Emotional probes with interview techniques

Interpreting the results using content analysis

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Abstract: The design of technology for communicating with loved ones abroad should be based on a real understanding of emotional experiences with regard to separation and communication. This paper describes a component of this work in the form of a probe study concerning how to plan and conduct a method of emotional probing by means of interviews. Nine participants were recruited, all of whom have one or more family members separated by large distances. Two sets of interviews were conducted with the participants at their homes using the emotional probes which incorporated the 'spirit of oracle cards', and the concept of a 'journey with my family where I was very happy'. The qualitative data elicited from these interviews (17hrs and 4min) was examined for text that indicated: (i) emotional feelings towards the family, (ii) comments about the method of communication, and (iii) positive or negative comments on family relationships using content analysis. The results were illustrated and distributed with the three fixes. The most significant number of text sections examined was in association with the 'emotion' and 'relationship' section (zone: B). We assumed that the text sections coded with the 'emotion', 'relationship' and 'technology' section (zone: A) will result in more emergent codes in the next step. Further analysis of the data is needed to understand more subtle, complex and meaningful themes on emotions.

Key words: probes, interview, qualitative data, content analysis, family

1. Introduction

Many ways have been proposed for connecting absent loved ones using technology (Chung et al., 2006; Chang et al., 2001; Sellen et al., 2006). A number of 'intentional' affective communication appliances provided 'visual information' as 'social cues' and 'affective factors' including tangible forms such as shapes, lights and colours, and concrete information such as photographs, personalized text messages and items

with meaning.

This paper addresses a particular part of the problem space, that is, three-generation families where one or more members are separated by large distances (e.g., between Korea and the UK, see Table 1) and thus awkward time differences. For understanding their deep and complex feelings, thoughts, and real dialogues in order to inform design, we needed to find an appropriate method. The new method we propose here is to collect and analyse qualitative data elicited from non-intrusive and non-directive interview techniques combined with probe methods (Kim & Monk, 2009; 2010).

"Cultural probes" (Gaver et al., 1999) were proposed as a generative technique to empathic understanding of user context with engagement. Many studies have also applied cultural probes to get design ideas such as aesthetic and cultural implications in order to provide opportunities for broadening new spaces for designing technology (Keller et al, 2004; Wright et al., 2008). We, however, proposed a method of "emotional probes", particularly for analyzing the data in a systematic way such like a social scientific approach in order to illustrate a big picture of complex and subtle emotions experienced by the three-generation families. This paper primarily focuses on the Probe study method with interview techniques in details (see Section 2). In order to interpret the data derived from the probe responses (17hrs. 4min, see Table 1), three methods were taken: (i) content analysis (Ole Holsti, 1969), (ii) open coding, and (iii) axial coding (Strauss & Corbin, 1990). The content analysis is commonly used to code the large amounts of textual information in order to identify the properties, patterns and trends in data sets (e.g., the frequencies of most used topics). In this paper, the content analysis was used with three fixes: emotion, relationship, and technology (see Section 3). The results are discussed in Section 4. The methods of open coding and axial coding and the results will be described at a later date.

2. Probe study method

A probe study was carried out where members of three-generational families, where at least one person is geographically separated from the others, talk about their subtle emotional experiences. Two interviews were conducted with participants in their own homes, separated by more than a week. This section describes two interview techniques to be designed with emotional probes and carried out with eight participants.

2.1 Ethical approval

Ethical approval for the probe study was obtained from the University of York, Department of Psychology Ethics Committee based on the consent form prepared for the participants. This made clear that the interviews would be recorded and that if they felt that no longer wish to take part at any time after signing the form, they could just say so and we would stop and destroy any data collected. The small gift was a £10 Marks and Spencer voucher given to the each participant.

Interviews were audio recorded and anonymised at the point of transcription English names were used as pseudonyms even when the participant was Korean but the gender of the participant was preserved.

All the information was stored securely. All the names given in this study are fictional.

2.2 Procedure

2.2.1 Interview 1

Fig. 1 shows the procedure for the first interview is set out. Participants were first asked about their day-to-day contact with their family. A family map was drawn identifying family members and how they typically communicate. This technique is a natural way of gathering data with open-ended questions, for example, *'I just want to listen to the story of your family and how you communicate with each other. If you don't mind, I will write your name on the centre of this paper. Is that ok?'*. Each family member was then added to this diagram (see Fig.2 for example). Next, to sensitise them to the types of technology we are interested in, they were shown pictures of four prototype communication devices (Lover's Cups (Chung et al., 2006), LumiTouch (Chang et al., 2001), HomeNote (Sellen et al., 2006), and Whereabout Clock (Sellen et al., 2006)) (see Fig.s 3 and 4). Pogo, an early mobile device, was also introduced as a wishing prototype (see Fig.5). The participant was asked, *'What do you wish this communication device could be? How do you think it would be working?'* Finally, the probes were introduced and left with them.

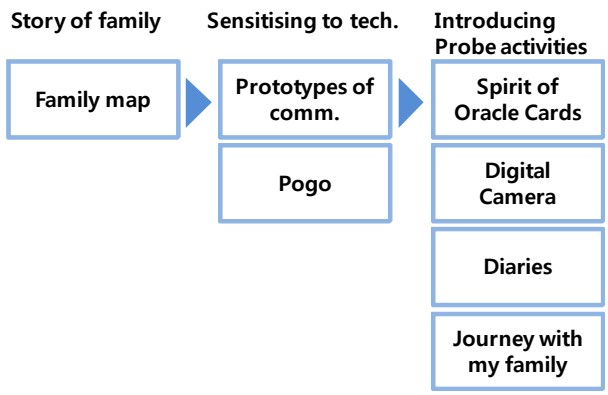

Fig.1 First interview procedure including probe activities

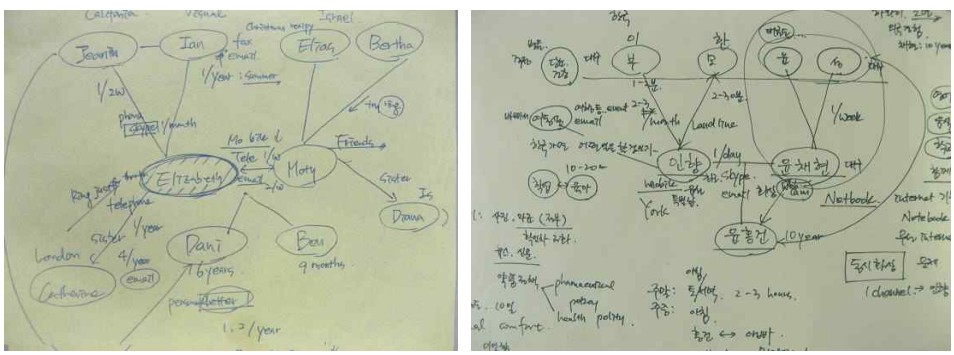

Fig. 2 Family map: a. English map, b Korean map

Fig. 3 Prototype communication devices: a. Lover's Cups, b. LumiTouch, c. HomeNote

Fig. 4 Prototype communication devices for sensitising to technology: d. Whereabouts Clock

2.2.2 Interview 2

More than one week after the first, the second interview was conducted. The probe responses were the stimulus for conversation. Participants were asked to talk about what they had done with the probes, focusing on "how and why", rather than what and who, in order to get more emotional context with subtleties. Some probe activities were conducted during the second interview.

The interview was designed to be natural and non-intrusive. If any signs of distress in the participants were recognised, 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.

2.2.3 The Probes: Box of 'things to do'

The probes were presented to the participant in an attractive "box of things to do" (see Fig.5) participants could choose to carry out one or more of the activities. These emotional prompts were four types of activities, each with instructions (see Fig. 5).

Fig. 5 Probes box, b. Things to do in the box, c. Things to do

2.2.3.1 Spirit of oracle cards with an invitation

These cards were intended for emotional reflection as stimulus. Each card has its own name and image on the front such as ‘emotions’, ‘intention’, ‘regret,’ ‘angel over me’, ‘blessings’, ‘faith’, ‘remembrance’, ‘speak your truth’, ‘soul mate’, ‘honesty’, etc (see Fig. 6a). Participants were asked to choose a few of them that elicit thoughts or feelings about their family, and write or draw on the back of the card. Fig. 6b shows examples of the responses to the cards from participants written down on the back.

Fig.6 a. Cards with instruction, b. Responses to the cards from participants

2.2.3.2 Digital camera

Participants were asked to take photos with association with any/all of eleven prompts listed on the instruction sheet (see Fig. 7). These were: something about you that you like, something you like to share with your son/daughter, something you like to share with your husband/wife, something you like to share with your mother/father, an element of family life, a favorite part of your home, a connection to someone you love, something connected to a favorite place, objects that are precious to you, children’s homework, artwork, certificates that they really want to show off, and symbols of affection. Some of the photo probe responses are ‘the name and drawing scribbled by son (Fig. 8a)’, and ‘son’s shouts at friends in football game (Fig. 8b).

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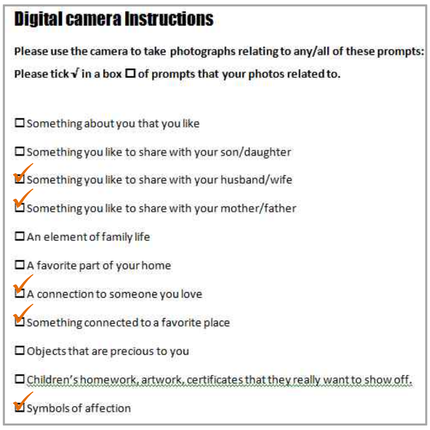
Digital camera Instructions

Please use the camera to take photographs relating to any/all of these prompts:
Please tick √ in a box ☐ of prompts that your photos related to.

- ☐ Something about you that you like
- ☐ Something you like to share with your son/daughter
- ☑ Something you like to share with your husband/wife
- ☑ Something you like to share with your mother/father
- ☐ An element of family life
- ☐ A favorite part of your home
- ☑ A connection to someone you love
- ☑ Something connected to a favorite place
- ☐ Objects that are precious to you
- ☐ Children's homework, artwork, certificates that they really want to show off.
- ☑ Symbols of affection

Fig.7 Digital camera instructions

Fig. 8 a. A connection to someone you love, b. Something to share with your husband

2.2.3.3 Diaries

Two diary cards were provided to write about special occasions of communication, for pleasant or unsuccessful ones, with the date, time, contact person, and the types of communication (see Fig. 10).

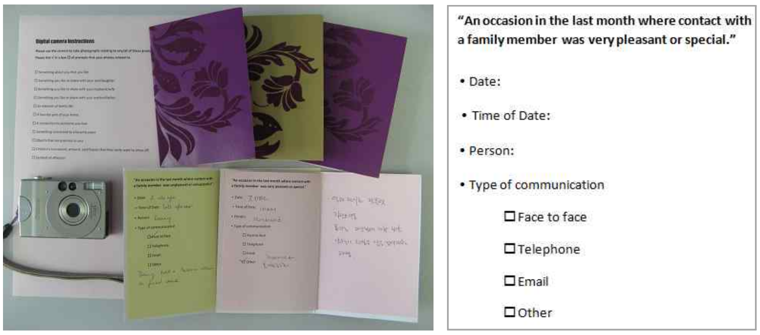

Fig. 10 a. Digital camera with instructions/Diaries, b. Instruction of diary: pleasant occasion

A third card was designed for a log of telephone calls with the instruction of 'Please list as many as possible the telephone calls you have with members of your family between the two visits'. The common topics were intended to indicate daily context. Examples of the responses of telephone calls (English and Korean) can be seen in Fig. 11.

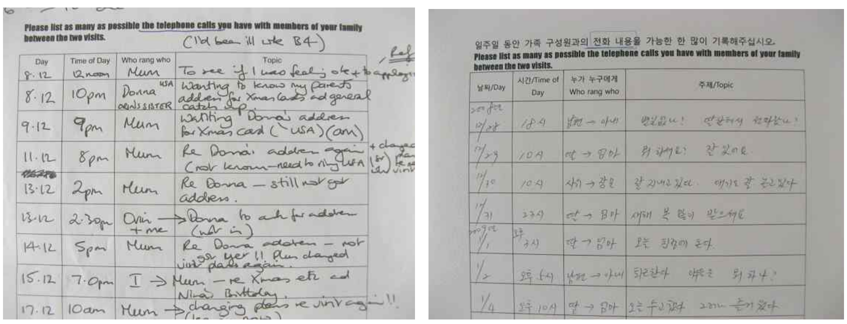

Fig. 11 Responses of telephone calls - English and Korean (below)

2.2.3.4 Journey with my family where I was very happy

A3 sized paper was offered for describing 'a happy journey' participants had with their family members. The instructions say 'Write something next to "Start" and "Destination". Add drawing, stickers, words or sentences along the given 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'. More than two events were expected to be described along the line on a journey in order to get as much data as possible (see Fig. 12).

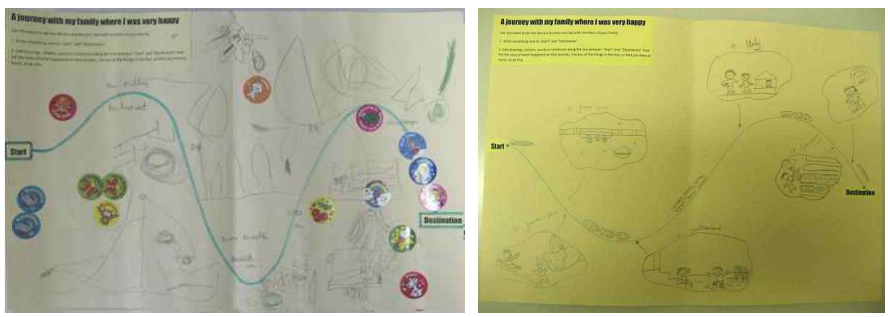

Fig. 12 a. Journey probe response (left), b. Journey probe response (right)

2.2.4 The informants

The informants are listed in Table 1. They were recruited by personal contacts and also via Societies for South Koreans at the University of York and the University of Sheffield. Six participants in the UK and three in South Korea were recruited. The qualitative data were elicited between the 5th of December, 2008 and the 4th of January, 2009.

Table 1. Infomants, all names in this study are pseudonyms to ensure anonymity.

	Interview			Probes						Int. duration	
	Informants	Who	Who is at a distance	Cards	Photos	Happy occasions	Unpleasant occasions	Phone calls	Journey	Int.1	Int.2
1	Anne	M of 2 in UK	Parents in USA	3	Yes	Yes 2	Yes 1	Yes 3	·	1hr 12min	14min
2	Betty	M of 1 in UK	Husband's family in USA	4	Yes*	Yes 2*	Yes 2*	Yes 10	·	45min	1hr 26min
3	Tom	F of 2 in UK	Parents in Korea	3 in 2nd R*	Yes*	Yes 1*	Yes 1*	Yes**	Yes*	40min	1hr 4min
4	Linda	M of 2 in UK	Parents in Korea	5	Yes	Yes 2	Yes 1	Yes 8	Yes	1hr 15min	1hr 34min
5	Emma	M of 1 in UK	Husband in Korea	5	Yes	Yes 2	·	Yes 9	·	1hr 24min	1hr 22min
6	Sam	Son in UK	Father in Korea	·	·	·	·	·	Yes	25min	17min
7	Jane	GM in SK	Daughter in England	5	Yes*	Yes 2	Yes 1	Yes 7	Yes	1hr 8min	59min
8	Helen	M of 1 in SK	Husband in Baghdad	3 in 2nd R*	Yes**	Yes 1	Yes 1	Yes 14	Yes	1hr 18min	1hr 26min

9	Lucy	M of 2 in SK	Husband in Bangladesh	4	Yes	Yes 2	Yes 2	Yes 5	Yes	·	34min

2.2.4.1 Informants in the UK

Two British mothers were the first to participate in the Probe study. One was concerned about her parents who had recently moved to California for their business. The other talked about the members of her husband's family settled in the USA. One Korean father, studying for a PhD and living with his family in the UK, participated in the interviews. One mother, looking after their children and supporting her husband, living with her family in the UK, was also interviewed. These two participants had elderly parents in South Korea. Another mother, studying for a PhD and looking after her son in the UK, was interviewed. Her main concern was her husband living in South Korea. Her 10 year old son also participated, talking about his own emotional experience of communicating with his father.

2.2.4.2 Informants in South Korea

One grandmother, living in South Korea with her husband, was interviewed, talking about her only daughter who was living in the UK with her family. Two mothers of children also took part in this study, talking about their experiences, connecting to their husbands working in different countries. One had two children and was a housewife, whereas the other was a working mother with a 9 month old boy. Equipment failure meant that there was no recording of the first interview for participant 9, Lucy (see Table 1).

3. Content analysis of Probe study transcripts

3.1 Overview of coding analysis

The work of transcription and translation into English, in the case of the interviews conducted in Korean, was carried out by the author. With approximately eight hours of recorded conversation for Interview 2 (nine files) and seven hours for Interview 1 (eight files), 134 pages of transcript were generated (see Table 1, last two columns "Int. duration"). The English conversation files were transcribed in full. Korean files were transcribed in Korean and then translated into English. Small sections (less than 10% in total) of the recordings were not transcribed as they were not concerned with the probes, family relationships or communication. For example, two mothers were busy calming their babies down, another mother had to pick up the phone and have a conversation with her friend, another who was a friend of mine was arranging to see me after interview. This accounted for less than 10% of the recordings.

Pseudonyms were used throughout this thesis. Transcripts were anonymised at the time of transcription. English names were used as pseudonyms even when the participant was Korean but the gender of the participant was preserved (see Table 1, second column "Informants").

As mentioned in Section 1, three steps were taken to understand the data; content analysis, open coding, and axial coding. The content analysis was carried out to break down the raw data and to examine and compare sections of text, in order to find out interesting bits from the data, without a preconceived

framework or hypothesis. Results of open coding and axial coding will be reported at a later date.

3.2 Results of content analysis

Ole Holsti (1969) defined content analysis as “any technique for making inferences by objectively and systematically identifying specified characteristics of messages”. Content analysis is, thus, a type of quantitative approach of coding large amounts of textual information in order to identify the properties, patterns and trends in data sets. In this study, due to the huge data (137 pages) to be examined, transcripts were first segmented into sections of text indicating: (i) emotional feelings; (ii) comments about the method of communication; (iii) comments on family relationships. These three terms: “emotion”, “technology”, and “relationship” can be thought of as prefixes of codes. The prefixes were considered as significant terms to understand the families’ deep feelings with regard to communication and separation. As such they are sensitising issues that are allocated to find interesting points in the data. In addition, texts were assigned as first level codes, for example, “emotion - looking back”, “relationship - too generous to grandchildren”, “technology - photos tangible”. Examples of these first level codes and the relevant sections of text they apply to are given below.

a. Example 1. code: emotion - looking back

“It is African embroidery. I like that one. ... It's like a mother and her child. ... Sometimes I just feel like walking away from it all. Sometimes I was quite happy to look at it. Sometimes I forget what I've got. ... when I moved a house as a student, everything was put in a trunk. Then I reopen the trunk and I saw, "Oh!" I feel really surprised. I've completely forgotten that. ... something happens in my brain, I was completely different. I've never done it. I've never been to Hong Kong. I've never worked in Chile, never travelled the world. I completely forget. It's really weird, and annoying, but it happens.” [Betty Int.2, Photo probe]

b. Example 2. code: relationship - too generous to grandchildren

“My parents and I have very different points of view for the kids. They want nothing from them. They sometimes want to accept everything of who they are, what they want. But I hope to make them having good characteristics, not spoiled.” [Hannah, Int.1]

c. Example 3. code: technology - photos tangible

“My precious objects are the photos of my kids. They are not digital, printed ones could touch.” [Tom, Int.2, Photo probe]

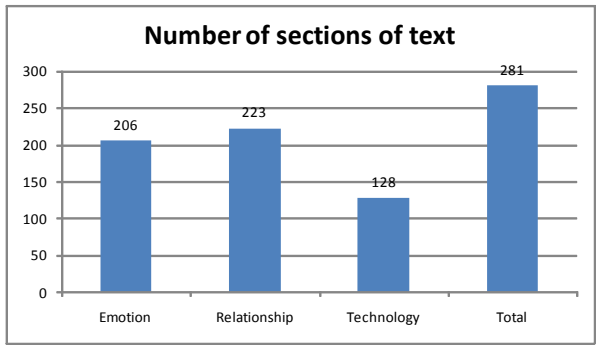

Fig. 13 Number of text sections

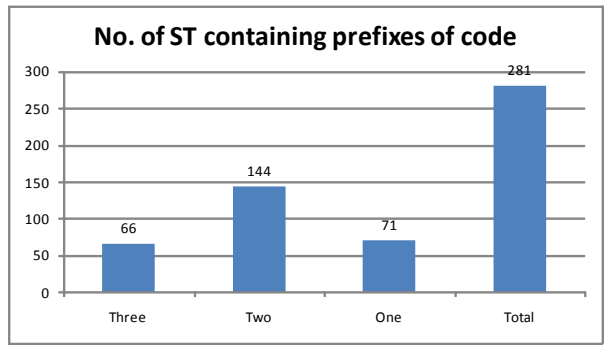

Fig. 14 No.s of text sections containing one, two or three prefixes of code

Following open coding, all the text segments were revisited and categorised according to the three prefixes. The remainder of this section provides a quantitative description of the distribution of the prefixes across the 281 text sections identified in this first step of open coding.

Fig. 13 gives the frequencies of sections of text coded with the three types of prefix: emotion, relationship and technology. Comments on technology were less frequent (128) than comments on emotion (206) and relationship (223).

Many sections of text received more than one prefix code. Fig. 14 shows that the number of sections of text associated with two prefixes is more than twice the number of text sections containing one prefix or the ones related to three prefixes of code. Even though the number of sections of text associated with three prefixes of code (emotion, relationship, and technology) is the lowest, this group could be considered to be the most interesting sections of text for further analysis.

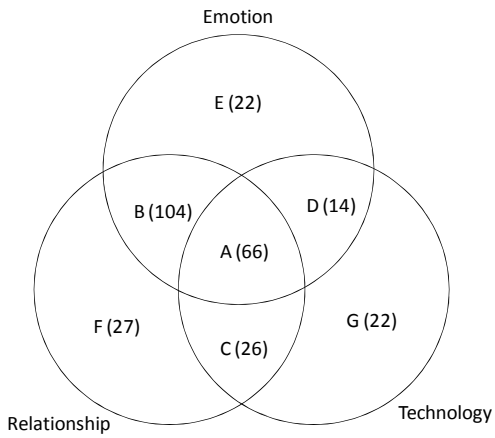

Fig. 15 Distribution of prefixes across the 281 texts in open coding

Fig. 15 shows the number of sections of text assigned with code prefixes: emotion, relationship and technology, and the overlap in this distribution. As mentioned above, zone A contains 66 sections of text associated with all three prefixes. This zone has more interesting issues than others zones. We could assume that the sections of text grouped in this zone will result in more emergent codes in Step 2. The emergent codes can be thought of as subtler units of meaning that are emerging while examining the sections of text.

The number of sections of text coded with “emotion” and “relationship” (zone B: 104) is the largest.

The prevalence of codes in this zone shows how complicated emotional feelings are about the relationships with members of one's family. The number of comments on "emotion only" (zone E: 22) is similar to other unique zones like "relationship only - zone F: 27", "technology only - zone G: 22". People commented little about the link between "emotion" and "technology" (zone D: 14).

4. Discussion and conclusions

The method of emotional probes combined with interview techniques was found successful in eliciting rich data for understanding the emotional needs of communication, and also practical constraints of technology, such as daily content, cost, and time difference. In addition, the emotional probe activities were thought of as therapeutic treatment because some participants could explicitly evoke and explain their experience of retrospective, present, and future dialogue. Others wanted to keep their probe activities for themselves as a symbol of the importance of the family. The reasons for these could be associated with two key features of the emotional probes: (i) 'creative and attractive stimuli', and (ii) 'participants take probes away and reflect'.

The results of content analysis presented in Section 3.2 showed the patterns of the text sections that were allocated into the three fixes; emotion, relationship, and technology. As introducing more emergent codes with text sections can illustrate how complicated emotional feelings are about the family relationship, which is the next step of investigations. Three examples with emergent codes are illustrated below.

a. Example 1. code: relationship, technology, and emotion (Zone A) - SMS, Time difference

"Using SMS is different from face to face communication. My daughter wants to contact with her friends in Seoul but just talking on the phone seems quite different from talking face to face. The time difference could be a big problem too. When she could SMS with her friend in Korea, she was really happy and excited, but it seems not easy for her to contact with her friends generally." [Tom, Int.1].

b. Example 2. code: relationship, technology, and emotion (Zone A) - Hope

"Just try to make a simple film of Benjamin and his dad and show the film very often to Benjamin. I [Helen's friend] think Benjamin [2.5 year old boy] will be very happy to see his dad playing with him with joy in the video." [Helen Int. 1].

c. Example 3. code: relationship and technology (Zone C) - Cost

"I buy a phone card, which is paid about £50 for 600 mins talk. Before my daughter got married, I rang her every day. After that, I ring her once or twice and she rings me once a week, so I talk with her at least twice a week on the phone." [Jane, Int.1].

Kim and Monk (2012) argued that many studies have applied cultural probes to get design ideas for

further development, such as Gaver et al. (2002), Keller et al. (2004), and Wallace (2008), but none of the above studies systematically analysed the qualitative data. The use of cultural probes and the way of interpreting the results can be chosen depending on the specific aim of a project, such as deriving design implications in a short period of time to develop concepts of design scenario. In this case, researchers are unlikely to consider the systematic interpretation of the data derived from the probe method used (Boehner et al., 2007). However, the data derived from the emotional probes in the present study confirm that the probe method had a desirable effect of encouraging our informants to talk about their stories, deep feelings, and emotional needs of communication technology. It can be attributable to the sensitive, indirect, and un-intrusive procedure of the interview schedule planned. The results of content analysis will be used as the input for further analysis concerning more subtle, complex and meaningful themes on emotions as a big picture to derive design ideas and requirements in a systematic way. This will be reported at a later date.

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