

# Design of technology to connect 3-generation families at a distance

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**Abstract:** The objective of this PhD work is to devise technological interventions to support people with family members living abroad. This paper describes a component of this work, that is a probe study where members of three-generational families, where at least one person is geographically separated from the others, talk about their emotional experiences. The method for eliciting this information is described along with the grounded theory analysis used to analyse them. Some tentative themes are outlined.

**Key words:** Probes, presence technology, light weight communication, grounded theory analysis.

## 1. Introduction

The problem addressed in this thesis is how to support people with family members living abroad to feel appropriate emotions when communicating. The objective is to propose a method for informing the design of communication technologies for three-generational relationships. Many devices have been proposed to connect absent loved ones. The LumiTouch system [1] and Lover's Cups [2] are introduced as a pair of interactive prompting tools which allow people to share the moment with their more sensual and tactile actions. PersonCards [4] is indicative of a direct connection between grandparents and grandchildren by providing lightweight picture and handwritten messages for the conversation. For situated messaging, HomeNote [6] was developed to explore the potential value of person-to-place communication. The key feature is deepening the understanding of home communication with diversity in the types of messaging. Despite the large number of designs proposed in this area we still know little about real value of this technology especially, from the point of view of the three-generational family. To do this we need to find an appropriate method to understand deep feelings and real dialogue.

## 2. Thesis Plan

A review of the literature has been conducted some of which was mentioned above. We have also carried out a probe study involving interviews with family members. Through the analysis of the interviews in the Probes Study, affective factors are derived. Based on this analysis alongside with further literature review, some of conceptual themes for affective communication will be constructed. The final stage of the thesis work will involve one or two target groups and communication technologies as case studies. The research will develop a generic tool for interaction design to support the specific need for emotional communications. The main empirical work completed this far is the Probe Study.

### 3. Probe Study

Probes are collections of small tasks for participants to carry out. This work is inspired by Gaver’s Cultural Probes [3] and Wallace’s probes [8]. In this Probe Study, a box of ‘things to do’ was left with participants at the end of the first interview as a stimulus for conversation with people in the second interview. The stories they told us were transcribed and subjected to grounded theory analysis.

#### 3.1 Procedure

Two interviews were conducted with participants in their own homes and separated by more than a week. In the first interview, participants were asked about their day-to-day contact with their family. A family map was drawn identifying family members and how they typically communicate. To sensitise them to the types of technology we are interested in they were shown pictures of four prototype communication devices (Lover’s Cups, Lumitouch, HomeNote see above, and Whereabout Clock [5]). Finally the probes were introduced and left with them (see 3.2 below). The second interview focused on how and why participants responded to their probes in the way that they had. Some of the probe activities were carried out during the second interview. The interview was designed to be natural and non-intrusive. If any signs of distress in the participants were recognized, the conversation was steered to another topic. All participants signed a consent form stating that they understood that the conversation was recorded and that they could stop at any time and ask to have the recording destroyed. No participant did this. Care was taken to ensure that the participants were not upset at the end of the interview. Interviews are audio recorded and transcribed. Transcriptions are made anonymous as the first step in coding and analysis.

#### 3.2 The Probes

The probes we presented to the participant in an attractive "box of things to do" (see Figure 1a) participants could choose to carry out one or more of the activities listed in Table 1.



Figure 1a. Probes box, b. Things to do, c. Cards with instruction

Table 1. Probes activity with instruction

Probe	Instruction
Spirit of Oracle cards (Fig 1c)	Please choose a few of them that elicit thoughts or feelings about your family, and write or draw on the back of the card.
Digital camera	Please use the camera to take photographs relating to any/all of 11 prompts. (e.g. Something about you that you like, Something you like to share with son/daughter, A connection to someone you love, An element of family life, Symbols of affection etc.)
Diary (Special occasions, Log of phone calls)	An occasion in the last month where contact with a family member was very pleasant or special. Please list as many as possible the telephone calls you have with members of your family.
Happy Family Journey	Use this sheet to tell me about a journey you had with members of your family. Write something next to "Start" and "Destination". Add drawings, stickers, words or sentences along the line between "Start" and "Destination" that tell the story of what happened on that journey. Use any of the things in the box, or that you have at home, to do this.

### 3.3 Informants

Informants are listed in Table 2. They were recruited by personal contacts also via Societies for South Koreans at the University of York and the University of Sheffield. They were all members of three-generational families, where at least one person is geographically separated from the others.

Table 2. Informants

	Interview			Probes					
	Informants	Who	Who is at a distance	Cards	Photos	Happy occasions	Unpleasant occasions	Phone calls	Journey
1	Anne	Mother of 2 in UK	Parents in USA	3	Yes	Yes 2	Yes 1	Yes 3	·
2	Betty	Mother of 1 in UK	Husband's family in USA	4	Yes*	Yes 2*	Yes 2*	Yes 10	·
3	Tom	Father of 2 in UK	Parents in Korea	3 in 2 <sup>nd</sup> R*	Yes*	Yes 1*	Yes 1*	Yes**	Yes*
4	Linda	Mother of 2 in UK	Parents in Korea	5	Yes	Yes 2	Yes 1	Yes 8	Yes
5	Emma	Mother of 1 in UK	Husband in Korea	5	Yes	Yes 2	·	Yes 9	·
5+	Sam	Son in UK	Father in Korea	·	·	·	·	·	Yes
6	Jane	GM in SK	Daughter in England	5	Yes*	Yes 2	Yes 1	Yes 7	Yes
7	Helen	Mother of 1 in SK	Husband in Baghdad	3 in 2 <sup>nd</sup> R*	Yes**	Yes 1	Yes 1	Yes 14	Yes
8	Lucy	Mother of 2 in SK	Husband in Bangladesh	4	Yes	Yes 2	Yes 2	Yes 5	Yes

R: interview record file / \*delivery second interview / \*\*delivery 1 week later after second interview

### 3.4 Grounded theory analysis

Grounded theory was developed by Glaser and Strauss [7], is a systematic qualitative research methodology emphasizing the generation of 'theory' from data. With 17 interview record files, 134 pages of transcript were generated. In this study, transcripts were first examined for text indicating: (i) emotional feelings towards the family; (ii) comments about the method of communication; (iii) positive or negative comments on family relationships. These can be thought of as first level codes. The sections of text marked with first level codes were then coded for more subtle themes. These second level codes included: 'happy & fun', 'comfort & yearning', 'reassurance & obligation', 'identity & hope' and 'trauma & upset', emerged from 'emotion' category. Each section of text may be marked with more than one of these codes. Codes were revised several times as the analysis proceeded. These codes were then clustered to identify the themes illustrated by the quotes below.

#### *Sharing the moment: a special event related to infants/children, with pride*

"I was pleased to see when the baby [20months] said some new words. One day, the baby sitter told me that Benjamin understood the meaning of 'the same'. She asked him who was prettier between her two daughters. Benjamin said 'the same'. In the night, I asked Benjamin who was prettier between me and other girl on the photo. I was expecting to hear from the word 'same', but he said, 'mummy'. I was so happy and excited that I rang my husband [in Baghdad] and told him this story. He was so surprised and happy." [Helen Int.2, diary]

#### *Keeping a record to feel comfort from the media*

"I keep answer machine messages. ... I saved it for a year ... when I felt lonely, I just pressed the button. I can hear people say hi, Sarah, it's me ... It's truly nice. I used to keep. I've got a friend in Australia. She's left me an answering message and I just used to keep it. I just want her voice." [Betty Int.1]

### ***Reassurance with regard to intergenerational obligations***

"My mum rang me [from Korea] about her bad dream. She was worried about everything about our daily life [here in England]. She asked if anyone is not well or my husband was away on business. I told her that the kids had caught a bad cold, but they are now ok." [Hannah, Int.2, Diary]

"I feel sorry for my parents when my kids refuse to talk with their grandparents on the phone, even though I threaten them" [Tom, Int.1]

### ***Comfort and consolation from yearning by seeing each other***

"My husband seems quite relieved from missing us since using the webcam. He doesn't want to be alone on Saturday nights. It is too long for him to be alone. I feel to be at the same space by seeing him on the computer while he leaves Skype on and watches TV or wanders around. I feel free from restraint." [Emma, Int.1]

### ***Comfort and consolation from yearning from an object with meaning***

"The watch could be the one, my wife bought me when I went on a business to the USA for the first time. I didn't wear it. I didn't need it because it's quite expensive and the mobile phone told me the time in Korea. But here I am wearing it most of the time, even at night. It is very practical to see the time. It reminds me of my wife." [Tom, Int.2, Photos]

## **4. Conclusion**

The probes study was successful in triggering deep feelings with regard to separation and communication. Future papers will address the effectiveness of the different elements of this method. Section 3.4 is the start of a discussion of the themes that emerged from our grounded theory which will be the focus of another paper.

As explained in section 2 the next step is to use these findings, with the understanding gained from the literature survey to propose and build some communication devices for case studies.

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