

# Mediated Parent-Child Contact in Work-Separated Families

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## ABSTRACT

Parents and children in families living with regular separation due to work develop strategies to manage being apart. We interviewed 14 pairs of parents and children (ages 7 – 13) from work-separated families to understand their experiences and the strategies that they use to keep their family together. Parents focus on combining scheduled synchronous and spontaneous asynchronous communication to maintain a constant presence in the life of the child. Children, on the other hand, focus on other sources of support, on other activities, and on the eventual reunion. Both the remote parent and the child rely heavily on a collocated adult to maintain awareness and contact. We compare work-separated families with other types of separation and highlight opportunities for new designs.

## Author Keywords

Parents, children, computer-mediated communication

## ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User Interfaces. *User-centered design*.

## General Terms

Human Factors

## 1. INTRODUCTION

Families are increasingly living with the challenge of regular separation due to work. Taking the United States as an example, 3.6 million Americans live in a different city from their partner due to work, a 53% rise since 2003 [3]. Additionally, many families with young children are affected by long-term separation due to military deployment [8]. Increasingly, work-separated families look to communication technology to support continued contact during the separation [3] and there has been a great deal of interest in the HCI community in designing for family communication

[5,9,16,19,22,23]. However, there has been relatively little work exploring the current parenting practices of work-separated families, especially taking into account the perspectives of both the parent and the child. We conducted a qualitative investigation of the experiences of work-separated families with 14 pairs of parents and children. Two research questions drove our work:

- How do parents and children respond to work separation?
- What are the strategies used by these families to stay in touch and what are the limitations of these strategies?

Aside from addressing these questions, there are two other goals in this work. First, we want to expand our current understanding of the experiences of separated families, particularly in contrasting work-separated families with other types of separation. Second, by highlighting the limitations of current strategies, we hope to point out opportunities for new designs that are grounded in existing practices.

We begin by reviewing the previous studies of parent-child separation, communication technology in the home, and designs for supporting parent-child contact. Next, we describe our interview methods and participants. Then, we present the results of our study with regard to our two research questions. Finally, we discuss the results of this work in the context of previous work in this field and point to opportunities for both research and design.

## 2. RELATED WORK

Parent-child separation has been investigated both in HCI and in other domains. However, HCI researchers have particularly focused on collocated parent-child closeness, how specific existing technologies are used for communication in the home, and on how to design new communication technologies for separated parents and children.

### 2.1. Parent-Child Separation

Studies of parent-child separation have often focused on the effects of military deployment. Kelley et al. have shown that children in deployed families are more likely to exhibit clinical psychological problems [12]. Another study of separation has also showed it to be a cause of short-term distress for both the parent and the child [20]. However, this previous work points out that temporary separation from either parent does not lead to permanent negative consequences for children. In supporting work-separated families, we are focusing on addressing the in-the-moment dis-

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stress that separation causes for families. These previous studies were conducted to investigate correlations between separation and children's outcomes. In contrast, in our study we are interested in examining the qualitative experience of separation for parents and children and the specific strategies that these families use to manage separation. Dalsgaard et al. looked at the characteristics of parent-child closeness and how intimacy is built in families [4]. While this paper looked at in-person contact, our work is focused on understanding closeness during physical separation.

There have been three relevant qualitative investigations of technology's role in parent-child separation. Yarosh et al. [24] and Odom et al. [18] investigated the needs of parents and children in divorced families. We want to apply a similar methodology to examine how the needs of divorced and work-separated families may differ. Modlitba [16] interviewed business travelers who have toddlers and found a significant need to support communication during separation. One of our goals is expanding this understanding of work-separated families by including the perspectives of not only the parents, but also the children involved in the separation. To be able to speak to the children about their experience, we are focusing on an older age range (7 – 13).

## 2.2. Studying Communication Technology in the Home

Several studies examine how established communication technologies are used by families to maintain connectedness. Ballagas et al. showed that the telephone is not an effective technology for communicating with children, as children face cognitive, social, and motivational challenges to audio-only communication [2]. Several studies of videoconferencing pointed to the great potential that this technology has for keeping families connected, because it enables show-and-tell and sharing daily activities [1,11]. Studies of text messaging (SMS) and instant messaging (IM) have shown both to be particularly important communication technologies for older children [10]. We focus on the entire ecology of communication tools used by the family rather than any specific technology. We want to identify the specific strategies that work-separated families have developed around communication technologies, but also point out the limitations of those strategies in the hope of identifying opportunities for new designs.

## 2.3. Designing for Parent-Child Separation

A number of novel systems focus on connecting adults and children remotely. Collage [22] and eKiss [5] are two systems that support children and parents posting photos from a mobile device to an in-home display or blog. Virtual Box [6] and Globetoddler [16] focus on supporting children and parents in playing asynchronously while apart. ShareTable [23], Family Story Play [19], and Video Play [9] focus on expanding the interaction afforded by video chat by providing opportunities for synchronous play and reading together. Sesame Workshop has recently shown interest in supporting remote families with the release of Family Con-

tions<sup>1</sup>, a private social networking site for families. Globetoddler [16] and Family Connections were the only two of these systems explicitly targeted at work-separated families, but all of these projects could be potentially applied to this domain. We return to these projects in the discussion section to highlight how such technologies relate to existing practices of work-separated families.

## 3. METHODS

We conducted in-depth semi-structured interviews with parents and children from work-separated families.

### 3.1. Participants

We interviewed parent-child pairs from 14 different families separated by work, speaking to the traveling parent and one of their children (selected by the parent) between the ages of 7 and 13. We wanted the children to be old enough to be able to reflect on their experience, yet young enough to be considered a child rather than a teenager. We looked for families that spend on average at least five nights per month apart or had recently (less than six months ago) returned from a separation that was longer than two months. Recruiting was done through word-of-mouth, ads on craigslist.org, and through local military support organizations. Table 1 contains detailed descriptions of our participants. Throughout this paper, we attribute quotes to specific individuals by using the family number followed by 'P' for parent or 'C' for child. We continued recruiting families until we felt that we had approached a point of data saturation. A *post-hoc* detailed analysis of the interviews revealed that all of the major themes pertaining to our research questions were represented in the first seven interviews, thus there is some support for the claim that we did indeed reach data saturation for our purpose.

### 3.2. Procedure

We conducted hour-long semi-structured interviews with each participant. All of the interviews were conducted in-person in a location familiar to the participant (typically, their home) with the exception of interview 13P, which was conducted over videoconferencing. Parents and children were interviewed separately, though in eight out of the 14 families the parent remained in the vicinity of the interview and was able to hear the child's responses, which may have potentially affected the child's answers. The questions focused on the participants' general experiences with the separation, how they manage contact during separation, and how they use technology to stay in touch. We also asked each participant to talk about whether he or she was generally happy with the amount of contact they had with their partner. Lastly, we asked a series of more specific questions about their experiences with the two most common technologies they use. We found that participants had no trouble reflecting upon their long-distance communication routines

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<sup>1</sup> <http://www.sesamestreetfamilyconnections.org>

#	Interviewed Parent (Traveling)	Children [Interviewee]	Collocated Adult	Periodic Separation	Long-term Separation	Most Used Technologies
1	37F - Recruiter	6M, [7M], 13M	Father	3 days/week	-	phone + video chat
2	43F - Personal Assistant	3M, [13F]	Adult Cousin	2-4 days/week	-	phone + SMS
3	36F - Army Pilot	[9F]	Father	-	1 year	phone + email
4	39M - Army	[10M], 17M	Mother	-	1-2 years	phone + email
5	39M - National Guard	[8F], 10M	Mother	1 week/month	1 year	phone + SMS
6	48F - Research Scientist	[12F], 15F, 16M	Brother	6-8 weeks/year	-	phone + video chat
7	48M - Professor	7F, 10M, [12M]	Mother	3 weeks/year	5 months	phone + video chat
8	44M - Marketer	[11M], 14M	Mother	10 days/month	-	phone + SMS
9	42M - Manager	6F, 6M, [8F], 10M	Mother	1-2 weeks/month	-	phone
10	51M - Manager	[10F]	Grandmother	10-20 days/month	-	phone + video chat
11	46F - Manager	[11F], 13M, 14M	Father	1-4 days/week	-	phone + SMS
12	42M - Military Tech	5F, 6M, [9F]	Mother	1 week/month	1 year	IM + video chat
13	47M - Student	12F, [13M], 15M, 17M	Mother	-	2 years	phone + SMS
14	40M - Instructor	[11F]	Mother	-	1 year	phone + IM

**Table 1. Work-separated families participating in the study, including the ages and genders of participants. We specify whether the family experienced periodic separation, long-term separation, or both.**

and practices explicitly, because many of these involved problem solving and complex coordination by the families. Nonetheless, we acknowledge that an inherent limitation of the interview method is that it may not get at some of the more tacit communication routines in the home.

### 3.3. Analysis

All interviews were audio-recorded and transcribed by the lead author. The interview transcripts were analyzed by creating thematic connections using a data-driven approach [21]. Statements of interest were extracted from each interview and grouped together by theme. With each pass through the interview data, these were refined until a set of distinct themes emerged. The analysis was conducted by the lead author. To demonstrate that an independent rater would code the data in a similar fashion, we computed an inter-rater reliability metric. The lead author and an independent coder coded three randomly-selected segmented interviews for these themes. The Cohen's Kappa value of agreement between the two coders was 0.85 (for 76 statements), which is classified as outstanding agreement [13]. Any disagreements on codes were discussed until consensus was reached. The lead author then proceeded to code the rest of the interviews using the agreed-upon scheme.

## 4. RESULTS

Our results focus on two research questions. How do parents and children respond to being separated by work? What strategies do these families use to manage separation and when do these strategies fail?

### 4.1. Responding to Separation

Parents and children respond to the separation in different ways. For the parents, the focus is maintaining an active role in the child's life, while children try to spend time with collocated adults and focus on the eventual reunion.

#### 4.1.1. Parents Seek Active Contact Remotely

Nine out of the 14 parents made comments about wanting to remain an important, active part of the child's life while away.

*"I guess just try and let your kids know that you're still there; you're still a part of their lives; that you haven't really gone; not to worry about you."* (4P)

*"Just 'cause they know that you're there and you still care and that you're part of their life. 'Cause they get busy too and they'll – out of sight, out of mind."* (8P)

Parents maintain contact by initiating either synchronous or asynchronous communication (we discuss this in more detail in 4.2.1 and 4.2.2). They describe their most meaningful conversations while apart as having to do with learning about the child's day and finding opportunities to provide support:

*"She was complaining about something her teacher had done. And I called to say that I hope her day gets better."* (6P)

Additionally, parents spent much of their time away thinking and talking to others about their children:

*"I talked about her a lot. I would talk to other people about her. It just made me think of her more."* (3P)

*"I got into the habit of quite liking thinking about what to buy them ... I suppose it's a way of thinking about them when I'm away."* (9P)

Nine other parents also mentioned acquiring physical and digital artifacts during their travels to share with the child. It seems that while away, parents dedicate a lot of thought and energy to the separation.

However, it is also important to acknowledge the experiences of the other five parents, who did not emphasize the importance of contact while apart. For all five of these families, separation lasted no more than a week. These parents mentioned relying on the collocated adult to take care of all childcare matters while they were away, but spending more time with the children upon their return. Interestingly, this strategy seems to be more in line with the way children manage separation, as we discuss next.

#### 4.1.2. Children Focus on In-Person Interaction

Unlike the parents, children think of separation in terms of the eventual in-person reunion, rather than focusing on

maintaining instrumental contact while apart. The most meaningful conversations for children were ones that focused on the reunion:

*"What we were going to do when he got home, planning different restaurants that he hadn't been able to go to, what games he hadn't been able to play with us, stuff that he hadn't been able to do that was one of the first things we wanted to do when he got home, looking forward to getting home." (12C)*

Ten out of 14 children mentioned being comforted by "counting down the days" (3C) as the most important topic of conversation with the remote parent while they were away.

Physical objects representing the remote parent seemed to be a big component of how children handle moments when they miss their parent.

*"He gave me a medallion with a picture of us before he left, so I can know that he's right next to me ... I wore it all the time." (4C)*

*"We had daddy dolls. One that was a pillow that was actually a human shape that had a full body picture of him. And so I would sleep with those at night or whatever when I missed him." (12C)*

As an interview strategy, we asked the interviewees how they would advise other children in handling separation from their parents. Rather than dealing with the separation by advising actively seeking a connection to the remote parent, children advised focusing on the eventual reunion, spending time with other family members, or finding other distractions:

*"I'd probably tell them that they're not going to work there indefinitely because that helped a lot." (3C)*

*"You should spend time with your mom when your dad's away and spend time with your dad when you mom is away." (9C)*

*"Maybe try to like think about other stuff. Like try not to think about that. Sometimes like watching TV gets my mind off of it." (8C)*

Perhaps because children's way of managing separation is not focused on direct contact, children were more likely than adults to be satisfied with the amount of contact during travel. Nine out of 14 children were satisfied with the current contact, compared to only four out of 14 adults. Three of the children in our study expressed some level of displeasure about being obligated to maintain contact with their parent while they travel, because it takes them away from other activities.

*"Evenings is my free time and I'm usually busy with my own things. I don't really like to spend time to chit-chat. It's just not who I am." (7C)*

Several parents confirmed that often children are not motivated to take the time to speak to them.

*"I'm calling from Iraq and he's like, 'Dad, my friend is here. I need to go play.'" (4P)*

Again, it is important to acknowledge the experience of the four out of the 14 children, all over the age of 10, who did manage separation by actively maintaining contact. Three of these children had been living with regular separation due to work for more than two years. We saw evidence that willingness to actively communicate is related to the personality of the child, his or her age, and the opportunity to practice communicating while apart.

## 4.2. Strategies for Managing Separation

Through our interviews we identified five specific strategies used by parents and children to manage separation due to work. For each of these strategies we will discuss the reasons for employing this strategy, the number of families in our study that have attempted this strategy and the number that use it regularly, and the limitations of this strategy that may be addressed with new technology.

### 4.2.1. Scheduled Synchronous Contact with the Home

It is not surprising that all of the families in our study maintained contact through synchronous technologies like the phone and video chat. Our contribution is identifying two specific characteristics of this synchronous contact that were shared by many families: the contact was scheduled and it consisted of the remote parent contacting multiple members of the household in a single call. For most of the families we spoke to, typical synchronous communication consisted of the remote parent contacting multiple members of the household during a pre-established window of time by either calling the house phone or contacting the collocated adult first.

*"I'll call home every night and then it just kind of depends on who's here." (9P)*

*"I'll call and see whoever answers, and they'll say, 'Oh, do you want to talk to so and so,' and I'll talk to each one for a little bit. But if somebody can't talk, that's okay." (6P)*

Only two families reported that their typical synchronous contact that did not exhibit these characteristics—family 13 only made sporadic unscheduled contact and family 8 contacted each household member individually rather than calling the house.

There are three advantages of this strategy. First, it allows the remote parent to schedule the interaction at a time that doesn't interrupt their work.

*"A lot of times I feel like I'm interrupted, you know. Like I'm in the middle of something and the phone rings and I'm like, 'Oh geez, I've got to answer.' I'm much more of 'Okay, we're going to talk at this time. Set it up.'" (7P)*

Second, it limits interruption of individual activities of those at home, because only those who are available to talk participate.

*"They also have lots of activities, so it's too hard to try to figure out when they might be available. I just call at a certain time and whoever can talk talks." (6P)*

Lastly, it allows multiple members in the household to participate in the conversation at the same time, which leads to a sort of synergy and generally a more fun experience:

*"Whenever someone else is talking, like my sister or my brother, we all just have fun, like sometimes I put rabbit ears in front of the other person to make my mom laugh and stuff." (6C)*

*"We'll say something like an inside joke, and she'll laugh. And my brother, he'll say something weird. We don't know what he be saying, but we just laugh." (2C)*

However, there are also three limitations that this strategy creates. First of all, because the interaction is driven by the parent, the child sometimes does not feel empowered to initiate contact:

*"She usually calls us because we don't know what kind of meeting she's in right then or something." (6C)*

Second, it put the remote parent into the difficult position of coming up with regular topics for conversation:

*"They don't like me to call every day because I ask the same questions ... I'm forcing myself to be a part of their life when they don't really have anything new to talk about." (4P)*

Lastly, four of the 14 households no longer had a communication device shared by the household (e.g., house phone) so the act of "calling home" must be mediated by the collocated adult. This can reduce contact with the child if the collocated adult is unavailable or unwilling to talk. We discuss this issue in more detail in 4.2.3.

#### 4.2.2. Spontaneous Asynchronous Phatic Communication

Thirteen out of the 14 families attempted to supplement the scheduled synchronous contact with spontaneous asynchronous communication over mail, email, or SMS. Eleven of these 13 families used asynchronous communication regularly. Eight of the parents explicitly mentioned that sending an asynchronous message was the way they dealt with moments when they miss their child. Asynchronous communication was usually targeted individually at the child:

*"I'll flood her box with a bunch of e-mails and send her animation things. And sometimes, I may just overnight her something in the mail. I mean, to get something with her name on it blows her away." (10P)*

Rather than focusing on instrumental concerns, asynchronous contact was usually *phatic* in nature—focused on reinforcing the social bond rather than providing information [14]. Two children describe their emails to their parents:

*"I always use big letters and say I love you. They take up like half of the page. I used to make these little smiley faces and I'd put them on there. Then I'd put like a little background." (3C)*

*"I wouldn't talk about how I'm feeling, I would just use a lot of those smiley face pictures." (4C)*

SMS messages were often focused on conveying a sense of connection rather than practical information exchange.

*"Oh, I'll send her little smiley faces or little messages. Little special, you know, songs or little gifts through the phone." (2C)*

*"I'll just send him a text and say, 'Hey, I'm thinking of you. Hope you're having a good day' type thing." (4P)*

Phatic communication was the rule for most of the families who communicated asynchronously (except families 6, 8, and 11, who also used asynchronous communication for instrumental purposes).

There are two limitations of this strategy. First of all, the only form of asynchronous communication available for individual use with younger children is mail, because they often do not have phones or email accounts. That makes it difficult for parents with younger children to enact this strategy. Four parents mentioned struggling with the idea of buying their child a cell phone to allow them to send messages to each other, but not feeling that the child was ready for the responsibility of owning a phone. The second issue is that asynchronous communication offers limited opportunities for emotional expressiveness—a major limitation since it is mostly used for phatic messages.

*"...with email, sometimes you will sanitize it a bit; like you're feeling really sad but you don't want the person to know how sad you are." (3P)*

*"... you can't really, like, feel someone's emotion that they're, like, feeling. Like if they don't want to talk about it then you don't know what we're going through." (8C)*

#### 4.2.3. Enlisting the Aid of a Collocated Adult

All of the families in our study talked about seeking help from a collocated adult during the separation. For children, this was the most listed strategy for managing separation:

*"If one of your parents is gone and stuff, then start to talk more to the other parent too about how you feel and stuff." (6C)*

*"She would, you know, would be there and like talk to me, tell me that he'd be home soon, that it's all right." (12C)*

For parents, the collocated adult is not only a source of emotional support, but also the major mechanism by which they stay in touch with the child. The collocated adult serves as an awareness system about the event in the child's life and encourages the child to speak to the remote parent:

*"It's [my wife] I'm always phoning ... she'd always make sure that they come to the phone, you know, talk a little bit ... And she recounts what's been going on, especially if there's anything around school or behaviors or something." (9P)*

*"If something comes up, she'll just normally send it to me on email while she's thinking about it. And then when I get to email, I'll have four, five, six emails waiting on me, and just get caught up that way" (5P)*

Additionally, the collocated parent supported technology use by helping set up any technology involved in the communication and motivating its use:

*"He would make videos with her, so he would actually set up the camera and everything and they would make videos together to*

*send to me, which she couldn't have necessarily done on her own at that time because she was little.” (3P)*

However, two of the families in our study were unable to use this strategy routinely: one (family 2) because the collocated adult was a distant relative unmotivated to maintain contact and one (family 4) where there was frequent marital conflict between the parents. These examples point to the limitations of this strategy. Even in families that are usually cooperative, there may be times that the collocated adult may be unwilling to participate fully:

*“There were times when, if my husband and I weren't getting along ... he was short in answer and so then I'm only able to email with her and that was very upsetting.” (3P)*

In other situations, the collocated adult may be willing to support the communication but may not have the technical competency to do so in the most effective way:

*“...because of her lack of technology awareness, she hasn't really helped too much...” (4P)*

Lastly, in six of the families parents expressed concern over the additional responsibilities that their absence introduced to the collocated adult and wanted to limit this overhead.

#### 4.2.4. Using Video Chat

We discuss the practices of using video chat separately from the synchronous communication practices highlighted in 4.2.1, because using video chat had a different effect on satisfaction with contact than other types of communication. We did not explicitly recruit for families that use video chat, yet nine of the 14 families had attempted to do so and five out of those families used it regularly. As in the previous investigations of videoconferencing [1], our participants described a number of advantages over the phone, such as being more emotionally expressive, leading to longer conversations, and allowing show-and-tell:

*“She's always showing me something new she got, something she made in school. So it's really, really fun.” (10P)*

The availability of video seemed particularly important to parents during longer separations:

*“If I had not done the video, it would have been when I left in June till December when I saw everybody ... So I don't know that I would have recognized them if it hadn't been for the video as often as it was.” (12P)*

Video chat seems to be an effective strategy for staying in touch. Eight out of 10 participants who used video chat routinely were satisfied with their overall contact with their remote partner, whereas only six out of 18 of those who didn't use video chat reported being satisfied with the overall level of communication (80% vs. 33%). So, why is it that so few families use it routinely? We discovered three major limitations of video chat that prevented it from becoming used routinely. First of all, setting up video chat is still a major barrier for families because it requires at least

one knowledgeable user at each location who is willing to deal with the setup overhead:

*“You know if I was to be here and try to get a video call done ... I just know that it's gonna be fraught with problems. It's not gonna be simple. Something's gonna be wrong ... It doesn't just have an on, off button.” (9P)*

Second, for a relatively large number of families video chat was simply unavailable because they did not have the necessary infrastructure such as a computer (family 2) or a reliable Internet connection (families 3, 4, 5):

*“When we were deployed, the bandwidth wouldn't support it and it would lock up, and you'd end up getting madder about the whole thing. We tried to use it and it just wasn't reliable. So that's the only experience I've had with it.” (5P)*

Lastly, whether for technical or social reasons video chat requires a dedicated time and place for the interaction. Several families mentioned that they used the phone more than video chat because it supports multitasking:

*“If I'm on the phone I could be washing the dishes, or doing other things that are mindless; whereas with Skype I can't be doing that because they'll notice.” (13P)*

*“I can walk with [the phone]. That's what I can't do as easily while I'm Skyping.” (6P)*

For others it was because the video-chat-enabled computer was often placed in a location usually used for work or rest rather than a living room.

*“I think it's because she has to be upstairs in her bedroom ... And she's not in her bedroom unless she's going to bed.” (10P)*

*“We're supposed to be on the computer at the same time, which usually can't happen because I'm not in the [home] office that much.” (13C)*

Many families viewed video chat as something only worth attempting on special occasions. For casual communication, they did not want to “make a big meal of it” (9P) and often used the phone instead.

#### 4.2.5. Playing Online Games

Four out of the 14 families attempted to incorporate some form of online gaming into their contact while apart, but only two families used online gaming regularly. Three of these families tried synchronous casual online games and one tried asynchronous gaming through Facebook.

Family 12 found online gaming to be so important that they switched video chat clients to one that provided a larger variety of games. The games that they played online became part of their in-person interaction as well:

*“We would play backgammon or Chinese checkers ... That was excellent. We even bought a Chinese checkers game after I got back home.” (12P)*

However, there are a number of challenges to incorporating online gaming into long-distance interaction. First of all,

children do not necessarily want to see their parents involved in every game space:

*"I don't want to play online games with my dad. I more like to play on my own." (14C)*

One avid World of Warcraft player rejected the idea of using it to stay in touch with his dad:

*"That'd be kind of weird. I would feel like he's watching over me." (4C)*

Second, when gaming is a synchronous interaction, multiple children may want to participate at the same time. However, currently multiplayer games are usually set up to allow only one player per computer. So, while children will often *talk* to their parent all at the same time, they have to take turns in order to *play* with their parent.

*"I think there was a couple of games where you could play with more than two players ... But we didn't do that often, because we don't have another computer at home." (12C)*

Lastly, when playing in-person, parents often have the responsibility of motivating the game and guiding the younger players. This is very difficult to do with online games, so younger children may quickly lose interest in the game:

*"I try to do some kind of chess play you know, that kind of thing, but with them is a little difficult because they are still learning ... we tried to do a monopoly game one day but it was very slow, the thing is he gets bored." (1P)*

There was less interest in playing online games together than may have been observed in previous work (e.g., [17]).

## 5. DISCUSSION

In this section, we put our investigation in context of other work in this field and point out some opportunities to further investigate and support work-separated families.

### 5.1. The Unique Situation of Work-Separated Families

While work-separated families share some challenges and needs with other types of parent-child separation, there are some unique aspects to their situation. We considered the results of interviews with divorced families [18,24] to better understand the similarities and differences between divorced and work-separated parent-child contact.

On first examination, the situation of work-separated families is not in as much need for intervention as the situation for divorced families. In work-separated families, reintegration is assumed, so many families are willing to put up with non-optimal communication technologies as a temporary solution. At least some of the parents and the majority of the children are willing to minimize long-distance interaction with the understanding that a forthcoming reunion will provide better opportunities for staying in touch. Overall, nine of the children and four of the adults in our study were satisfied with the currently available methods of communication. However, there is a class of families that seems to be consistently unhappy with the available options for

communication. Out of the eight military family interviewees, only one was satisfied with the amount of contact during the deployment. So, while the overall level of satisfaction with current contact is higher for work-separated families than for divorced families, there are clearly opportunities where additional interventions would be welcome.

The second difference between divorced and work-separated families is the greater expectation of conflict in the former. Work-separated families make greater use of the collocated adult, whose cooperation is expected. The presence of this ally makes the work-separated situation easier to handle. However, our interviews revealed that even in intact work-separated families, conflict between the remote and collocated adult can limit interaction with the child. In divorced families, this conflict is anticipated and families implement strategies to minimize the effect of this conflict on the relationship between the remote parent and the child. Work-separated families do not usually prepare alternative routes of communication and strategies for managing conflict. In this way, when the conflict does occur, its effects may be more serious.

Lastly, a big difference between separation due to work and other types of parent-child separation is the relative lack of control by the remote parent over their environment. In divorced families or other permanent separations, the parent may be more able to invest in the necessary infrastructure to support richer forms of interaction. Work-separated families may not have access to the necessary infrastructure or the influence to create such infrastructure either because their relocation is short-term or because they are in an infrastructure poor location (as is often the case for military families [8]). Additionally, work-separated parents may have less control over their time while away for work and fewer opportunities to develop permanent social strategies for maintaining contact with their children. In essence, while divorced families may sculpt their permanent environment to support maintaining contact, work-separated families must often make do with temporary solutions that they can bring into the situation with them.

### 5.2. Non-Consensus in Work-Separated Families

Studies of communication technologies for the home often emphasize families that seek out more opportunities to communicate. It is a common trend in discussing domestic communication technology to focus on harmony and consensus. However, recent work in the HCI domain points out that conflict, disruption, and non-consensus are also part of family life and the way families use technology [7]. To contribute to this conversation, we want to highlight the finding that there is often a lack of consensus between parents and children in work-separated families as to what constitutes "enough" communication.

Our study showed that the need to increase contact is a characteristic common of travelling parents, but less commonly seen in children. Spending more time communi-

cating with the remote parent may in fact interfere with the strategies used by children to cope with the separation. To them, the time is better spent connecting with a collocated adult and focusing on things other than being apart. While only three children expressed displeasure with excessive contact from their traveling parent, a number of parents expressed frustration with short conversation and single-word replies. At least one previous project has considered giving the child the power to determine the amount of communication—the eKiss system allowed only the child to send messages to the system and did not provide the parent with any means of prompting for a communication [5]. They found that children did not share as much as the researcher had expected or as much as their parents had hoped. This is additional evidence that children are not as motivated to communicate as their parents may be.

In designing new communication technologies for families, we are implicitly supporting the desires of the typical parent over the desires of the typical child. Perhaps, we are justified in making this design decision in the spirit of meeting the *needs* rather than satisfying the desires of the child. However, it is important for designers to consider the obligation to communicate that their system may impose on the child and what may happen if the parent's expectations for communication are not met.

### 5.3. Opportunities in Designing for Separation

There are three clear opportunities in designing for work-separated families that emerged from our interviews: designing for synchronous communication with multiple children, designing for direct asynchronous communication between the parent and child, and designing for infrastructure-poor environments.

Synchronous communication in work-separated families often occurs between the remote parent and multiple members of the household simultaneously. Video chat supports participation by multiple individuals and is reportedly used this way quite frequently [1]. However, the synchronous communication technologies that we have been designing as a community seem to focus on contact with one child at a time [9,19,23]. In our interviews, families talked about the synergy that occurs when multiple children are able to talk to their parent together. We should consider placing a greater emphasis on designing to support this configuration.

Though there have been several previous projects looking at asynchronously sending photos from a mobile device to a public display or blog [5,15,22], there is an opportunity to explore designing devices that allow the parent and child to exchange asynchronous messages directly. Our study showed that though synchronous communication tends to occur “with the household,” asynchronous communication is often targeted directly to the child. Parents mentioned that sending a message just to the child is a way of making him or her feel special. Though cell phones currently fulfill this functionality for older children, mail is often the only

available form of asynchronous contact with younger children—a clear opportunity for new designs. In creating novel methods of asynchronous communication, it is important to keep in mind that such a system would be most helpful if it provided opportunities for including color, images, and animations. Our participants emphasized that these are important to the way that children express themselves in asynchronous messages.

Perhaps the biggest need in designing for work-separated families is in supporting military parents. These families face a combination of three challenges that make the separation particularly difficult: the separation is usually long-term, there is usually a significant time zone difference, and there is usually very limited access to communications infrastructure [8]. Using video chat is a key strategy for other work-separated families, but one that is often denied to this group. These families have found creative ways of appropriating communication technologies that are otherwise not very child-friendly, such as email. There is a clear opportunity to provide expressive, low-bandwidth means of communication for these families. Some of these prospects are being explored by Sesame Workshop's Family Connections, but there are still many opportunities for future work.

### 5.4. Opportunities in Investigating Separation

There are two directions for future investigation: studying the role of the collocated adult and further investigating the role of games in staying in touch.

The collocated adult plays a key role in work-separated families. Aside from serving as emotional support, a human awareness system, and encouraging communication, they are in the difficult position of reconciling the sometimes conflicting strategies for managing separation enacted by the child and the remote parent. Though our interviews revealed some of the responsibilities of these individuals, a follow-up study looking specifically at collocated adults in work-separated families would allow us to better understand the challenges they face, the strategies they use, and how we could support them in their role.

Our interviews revealed a tension in how families use online games to stay in touch. While two families found it helpful, others rejected the idea of playing games together for various reasons. This seems contrary to the previous suggestion that activities together are a more natural way for parents and children to stay in touch than simply talking [24] and to previous accounts of families playing together online [17]. As a community, designing for remote play between parents and children has been a key approach taken by several projects [6,9,16], but all of these systems presented only preliminary evaluations so it is what would happen in a longer deployment. Our assumptions as a community about the benefit of games for connecting parents and children may not reflect the reality of long-distance parent-child interaction, so we should investigate this in more detail. What aspects of games contribute to



families adopting online gaming as a strategy for staying in touch? In what situations can online gaming be an effective strategy and in what situations do families reject it?

## 6. CONCLUSION

When separated by work travel, parents and children adopt strategies for managing being apart. Parents often turn to synchronous and asynchronous communication technologies in order to maintain a consistent presence in the child's life. Scheduled synchronous communication with the entire household is supplemented with spontaneous asynchronous contact with each child individually. Video chat is a successful strategy for staying in touch when it is used, but is often unavailable or impractical for regular use. Unlike their parents, children often do not seek out communication but rather focus on managing separation by spending more time with a collocated adult. It is often up to the collocated adult to balance the gap in motivation to communicate between the parent and child. Current communication practices are meeting the needs of many work-separated families, but not the needs of military families. A designer focusing on work-separated families should consider the tension between the amount of contact desired by the parent and child, the role of the collocated adult, supporting existing synchronous and asynchronous communication practices, and designing for situations with limited infrastructure.

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## REFERENCES

1. Ames, M.G., Go, J., Kaye, J., and Spasojevic, M. Making Love in the Network Closet: The Benefits and Work of Family Videochat. *Proc. of CHI*, (2010).
2. Ballagas, R., Kaye, J., Ames, M., Go, J., and Raffle, H. Family communication: phone conversations with children. *Proc. of IDC*, ACM (2009), 321-324.
3. Conlin, J. Living Apart for the Paycheck. *The New York Times*, 2009.
4. Dalsgaard, T., Skov, M.B., Stougaard, M., and Thomassen, B. Mediated intimacy in families: understanding the relation between children and parents. *Proc. of IDC*, ACM (2006), 145-152.
5. Dalsgaard, T., Skov, M.B., and Thomassen, B.R. eKiss: Sharing Experiences in Families Through a Picture Blog. *Proc. of British HCI*, (2007), 67-75.
6. Davis, H., Skov, M.B., Stougaard, M., and Vetere, F. Virtual box: supporting mediated family intimacy through virtual and physical play. *Proc. of OZCHI*, (2007), 151-159.
7. Dimond, J., Poole, E., and Yardi, S. The Effects of Death, Divorce, and Life Disruptions on Home Technology Routines. *Proc. of GROUP*, (2010), To Appear.
8. Drummet, A.R., Coleman, M., and Cable, S. Military Families under Stress: Implications for Family Life Education. *Family Relations* 52, 3 (2003), 279-287.
9. Follmer, S., Raffle, H., Go, J., Ballagas, R., and Ishii, H. Video play: playful interactions in video conferencing for long-distance families with young children. *Proc. of IDC*, ACM (2010), 49-58.
10. Grinter, R.E., Palen, L., and Eldridge, M. Chatting with teenagers: Considering the place of chat technologies in teen life. *ACM ToCHI* 13, 4 (2006), 423-447.
11. Judge, T.K. and Neustaedter, C. Sharing conversation and sharing life: video conferencing in the home. *Proc. of CHI*, ACM (2010), 655-658.
12. Kelley, M.L., Hock, E., Smith, K.M., Jarvis, M.S., Bonney, J.F., and Gaffney, M.A. Internalizing and externalizing behavior of children experiencing military-induced separation. *American Academy of Child and Adolescent Psychiatry* 40, 4 (2001), 464-471.
13. Landis, J.R. and Koch, G.G. The Measurement of Observer Agreement for Categorical Data. *Biometrics* 33, (1977), 159-174.
14. Malinowski, B. The Problem of Meaning in Primitive Languages. In C.K. Ogden and I.A. Richards, eds., *The Meaning of Meaning*. London, 1923, 146-152.
15. Markopoulos, P., Romero, N., van Baren, J., Jsselsteijn, W., de Ruyter, B., and Farshchian, B. Home and away with the ASTRA awareness system. *Proc. of CHI*, ACM Press (2004), 1351-1354.
16. Modlitba, P.L. Globetoddler: Enhancing the experience of remote interaction for preschool children and their traveling parents. Masters Thesis. MIT. 2008.
17. Nardi, B. and Harris, J. Strangers and friends: collaborative play in world of warcraft. *Proc. of CSCW*, (2006), 149-158.
18. Odom, W., Zimmerman, J., and Forlizzi, J. Designing for dynamic family structures: divorced families and interactive systems. *Proc. of DIS*, (2010), 151-160.
19. Raffle, H., Ballagas, R., Revelle, G., et al. Family Story Play: Reading with Young Children (and Elmo) Over a Distance. *Proc. of CHI*, ACM (2010).
20. Rutter, M. Parent-Child Separation: Psychological Effects on the Children. *Journal of Child Psychology and Psychiatry* 12, 4 (1971), 233-260.
21. Seidman, I. *Interviewing as Qualitative Research: A Guide for Researchers in Education And the Social Sciences*. Teachers College Press, New York, 1998.
22. Vetere, F., Davis, H., Gibbs, M., and Howard, S. The Magic Box and Collage: Responding to the challenge of distributed intergenerational play. *Intl J of Human-Computer Studies* 67, 2 (2009), 165-178.
23. Yarosh, S., Cuzzort, S., Mueller, H., and Abowd, G.D. Developing a Media Space for Remote Synchronous Parent-Child Interaction. *Proc. of IDC*, (2009), 97-105.
24. Yarosh, S., Chew, Y.C., and Abowd, G.D. Supporting Parent-Child Communication in Divorced Families. *J of Human Computer Studies* 67, 2 (2009), 192-203.