

Crafting Unconventional Artifacts to Support Long-distance Relationships: An Overview of Doctoral Research

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Abstract. This paper presents an overview of my doctoral research thus far, which has been dedicated to creating unconventional artifacts that use interaction solutions beyond conventional screen displays to mediate emotional communication in the use case of long-distance relationships.

Research question

Long-distance relationships (LDRs) thrive in the contemporary life. There are a significant number of individuals who have to live apart from their loved ones due to educational demands, career pursuits, military duty, emigration and such circumstances (Stafford, 2004). Luckily, computer-mediated communication tools have enabled a variety of convenient channels for people to interact with their loved ones over distance. Email, instant messaging, cell phone calling, texting, video chat, and social networking sites all create easy ways for remote couples to communicate. However, current long-distance communication is limited to visual, audio, and text-based channels. Moreover, the user interfaces are mostly limited within screens. It has been found out that most available technologies focus on the transmission of explicit information, which neglects the emotional and subtle communication needed for close relationships (Hassenzahl et al., 2012). Thus, my

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research question is centered on: How can design help to bridge the gap between understanding LDR couples' needs in research and designing technologies for them in practice?

Methodological approach

Participatory methodology of design thinking has been employed and developed in my research so as to create empathy and engage the users – remote couples who are in serious LDRs – into the design process. Empathy has been used as a powerful tool and strategy to understand the users in which service design tools and methods, e.g. persona, empathy map, user journey, etc., have been applied. My methodological approach has combined conducting workshops and developing findings through the use of qualitative methods, e.g. semi-structured interviews, focus groups, case studies, etc.

Work/findings to date

My research thus far has resulted in three conference proceedings:

(1) The first presents a systematic literature review which was based on 52 research prototypes for mediating emotional communication between LDR couples. One of the key findings reveal that many reviewed works show a lack of user participation, and strikingly, most of the recruited participants in the lab studies were not authentic remote couples in real life, but substitute participants were used instead. Even though there were a number of studies did engage authentic participants who were involved in LDRs when the studies were carried out, in most cases the participants were only engaged in the evaluation stage (Li, Häkkinen, & Väänänen, 2018).

(2) To address the gap found in the first study, I engaged five remote couples who have sustained a long-term commitment in their LDRs in the second study, with a view to build empathy with them, explore their experiences and skills for coping with LDRs, identify their main challenges and needs, and understand their perspectives on existing artifacts that mediate intimacy between remote partners. The participants were treated as experts on their own LDR experiences, and were intensively engaged as co-designers throughout the design process where they had a chance to express their knowledge and insights on designing desirable LDR-oriented products that could better fit into the lives of the end users. The findings revealed that there is a need to take the strategy of customization into account when designing technologies for LDRs, where customization can serve as an aid to empower remote couples as skilled practitioners to creatively use technologies so as to meet their diverse needs (Li, 2018).

(3) The third proposed a functional prototype which uses a pair of connected candles as peripheral emotional user interface for creating an implicit communication channel to support emotional awareness in LDRs. The aim was to bring a subtle and poetic cue of the presence of a distant loved one by lighting up a candle. The concept is that each partner has an identical set up which consists of an authentic candle and an electronic candle. When the local partner lights the authentic candle, the LED candle of the paired system at his or her remote partner's location will illuminate. Additionally, there is a space between the candles for the users to customize their candle setup by placing a small token or memento, reminding them of the connected partner. Its evaluation based on a focus group with authentic LDR participants revealed that the concept was generally positively received, especially from the aesthetic point of view (Häkkinen, Li, Koskinen, & Colley, 2018).

In addition, two manuscripts are currently under review:

(1) One proposed a non-illuminating electrochromic ambient display and explore its use for supporting the communication LDRs. The unobtrusive display technique was prototyped with an interactive picture frame, which was used as a probe to chart the possibilities of the technique in an interview-based user study (n=12) and an in-the-wild deployment (one couple) of people living remotely from their partner. The salient findings showed positive response especially on the non-light-emitting nature of the display. Moreover, the presented concept added a new communication channel between the remote couple in real-life settings, which supported their communication and relationship through a pair of private, meaningful, and always-on yet calm displays (Li, Müller, & Häkkinen, 2019).

(2) The other presents a conceptual framework of the different aspects that the designers should consider when designing technology-mediated communication systems for LDRs. The framework addresses four main areas of LDR systems: users (the remote couple), LDR, technology, and design. Additionally, a set of six existing systems and prototypes were analyzed in the context of the framework. The analysis indicates that the framework functioned as a practical tool in categorizing and investigating their different aspects in a systematic way, which could be further developed to be used as a tool for design and evaluation of systems for interpersonal emotional communication for LDRs (Li, Häkkinen, & Väänänen, 2019).

Next steps

I regard the in-the-wild study as an important next step. More specifically, I will keep pursuing in the development and evaluation of novel devices which could be used to support LDRs, and deploying those devices with a number of LDRs.

Additionally, I will create a design tool that can help designers to better design and evaluate communication technologies that support LDRs, which is now in the process of developing.

Expected contributions

I hope my research will enlighten the impact of emotional communication on LDRs and result in the new understanding of how communication technologies could be embedded in unconventional forms and humanized with higher levels of emotional communication, thus supporting LDRs. Furthermore, I expect my research can challenge the way the world uses technology, through crafting technologies to become part of our lives and the way we were born to interact, instead of letting technology shape us.

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