
Globetoddler – Designing for Remote Interaction between Preschoolers and Their Traveling Parents

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Abstract

In recent decades, families in the Western world have become more geographically distributed, making it more difficult for family members to achieve and maintain a feeling of connectedness. Different time zones and contexts and a limited awareness of the other family members' availability and mood are some of many factors that make "being together" more challenging when physically apart. Besides, when it comes to preschool children, existing communication technologies, such as phones and computers, may not even be an option. As a result, many families simply accept the fact that being apart leads to fragmented, or even non-existent, interaction. In this paper we present initial work on a tangible system, Globetoddler, which aims to make remote interaction between preschool children and their traveling parents easy and enjoyable. The paper describes the process of defining design principles for this system, as well as the content and implications of these principles.

Keywords

Remote interaction, Remote awareness, Domestic communication, Children, Mobile applications, Tangible

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CHI 2008, April 5 – April 10, 2008, Florence, Italy
ACM 978-1-60558-012-8/08/04.

interfaces, Children-parent interaction, Family-oriented interaction, User-centered design.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

The potential to use technology for connecting geographically distributed individuals has been recognized and studied for many years. In 1993, Bly et al. [1] presented the concept of *media spaces* - systems designed to use audio, video, and other media to create shared spaces in which distributed work groups can operate continuously and conveniently. Since then the academic field of remote interaction has been extended from formal work and office milieus into home environments [11]. As in the case of work-oriented systems for remote communication, domestic systems address a wide range of needs and activities, both practical and socio-emotional. To date, a large number of projects have addressed the problem of connecting distributed family members – all with unique approaches and conclusions, for example [5][8][10]. However, despite their disparate solutions, they all seem to agree on the fact that using technology in order to make dispersed families feel more connected is a good idea, if not a necessity.

We have chosen to focus on remote communication between traveling parents and their preschool children. An undeveloped perception of time, alongside limited verbal communication, writing, and reading skills are some of many factors that normally make using traditional communication technology for remote interaction with preschoolers particularly challenging.

However, so far, academic research on remote interaction between children and their traveling parents has not been as extensive as one would expect considering the large number of traveling business men and women. According to the Travel Industry Association, business travel increased by 14% between 1994 and 2001 and is projected to continue to rise [14]. Many of the existing family-oriented communication projects not only fail to address the possible need for mobility and flexibility, but, more importantly, do also fail to address the asymmetry of user needs that occur when users of various ages use the same system. Although the psychological and social aspects of remote interaction and presence in general are often discussed, younger children's way of perceiving this kind of interaction is normally not addressed. Author and mother, Charlie Hudson, describes some of the challenges in remote child-parent communication in her book "The Parents Guide to Business Travel" [7]:

[The] challenge was keeping in touch with my son and, while I called on a regular basis, a preschooler doesn't have a lot to say during a phone conversation. I would send him cute postcards or greeting cards with a sentence or two, although that first summer I wasn't aware of how meaningful those cards were to him... This is also the age when it may be difficult to distinguish between imagination and reality, and a child may become fearful of something that doesn't occur to you. For example, if you have taken a trip to Arizona, but your child doesn't know where or even what Arizona is, he or she may conjure up disturbing images of you in a terrible place.

We find testimonies like the one above intriguing for several reasons. First, when we think of parent-child awareness we tend to see it from the parents' point of view. Parents want to monitor their children and make sure that they are safe, but what about the children? Do they feel a similar need to be aware of and feel connected to their parents? Second, what is it that makes preschoolers reluctant to use the phone? Could it be that they do not find the phone conversation fun or rewarding enough? Do they have problems relating to or imagining the remote location of the remote parent?

As an initial phase in the process of designing a system that reconciles these issues, we decided to conduct a thorough literature study, as well as an interview study with a set of families who all fit the target group profile. The results of these two study sessions are presented and discussed in the remainder of this paper.

Literature Study of Previous Work

Parent-child communication

At the beginning of the 20th century, D. W. Winnicott introduced the concepts of *transitional objects* and *transitional experience* in reference to a particular human developmental sequence in toddlers. Winnicott used the word *transition* to describe the cognitive gap between psychic and external reality that toddlers normally experience when they become old enough¹ to separate between *me* (themselves) and *not-me* (other objects and individuals; initially the main caregiver). According to Winnicott, the transitional object, for example a blanket or a doll, is used by the child to bridge that gap, and, thus, create a sense of comfort by replacing the seemingly more distant parent [15][16].

¹ Normally around six months of age.

Today, Winnicott's theory is established in both theoretic [13] and practical psychology [3][12].

Family-oriented interaction

Contextual Asynchronous System (CASYS) [17] is a system that uses audio and video messaging, asynchronous communication and context-based delivery in order to help distributed families feel connected. CASYS enables family members to send 'good morning' and 'good night' asynchronous video snippets into a shared family database. The recipient then views the snippets when going to sleep or waking up.

PlayPals [2] are a set of wireless dolls, designed by Bonanni et al. at, which are supposed to be used for playful remote communication, sharing of multimedia experiences, and virtual co-presence between children age 5-8. According to the designers, embedding digital communication into existing play patterns and objects enhances both remote play and communication.

Awareness of unfamiliar locations and viewpoints

Plane Tracker [9] is a project developed at the Goldsmiths College in London as a part of their Curious Home project. The Plane Tracker is intended to give people a feeling of connection with distant parts of the world via the planes that physically pass by overhead. Transponder data from passing aircrafts is collected, decoded and used to display the apparent virtual flight on a display. Although this application encourages people to learn more about remote locations, it does not take social aspects and human-to-human interaction into account.

Non-academic projects

The Flat Stanley Project [4] is a successful educational initiative, which was started in 1995 by a Canadian third-grade schoolteacher, Dale Hubert. The Flat Stanley project uses this concept of letter-traveling in order to provide an opportunity for students to make connections with peers in other schools. The students begin by making personal Flat Stanley paper dolls and keeping a journal for a few days, documenting the places where Flat Stanley goes and the activities in which he is involved. The Flat Stanley paper doll and the journal are then mailed to students in other parts of the country who are asked to treat the figure as a visiting guest and add to his journal. After a period of time, they mail both Flat Stanley and the journal back to the original school. According to Dale Hubert, several factors have contributed to the success of the Flat Stanley project. First, the project helps to make abstract, remote tasks and interactions more meaningful and comprehensible. Second, it allows you to have a mutual friend with other people, and thus gives the children a feeling of being a part of a "global community". Third, the Flat Stanley Project enables "proxy journeys", which are particularly beneficial for children who are not able to travel in real life [6].

Interview Study

An initial interview study was conducted with a total of five families: five mothers, three fathers, and six children age 4-10. Both traveling and non-traveling parents were involved in the study in order to broaden the perspective. The interviews were carried out as semi-structured conversations, based on a framework of core questions regarding traveling and remote interaction with existing technologies and methods. Naturally, each

family's story is unique; still, a number of mutual and significant experiences could be identified:

- **Separation anxiety:** Saying goodbye before a trip is in many cases the hardest and most crucial part, both for the child and the parent. The families used for example notes, detailed itineraries, maps, stories, and toys to talk about the upcoming journey and separation.
- **Guilty conscience:** Once separated from their traveling parent, the children seem to handle being apart rather well. The parents describe their children as being "busy" and in their "own little world". Only occasionally the children specifically ask for their parents. The traveling parent, on the other hand, seems to handle the separation less well - having a guilty conscience is common.
- **Concept of time:** For many of the younger children the main concern is: "When are you coming back home, mum/dad?" Preschool children are normally not only illiterate but have a limited understanding of the concept of time, which makes it particularly challenging to help them to understand the procedures of a trip. Two of the interviewed families used illustrated calendars to make the concept of duration more comprehensible.
- **Routines:** Maintaining family routines, even when a parent is on the road, is very important. Naturally, this is a bigger challenge when the main caregiver is traveling. At least two of the

interviewed parents write or record lists of tasks for their children and/or partner before leaving.

- **Time difference:** For many families, being in different time zones was perceived as the most limiting factor. In most cases the traveling parent adjusts to the routines of the family at home. Bedtime is the most cherished time of the day in all families – an intimate routine that most parents don't want to miss out on.
- **Busy schedules:** All families mentioned tight schedules as another crucial limitation. Some traveling parents deliberately squeeze in as much as possible in their schedules in order to shorten their trips. However, in many cases the children seem to be just as busy as their parents (e.g. day care, after-school, homework, and extracurricular activities).
- **Media:** Most families used the phone to communicate, which seemed to work fine for the older children (5-10). However, the children who use video chat (with the help of a parent) all described that they prefer seeing the face of the person they talk to. In the case the parent takes photos during the trip, the children prefer viewing the photos after the parent comes home, in order to hear the parent describe the captured event. At least two of the children regularly use the computer to look at old pictures.
- **Frequency:** All families (try to) talk at least once per day when a parent is traveling.

Bedtime is the most common time for communication.

Discussion

Among other things, the results above indicate a strong asymmetry in needs and interests when it comes to remote interaction between preschool children and their traveling parents. Whereas the main concern for the children is the initial moment of separation, as well as wanting to know when the parent is coming home again (rather than what he or she is currently doing), the parents experience a continuous feeling of separation anxiety and a guilty conscience, and want to stay updated on events that occur in the home, as well as to stay in touch with their children. Thus, we are dealing with communication asymmetry, both regarding content and frequency. Based on these results we suggest designing a system that, on the basis of the concept of affective (transitional) objects, i.e. objects that the child cares for, encourages the child to interact with the parent. In addition, the system should (1) increase the overall opportunity for synchronous communication, e.g. by implementing alerts, (2) allow the parent to know when the child may be receptive to communication, (3) make it easier for the child to initiate interaction by enabling the child to interact with the software, as well as to send interaction requests, and (4) increase the chances for asynchronous communication, e.g. by recording sound and/or video when the child plays with the toy.

Conclusions

This paper presents a set of design principles for designing systems for remote interaction between preschool children and their traveling parents. The principles highlight the need for a system that is flexible

enough to support the user need asymmetry that arises when young children interact with adults. In addition, the principles suggest designing an interface that explicitly encourages the children to interact with the remote parent by using affective physical objects that the children care for and can relate to.

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