

# “Presence in Absence”: Distributed Family Communication Practices for Familial Bonding via Mobile Communication Technology

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**Abstract.** Technology for bringing family together or coined as *Family Connecting Technology* (FCT) has become a prominent topic in HCI. As familial bonding has significant implication in affecting the design and use of FCTs, research on familial bonding is deemed important, yet challenged by discrepancy on its actual operationalization due to the diversity of current research focus. Therefore, this study aims to discover underlying patterns of mediated familial bonding from family’s actual practice of FCT that is social messaging system. From a thematic analysis of interview data, we identified two main issues: ‘online shared activity as transitory platform of familial bonding’ and ‘effects from technology design on familial bonding’. Then, we discuss potential indicators of familial bonding that provide insights to our future work in developing a conceptual model of mediated familial bonding.

**Keywords:** HCI, family connecting technology, social messaging, mobile technology, familial bonding, extended family, mobile communication, mediated family interaction, online shared activity.

## 1 Introduction

In the realm of Computer Supported Collaborative Work (CSCW) technologies, research in the organizational setting have highlighted how connection is entrenched in supporting collaboration and coordination of workgroup in improving productivity, efficiency and effectiveness [1]. As of its early invasion to the domestic life has been realized in the late 1980s [2], research in CSCW has been expanded broadly from functional to social aspects of technology where one of the increasing interest and importance is family connection [3]. An abundance of technologies has been designed including readily available applications to connect distributed extended family members – those who are related but do not co-residence [4]. Drawing on the definition of family connection posited by [3], we coin the term “Family Connecting Technologies” (or FCTs) referring to a group of technologies that support families to

communicate with each other, to share their lives and routines, to engage in social touch, and to negotiate for being together, or being apart.

Strong familial bond is prevalent across cultures in collectivist countries such as Malaysia, China and Bangladesh [5]. However, demands on career and education advancement have forced people to migrate [6], creating a scenario of contemporary families that lead hectic lifestyles. Since “families are more closely bound together as a group of interacting persons” [7], the adoption of FCT helps bring family members together, anytime and anywhere. In the earlier studies of FCT such as cell phone [8], short messaging system (SMS) [9] and electronic mail (email) [10], familial bonding merely captured insignificant attention despite of its importance. Later, with burgeoning interest from society towards the technology and realization of its capability in engendering affective sense while maintaining interpersonal relationships [11] makes it essential to explore how it is appropriated by family in the pursuit of familial bonding. As in non-mediated environment, familial bonding is manifested through joint activity or mutual interests [12][13], and expression of care or protection [14], which can be evidenced from facial expressions and body gestures displayed during interaction. However, the trace of familial bonding seems to pose more challenges within technology mediated environment as all the bonding cues are embodied in other forms. Even though current research has provided valuable insights on the ‘do’s and ‘don’ts in FCT design, there is a paucity of unified understanding in how mediated familial bonding is perceived, particularly in the context of using social messaging system.

As the first step, this exploratory study sought to capture initial patterns of perceived mediated familial bonding through actual practice of mobile family interaction. We believe that this newly emerged FCT that was predicted as a future trend in 2014 and beyond [15] can be a great advantage in terms of its practicality and mobility to enable extended family members virtually bonded in group. In the broader sense, this study is a fragment of our long-term aim in solving a problem of designing FCT informed by operationalization of mediated familial bonding that is theoretically, methodologically and empirically supported [16].

## 2 Related Studies

Connectedness or bonding [17] between distributed extended family members has received considerable attention recently and has become a very intuitive design orientation for FCTs. Research shows that familial bonding is facilitated via FCT in various forms. For example, SPARCS [4] was designed to support serendipitous and lightweight sharing of photos through daily sharing suggestions to minimize the effort which is one of the important concerns emerged in distant family communication. Along this line, the Digital Family Portrait [18], the Wayve [19], as well as the Family Window and Family Portal [20], are other variants of FCTs to support familial bonding between distributed family members through the use of messaging feature bundled with multimedia elements such as photos, text, scribbled handwriting, video, audio and drawing. The lightweight feature of technology has often been taken into

design consideration in promoting frequent sharing of information. Interestingly, FCT design does not merely employ explicit messaging as means of connecting family. FamilyPlanter [21] for instance, has been designed to support a sense of closeness between remote family members through its unique design concept *tsunagari-kan* or 'closeness' that continuously and interactively provides situational cues such as motion signs. Likewise with shared family calendar [22] that was designed to support coordination between remotely located members through sharing of certain calendar information. From synchronizing routines of different households, shared activity could be organized without having to ask for similar information repetitively such as the whereabouts of adult children during weekend. Essentially, these studies point to the use of FCTs to facilitate familial bonding among extended family members outside of their daily interaction circle, in which qualitative indicators or self-reported psychological experience have been used to indicate the emergence of bonding with exception to [21] that combined both qualitative and quantitative indicators of bonding. Furthermore, all aforementioned studies focus on either dyadic or triadic interaction between members.

Also of interest regarding familial bonding lies on family appropriation of readily available FCTs in the market. As an obvious case in point, the use of social network sites (SNSs), for example Facebook has attracted much global interest. A study on privacy within family communication upon using Facebook has discovered positive use by family that signifies ongoing evolution of SNSs as family communication medium [23]. Besides, social spaces like Blogspot and Flickr serve as platforms for continuous interaction in the form of photo-narrative among remote family members [24], and more recently, explosive growth of smartphones along with the broadband services has witnessed an increasing trend in utilizing mobile social messaging or also known as mobile instant messaging in daily life. People including family use this technology in enacting friendships and groups, however studies involving social messaging is very limited [25] particularly in understanding mediated familial bonding through FCT.

### 3 Research Method

The virtual family group formed via social messaging system can be categorized into intra-generational family or inter-generational family. The former is restricted to siblings and siblings/spouses, and the later may also include aunts/uncles and nieces/nephews. In this study, a purposive sampling was used to inform an understanding of the research problem [26]. The need to gather thick descriptions were constrained by time and financial limitations, however, makes it unfeasible to have a large number of participants. Due to this, no assertion are made that the results represent general population as a whole. The Malaysian family selected for this study adopts a social messaging system to connect with distributed family members. The family relationship of this family may include both intra-generational and inter-generational family. In-depth interviews were conducted with seven participants from the family members between August and December 2013.

### 3.1 The Participants

At the beginning, ten members from the family were approached but three of them were disqualified since they did not participate in the family group communication. Although all of the participants installed several types of mobile messaging applications such as WhatsApp, WeChat and LINE in their smartphones, all of them only use WhatsApp or WeChat for their family group interaction. Table 1 shows the demographic detail of the participants, their current residential location, and details of the family group interaction such as the number of virtual family groups they participated, duration of participation and virtual family group structure, whether intra-generational (Intra) or inter-generational (Inter). Two participants are residing in United Kingdom; one is residing in Dubai, while the rest are residing in Malaysia. Pseudonyms are used to protect participants’ anonymity.

**Table 1.** Demographic information and family relationship information of participants

Name	Age	M/F	Residential Location	Employment	# of group	Duration of group participation	Intra / Inter
Sarah	40	F	Kedah, MAL	Teacher	2	< 6 mths	Intra/Inter
Omar	32	M	Manchester, UK	Businessman	2	Nearly 1 year	Intra
Ahmad	39	M	Sabah, MAL	Teacher	3	< 6 mths	Intra/Inter
Jasmin	40	F	Manchester, UK	Fulltime housewife	4	Nearly 2 years	Intra/Inter
Zaki	49	M	Dubai, UAE	Engineer	4	< 6 mths	Intra/Inter
Siti	22	F	N.Sembilan, MAL	Student	1	< 6 mths	Intra
Faizal	27	M	Kelantan, MAL	Clerk	1	< 6 mths	Intra

### 3.2 The Interviews

Owing to the geographical barriers and the different time zones, five out of seven participants were interviewed over Skype and Facebook Messenger with the account of considerations discussed by [27] such as providing a brief introduction to the aims of the interview, estimated duration, and also a need of building good rapport with virtual participants since common visual cues are absent. With the two remaining participants, both online and face-to-face interview were conducted. The face-to-face interviews were conducted at the participants’ choice of venue. Each interview session lasted for approximately 45 minutes for the face-to-face interviews and 90 minutes for the online interviews. All of the interviews were conducted in the Malay language as the conversation generated is inherently bounded by the social context in which it takes place while placing the interviewees at ease [28].

In general, participants enthusiastically drew on their experiences to offer insights about social messaging system in mediating familial bonding. During the interview, the participants may elicit genuine responses throughout the session.

### 3.3 Data Analysis

For the data analysis, the transcriptions of audio recorded interviews were analyzed along with the text-based online interviews in an iterative manner using thematic analysis [29], involving several rounds of analysis to categorize recurring themes. Qualitative data analysis software ATLAS.ti has assisted in the extraction and categorization of emergent themes. In the needs of supporting arguments, English translation only involved with the whole segment of which excerpts of transcripts was taken, and re-examined by professional translator.

## 4 Findings

### 4.1 Online Shared Activity as Transitory Platform of Familial Bonding

Several themes emerged from our data indicate that shared activities during online family interaction are quite similar to activities supported by current FCT design. These findings illuminate how FCT is used as a transitory platform by extended family members to gather virtually before actual meeting is made possible. Online encounters between the members through these activities are not limited to typical conversation or “catch-up” but can be as much as simulating a living space in physical home of which familial bonding can take place.

**Surrogate Social Care.** [18] defined this activity as “a form of mediated awareness intended to re-establish certain aspects of naturally occurring social support that have been disrupted”. As the geographic distance of extended family is seen as the source of disruption, FCT affordance is deemed advantageous to the point that naturally occurring social support system that require physical proximity is not possible as Sarah indicated, *“my sister, a doctor who acts as a kin-keeper create our own virtual sibling group in addition to other family groups as a private and confidential channel to discuss about our ageing mother’s well-being. She is almost 80 years old and always sick. Whenever our mother is admitted to the hospital, she will share the results of the diagnosis on the spot. We will discuss on what to do next”*. Indicator of care and support does not restricted to the ailing parents only but could also be shown to this extent: Ahmad, a teacher who was transferred to remote area far flung from others about nine years ago longed to live nearby. Since his application of transferal was kept denied, Ahmad regularly expressed his frustration by giving a call to his mother, and then she will contact others encouraging them to relax him. As of using FCT, he just expressed his feeling in the virtual group and later, other members will provide various kinds of support.

**Spiritual Materials Dissemination.** The participants feel that it is their responsibility to remind each other about their faith. In performing this responsibility, social messaging has been appropriated for the dissemination of spiritual and religious materials. This was the case with Sara *“I like to share excerpts of hadith and snapshots of Quran citations to remind others. It is one of my efforts to inform my family members,*

*especially about the importance of righteous acts in this challenging world*”. We also discovered that Omar, Ahmad and Jasmin have considered this as a convenient and subtle alternative of encouraging others to perform good deeds.

**Serendipitous Sharing of Everyday Moments.** Sarah who resides in another country often use location sharing as *“a way to inform my family members that I am shopping at certain shopping store especially designer’s outlets and if they want me to buy something for them, they can spontaneously make the order”*. This transactional interaction is indeed not business-oriented as she was glad to help others in having something which is unaffordable in her own country. Besides, photo or video sharing while at work, at dinner, during shopping, or even involved in bad incidents such as accident is also reported.

**Breaking news.** FCT is viewed as an appropriate channel for breaking news instantaneously as mentioned by Omar, *“When my wife got pregnant, I just post a picture of the pregnancy test kit used by my wife without any description signifying the existence of our oncoming baby. Then, others started congratulate me”*. Faizal also mentioned that social messaging adds a dimension of empathy not offered by conventional medium such as phone call, email or SMS since original intent of the message sender could be captured by facial or emotional expressions embodied in emoticons, live images or video clips. Any curiosity and misunderstanding is normally resolved when the sender offers further textual explanation after being requested by others. At first glance, we found the similarity of this activity to the cultural trope of *vaguebooking* which effectively prompts other members to respond immediately due to the nature of message or status that is vague and may attract the curiosity of others.

**Event Planning and Coordination.** Sara described this activity as provocative and ‘infectious’, *“Usually I will throw the idea in the first place and ask about the participation, and later propose the tentative of the program. I have a big family so I don’t expect that all members will join. At the beginning, there might be only several members will join but as the discussion progress, more and more members are enthusiastically taking part in the preparation and even join the event after seeing the merri-ness of the discussion. Normally, there is an overlap in the dates of the events with individual programs which created an atmosphere of dissatisfaction and disappointment but humorous statements and emoticons replied by others heal the situation”*. Figure 1 shows a photo of a pamphlet provided by Sarah, signifying their anticipation on this activity. The pamphlet was designed by her family member prior to the “Family Day” and represents a small portion of their online discussion. Interestingly, she conveyed that all the details about the activity were completely organized through social messaging.

**Supporting Long Distance Family Relationship.** The importance of FCT in familial bonding between distanced family members is further highlighted by Siti, *“Usually, I post my live pictures at college so that my mum who lives with my sister in our hometown will know that I am not going anywhere except in college, so that she would not*



**Fig. 1.** Snapshot of Sarah’s virtual family group in event planning and coordination

worry about me! Then, whenever possible I chat with my nephews or nieces who already know using their mum or dad’s smartphones to share our brief story of that particular day”. As for Omar, Jasmin and Zaki who reside in another country, FCT is essential to stay in touch with others. Omar indicated “If I make a phone call, I cannot talk to more than one person at a time but using WhatsApp, I can talk to many members. It’s like a black magic, I am not ‘there’ to be touched but I am there to talk to. I can feel that all family members are at the same place”.

## 4.2 Effects From FCT Design to Familial Bonding

The kind of online shared activities being shaped upon using FCT has further characterized how the design of technology could actually give impacts to familial bonding that recurrently drives family interaction. These findings essentially point out the importance of FCT design in bringing family together virtually, which may be considered by designers.

**Continuous Presence and Awareness through Shared Context.** Desires for the sense of continuous presence and awareness for other family member around them are often mentioned eloquently. As Zaki commented “I am physically far away from others. Now, it feels like I can reach them anywhere, anytime without limits. I feel they are near me even with the smallest hint, and that’s better than nothing. This reminds me a lot of our childhood memories”. Similarly, Ahmad stated, “at once I thought that all group members are living next door and sometimes I feel like if I want to talk to them, I just need to enter a special dark room with some lights and say hi as someone is in there to accompany me”. When probed on the term ‘special dark room with some lights’, Ahmad explained that prior to the interaction, he would not know who will be online with him but status information like ‘typing’ or ‘online’ might provide

some clues who are available to talk to. On the contrary, Faizal indicated that *“just by knowing what’s going on with my family members is enough. It gives me sort of peace of mind just by looking at the pictures and read tons of messages. I don’t bother to post anything about me”*.

**Privacy.** The secrecy of family matter is the utmost concern of most participants when discussing about the content of messages. Zaki expressed his concern of external privacy when indicated *“Family is number one for me and I’d prefer not to share about our family issues with outsiders such as friends or colleagues. When joining family groups, there’s like exist unspoken agreement not to share the contents unnecessarily”*. On the contrary, Sarah offered an insight on internal family privacy *“I have two groups currently because in my sibling group, we discuss more serious topics related to making decisions about our ageing mother or perhaps considering a plan for each of us to contribute certain amount of money for her well-being. In another group, more general topics like planning a vacation or surprises are discussed by more members”*.

**Immediacy.** All participants expressed their appreciation on the promptness of the messages delivered to all group members. For example Zaki commented *“There are times when I restlessly need to know about my mum’s condition usually when she’s not well. Luckily we have this app, so I know the most up-to-date progress about her no matter if I am at the office or at home”*, whereas Siti who often encountered unintended situation like insufficient water supply at the hostel expressed her relief, *“Luckily I have WhatsApp. I just message them to pick me up as soon as possible and then someone will reply back as I know they are online most of the time”*.

**Embodiment of Affective Contents.** Jasmin and Siti mentioned that the occurrences of unordinary events or incidents that emotionally involved often invite responses from others, and the messages are diverse depending on scenario as expressed by Faizal, *“one of my sisters told us about her miscarriage. All of them kept posting messages including digital condolence card and emoticons to console her”*.

**Reciprocity.** [30] defined reciprocity as “actions that are contingent on rewarding reactions from others and that cease when these expected reactions are not forthcoming”. In this sense, the Social Exchange Theory [31] suggests that family members assume mutual reciprocity to align with their initiatives in terms of time spent for mediated interaction through FCT. This affects the number of replies posted by participants and their family members during interaction. Significant mutual reciprocity between family members had resulted with many messages being posted during interaction as expressed by Sarah *“when discussing about our family day, about 300++ messages being posted by approximately eight different members if I am not mistaken. The conversation took less than 15 minutes and it was havoc but I feel so close with them!”* In the opposition of the frequent replies within a short timeframe of interaction, Omar has indicated the lack of mutual reciprocity *“I realized there’s a few times when somebody post the message or photo, no one replies or if any, perhaps one or*



*two members only and the conversation ends there” and when asked about the reasons, he speculated that others were perhaps busy, getting offline or uninterested. However, we note that family kinship play its role in the norms of reciprocity as Jamin highlighted, “I have four groups: siblings only, my siblings with their spouses including my husband, my husband’s siblings group with their spouses, and another one is joined by my nieces and nephews. So, the number and frequency of post to each group is different depending on my status. I regularly post to my sibling group and another one but less in the groups which my husband family is there”.*

## 5 Discussion and Limitation

This study highlights that familial bonding in the online shared activities over family interaction. This study uncovers several new activities in the family interaction such as product or service recommendation and spiritual materials dissemination. The other activities that took place having similarity with current issues of FCT in other studies as in the serendipitous sharing of daily moments in SPARCS [4], surrogate social care was being studied through Digital Family Portraits [18], family coordination through shared family calendar [22], and supporting long distance relationships as common aim in other studies [20][24].

Despite of having specific questions requiring the participants to describe how the sense of bonding is formed and the perceived feeling experienced by other members, all participants vaguely and repetitively mentioned that leaving comments or messages as an indicator of bonding [19], apart from emphasizing the phrase “*I feel close*”. To further illuminate this, we had another round of reading the transcripts and the emergent themes, in relation to the reported indicator to identify possible implicit cues of mediated familial bonding which is bound in an interwoven of virtual shared activities and effects of FCT design. These include: 1) the frequency of mediated interaction through FCT, 2) the degree of reciprocity, 3) embodiment of family emotions through contents, and 4) visualization of the shared context. These propositions are compatible with the results of [32] that found higher level of family emotions or termed as affectual bonding lead to higher frequency and intensity of contacts of which referred as associational bonding. Our findings have shown that FCT or social messaging system in particular, serves as an affordance for frequent family interaction over online shared activity driven by the amount and types of multimedia elements as well as other features used, which embody family emotions. This in turn, permits distributed family members to mutually reciprocate in the shared context provided by FCT design.

Although the findings are encouraging, our study has limitations since each family is characterized by great diversity. We made no claim on the universality of these findings particularly on family online shared activities across cultures, but as the familial bonding is rooted in similar sources [12][13][14], the sense of bonding articulated in our study is apparently manifested through the equivalent ebb and flow of all family life.

## 6 Conclusion and Future Work

This study has reported a preliminary study of a variant of FCT that has shed some light on how mediated familial bonding is perceived in virtual environment. It has appeared that mediated familial bonding can be maintained and facilitated through online shared activities that serve as transitory platform embedding the expressions of care, protection and mutual interests, interlaced with a myriad of family emotions. However, the findings suggest that the manifestation of mediated bonding does not entirely depend on its transitory platform but the right combination between family interrelated acts and technological design of the ‘platform’ that indeed warrants the emergence of familial bonding. Moreover, the study also reveals the ambiguity of bonding manifestation perceived by participants, apart from self-reported experience. Therefore, we plan to explicate these issues further with theoretical explanation by developing a conceptual model of mediated familial bonding through FCT as our future work.

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