parental mediation [22,27] is one of the most commonly cited approaches for reducing teen online risk exposure throughout the adolescent online safety literature. Parental mediation can be categorized into the broad categories: active mediation (parent-teen conversations about technology use), restrictive mediation (rules and restricts on technology use), and co-use (parental presence during the teen's technology use) [28]. Yet, recent research on adolescent online safety advocates for a paradigm shift from restrictive, parental

control to more resilient, youth empowering strategies (e.g., [13,18,40–42]). For example, Wisniewski et al. found that most of the risks encountered by teens are unintentional and that teens are often able to effectively cope with them without the help of their parents [42]. Others have also tried empowering teens to address online safety through design [1]. Much of this research, however, has largely focused on white, high-income, highly educated, involved parents and families. Thus, it may not be generalizable to other populations of families and teens.

Several SIGCHI researchers have more recently recognized the importance of studying how racial and socio-economic differences influence the online needs and behaviors of different families. For example, Pina et al.'s [31] recent work with Latino families revealed that family values and access to different levels of resources influence intergenerational information seeking behaviors online. DiSalvo et al.'s [10] research with African American families found that lower-SES families struggle to access online computer science learning tools, despite having access to them, because of parents' perceived technical skill, concerns with face saving, and their methods of acquiring information. Similarly, Stevens et al.'s [34] work cautions that providing disadvantaged communities more technology access can actually amplify negative social interactions and reduce the equity of benefits. Therefore, we add to a growing and important body of literature on technology mediation and use within diverse families.

2.2 Online Safety for Vulnerable Youth

Prior research has highlighted that certain sociocultural factors can make some youth more vulnerable to online risks than others [25,30,43]. For example, Yardi's and Bruckman's [43] work with families of color found that teens with low socioeconomic status are given more independence with their technology devices. Pater et al. [30] found that racial minority, low-income urban teens commonly experience sexting, cyberbullying, and self-harm. More recent literature has focused on the advantages and disadvantages of technology access for teens in foster care [2,7,8], noting that owning a smartphone enhances foster youth's self-esteem and sense of individuality; however, it does not investigate the influence technology may have on the behaviors of foster teens [2]. In their recent literature review, Badillo-Urquiola et al. [2] highlighted the need for more research investigating online safety for teens in foster care and encourage this action by providing avenues for future research. We answer this call by making the following unique research contributions:

- An in-depth analysis of the challenges of mediating technology use for teens within the unique context of foster families.
- Novel insights as to the use of technology restriction as a means to mitigate risks foster teens encounter on and offline.
- Implications for education, policy, and technology solutions that promote effective parental mediation of teen technology use within the context of foster families.

In the next section, we describe our methods.

3 INTERVIEW STUDY DESIGN

We recruited parents who were 18 years-old or older and had foster teens (between the ages of 13-17) in their home within the past five years. Fostering situations ranged from teens within the U.S. child welfare system to orphans who were fostered or adopted through international hosting programs. We designed a semi-structured interview script based on similar interview studies conducted with parents regarding mediation strategies of technology use, technology access, privacy, and online safety of teens (e.g., [3,6,13]). Our questions were organized as follows:

- **Background:** Participants' motivations, personal experience as a foster parent, and the teen(s) that they have brought into their homes.
- **Potential Challenges:** Whether participants felt like fostering teens presented any unique challenges compared to younger children, and if these challenges have changed over time. Whether parents received training to meet these challenges.
- **Technology Access in the Home:** What technologies teens used on a daily basis (e.g., social media apps). These questions were inspired by Livingstone et al.'s work on digital inclusion related to children and the digital divide [26].
- **Parental Mediation Strategies:** Informed by Blackwell et al. [3] and Erickson et al. [13], the actions the participants took to monitor the use of technology (and particularly smartphone use) in the home. Whether or not and how teens in their home discussed their online activities with them.
- **Relationship between Technology Access and Parenting:** Concerns participants may have about technology use in the home, and how they managed tensions between privacy and online safety. We leveraged Cranor et al.'s work on parents' and teens' perspectives on digital privacy [6].
- **Online Risks:** We asked participants if they were aware of any online risks (e.g., cyberbullying, sexual solicitations, exposure to explicit content [41,42]) teens may have encountered online.
- **Blue Sky Visioning** [36]: We asked participants what type of support or new technologies could make their lives easier in terms of protecting foster teens from online risks.

During the interview, we asked follow-up questions to clarify interesting discussion points that came up in the conversation. At the end of the interview, participants completed a paper-based demographics survey that included questions about their age, sex, highest education level, current employment status, household income, and ethnicity.

3.1 Data Collection and Recruitment

We conducted interviews over the phone to accommodate the busy schedules of the foster parents. Upon scheduling the interview, we emailed participants an IRB approved informed consent form to review. Prior to the interview, we asked participants whether they had any questions and obtained their verbal consent to participate in an audio-recorded interview.

Recruiting foster parents of teens proved to be a hard-to-reach target population; therefore, the researchers invested a considerable amount of time building relationships with local and national foster agencies across the U.S. Recruitment efforts began June 2016, and the last interview was conducted March 2018. We contacted over 100 child welfare organizations within the foster care community by word-of-mouth, in-person, via social media, by phone, and through email. The foster care organizations distributed a recruitment flyer to potential participants, who were then asked to contact the first author if they were interested in participating in the study. We incentivized participation with a \$20 Amazon gift card distributed to the participant via email upon completion of the interview. We conducted a total of 29 interviews (P7 and P15 were removed from our analysis due to the selection criteria not being met). The average length of the interviews was 51 min, ranging from 25 min to 1 hour and 52 min. All interviews were transcribed for later analysis. We transcribed a total of 25 hours and 27 minutes of recorded audio.

3.2 Qualitative Data Analysis Approach

We used multiple qualitative approaches to analyze the interview transcripts. First, we conducted a content analysis [12] to understand the convergence and variance across the

Table 1: Structured Codebook

Dimension	Code	Definition	Exemplar
Online Risk	No risks	Parents unaware or not reporting any online risk experiences	<i>"No, we didn't have any experience with that, not directly."</i>
	Typical risks	"Low" and "medium" level risks typical teens encounter frequently (e.g., explicit content) [38]	<i>"I know he's watching fights, videos of fights, on social media"</i>
	High risks	Situations that posed imminent risk to the teens' safety or emotional well-being (e.g., sexting, porn addiction, and contact with unsafe individuals) [38]	<i>"She would meet a guy online that she's never even met before and within hours would be sending completely naked pictures."</i>
Parental Mediation Strategies <i>(Ordered from most to least restrictive)</i>	Restriction	When a parent revoked technology access to the point of non-use [10].	<i>"Like I said, I unplugged it, take it away and changed the passcode and everything."</i>
	Parental control	Surveillance of a teen's online activities using parental control software [15]	<i>"One of those restrictions is set up from Disney company, and the other is set up through Verizon."</i>
	Monitoring tech	Passive surveillance in which a parent manually checked the teens mobile devices or web history [27]	<i>"The only thing I do is try to look over his shoulder, every once in a while."</i>
	House rules	Placing rules and limits to the teen's technology use [20]	<i>"As far as the phone time goes, there's no phones near bedtime during weekdays."</i>
	Active mediation	When the foster parent and teen have conversations regarding the teen's online behaviors or activities [27]	<i>"We talk about why, we talk about what they're looking at."</i>
Technology Expertise	High Tech	Parents demonstrated more advance understandings of technology	<i>"I have Snapchat, I have Instagram, I have Facebook, I have... all of it to keep myself up to date and to know what to do with it."</i>
	Low Tech	Parents demonstrated little to no knowledge about technology	<i>"I'm not really tech savvy so I don't really know how to monitor things"</i>

participants' responses for each question. During this analysis, we took note of key dimensions that appeared to influence key outcomes and used these dimensions for a structured data analysis. They included: 1) **Risk Level:** The severity of the types of risks their foster teens experienced online, 2) **Parental Mediation Strategies:** The predominant approach each participant took to mediate these online risks, and 3) **Technology Expertise:** The level of self-reported and demonstrated knowledge the parent had with technology. The codebook included three **risk levels** (*no*, *typical*, and *high*). No risk was defined as the parent being unaware or not reporting any online risk experiences of the teen(s) in their home. Typical risks were based on Wisniewski et al.'s [42] operationalization of "low" and "medium" level risks typical teens encountered in their diary study (e.g., explicit content and interacting with strangers online). We coded high risk scenarios based on situations that posed imminent risk to the teens' safety or emotional well-being (e.g., sexting, contact with unsafe individuals), which is consistent with prior work [42].

We classified **parental mediation strategies** into six different categories based on our data and online parental mediation strategies previously addressed in the literature (e.g., [11,27,39,41]). Definitions for each of these codes are included in Table 1. **Technology expertise** was coded (*low* or *high*) based on stated experience and the experience level actually demonstrated by the participants during the interview. The first author coded all the interview transcripts, and the last author reviewed the consistency of

the codes iteratively throughout the data analysis phase. Our codebook is summarized in Table 1.

Of the 29 parents interviewed, they had a total of 42 foster teens as shown in Table 2. Since risk level varied by teen, we chose the parent-teen dyad as our level of analysis. Thus, foster parents who reported having multiple teens in their home could appear in more than one dyad. While the technology expertise was held constant for a given parent, we allowed risk level and parental mediation strategy to be different based on the teen. However, after coding our interview data, we found that parental mediation strategies did not change. We applied codes mutually exclusively; for instance, technology expertise was coded as a binary of low or high, and risk type was assigned based on the highest severity risk reported for a given teen. The parental mediation strategy codes reflected the primary strategy employed by each parent for each teen. If a parent applied multiple strategies equally, then we coded for the most restrictive strategy. The codes that were applied to each parent-teen dyad are shown in Table 2.

After our structured analysis, we conducted a grounded, thematic analysis [35] of emergent themes that were unique to the context of foster parenting teens. This analysis followed Braun and Clarke's [4] six-phase framework, where the first and last authors familiarized themselves with the interviews and generated the initial codebook. The first author coded the interviews based on these codes (allowing for new codes to emerge), and all authors formed

Table 2. Parent and Teen Profiles

Foster Parent	Foster Placement Type	Gender	Total Time Fostering/ since Adoption	# Teens	Gender	Risk Level	Parental Mediation Strategy	Tech Expertise
P01	Therapeutic	F	7 years	2	F, F	H, H	Restriction	Low
P02	Independent	F	11 years	1	F	H	Monitoring Tech	Low
P03	Respite	F	5 years	1	F	H	Restriction	Low
P04	Renewing License	F	9 years	3	F, F, F	H, H, H	Restriction	Low
P05	Host/Adoptive	F	3 years	1	F	H	Restriction	High
P06	Foster-to-Adopt	F	3 months	1	F	H	House Rules	Low
P08	Therapeutic	F	8 years	1	M	T	Parental Control	High
P09	Therapeutic	F	9 years	2	M, F	N, H	Monitoring Tech	Low
P10*	Respite	F	1 year	1	F	N	House Rules	Low
P11	Respite	F	15 years	1	M	H	Monitoring Tech	Low
P12*	Respite	M	1 year	1	F	N	House Rules	Low
P13	Adoptive	F	15 years	1	M	H	Restriction	Low
P14	Adoptive	F	9 years	1	M	T	Restriction	Low
P16	Level 1	F	11 years	3	F, F, F	H, H, T	Monitoring Tech	High
P17	Adoptive	F	3 years	2	M, M	T, T	Active Mediation	High
P18	Adoptive	F	6 years	2	F, F	H, N	Parental Control	High
P19	Level 1	F	7 months	1	F	T	House Rules	Low
P20	Adoptive	F	4 years	2	M, F	T, T	Parental Control	Low
P21	Foster/Adoptive	F	4 years	2	F, F	T, T	House Rules	Low
P22	Level 1	F	2 months	1	M	T	Monitoring Tech	Low
P23	Therapeutic	F	2.5 years	1	M	H	Monitoring Tech	Low
P24	Adoptive	M	1.5 years	1	M	T	Parental Control	High
P25	Respite	F	15 years	2	M, M	T, N	Active Mediation	Low
P26	Collaborative	F	16 years	2	F, F	H, H	Monitoring Tech	Low
P27	Respite/Adoptive	F	7 years	2	F, M	H, N	House Rules	High
P28	Level 1	F	7 years	2	M, M	H, H	Monitoring Tech	High
P29	Therapeutic	F	6 years	1	F	H	Parental Control	High
P30	Foster-to-Adopt	M	2 years	1	F	H	Restriction	High
P31	Respite	F	3 years	1	F	N	House Rules	Low

*Foster parents are a married couple, so this foster teen is counted twice; N = 43 parent-teen dyads

a consensus around the codes to present the following themes: 1) foster families face unique challenges related to online safety and mediating technology use in the home and 2) parents are desperate for better solutions for keeping their foster teens safe online and offline.

4 RESULTS

We present our findings by first describing characteristics of the foster parents in our study. Then, we discuss the major findings from our structured analysis, followed by our emerging themes.

4.1 Participant Profiles

Most of our participants were female (N=26) with three who identified as male. Similar to most research in family studies [3], our sample had a bias toward mothers as the primary caregiver. Foster parents in our sample provided a wide range of foster placements, including traditional care (level 1), short-term “respite” care, therapeutic care (youth with significant mental or behavioral health challenges), foster-to-adopt (there is a possibility of adopting the child), adoptive (the parent fostered and then adopted the child),

and collaborative/independent living (programs to increase basic life skills for transitions to adulthood).

Twenty-three participants identified as white or Caucasian; other participants identified as black/African American (3), multi-ethnic (1), and two participants preferred not to answer (one did not to answer any of the demographic questions). Most of our participants (12) were under the age of 40, nine were between 40-49, five were between 50-59, two were over 60. Most participants had a bachelor’s degree (11), while others had a master’s degree (7), professional degree (5), some college (3), or high school diploma (2). Participants worked full-time (20), part-time (3), were retired (3), or unemployed (2). Participants also lived in a variety of states: Florida (7), North Carolina (5), Maine (3), Connecticut (1), Georgia (1), Indiana (1), Kansas (1), Michigan (1), New Jersey (1), New York (1), Tennessee (1), and Washington (1); four participants preferred not to disclose.

Table 2 provides additional details about each foster parent. We provide the codes from our structured qualitative analysis for how we classified teen risk level (respectively ordered with teen gender), primary parental mediation

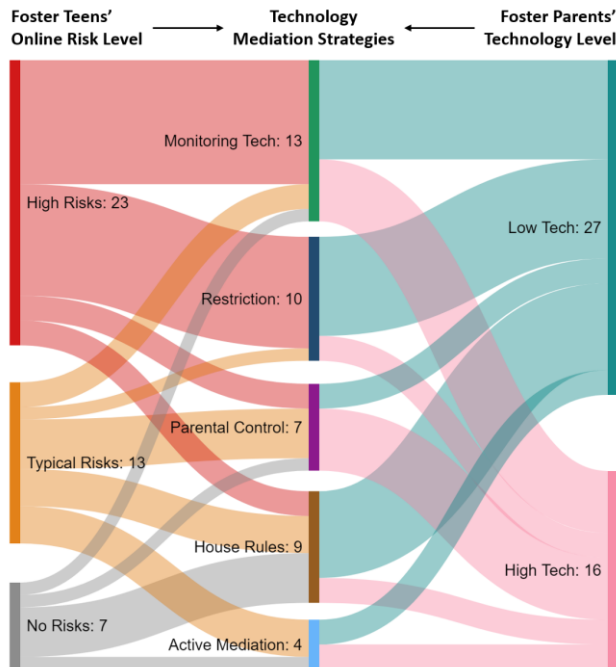


Figure 1. Sankey Visualization of Parent Profiles

strategy, and the level of technology expertise of each participant. In Figure 1, a Sankey diagram illustrates the relationships between structured codes as map value flows [33]. The three vertical bars represent the number of parent-teen dyads that were classified based on teen risk level (left), parental mediation strategy (middle), and the technology expertise of the foster parent (right), respectively. Overall, we had a larger representation of high-risk teens ($23/43 = 53\%$) with parents who employed either passive technology monitoring (44%) or restriction (39%) and exhibited a low level of technology expertise (61%).

Reading from left to right, the Sankey diagram in Figure 1 shows the relationship between teen risk level and parental mediation strategy. For example, most foster parents of high-risk teens either used restriction or monitoring technology in the home as their primary mediation strategy. Reading from right to left, the Sankey diagram illustrates the relationship between the level of technology expertise of the parent and their chosen parental mediation strategy. For example, “high-tech” parents were more likely to use parental control software, while “low-tech” parents were more likely to use restriction and house rules. Our results suggest that mediation strategy is shaped by both risk level and parental technical understanding. In the sections that follow, we describe these dimensions and relationships in more depth, focusing first on foster parents

who had teens that experienced high-risk online situations, followed by teens who experienced typical online risks, and those for which foster parents did not report any knowledge of past or current online risk experiences.

4.2 Mediating Technology for High-Risk Teens

Over half (53%) of the foster teens had experienced online risks that placed the teens in imminent danger. Based on the foster parents’ accounts, 91% of these risks could be classified as conduct and contact-related risks [24] as the teens initiated an interaction and/or online behavior with an unsafe person (e.g., abusive parent, adult stranger, etc.). The most common risks reported were sexual in nature, such as teens sending naked pictures of themselves to others. In many cases, foster parents pinpointed mobile smartphones as the medium in which these interactions occurred. A couple of these interactions occurred with boyfriends or girlfriends, but the majority of foster teens engaged in sexual exchanges with strangers, specifically girls engaging in explicit conversations with older men. For example, P26 found one of her 16-year old foster daughters sexting with multiple men:

“It was butt sex. It was on her social media... and there were those men masturbating. At one time, one of the persons she was talking to asked her what turned her on and she sent him naked pictures of a 10-year-old girl, she said that this is what turns me on.”-P26 Foster Mother from Indiana

The quote above suggests that the girl was sexting with men and demonstrating highly provocative behavior, possibly indicative of past sexual abuse. In many cases, online sexual exchanges led to physical harm. Seven of the foster parents shared stories about foster teens who used technology as a means to run away (or “elope”) from home, which then resulted in traumatic consequences, such as rape and sex trafficking.

“I have a child in care who was constantly eloping and during her elopement she got involved in sex trafficking. Where she was held up in a home and raped multiple times by multiple persons. By her own admission she was being leased out to various men. Who, if she had access to a phone, she still would be contacting this person.”-P01 Foster Mother from Florida

Another common theme was that teens used technology to contact unsafe people from their past. Many of the teens had court orders or case plans that restricted contact with biological family members, previous foster families, or other individuals that were abusive to the teen in the past. One foster parent explained that such interactions would “re-traumatize” the teen, making teens noticeably regress after contact occurred.

“She had accused her adoptive father of sexually abusing her, and she still persisted and wanted to have conversations with this man...court order stipulated that she was not supposed to have contact with this man without supervision.”-P01 Foster Mother from Florida

Two foster parents reported substance abuse and pornography addictions that were facilitated through technology use. This behavior was more typical of boys. For instance, P28 son was addicted to drugs. As a result, she did not allow him to have a cell phone because it would provide easier access:

“Because of the substance abuse issue, because obviously it would make it a lot easier for them to communicate with folks in order to obtain marijuana or anything else.”-P28 Foster Mother from North Carolina

The quote above gives one example (through the use of restriction) of how teens’ online risk experiences influenced how foster parents mediated technology use in the home. Overall, we found strong evidence that foster parents believed that technology access facilitated high-risk behaviors both online and offline. In the sub-sections that follow, we describe the range of strategies (from most to least prevalent in our sample) foster parents used to protect high-risk teens from online dangers.

4.2.1 Monitoring Technology Use in the Home

Most (43%) of the parents of high-risk teens monitored technology use by manually checking the foster teens’ devices or looking over their shoulders. P26, as well as others, asked for her teens’ device passwords, so she could conduct random checks. There was often no warning for the device checks, but she typically performed the check whenever she felt concerned that her teens were behaving inappropriately online.

“Yes, I’m supposed to have their passwords and I’m also supposed to check their phones. There’s no set time or amount of time in-between checking, it’s mainly if I feel there’s something going on.”-P26 Foster Mother from Indiana

Like P26, who emphasized the phrase “supposed to,” many parents admitted that this strategy was not fool-proof and that they did not do it on a regular basis. Others expressed dissatisfaction with this approach because teens refused to give them access to monitor devices or because the teens would make fake accounts.

“[Monitoring] It’s hard unless they accept you as a friend on Facebook or unless they ask you to join or give you their information so you can see and monitor what they are doing, you don’t know what they are up to.”-P16 Foster Mother from North Carolina

We also found that manually monitoring devices in the home was more typical of parents who lacked the technical expertise to do so using more automated approaches. This was often because they did not know about available parental control technologies to monitor what their teens were doing online:

“I don’t know a whole lot about it [parental control software]... I would rather have them mad at me for checking their phone than be dead, or hurt, or laid.”-P26 Foster Mother from Indiana

However, irrespective of risk level, the proportion of “low-tech” parents (8/27 = 30%) versus the proportion of “high-tech” parents (5/16 = 31%) who manually monitored technology in the home was similar.

4.2.2 Restricting Technology Access

Nine parents of high-risk foster teens felt like they had to resort to restriction, where they revoked access to technology and did not allow the teens to have or use internet-enabled devices in the home. Frequently, these foster parents restricted the use of handheld personal devices, such as smartphones and tablets. Typically, restriction occurred as a result of teens experiencing high-risk situations online:

“So, from that [elopement] I took my tablet away from her, and she never got to use it again.”-P03 Respite Foster Mother

Some parents went as far as restricting mobile phone access of their teens’ friends when they came to the parents’ homes:

“She’s had friends who absolutely won’t come over to her house because we make them give us their phones. We tell the parents right off the bat too...’Hey we have a strict NO policy on phones.”-P30 Foster Father from Florida

These parents often felt they had to restrict their teens’ technology use, rather than use a different strategy like monitoring, because it was the only way they could completely control the teen’s use of technology.

“Here’s the thing I can’t control if she goes out and creates a new password or new profile, you know what I mean.”-P05 Foster Mother from Georgia

Similar to those who manually monitored their teens, however, these parents felt restriction was also an ineffective strategy to mediating their teens’ technology use. This was because the teens would find other means for getting access to technology. P04 said her teens were not allowed to use technology in her home, but they often snuck in devices without her knowledge.

"They still sneak in my house and I don't know until I physically go to their room and heard them talking on the phone, and if they heard me coming then you know they'll hide it."-P04 Foster Mother state undisclosed

Overall, we saw a trend where 30% (8/27) of "low-tech" parents restricted technology access in the home, but only 13% (2/16) of "high-tech" parents used this mediation strategy. This was often because many parents were unaware of the availability of parental control software, so they preferred to remove technology from the equation altogether.

"I didn't know they had those stuff [parental control software]. Like I said, I'm not a computer pro. I have the computer I may use one or two things on the computer, but I am not gonna say I'm a computer pro."-P04 Foster Mother state undisclosed

Next, we present parents who knew about parental control software and chose this strategy to mediate technology use.

4.2.3 Using Parental Control Software

Two parents of high-risk teens used parental control software, which allows them to monitor their teens' devices by restricting specific content, enforcing time limits, and supervising online activities [19]. Similarly, three parents of "typical-risk" and one parent of a "no-risk" teen also used this strategy, which we discussed later. For high-risk teens, P18 installed a parental control app on her daughter's phone after her daughter posted naked pictures of herself online:

"We had an app called 'MamaBear'...It's an app where we can see what she likes on Instagram, or who liked her stuff. We get an alert when she posts to Instagram or YouTube or any of those outlets."-P18 Adoptive Mother from Maine

In contrast, P29 used her router to filter content. Her foster daughter "owned" her own phone, so she did not have access to install parental control software directly on her teens' device.

"We would restrict those types of things from our actual browser. So, they could get on Wi-Fi, but different sites would be blocked at certain times of the day."-P29 Therapeutic Host Mother from Florida

Irrespective of risk-level, "high-tech" parents were more likely (5/16 = 31%) than "low-tech" parents (2/27 = 7%) to use parental control software to mediate technology use in the home. One of the reasons these parents used parental control software was because they wanted to take a preventative approach. P18 was able to download the software onto her teen's phone to proactively monitor any new high-risk behaviors exhibited by her daughter.

"I think that's why my overall philosophy in life is to be responsive, not reactive. To be proactive rather than reactive... not because we don't trust you, but because it's for safety"-P18 Adoptive Mother from Maine

These parents noted that parental control software could not guarantee that their teens would not have repeated high-risk online incidents, but it made them feel more confident that they would be aware of these situations if they did reoccur.

4.2.4 Implementing House Rules

Finally, two parents of high-risk teens used house rules as the primary method for mediating their teens' technology use in the home. House rules were generally verbal limitations placed on technology by parents. A key point is that these parents did not mention monitoring technology use other than setting these house rules to limit use. For example, P27 would have her foster daughter leave her door open while she was Skyping and turn in her phone at bedtime.

"She gave me her phone before she went to bed, so that I knew she wasn't texting all night."-P27 Foster Mother from New Jersey

However, P27 still had issues with her daughter messaging with her boyfriend inappropriately and using her cell phone to contact that boyfriend to take her out of the home without her foster mother's consent. A main concern of parents was that teens often did not follow the house rules that they set. When teens did not follow the house rules, the consequence was often to use restriction instead:

"If she was really out of control I knew how to switch passwords and things like that... so, taking that away from her was like taking away her arm so that wasn't taken very well. But I really didn't do that to her very much."-P06 Foster Mother state undisclosed

Overall, 26% (7/27) of "low-tech" parents used house rules as their primary mediation strategy, while only 13% (2/16) of "high-tech" parents chose this approach. For the most part, parents who used house rules were fairly hands-off when their teens did have access to their devices in the home. In the next section, we compare and contrast trends we found for foster parents of high-risk teens with parents who reported low to medium levels of online risks encountered by their teens.

4.3 Teens Experiencing Typical Online Risks

Ten parents reported that their 13 teens had experienced low to medium-level risks online [42]. Many of the risks reported involved *content risks* [24], which meant the information or material the teen was interacting with was

considered unsuitable or inappropriate for adolescents. Some of the typical risks these teens encountered were consuming inappropriate or explicit online content, such as pornography or violent material. While these risks may still be harmful, they were not considered high risks, because they did not pose imminent danger to the teen or were not to the point of being described as addictive behaviors.

"There was some pornography. Mainly, you know, looking at things. Not engaging in anything, just viewing."-P20 Adoptive Mother from Maine

There were also a few reports about teens friending strangers on social media but not having any face-to-face or inappropriate online interactions:

"I was like 'who is this person?' I don't know but they liked my photo,' so that was her criteria for including them in on her friends list."-P16 Foster Mother from North Carolina

Generally, the foster parents did not feel like these online risks were overly problematic. In comparison to parents of high-risk teens, these parents tended to be less restrictive and were more actively engaged in their teen's technology use. While parents of high-risk teens most commonly used technology monitoring (10/23 = 44%) and restriction (9/23 = 39%), the most common parental mediation strategy for these parents was the use of parental control software (4/13 = 31%), followed by house rules (3/13 = 23%), and active mediation (3/13 = 23%). In many instances, when parents of typical-risk teens utilized the same strategies as high-risk teen parents, they noted similar benefits and limitations. For instance, a few foster parents used parental control software of their teens' phones. Most found this method useful; however, P08 noted how teens had a way of circumventing the technology.

P19 and P21 implemented house rules. However, P21 admitted that she was lenient with her rules, setting them, but not always enforcing them. P16 and P22 used technology monitoring, but they did not find this method very effective, mostly because they were inconsistent doing it. Only P14 restricted her foster son's tablet after she caught him using it inappropriately. Two parents of three teens, out of 13 who encountered typical online risks, used active mediation as their primary parenting approach. In contrast, we did not observe any parents of the 23 high-risk teens in our sample using active mediation. Therefore, we describe this parental mediation strategy in more depth in the next section.

4.3.1 Actively Mediating Online Risks

Two parents used active mediation by having conversations with their teens about the benefits and consequences of their online behaviors, as well as expectations for appropriate use. P17, an adoptive mother of her foster teens, said that she tries to understand the underlying cause of the problem:

"We talk about why, we talk about what they're looking at... we try to work on the inside and work on what's going on in their lives. Which is particularly challenging... but I've had good trust in the relationships."-P17 Adoptive Mother from Michigan

P25 talked to her foster son about appropriate use in terms of his behavior being a reflection on their family.

"It's been appropriate use, such as you know you represent the us in our family, so you can't post any like provocative pictures or drug related things"-P25 Respite Foster Mother

P25 not only talked with her foster son, she also talked with his biological parents to ensure everyone understood what video games he was allowed to play. In both cases, these parents used language and behaviors that showed that they were purposefully trying to integrate the teens into their families. In this way, these teens were being treated more like "typical" teens. Next, we discuss families where foster parents were unaware of the online risks their teens were experiencing online.

4.4 When Risks Are Unknown

Seven parents reported that their six teens had not experienced any type of online risks, at least to their knowledge. These parents used house rules (3), monitoring technology (1), active mediation (1), and parental control software (1). Two of these foster parents were a married couple parenting the same foster daughter. Even though the foster parents were interviewed separately, there was a high level of consistency between their interviews. Both said that they used house rules to set limits on when their foster daughter used her cell phone. Otherwise, they did not monitor her technology use in other ways.

"The only rule that gets followed, pretty much everyday around here, is that at bedtime her phone is not allowed in her room at all."-P10 Respite Foster Mother from North Carolina

Neither reported any online risks of which they were aware, and her father (P12) confirmed, *"that's about it as far as monitoring goes."* Therefore, P12 said he was unaware of any online risks encountered by his daughter online:

"As far as I know, most of her phone use is talking to family and listening to music on YouTube or playing a

game. So as far as I know, there hasn't been anything."-
P12 Foster Father from North Carolina

However, as P31 reflected, foster parents probably do not know many of the risks their teens are encountering online, especially when they do not actively monitor technology use, making it difficult for them to answer our interview questions accurately:

"The frightening thing about all of this, is that, how many parents or foster parents don't know the answer to these questions. And I feel like we should know, we should know those answers, right? Like we should know what our kids are doing and who they're contacting and what's been done, and we honestly don't know the answer."-P31
Respite Foster Mother from Washington

Next, we present the emergent themes from our thematic analysis on the unique challenges related to mediating technology use within foster families.

4.5 Emerging Themes for Foster Families

4.5.1 The Unique Challenges of Foster Families

A consensus shared by most of the foster parents was that their teens experienced severe abuse and trauma that made them more vulnerable to online risks than typical teens. Being removed from their biological family often came with a sense of rejection and the need for acceptance and love. Foster parents explained that this rejection often manifested as "attachment disorders" and feelings of "distrust" towards adults. This also created a disconnect between the foster teen and their foster parent, ultimately causing the teens to seek attention elsewhere.

"Even if somebody does care about them, that's a feeling they've never had because they feel very disconnected."-P5
Adoptive Mother from Georgia

These attention-seeking behaviors also manifested as "mixed-maturity levels," which were described by parents as knowing too much for their age (e.g., overly sexualized), but also being emotionally stunted and demonstrating childlike behaviors.

"I can just tell my gut like she's over-sexualized and she has been exposed to more than what I realized, more than what the DSS realizes."-P16 Foster Mother from North Carolina

"Kids that have or are in foster care and have had tough lives and frequently have behaviors that younger kids might."-P12 Foster Father from North Carolina

Meanwhile, participants also felt that they faced unique challenges as foster parents. Many parents expressed frustration that they could not effectively mediate

technology use in the home because their teens did not accept their authority as their parents:

"They'll tell you, you're not my parent, you can't do anything for me, and it's my cellphone don't touch it."-P04
Foster Mother state undisclosed

This led to a sense of desperation in many of our interviews as parents sincerely wanted to protect and care for the foster teens who were part of their families.

4.5.2 Foster Parents Were Desperate for Solutions

A strong, emergent theme across many of our interviews was that foster parents did not know what else they could do to protect their teens from online risks. In some cases, this manifested as defensiveness and a sense of hopelessness:

"They've already seen everything and done everything, so what am I supposed to do?"-P11 Respite Foster Mother from Florida

In other cases, foster parents explained that they already had so many other things to worry about offline, that it was just too much to also have to worry about what they were doing online.

"There's so many other things that we're trying to work through and focus on, and that's not always a topic of conversation...like medical issues...Getting jobs. Going to school is definitely one of them. Friends and drama that completely debilitated her... There's so many things that we're on her about, that you kind of feel like you have to choose your battles. And so that's not one of the battles."-
P21 Foster and Adoptive Mother from Florida

When we asked parents to tell us what they thought would help them mediate technology use in the home more effectively (i.e., Blue Sky Visioning [36]), they gave a wide range of responses. Quite a few participants suggested parental control software to help them prevent high-risk online behaviors, such as sexting:

"If you try to post a picture of nudity, that it's immediately like, 'this picture contains nudity.' Or something to shut that down from sending it"-P09 Therapeutic foster mother from North Carolina

Some parents thought it would be useful if this technology came standard on the teens' devices:

"You don't have to download an app to monitor, I think these things should come standard and activated, where if they go to a website that is viewed as a potential risk, that it just shuts down the device right away, or cut it off, or refuse to connect to the website."-P08 Foster Mother, state undisclosed

We noted that these parents wanted restrictive technologies to identify risky content and behaviors to shut them down.

Yet, other parents were less interested in technological solutions; they wanted more resources, such as “best practices” for mediating technology use.

“Maybe resources that are available, if kids exhibit certain kinds of behavior, then, maybe try this, or try this. I think that would be helpful.”-P21 Foster mother from Florida

Considering foster parents’ technology expertise, “low-tech” foster parents tended to ask for educational resources and parental control features that already exist on the market. In contrast, “high-tech” parents suggested specific features, such as nudity detection that would prevent the teen from sending inappropriate pictures to others. All in all, foster parents consistently told us that they needed more help and support to keep their teens safe online.

5 DISCUSSION

In this section, we discuss the implications of our findings in comparison to prior work, the limitations of our work, and future research directions.

5.1 The Paradox of Privacy vs. Online Safety

One of the questions we asked foster parents was whether they felt online safety versus respecting the teens’ privacy was more important and why. We asked this question because Cranor et al.’s earlier work [6] found that most (biological) parents felt that teens’ cell phones were considered their private devices. In contrast, the majority (over 75%) of foster parents in our study said that online safety, not privacy, was of utmost importance. This was often because foster parents could get in serious trouble if they did not take a protective role in the home:

“I’ve been placed in a parental role by the state, by you know by the court and that’s part of what a parent is supposed to do, is like, help protect the child.”-P27 Respite and Adoptive Foster Mother from Connecticut

The “privacy paradox” we identified here was that while the foster parents said they would choose online safety over privacy, they were often ineffective at achieving either. Teens simply refused to give up their privacy (even more so than compared to the practical obscurity parents typically face with teens [4]). Teens hid their online activities, and in some cases, even their devices from their foster parents. The lack of trust between foster parents and teens led to even more impenetrable privacy boundaries than what other researchers have found in research with conventional families (c.f., [3,6,13,21]). As a result, many foster parents had to restrict access to technology in the home altogether. This caused even more conflict because it prevented foster parents from being able to form a trust relationship with

their teens, which made it even harder for them to be actively engaged in more positive forms of digital parenting. Revoking access also negated giving foster teens a “sense of normalcy” in our highly digital culture. Five parents explicitly mentioned “normalcy,” while discussing the challenges around mediating technology use in their home:

“The agency likes to say that it is ‘normalcy,’ to have the child have all of these electronics and have access like a normal child. However, the children that we get in care, more often than most, did not have a normal upbringing like your child or your siblings or yourself would have had.”-P1, Foster Mother from Florida

In many cases, making sure the foster teen was safe had to come first over granting access to technology. In the next section, we frame this dilemma as a new “Digital Divide” for foster youth.

5.2 A New Digital Divide for Foster Teens

Our work contributes a new perspective regarding foster youth and technology access [9,26,32]. Researchers have found that less than 21% of urban foster teens own a computer, compared to 90% of teens across the U.S. [45]. Researchers have labeled this inequality as the “Digital Divide,” a disparity between those who have more access to technology and those who have less, typically due to cultural or socio-economic factors [15]. However, what we found is that foster parents in our interview study intentionally restricted access to technology in the home to protect their teens from online and offline risks, not due to socio-economic reasons. This is a novel insight that has not yet been highlighted in the digital divide literature and should be considered when studying the potentially negative (and positive) consequences associated with foster youths’ lack of technology access. Prior research has found that restricted technology access reduces digital literacy [15], and limits the ability for foster teens to develop healthy social relationships [16], perform well in school [45], and, in the future, achieve job placement and financial security once they “age out” of the system [14]. Yet, many foster parents in our study believed that revoking access was the only way to keep their foster teens safe. Therefore, addressing the issue of adolescent online safety for foster youth is a critical problem that, if solved, could also improve other important life trajectories for foster youth.

5.3 Implications for Practice and Design

Our research calls for new solutions that take into consideration the unique challenges and needs of foster parents. We propose several approaches (educational, policy, and technical) for addressing these challenges. First,

we found that parental mediation strategies were often influenced by the level of technology expertise of the foster parent. Therefore, this calls for training and educational programs to teach foster parents about the latest technology trends and about effective digital parenting practices [48]. This would empower foster parents by giving them the prerequisite knowledge they need to protect their teens from online risks, either by using parental control software or active mediation to teach their teens how to use technology safely.

Enacting new policies that give foster parents more authority to use an array of possibilities to mediate technology use in the home may alleviate this problem. Federal, state, and agency-level policies that promote “reasonable and prudent” standards for “normalcy” [46], need to be updated to address the intricacies of digital parenting. For example, it could be considered reasonable and prudent for foster youth to have digital devices that are approved by the foster agency with an explicit statement that foster parents have the right and obligation to set limits and monitor technology use when necessary. Conversations regarding the management of digital devices and online presence of the teen could also be included within the case plan.

Another opportunity would be to design parental control software that is uniquely tailored to foster families. Traditional parental control software has been found to be overly restrictive and privacy invasive [18], harming the trust relationship between parents and teens [19]. Instead, we could re-imagine online safety software that empowers and teaches teens, affording more personal privacy, while safeguarding them against the most harmful online risks, such as online sexual predation [49].

5.4 Limitations and Future Research

There are several limitations to our study that present opportunities for future research. First, we were unable to incorporate the perspective of foster teens in this interview study due to the legal complexities of needing a court order to conduct research with wards of the state [50]. We hope to overcome this hurdle in our future research. Second, we cannot infer causality; the interviews with foster parents implied that restriction was a result of high-risk teen activity. However, parents did not change their mediation strategies based on the different online risk experiences of the teens in their home. Therefore, future research should further explore the relationship between teen risk activity and parental mediation strategies to disentangle this dynamic.

Third, our sample was diverse in terms of the types of foster placements; however, our it was still biased toward white, educated, middle to high income women. Consequently, we found a pattern where lower income, less educated participants tended to also be classified as “low-tech” parents with “high-risk” teens, who were more likely to use restriction and house rules to mediate technology use. Therefore, some of the challenges uncovered in our study may be amplified for lower-income and less educated foster parents. This pattern is consistent with Livingstone et al.’s [28] research, which found that low-income parents are more likely to use restrictive instead of instructive mediation in the home. Given that most foster families receive public assistance and are 200% below the poverty line [29], we urge researchers to commit more resources to work with socio-economically disadvantaged and diverse foster families.

Finally, we reflect on and acknowledge our own deficit-based framing [44], where we attempt to catalog risk to ameliorate the problem of online safety for foster youth. This type of “risk discourse” often creates a sense of moral panic, overshadowing positive outcomes of youth, such as how youth themselves understand and mediate risks [37]. In our future work, we are committed to taking more strength-based approaches that focus on positive factors that can help improve the lives and online safety of foster youth.

6 CONCLUSION: A CRISIS THAT MUST BE ADDRESSED

Our research confirms that online safety is a challenging issue within foster families. Unlike prior work, such as Wisniewski et al.’s research with conventional families [39–41], which found that only 12% of the online risks reported by parents and teens were high-risk [41], the majority (53%) of foster teens in our sample were considered high-risk. Many of these teens endured extreme trauma associated with their online activities, including rape and sex trafficking. Similarly, while conventional parents used restriction infrequently (4%) [40], foster parents in our study used this mediation quite often (23% of the time) with their foster teens. Unlike Blackwell et al. [3], who found that teens in her study only “heard no” from their parents, many of the foster parents in our study, indeed, “said no” to their foster teens. These are just a few of the noticeable differences between our research and other studies that have examined how parents mediate technology use in traditional family settings (e.g., [3,6,13,21].)

Through this research, we realized that foster parents, not just foster youth, are marginalized individuals that need our attention and support. They are often marginalized by the system, as well as their teens, who do not accept them as their parents. Yet, a common theme when we have presented preliminary versions of this work is that parents of teens (some who are researchers) frequently question the validity of studying adolescent online safety in the specific context of foster families. These individuals often relate to our research based on their personal experience with their own teens. While we agree that conventional families share many of the same struggles as foster families, we want to caution against downplaying the struggles of foster parents as this could potentially re-marginalize an already vulnerable population that is in need of immediate resources.

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