

Family Communication: Phone Conversations with Children

Rafael Ballagas, Joseph ‘Jofish’ Kaye, Morgan Ames, Janet Go, Hayes Raffle

Nokia Research Center

Palo Alto, CA

{tico.ballagas, jofish.kaye, hayes.raffle}@nokia.com

ABSTRACT

We interviewed and observed families in their homes to understand how they communicate across generations and across distances. The phone is still the most common way for keeping children in touch with distant relatives. However, many children can't talk on the phone by themselves until 7 or 8 years old. This paper examines the challenges children have with phone conversations, and looks at how families are currently working around these issues. These findings can help inform the design of future family communications technologies.

Categories and Subject Descriptors

H.5.2. User Interfaces: User-centered design

General Terms

Design, Human Factors

Keywords

Intergenerational, mobile, phone, children, grandparents, design, user interfaces, family communication

INTRODUCTION

Children and grandparents typically have the most time and motivation for communication, but currently lack the tools to communicate together satisfactorily. Technologies have the potential to improve communication across generations and distances to foster a greater sense of family togetherness. To inform the design of such technologies, we studied existing family communications patterns in a total of 23 families in the San Francisco Bay area.

STUDY DESIGN

In this paper, we briefly discuss two consecutive studies of families in the Bay Area: a study of 18 families across a broad socio-economic spectrum in which we focused on their communication technology use, and a follow-up study of 7 families (including two families from the original study) in which

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we looked at videoconferencing using Skype or iChat. [6]

In the first study, we began by asking families to fill out some background information with their children, about typical days and the structure of the family. Then we spent a “typical evening” with our participants: we would bring dinner as part of the study which we'd eat with the family, discuss the background information and have the children give us a tour of their room. Later we'd talk with the parents about their interactions with their children, and their thoughts on children, toys, technology, and any rituals, rules, regulations or other limitations on technology use. These visits typically took around three hours.

In the second study, we conducted field studies and interviews with 7 families who used videoconferencing to communicate between grandparents and grandchildren. We visited these families in teams of two. Researchers sat with the family and observed a “typical” video call with remote grandparents, which had been previously arranged for our visit. In five of the seven interviews, the two researchers then split up separately to interview the local parents and the remote grandparents. We asked how the family started using video chat, what they think of it now, and how it fit into their broader communication patterns and the work they do to create a sense of “family.” In two of the family interviews, we were not able to interview the remote grandparents. We video- and audio-taped all calls for later analysis. These visits typically took around an hour and a half.

In each case, we would take notes, transcribe video and audio recordings, identify salient points, and work as a team to identify points of interest for further observation.

FINDINGS

Unsurprisingly, the most common way for keeping children in touch with distant relatives was through the phone. Through our observations, we uncovered several sets of challenges that children have with communicating over the phone.

Cognitive Challenges

Children under 5 years old have a hard time understanding how to communicate with a remote person using a telephone [3]. During conversation, young children tend to forget about the special circumstances of the phone conversation and communicate as if the person were in the room with them. Typical behaviors include incidents of gesturing to objects in the room where both the gestures and the objects are unseen by the remote conversation participant (see Fig. 1). Children sometimes forget that they need to hold the phone in a certain posture to hear the remote participant or be heard by the distant family members. Young

children also have difficulties articulating clearly with words alone: they rely on body language and facial expressions as a critical part of the communication process.

Many of these findings are consistent with the literature on child development. The difficulty to imagine the point of view of another party seems to require both a theory of mind [4] and an ability to take another's perspective [7]. When talking on the phone, a child must hold an inert piece of plastic and imagine that the other person is present. This is inherently an abstract and rather strange idea. Compounding this is the fact that the speakers do not share context and cannot read typical cues like tone of voice, posture and subtle gestures that are usually such valuable communication skills for children.



Figure 1. Illustration of cognitive challenges in phone conversation: this study participant (age 4) is gesturing to items in the room that are unseen by the remote participants (left and center) as well as sometimes forgetting to hold the phone up to her face while talking (right).

Furthermore, language is not always the easiest way for children to communicate. Children generally have an easier time expressing their knowledge and ideas through action rather than through words. Bruner [1] theorized that all knowledge begins with action, progresses towards iconic representations, and then can be expressed with language. His theory suggests that a language-based medium like telephone would be more complex for children than a medium that leveraged action, bodily movement, or imagery.

Gardner's theory of multiple intelligences [2] allows us to look at this challenge from another perspective. While children with a high "verbal intelligence" were most successful with the phone, other children preferred to communicate with co-located parties who were not limited to words alone. One four year old boy illustrated the active, mobile and physical character of so much of children's communication and play:

Mother: "Son, do you want to call somebody?"

Son: "Nope, I just want to hit somebody"

(son breaks into a sprint chasing his older sister around the house)

There is a clear mismatch between children's needs and the opportunities afforded by telephony.

Social Challenges

The *art of conversation* is a skill that slowly develops. Important aspects of conversation like turn-taking, asking questions, listening skills, and storytelling are often lacking in children leading to significant breakdowns in the phone conversation. By 5 years old, children already seem to be able to carry on conversations in person, and may understand how to use the phone, but need help with conversation. We observed that even children that are normally talkative face-to-face can regress to yes and no responses in phone conversations.

This is not surprising. Phone conversations introduce an artificial constraint of one-to-one communication; normal conversation is not usually structured in this way. While speakerphones help to alleviate this problem, few participants in our study used this feature. Without speakerphone, children's ability to learn telephony skills is limited: children often learn by observing and copying people older and more experienced than they are. [8] But children can not easily learn from more experienced users if they hear only one half of a phone conversation. The co-present mentor's dialogue lacks any meaningful context for the learner.

Attentional / Motivational challenges

The cognitive and social challenges with telephony lead children to be unmotivated to talk on the phone. In our studies, children up to 9 years old had difficulties staying engaged in the phone conversation. Although most phones are portable today, children are often expected to sit still and "be on good behavior" while talking to a remote grandparent or other family member. This was difficult for many children. Children's words and actions suggested that they didn't feel connected with the remote party, and typically perceived talking on the phone to be a chore.

MAKING PHONE CALLS SUCCESSFUL

There were a variety of strategies that we observed to overcome these challenges. The most common strategy was *parental scaffolding* where parents directly helped the children to overcome the various challenges they experienced. For example, parents for children under 7 reported that they need to help children initiate the phone call by dialing the number and even prepping the remote family members before handing off to the children. Parents would monitor the child's conversation progress closely and would step in when breakdowns were occurring. For

example, it was very common for parents or family members of younger children to hold the phone in the correct posture (see Fig. 2). Similarly, when children started to gesture, parents would remind them that the other party couldn't see them.



Figure 2. Parental scaffolding is a common way to overcome various issues. Here are two examples of family members holding the phone for the child to help them speak clearly into the microphone.

To overcome the social challenges we saw a variety of strategies. Some families would prepare for an upcoming conversation by posing questions like: "What do you want to tell grandma today?" This would allow them to discuss potential topics and prime the children for a successful call. Additionally, we saw a lot of instances where parents would prompt children with things to say during the conversation. Here is an example from a 3 year old boy.

Son (talking on the phone): "*Christmas!*"
 Mother: "*Say cars*"
 Son: "*Cars*"
 (Son begins kissing the phone speaker)
 Mother: "*Say bye-bye Ti-Ti*"
 Son: "*bye-bye Ti-Ti*"
 Mother: "*Say we love you... we love you*"

(Mother reaches for the phone to make sure the son doesn't hang up)
 Son: "*love you*"
 (Son abruptly closes the clam-shell phone, hanging up the call)

To overcome the attentional challenges, we saw an interesting trend of remote relatives using silliness to engage the children in the conversation. For example, one set of grandparents would ask deliberately wrong questions to provoke their grandchild into conversation.

It's the typical thing, you say something totally inaccurate and Kate says "No!...I'm 5!" So you can tell they're saying "I hear you're turning 26." or "I hear you lost a finger." "No, a tooth!" And then you can get them starting talking.

Silliness seemed to improve enjoyment from both sides of the conversation as well as leading to generally longer phone encounters between children and grandparents. In general, adults engage with children through play (not "conversation"). While phones are accessible and ubiquitous, it is not obvious how to "play" with someone over a phone.

THE EMERGENCE OF VIDEO CONFERENCING

Some families in the first study used Skype or iChat for children and remotely located grandparents to communicate. We took the opportunity to interview a total of seven families who used home videoconferencing and observe a videocall [6].

Home videoconferencing allowed the families we studied to overcome many of the challenges of phone conversation. The primary advantages to grandparents are that children are willing to videoconference for much longer than they are willing to talk on the telephone, and that videochat is more enjoyable. This enables grandparents to keep up their relationship with their child in a way that can be hard over the phone. To form relationships with young children, conversation is not successful in itself: families must be able to play together.

Play is supported by the physicality video allows, including richer physical expression through facial expressions and body language. Physicality manifests itself in several ways: children use the video camera to show-and-tell their new lunchbox - or lizard, or rocks, or nightlight. Others take advantage of the opportunities for performance: we saw grandchildren singing songs or playing the trumpet to perform for appreciative grandparents. We witnessed many "skype kisses", where family members leaned towards the camera and made kissing sounds and gestures (sometimes including family pets). Less formal performance also occurred: we saw children being told off by their parents for 'acting out' for the camera. Video heightens shared context and provides opportunities for social interaction around the situation; the visual awareness also affords different conversation topics where users can show rather than tell.

Grandfather: "*What's that on your cheek?*"
 Granddaughter: "*It's an ice cream, we went to the carnival*"
 (referring to her fake tattoo)

The third aspect of interest is the role of groups. The videocalls we observed frequently at least began as group activities, with the

whole family assembling in a group in front of the screen, as if for a family portrait. This provided opportunities for parental scaffolding in a variety of ways: making sure children stayed within the field of view of the camera, prompting questions, or even fixing the children's hair in the "mirror" provided by the local video feed.

While videoconferencing provided these (and other) advantages, it also has significant problems. The first and most apparent is the technical work that needs to go into using a video call. We saw families rebooting computers and routers at both end of the conversation, coordinating by (reliable) cellphone to connect by (unreliable) video conferencing. Bandwidth is scarce: one thirteen-year-old was scolded by her parents for trying to download a large file (a demo version of a game) while the family was trying to videoconference. In addition, it was often necessary for the most technically savvy member of the family to set up the videoconferencing system in the first place, typically while on a visit such as Christmas or Thanksgiving. There was also a significant amount of social work that went into videoconferencing. For example, one grandparent would always put on her jewelry before a call; another family hypothesized that they would never be able to videochat with one of their grandparents because she was ashamed of her cluttered and messy house.

Video provides more opportunities to play, including showing (not telling) things or skills, the ease of sharing the communication with multiple parties, and a greater sense of shared perspective. However, the technical challenges of videoconferencing could hinder this, as video chat tended to be a more precious, and thus more formal, affair.

CONCLUSION

Given these findings, we provide the following takeaways for the design of family communication interfaces for children.

Modify the rules of exchange: Make communication more simple and easier to initiate. Interfaces should also elicit sharing or storytelling and support building connections through interactive play (not just conversation).

Replace the one-to-one communication model: Interfaces for family communication are likely not going to be used by the child in isolation, we should design these interfaces to be used collaboratively with child and parent together enabling a shared group communication exchange.

Make interactions more engaging: Technologies need to provide opportunities for silliness to help keep children engaged. Some family members are naturally silly, while others may need some support through prompting or assistance of fictional characters that are familiar to the children.

Although video conferencing is a promising development in improving family communications, it is clearly only one point in the design space. It is probably part of the answer, but not the only answer. We should learn from its successes to explore new interfaces with different properties. For example, what might an asynchronous media sharing interface look like? How can tangible interfaces [5] help support children's needs? We plan to explore these new interfaces for family communication as a part of future work.

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