

“Everything’s the Phone”: Understanding the Phone’s Supercharged Role in Parent-Teen Relationships

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ABSTRACT

Through focus groups (n=61) and surveys (n=2,083) of parents and teens, we investigated how parents and their teen children experience their own and each other’s phone use in the context of parent-teen relationships. Both expressed a lack of agency in their own and each other’s phone use, feeling overly reliant on their own phone and displaced by the other’s phone. In a classic example of the fundamental attribution error, each party placed primary blame on the other, and rationalized their own behavior with legitimizing excuses. We present a conceptual model showing how parents’ and teens’ relationships to their phones and perceptions of each other’s phone use are inextricably linked, and how, together, they contribute to parent-teen tensions and disconnections. We use the model to consider how the phone might play a less highly charged role in family life and contribute to positive connections between parents and their teen children.

CCS CONCEPTS

• **Human-centered computing** → *Empirical studies in HCI; Empirical studies in ubiquitous and mobile computing*; • **Social and professional topics** → *Adolescents*.

KEYWORDS

parents; teens; family; smartphones; relationships

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1 INTRODUCTION

Prior work shows that popular media depicts smartphone use as problematic; teens and parents alike reflect this messaging in the language they use to describe their own phone use and that of others [34]. There is ample research pointing to the fraught nature of the smartphone and other networked devices in families with teen children. Many parents feel insecure about how to approach parenting in a networked age [37, 43, 59]. They do not always understand the apps that their teen children have on their phones, or what, exactly, they are doing on social media [3, 37, 43]. They worry about their children’s privacy, digital footprint, and long-term reputation, as well as their potential exposure to predators, pornography, and cyberbullying [18, 26, 33, 37, 57, 69]. Because of these insecurities, many parents take an “on/off switch” approach to mediating their children’s technology use [59]. They set limits on how much screen time their children are allowed in a day, or what apps they are permitted to download to their phone.

For their part, teens feel that their parents do not understand what they are doing online [3, 29]. They resent restrictions such as parental controls, which they feel violate their privacy [19]. They believe that many (but not all, see [24]) of the rules their parents set are not appropriate to their actual technology use [3, 29]. Teens’ frustrations are heightened when they see their parents breaking their own rules, such as by using their phones at the dinner table [3].

At the same time, the growing body of research addressing technology’s role in family life points to positive functions of interactive technologies, such as family bonding, fun, and learning through joint media engagement activities like video games and social network use [6, 56, 62, 64, 66]. Researchers have also uncovered similarities between parents

and children in their patterns of behavior around personal device ownership and use [3, 34, 37], challenging common wisdom that a generational divide exists between parents and their teen children [67]. Clearly, the story is more nuanced than ‘smartphones are destroying a generation’ [67]. However, we still lack deep insight into where parents and teens align and where they differ with respect to their relationship to and perceptions of smartphones in the context of family life.

We investigated how parents and their teen children experience their own and each other’s phone use, and we examined how these experiences interact with and affect family dynamics, particularly parent-teen relationships. In so doing, we join a growing body of work that explores the contextual factors associated with smartphone use in families [3, 27, 34, 43]. The current study is guided by the following research questions: *RQ1: How do parents and teens perceive their own and each other’s phone use in the context of family life? RQ2: How do parents and teens describe the phone’s impact on family life, particularly parent-teen relationships?*

We conducted 7 focus groups with 32 parents of tweens and teens between the ages of 10 and 18, and 6 focus groups with 29 tweens and teens between the ages of 10 and 18. To determine whether the themes we uncovered applied more broadly, we then conducted two nationally representative surveys, one with $n=1,049$ parents of 10 to 16 year-olds and one with $n=1,034$ 13 to 16 year-olds.

Our analysis showed that both parents and teens expressed a general lack of agency with respect to their own and each other’s smartphone use. They believe that they use their phones too much, turning to them unconsciously and out of habit. Parents expressed an added layer of guilt with respect to how their smartphone use affects their ability to parent effectively. Demonstrating a classic example of the fundamental attribution error [15], both parties offered legitimizing excuses for their own phone use while pointing to the other’s phone use as the main cause of interpersonal disruption. We show how these perceptions contribute to technology-related tensions in families, and, notably, a disconnection between parents and their teen children. We used these empirical insights to generate a conceptual model depicting the smartphone’s impact on parent-teen relationships. We consider points in the model where designers might intervene to promote parents’ and teens’ agency in their smartphone use and support positive family interactions involving smartphones. The empirical findings and model from this work contribute new insight into the smartphone’s current and potential role in family life.

This paper contributes (1) empirical evidence from focus groups and nationally representative surveys that put into dialogue parents’ and teens’ perspectives about their own and each other’s phone use in the context of family life, (2)

a conceptual model that represents and synthesizes the primary insights from these empirical results, and (3) design implications that derive from the conceptual model suggesting how phones might be incorporated into family life in such a way that lessens parent-teen tensions and promotes their positive interactions.

2 RELATED WORK

The Phone’s Role in Families with Teen Children

As children make the transition into adolescence, they begin to assert their independence from their parents as they explore who they are separate from the family unit. They spend more time with their peers, less time with their parents, and they no longer take for granted the formerly unilateral nature of their parents’ authority [9, 74]. These changes are often accompanied by some degree of tension between parents and their adolescent children as they each negotiate a new parent-child dynamic [32]. Amidst these shifts, however, connection and openness continue to be important to both teens and parents [13]. In fact, although they spend less time together overall, the time that parents and teens spend in conversation tends to remain consistent between childhood and adolescence [35, 36]. Adolescents rely on their parents for emotional support and instrumental advice (e.g., course enrollments, college applications) [61].

With the average age for owning a first phone at 10.3 years [25], the mobile phone now plays a prominent role in the renegotiation of parent-child relationships during the transition from childhood to adolescence [29]. Indeed, the mobile phone has been characterized as a “transitional object” for children entering adolescence, providing a means for them to stay connected to their parents as they spend increasing amounts of time outside the home and their parents’ direct supervision [8, 19, 54, 70]. Many early adolescents—or “tweens”—receive their first phone from their parents so that their parents can monitor their whereabouts when they are traveling unaccompanied between home and school [29]. At the same time, the phone provides tweens with a means to connect to their friends and the outside world while under the direct supervision—but often unawareness—of their parents [3].

After making the initial decision to allow their children to own a phone, parents face deciding how much they should mediate their children’s phone use, with much of the research surrounding families and smartphones focusing on such mediation strategies [18, 27, 40–42]. Existing research shows that the use of mediation strategies varies according to factors such as parent and child age, socioeconomic status (SES), parent gender, and the digital skills of both parents and children [1, 2, 12, 18, 27, 40–42, 53, 72]. Research involving

U.S. families specifically indicates that parents' technology-related rules generally focus on how much, where, and when their teen children can use their devices, as well as what apps, games, and social media platforms they are allowed to use. In a nationally representative survey of U.S. parents and their teen children, the two most popular phone-related rules set by parents were no mobile devices during family meals (78%) and no mobile devices during bedtime (63%) [37]. This survey also found that parents who worry a lot about teens' screen exposure are more likely to set screen time restrictions. Other researchers have found that parents employ similarly restrictive techniques for mediating their children's technology use [3, 39, 43, 46, 49, 58, 71]. This approach may undermine parents' own goals, as Hiniker et al. [24] found that giving children input into the rule-setting process increased their buy-in and commitment to following rules.

Phone-Related Tensions

Parents' mediation of their teen children's technology use is influenced by and influences family dynamics, as do the individual motivations, attitudes, and experiences of parents and teens themselves. Research exploring the contextual factors associated with technology's role in family life highlights the tensions that arise in a digitally networked family. Parents' attitudes toward and strategies for mediating their teen children's technology use are influenced by their own insecurities around parenting digital-age youth. Many parents feel they lack the technical expertise to understand and manage their children's technology use effectively [3, 43]. They are also highly aware of the messages sent to them from society, which underscore the many risks associated with young people's digital media use [33, 34, 42, 43]. These messages cause them to worry about how technology may be affecting their children; common worries include negative impacts on their social development, sleep disruption, and technology addiction [18, 26, 33, 37, 57, 69].

For their part, many teens express resentment around their parents' rules, restrictions, and, in many cases, surveillance practices, feeling that they reflect parents' misunderstanding of how and why they use technology [29], as well as their lack of trust in them [20]. For instance, Ghosh et al. [19] found that children (age 8-19 years) perceive mobile online safety apps as an invasion of their personal privacy, and believe they negatively affect their relationships with their parents, corroborating earlier research pointing to the potential for mobile-based location tracking to undermine parent-child trust [4]. Yet, Hiniker et al. found that children's views may be somewhat more ambivalent [24]. On the one hand, they expressed a desire for parents to stop trying to control them and let them do what they want with technology. On the other hand, they also expressed a desire that their parents

teach them to use technology responsibly and look out for their wellbeing. These results are consistent with Lanette et al.'s research showing teens' concern about the phone's potential negative impact on themselves [34].

Despite some expressed ambivalence towards their parents' rules and restrictions, many teens readily admit that they regularly disregard or otherwise circumvent them [3, 24, 29]. They feel further justified when they see their parents regularly breaking their own rules, such as texting while driving or answering work-related emails at the family dinner table [3, 24, 29, 37, 48]. This sentiment underscores the fact that it is not just teens' mobile phone use that affects family dynamics, but parents' phone use, as well. In their review of peer-reviewed papers published on this topic, Kildare and Middlemiss found evidence suggesting that parents' use of mobile phones disrupts parent-child interactions, making them less sensitive and responsive to their children's bids for attention [28]. Similarly, other work has found that parents who use technology during their interactions with their children experience more challenges with child behavior [45]. And, intrusions from technology increase co-parenting challenges [44]. It should be noted that most of these papers focus on parents of younger children; however, a smaller body of work has explored parents' phone use as reported by teens and found similar patterns [55, 65].

Phones Bring Families Together, Too

Despite the tensions reported above, researchers have identified ways that smartphones can bring families together. Sobel et al. investigated how families with children aged 2-17 years used smartphones to play Pokémon Go together [62]. Parents reported feeling that playing the game with their children led to family bonding by helping them to identify shared interests and facilitating impromptu conversations. This study builds on prior work showing positive interactions among family members when they use technology together, a phenomenon called joint media engagement [6, 56, 64, 66]. Other work has explored how technology can create new communication opportunities to bring family members together [14, 68, 73], enhance family collaboration and creativity [76], or support families in learning new skills together [1, 53].

Yu et al. found that smartphones were used to support a sense of family unity during vacations by creating shared moments and generating conversations among family members [75]. They were also used to build family consensus, for instance, by allowing family members to look up information to help them make a decision about shared activities. After the vacation, pictures taken with smartphones helped families to form and cement shared memories. At the same time, the researchers also found that the smartphone contributed to family conflicts and reduced interaction frequencies and quality among family members. This happened when family

members felt that others were distracted by or otherwise spending too much time on their phone. This study underscores the complex interactions between smartphones and family life.

3 METHOD

Recognizing the complexity of the phone's role in family life, researchers are starting to examine the contextual factors on the part of both parents and children that affect family dynamics [27, 43]. The current study takes a similarly contextual approach to the topic of the smartphone's role in family life by exploring how parents and teens talk about their own and each other's smartphone use in relationship to family dynamics, particularly parent-teen relationships.

We conducted 7 focus groups with 32 parents of children between the ages of 10 and 18 years, and 6 focus groups with 29 tweens and teens between the ages of 10 and 18 years (Table 1). Focus groups allowed us to uncover multiple perspectives relating to parents' and teens' perceptions of their own and each other's phone use in the context of family life [38]. We concluded our focus group data collection after reaching saturation in the themes that emerged across groups [16]. We then conducted two nationally representative surveys, one with $n=1,049$ parents of 10 to 16 year-olds and one with $n=1,034$ 13 to 16 year-olds to determine whether the themes identified in the focus groups applied to US parents and teens more broadly. We purposely sampled focus group participants from the age when tweens (equivalent to early adolescence, which is generally recognized as starting at age 10 [63]) first get access to their own smartphones and parents have most (perceived and actual) control over their children's device use through to the age when teens feel autonomy and independence over their own device use. The age range of our teen survey sample was narrower due to limitations in the vendor's available panel.

Focus Groups

Participants. To encourage rich discussions among participants, we created the following screening criteria for the focus groups: Tweens and teens had to have their own smartphone, report that they sometimes use their smartphone when they should not, and be able to recount a family discussion around smartphones with their parent/s. We grouped tweens and teens by common age and gender. Participants did not know each other prior to the study.

Parents had to be parents of tweens and/or teens who have their own smartphone, have found their child to use their own smartphone at least sometimes when they should not, and be able to recount a discussion around smartphones with their child. We grouped parents by common age of their children. We asked participants with multiple children to focus on a single child when answering questions.

Table 1: Demographics of focus group participants. Parents with multiple children were asked to focus on a single child.

Gender	Youth Participants	(Children of) Parent Participants
Girls	15	20
Boys	14	12
Ages	Youth Participants	(Children of) Parent Participants
10-12	10	7
13-15	12	16
16-18	7	9

In an attempt to represent a diversity of experiences, our recruiting approach aimed for a mix of participants along SES and ethnicity. However, we recommend that specific demographic differences should be explored systematically in future work. All participants received financial compensation for their participation. The parent participants and the tween and teen participants were not recruited to be a matched pair, but in 8 cases, we spoke to both parents and their child in separate focus groups. Of the parents interviewed ($n=32$), 28 were mothers. All were the primary caregiver for their children, although 14 had shared custody arrangements with the child's other parent. Table 1 shows the demographic breakdown of focus group participants.

Procedure. Focus groups took place in Arlington, VA, in March 2018 and in Sacramento, CA, in August 2018. Each focus group lasted between 75 and 90 minutes and was video recorded and transcribed verbatim. The interviewer (second author) also took photographs of the whiteboard activity conducted in the youth focus groups (see description below).

We asked teens a variety of questions about their parents' smartphone-related rules, including their opinions of and adherence to them. We also asked them whether the rules applied to their parents, a topic that initiated a conversation about their parents' phone use more generally. Teens were asked to reflect on their own phone use, including the contexts, purpose, and perceived value of their smartphone use. They were also asked whether they thought they use their phone about the right amount, too much, or too little. The discussion then moved to phone use when parents and teens are together, and the interviewer asked teens to establish desired expectations for both their parents' phone use and their own phone use in the context of family life. These expectations were written as a group activity on a whiteboard, and guided subsequent discussion.

To set common ground with parents, the interviewer started by asking them about their opinions of their teen children's smartphone use, as well as their approaches to parenting—including rule-setting—around smartphones. Parents were also asked to reflect on their own smartphone use in the context of family life. As with the teens, they were asked

Table 2: Demographics of survey participants.

Teens:	
Gender	Male (50.6%), Female (49.4%)
Age	Age 13 (25.1%), Age 14 (25.4%), Age 15 (25.6%), Age 16(23.8%)
Race	White (49%), Hispanic (14.4%) Black (14.3%), Asian (5.4%), Native American (2%), Mixed (14.5%), Other (0.4%)
Parents:	
Gender	Male (15.4%), Female (84.6%)
Age	Mean (sd) = 40.5 (7.93) years; Range = 18-65
Race	White (51.8%), Hispanic (13.2%) Black (12.7%), Asian (3.5%), Native American (1.1%), Mixed (17%), Other (0.7%)
Income	<\$19,999 (9.1%), \$20,000 to \$34,999 (16.6%), \$35,000 to \$44,999 (11.3%), \$45,000 to \$54,999 (11.2%), \$55,000 to \$64,999 (10.1%), \$65,000 to \$74,999 (8.3%), \$75,000 to \$99,999 (14.9%), \$100,000 to \$149,999 (11.6%), >\$150,000 (6.9%)

to comment on whether they thought they use their phone about the right amount, too much, or too little. Towards the end of the session, parents were shown what teens had written on the whiteboards to encourage reflection on teens' perspectives relating to smartphones and family life.

Analysis. We used thematic analysis as our data analytic approach for analyzing the focus group transcripts [5]. The first author conducted open coding on a subset of 4 transcripts (2 parent, 2 teen) to identify emergent themes relating to our research questions [7, 21, 52]. The “start list” of codes [47] generated from open coding was shared with the second author, who had led the focus groups. The two authors discussed and refined the themes collaboratively [22, 60]. The second author then applied the final list of themes to all transcripts and accompanying whiteboard photographs, recording any new themes that emerged (including any that contradicted the original themes) and the absence of certain themes in a particular transcript. To ensure that themes were applied consistently and accurately, the two authors met regularly to discuss the coding process and ensure that they were in agreement with the code application. Any questions or disagreements were resolved through discussion [22, 60].

Surveys

Participants. An online research firm was enlisted to deploy the survey to a nationally representative sample of parents and teens. Table 2 summarizes the demographic characteristics of survey respondents.

Procedure. The survey was administered in August 2018 to an online panel of families and took approximately 15 minutes to complete. We developed survey questions based on our guiding research questions and themes emerging from an initial analysis of the focus group transcripts. Both the parent and teen versions of the survey included questions about personal phone use and the phone use of respondents' parents or children. Specifically, we asked respondents whether they thought they and their parents/children use their phone too much or about the right amount, as well as the impact on their family and on themselves of their own phone use and the phone use of their parents/children. We also asked questions about the nature of family time, including the phone's (positive and negative) role.

Analysis. The survey data were used to determine whether primary themes identified in the focus group analysis surfaced more broadly in a nationally representative sample of parents and teens. Parent participants who reported *not* having a child between the ages of 13 and 16 (inclusive) and teen participants who reported their age as younger than 13 or older than 16 were excluded from analysis. We first defined a set of *a priori* questions for quantitative analysis, drawn from the themes that emerged from focus group data. We used these to run both descriptive and inferential statistical procedures, although inferential tests should be seen as exploratory and suggestive, as they were not hypothesis-driven from the outset. Quantitative analysis was conducted using SPSS version 24.

4 RESULTS

Parents and Teens, Birds of a Feather

Both parents and teens expressed the feeling that they use their own phones too much; among survey respondents, 36.3% of teens (mean = 2.98, sd = 1.24) and 39.7% of parents (mean = 2.83, sd = 1.37) agreed with the statement “*In general, I use my smartphone too much.*” They also used remarkably similar language to describe their personal phone overuse. One parent commented: “*I’m on mine way too much. Like, I’m jonesing right now to check it*” (mother of 16-18 yr. old). A teen girl expressed a similar sentiment about wanting to check her phone during her focus group session:

“But I’ve just been looking at my phone, like I’m just looking at it, because people are Snapchatting me and I want to look at them so bad, but I’m here, and I’m trying to like not do it.” (teen girl, age 16-18)

These quotes convey participants' recognition of their desire to check and be on their phones continually as well as a belief that this desire is problematic, even cause for shame.

Another teen girl characterized her relationship to her phone succinctly: *“I have a problem. I really do.”*

Many participants explained their overuse by expressing a feeling that their phone use has become a habit.

“Sometimes it probably can be laziness, like you’re just like, oh, I don’t feel like doing anything, so you’re just on your phone, and then like you’re scrolling, and you see all these things. So it’s like, ooh, I’ll watch that, but then I’ll watch that, and then that, and then it’s like two hours, and you’re like, what have I done?” (girl, age 16-18)

“And then you get that endorphin rush from being able to look at your phone, and then it becomes habit-forming and you sit at home and you’re in front of everyone, or at dinner, and the first thing you go to is muscle memory and you’re on your phone.” (father of 10-12 yr. old)

The teen and the parent in these quotes reflect on how their phone use is out of their conscious control, almost like a default behavior.

In the context of family time, both parents and teens acknowledged that they are sometimes on their phones in the presence of family members. In these situations, both sides made clear a desire to legitimize their smartphone use, explaining that they need time for themselves to unwind from the day, or that they have work to do. With respect to the former, participants described the phone as a source of comfort and relaxation to unwind after a day of work or school. A mother of a tween girl explained: *“I mean, I’ve just been at work. Let me just—I just need ten minutes. Just give me ten minutes so I can do this.”* Similarly, one teen girl reflected:

“When I’m at school and I’m not on my phone all day, and I’ve had like a really long day, and I come home, and I’m like—I just like go on my phone because it’s relaxing and it’s easy.” (girl, age 16-18)

These quotes imply a degree of defensiveness as participants justified turning to their phone rather than their family members when at home.

Work was also depicted as a legitimate reason for being on one’s phone at home. Teens said they had schoolwork and other extracurricular commitments, while parents explained they have to keep on top of their work.

“We’re both self-employed so work kind of goes until about like eight sometimes, especially for my husband so a lot of our work is based from our clients contacting us through our phones or texting or something. ... {the kids} are like ‘Dad, what are you doing? No phones at the table!’ ... my husband’s like, ‘Well, if I put mine down, how

am I gonna get money on our table?’” (mother of 13-15 yr. old)

Both Feel Guilty, But for Different Reasons

Both parents and teens expressed guilt about using their phones too much around family members, but the source of their guilt differed. Parents worried that their phone use distracts them from paying attention to their children. *“I know that I have been guilty of my child trying to talk to me and I’m in the middle of something stupid on my phone”* (mother of 10-12 yr. old). Similarly, another parent commented: *“I feel guilty when they say, ‘Oh, Mom is on her phone again.’ Or, ‘Mom is not paying attention, she’s on her phone’”* (mother of 13-15 yr. old).

Several parents expressed guilt over setting a bad example for their children. For instance, one father of a tween girl reflected: *“I think they’re kind of a direct reflection of us in some sense.”* This feeling was reflected by a substantial minority of survey respondents, with 34.5% of parents either somewhat or strongly agreeing that they feel guilty about using their phone too much when they are around their child. For some parents, their guilt translated into a feeling that they have no right to limit their children’s phone use if they cannot even limit their own. One mother of a teen girl, age 16-18, reflected:

“...but the problem is I am addicted to my phone, too. So I get angry with her or frustrated, but I don’t really—I get frustrated internally. I don’t really say to her, ‘You’re on your phone too much.’ Because I’m on my phone all the time, too, so I feel like it’s a double edged sword there.”

Compounding their guilt, some parents appeared to harbor the feeling that they do not measure up to other parents. At the conclusion of one focus group, one mother of a tween girl confided: *“I thought I was a bad parent, for giving her a phone. But I guess we’re on the same boat.”* Survey results supported the suggestion that this was a common, but non-dominant, feeling, as 20% of parents reported that they feel others would judge them poorly if they knew how much time their teen spends using their phone.

Like their parents, teens expressed guilt for using their phone too much around their family members. In fact, teen survey respondents were more likely than parents to agree or strongly agree with the statement *“I feel guilty when I use my phone around my {parent/child}”* (teens: mean = 3.36, sd = 1.15; parents: mean = 2.69, sd = 1.37), and an independent samples *t*-test showed that this difference was significant ($t(2081) = 12.09, p < .001$).

When probed explicitly by the interviewer, teen focus group participants offered responses such as: *“My sister wants to hang out with me. And I’m just like, ‘No, I’m busy right now.’”*

And I don't consider the fact that I can always do this later, and family time's important" (girl, age 10-12). Similarly, another teen boy reflected: *"When I'm on my phone sometimes I think I could be using this time on my phone to be socializing with somebody physically or talking to my parents or making a strong connection with my brothers or sisters"* (boy, age 13-15). Although these teens sound much like the parent participants, such statements did not strike the focus group facilitator (second author) as being as genuine as the other comments they made during the focus group. Participants used different language and their comments sounded rehearsed. Moreover, teen participants offered statements such as these only when probed explicitly by the interviewer, suggesting they were more a reflection of social desirability bias than participants' true beliefs.

It is also possible that teens have internalized the strong messages received from their parents about the negative impact of their smartphone use. Such messages were expressed repeatedly by parents in the focus groups. For instance, one father of a tween girl narrated the message that he has communicated to his daughter:

"You can choose to interact with everyone, put that down and have a conversation, ask someone how their day was and learn how to be socially acceptable and be part of a conversation in a crowd, or we can give up the phone for the rest of the day and you can do it anyway."

In more candid moments, several teens observed critically that their parents treat their phone as a scapegoat, blaming it for all manner of negative behaviors and situations, from failing to do chores to not spending enough time together as a family.

"My mom says I'm on the phone too much. But like, if my room is messy she's just like, 'See, that's because you're always on your phone.' ... And she always like, draws it back to my phone. ... Like, if the dishes aren't washed it's my phone. If I don't go to sleep it's my phone. It's just...everything's my phone. ... Like, if – one time I got sick, she was like, 'because you're on that phone all the time.'" (girl, age 13-15)

The "Forehead Effect"

Both parents and teens expressed similar beliefs about the other being on their phone too much, and the other's phone time taking away from family time. Teens think that it is their parents' use of their phones—not their own—that contributes to a lack of family time. Similarly, despite their expressed guilt over their own phone use, parents nevertheless pointed to their teens' phone use as being the primary source of family disruption. Sometimes, participants used remarkably

similar language to describe each other's behavior. *"I always joke with them too. I'm like 'Hi, you're so beautiful! I always see your forehead. That's all I see because it's like this'" (mother of 13-15 yr. old), and "My mom – she'll literally just take her phone and sit like this, {imitates phone in front of her face} ... 'Hey, Mom. Nice to see your head'" (girl, age 10-12).*

These findings were corroborated by survey results. We ran a repeated measures ANOVA of participants' agreement with the statements, *"I use my smartphone too much"* and *"My {parent/child} uses their smartphone too much,"* comparing perceptions of self to perceptions of their counterpart with age group (either "teen" or "parent") as a between-subjects factor. This revealed a significant main effect of self vs. other, with participants from both groups finding their counterpart's phone use more problematic than their own ($F(1, 2081) = 95.31, p < .001, \eta^2 = .044$). This analysis also revealed a significant main effect of age group, with parents finding everyone's phone use more problematic, though this effect size was small ($F(1) = 41.74, p < .001, \eta^2 = .020$). There was also a significant interaction effect between age group and self vs. other, such that the gap in perception was larger for teens than for parents ($F(1, 2081) = 95.312, p < .001, \eta^2 = .044$).

For the most part, teens and parents reacted with similar emotions, expressing hurt about each other's focus of attention being on their phones instead of each other.

"My daughter? She will not hear you. You literally have to repeat yourself at least three times just to say, 'Hey, I've been standing right here saying the same thing to you...your phone is more important than what I have to say right now.'" (mother of 13-15 yr. old)

Like parents, teens expressed a sense of being in competition with the phone for their parents' attention. Younger teens in particular often mentioned feeling unimportant to their parents and expressed feelings of hurt. *"I'll be telling my mom something that I'm really excited about. And then she'll just kinda be like, on her phone"* (girl, age 13-15). We used a Pearson correlation to examine the relationship between age groups (13-, 14-, 15-, or 16-years-old) and the frequency with which teens felt unloved or unappreciated because of a parent's phone use. These factors were highly correlated ($r = .13, p < .001$), with younger teens reporting they are more likely to experience this feeling daily, and older teens more likely to say this sentiment is not relevant for them.

Hypocrites vs. Aliens

Despite these similarities, teens and parents differed in other attitudes they shared about the other's phone use. For instance, teens expressed annoyance at what they perceived as their parents' phone-related hypocrisy.

“They’re telling me to be responsible with your phone and then like when we’re driving they’ve got to like check on Match.com or texting with it. I’m just checking the time...They get carried away, you know, and they do the same exact stuff as like we do. And they can’t hear us and we’re like talking. It does cause problems, whatever.” (teen boy, age 13-15)

This teen boy expresses frustration over what he perceives as his parents’ double standard relating to smartphone use. He proceeds to reflect on how that double standard—specifically, his parents’ distracted phone use—impacts him personally when he is trying to talk to them.

Parents, on the other hand, described their children’s phone use as something that was alien to them, despite the fact that they admitted to overusing their own phones. *“It’s like her right hand is impaired. She can’t use this—yes. This hand is not for any other use than holding the phone”* (mother of 16-18 yr. old). By depicting her daughter’s phone use as a type of impairment, this parent is expressing disapproval as well as characterizing her daughter as a being that she does not fully understand. At the same time as they distanced themselves from their children, some parents expressed self-consciousness and defensiveness of their position as the less technically savvy family member.

“He texts me and I’m in the house. So it’s just kind of – it’s weird to me. I’m not – like what are you doing? And to him it’s like, ‘What do you mean? What are you doing?’ It’s, ‘You’re old school. I’m old. I don’t know anything.” (mother of 13-15 yr. old)

Reinforcing the difference between themselves and their children, parents conveyed a strong sense of nostalgia for their own, pre-networked childhoods. *“It’s not like a normal phone like when we were kids. I don’t think they understand what talking actually is”* (mother of 13-15 yr. old). Similarly, a father described his teen daughter’s behavior at a school dance as both unfamiliar and problematic:

“She had a school dance a month ago or so. They had a glow dance after school from like 5:00 to 7:00 or something like that. We spent a lotta time breaking open glow sticks and creating awesome shirts and stuff. And then when she got done I was like, ‘How was your dance?’ And she’s like, ‘Well’ – and the only thing she could express about her time at the dance was how they’d take pictures, and then they would all take turns using different filters and apps to create different images of the – it’s like, ‘You didn’t dance or talk?’ It seems like they just played on their phone. They took a picture of themselves having fun and then they spent

15, 20 minutes creating different images of that one moment in time. They had fun, but that was their dance instead of – I remember school dances a lot differently.”

Like so many of the parents in our study, this father does not fully understand his daughter’s behavior. He draws on his experiences of dances from his own adolescence to make sense of what he observes. Recognizing notable differences, he concludes that her experience is somehow lacking. As this example illustrates, much of parents’ nostalgia is tied to a feeling that their children’s communication skills are deteriorating as a result of their smartphone use.

Phone Time Is/Is Not Family Time

Parents tended to make a sharp distinction between family time and time spent on the phone. Similar to their understanding of what childhood ‘should’ look like, they also expressed a strong opinion of what family time ‘should’ look like – without phones.

“I love talking to my kids. We don’t do that. Like we used to do that with our parents. That was our time at the dinner table and you’d have to have chores and everything done before you could do it but we didn’t have phones back then.” (mother of 13-15 yr. old)

Parents described various attempts to create their ideal of family time by instituting phone-free family time and limiting their children’s access to their phone. Some of these attempts were quite creative, such as one mother who explained that she is participating in an energy savings program that requires the power to her house be shut down everyday at a certain time.

Survey results supported this theme, with half of parents agreeing either with: (1) the statement that they would spend more time with their teen if the teen used their phone less, (2) the statement that they would spend more time with their teen if they themselves used their phone less, or (3) both. Parents were slightly more likely to blame their teen’s phone use (mean = 2.8, sd = 1.3) than their own (mean = 2.7, sd = 1.4), and a paired samples *t*-test revealed that this difference was significant ($t(1048) = -2.087, p = .037$). Further, only 27% of parents agreed with the statement that, overall, smartphones have had a positive effect on family time.

Parents expressed hurt when they put effort into creating family time and their children were seemingly not participating because of their phones.

“I’ll notice I’ll rent something on Redbox and I’ll be like, oh it’s a family movie or something that I know they kind of want to watch. And I’ll make popcorn and you know, put snacks out. And we’ll literally go, dim the lights in the living room and

then I see a glare coming from over here. A glare from over there. I'm like, 'What is going on?' Like, 'Oh I got an alert. Oh, somebody's making a funny video.' I'm like, 'Are you not going to watch? I'm not going to put it on pause because you're watching some silly live stream of you know, whatever.'
(mother of 16-18 yr. old)

Teens, conversely, saw family time and phone time as being compatible. When asked whether it was easier or harder to talk to family members when there are phones involved, teens debated the merit of the question. For them, there is no either or. *"But sometimes like, when we're talking it's like, you have to show them stuff from our phones"* (girl, age 13-15). Teens also had no trouble recalling times when technology brought family together.

"We have this thing on my phone, [where it] shows up on the TV screens. So like, it connects to like – sometimes like, I'll go through my phone and like, we're all looking at it together 'cause we can all see like, my phone on the TV. So like, that's fun."
(girl, age 13-15).

Again, survey results supported these sentiments. An independent samples *t*-test showed that teens were significantly more likely than parents to agree with the statement that phones have, overall, had a positive impact on family life (teens: mean = 3.17, sd = 0.93; parents: mean = 2.95, sd = 1.02, $t(2081) = 5.17, p < .001$). Similarly, teens were significantly more likely than parents to express interest in trying apps that they could use together as a family (teens: mean = 3.29, sd = 1.21; parents: mean = 2.72, sd = 1.22, $t(1034) = -10.53, p < .001$), and they were significantly more likely than parents to say that apps can make great conversation starters for their family (teens: mean = 3.44, sd = 1.03; parents: mean = 2.66, sd = 1.07, $t(1034) = -16.91, p < .001$).

Despite their overarching and strong feeling that family time should not involve smartphones, several parents did recall instances when the phone contributed to bonding with their children. A mother of a tween girl recalled the phone's positive role in a pleasant home improvement experience with her daughter:

"We painted our bedframe and our nightstand too. And she taught me how to do it because she learned it from the DIY videos. So it was really cool. So just getting all those – I guess, yeah, just getting all those ideas that she's grabbing from the phone, especially Pinterest, and bringing it, you know, sharing it with me. Like she'll go, 'Oh, mom, you have to sand this. This is what you have to do.'"

Other parents described the games their families play with smartphones:

"All generations, me, my sister, and my dad and his wife, we could all enjoy and spend time together. Still on our phones, so we still get that fix but it was more of an app together that we could play, that we could bond over. And then I think we did another one about like, tell us about yourself and we just went around the table. We played the app but it was also still interacting with each other. So, it was still kind of like a bonding thing." (mother of 16-18 yr. old)

This was corroborated by survey results; 50% of parents disagreed with the statement they would be interested in trying out new apps that they could use together as a family, and 25% were unsure if they would be interested. Yet, the remaining 25% of parents expressed interest, suggesting that a non-trivial minority of parents hold this view.

5 DISCUSSION

By examining their perspectives alongside each other, we uncovered remarkable similarities—and notable differences—in the way parents and teens described their own and each other's phone use in the context of family life. We represent the dominant themes from our analysis in a conceptual model depicting how parents' and teens' perspectives relate to each other, where they align and where they diverge, and how, together, these perspectives account for phone-related tensions between parents and teens (Figure 1). In this discussion, we draw on our empirical results to describe the model and the insights it offers into the dynamics that arise between parents and teen children as they try to manage their own phone use and contend with each other's phone use. We also use the model to identify design opportunities that address the full complexity of phone-related family tensions (not just one aspect, such as feelings of phone overuse, or parental guilt).

Parents and teens described themselves as using their phone too much, turning to it unconsciously out of habit, and feeling overly reliant on their phone. These findings are represented in the upper middle portion of Figure 1 and parallel recent research showing that parents and teens use the language of addiction to describe how they relate to their smartphones [34]. Like Lanette et al., we find this language conveys a sense of powerlessness and lack of agency in one's smartphone use, which may be reinforced by the guilt that both parents and teens expressed [34]. However, the source of their guilt differed, with parents expressing guilt about how their phone overuse impacts their children (top, left hand portion of Figure 1), compromising their ability to pay attention to them, serve as a positive role model, and set and enforce phone-related rules. In short, parents are struggling to parent around phone use at the same time as they struggle

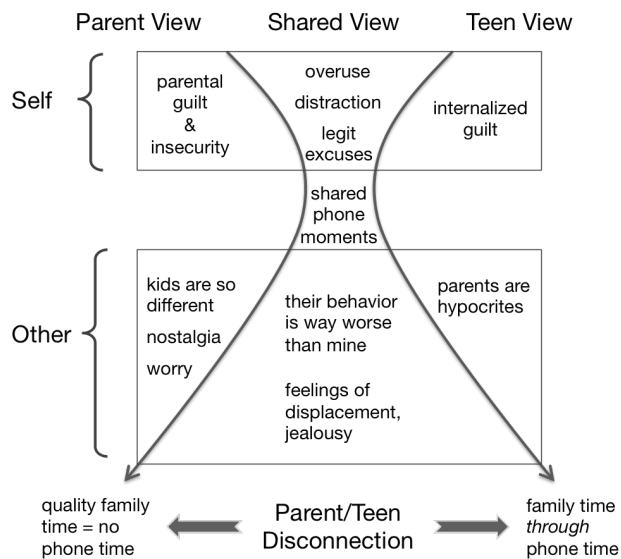


Figure 1: Model depicting the relationship between parents' and teens' perceptions of their own and each other's phone use and the resulting impact on parent-teen relationships.

to regulate their own phone use. In contrast, the guilt that teens expressed seemed more rehearsed, possibly reflecting an internalization of the strong messages received from their parents and society at large (top, right hand portion of Figure 1) [34].

Parents' and teens' lack of agency extended to their reactions to each other's smartphone use. Both parents and teens expressed a sense of competitiveness with the other's phone use, and described ways that the other's behavior interrupted their attempts at interpersonal connection. Demonstrating a classic example of the fundamental attribution error [15], each recognized and bemoaned the "forehead effect" in the other, while defending their own phone use with legitimizing excuses such as the need to finish work or grab a moment of needed relaxation. This phenomenon was also reflected in the survey data. Participants' emphasis on the other's behavior rather than their own is represented in Figure 1 by the different sized rectangles, the smaller representing the self and the larger representing the other. This blindspot holds negative implications for parent-teen relationships. By placing the bulk of the blame on the other, neither party recognizes or takes responsibility for their own actions and how they influence family life.

Moreover, the tendency to lay all blame on the other's phone use risks placing an outsized emphasis on the phone's role in family life. Participants—particularly parents—did not appear to recognize that the phone is actually part of a larger

renegotiation of parent-child relationships during adolescence, one in which teens seek to establish a degree of independence from their parents [9, 17, 74]. The pace at which this independence is established may not always feel comfortable, either to parents or to teens. To be sure, the phone adds considerable complexity to the process, particularly when parents do not understand their teen children's phone use or the social value that it holds for them. The phone is simply a new mechanism for satisfying teens' longstanding desire to spend more time with their peers than their parents. The way today's teens create sociality with each other may look different than it did twenty years ago (bottom left hand portion of Figure 1), but it nevertheless serves the same purpose: to establish independence from one's parents and connection to one's peers [10, 11]. Parents who fail to understand this and who judge their children negatively risk failing to understand and connect with a core part of their teen children's experiences. This connection is crucial as teens continue to rely on their parents for emotional support and instrumental guidance [74]. The lack of connection between parents and teens is represented in our model by the divergent arrows at the bottom of Figure 1.

As parents and teens made sense of their own and each other's phone use, they each expressed different ideas about the phone's proper role in family time, which were reinforced by our survey analysis. In short, teens expressed greater openness to incorporating phones into family time than parents. On the one hand, parents' views are understandable. Consistent with prior work on "technofence" [44, 45, 65], both parties pointed to times when their attempts to connect with each other were thwarted by the other's distracted phone use (bottom, middle portion of Figure 1). At the same time, even parents described specific instances when the phone contributed to positive shared experiences with their teen children (converging lines in middle of Figure 1). Consistent with prior work [3, 29, 43], our findings suggest that the phone can contribute both to moments of disconnection or connection between parents and their teen children depending on how the phone is used and perceived by each party. Disconnection arises when it interferes with one member's attempts at connection; connection arises when both parties use the phone together to share an experience.

Like Blackwell et al. [3], our results suggest a need to rethink family togetherness, and perhaps even establish new expectations of what family togetherness looks like in a digital age. Although the parents in the current study expressed an explicit belief that family time and phone time generally do not mix, many of them also described instances of shared experiences with the phone, suggesting a certain degree of openness to incorporating the phone into family time. The challenge is for parents and teens to come to a shared understanding of the phone's role in family life. This shared

understanding may look different for different families, as Mazmanian and Lanette found considerable variety in the way families approached technology rules and expectations [43]. To discover what works best for their particular family, parents and teens need to develop insight into their own behavior and how it affects others, as well as an attempt to understand the motivations and needs behind their family members' behavior. Our analysis suggests that parents and teens may find they have more in common than they might imagine.

6 IMPLICATIONS

In helping us to understand where phone-related tensions and disconnections occur, our conceptual model points to design opportunities to support parents and teens around their own smartphone use and help them to integrate it into family life in such a way that promotes positive parent-teen relationships. Some of these opportunities have been explored in prior work and have even been introduced commercially. By presenting them together and connecting them to specific points in the model, we contribute new insight into how these design opportunities can—indeed, *should*—work together in an integrated way to support parent-teen relationships.

We perceive opportunities for designers to help remedy the fundamental attribution error and promote user agency. The disproportionate emphasis that parents and teens place on the other's problematic phone use can be diminished in part by drawing attention to their own phone behaviors. Commercial apps such as *Checky* and *RescueTime* show users how often they check their phone and how much time they spend on various apps. Prior work has explored how such apps can empower users to change their own behavior by making their behaviors more salient to them and allowing them to set personal goals for desired phone use [23, 30, 31, 50].

To address the other-focused dimension of the fundamental attribution error, we propose creating an “externalizing interface” to show parents and teens that what the other is doing is not due to a lack of interest in them. Such an interface could help parents and teens appreciate the external, situational demands on each other, such as a request from a friend or colleague, and thereby decrease their tendency to attribute the other's behavior to an innate personal quality. To succeed, the interface would need to provide users with insight into the other person's motivations and the value they derive from their phone-related activities.

In addition to changing perceptions of their own and each other's phone use, our model points to the value of supporting shared experiences between parents and teens that involve the smartphone directly. Prior work has explored ways to use smartphones to bring families together by blending

the digital and the physical [14]. We see promise in designing into apps opportunities for users to share with someone in person, in contrast to most commercial apps, which emphasize online-only sharing. For instance, Yuill et al. designed a collaborative drawing game to support creative, co-located groupwork in families using a single device shared among family members [76]. And, game developers such as CowlyOwl are developing games that allow multiple players to play together using a single device. Even when users are on their individual devices, apps can be designed in such a way that physically proximate users are able to engage through their devices in a shared experience [51]. For example, the app *HQ* is a trivia game that users often play together in each other's presence. We see great potential for future research to build on these examples and explore the design of app experiences for the explicit purpose of engaging parents and teens in meaningful shared activities.

Lastly, the phone-related tensions expressed by participants and represented throughout the conceptual model suggest that there is value in carving out time when family members agree to put their phones away and engage with each other in person, without distraction [17].

7 LIMITATIONS AND FUTURE DIRECTIONS

In the findings, we reported that teens' statements about their phone-related guilt appeared to the focus group facilitator (second author) as being less genuine than other comments they made during the focus groups. Although the facilitator did not draw a parallel inference about the parent participants, we want to acknowledge the real possibility that parents may have also made less than genuine statements due to the social desirability pressures associated with focus groups. As a result, it is possible that they, too, may have exaggerated their feelings of phone-related guilt.

Although we made a concerted effort to achieve a demographically diverse sample, the focus groups were nevertheless concentrated in two geographic locations on either coast of the United States. Moreover, the parent sample was overwhelmingly female; it is possible that fathers have somewhat different feelings about the phone's role in family life. The supporting evidence provided by the nationally representative surveys gives us confidence that the themes we uncovered are broadly applicable to parents and teens living in the United States. However, as noted earlier, the inferential tests should be seen as exploratory and suggestive, as they were not hypothesis-driven from the outset. Future work should examine whether the same patterns emerge from hypothesis-driven investigations.

Aside from stage of adolescence, we did not explore demographic differences in either our focus group or survey samples. Future work should investigate whether nuances

in our model can be discerned in families with different demographic characteristics, such as income level and race/ethnicity. Future work should also explore the impact of differences in families' attitudes towards technology. Pro-technology families are likely to incorporate digital technologies differently than more technology-resistant families.

8 CONCLUSION

During a developmental period when tensions typically arise from the renegotiation of parent-child relationships, smartphones introduce a new layer of complexity and serve as a lightning rod for both parents and teens as they reflect on their time together. Results from the current mixed method investigation showed notable similarities in the way parents and teens spoke about their own phone overuse, as well as feelings of jealousy and displacement when describing each other's phone use. We presented a conceptual model depicting how their perspectives interrelate, and how they give rise to tensions and disconnections in parent-teen relationships. We drew on the model to highlight opportunities for designers to promote parents' and teens' agency in their smartphone use and support positive family interactions involving smartphones.

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