

Chatterbox Opener: A Game to Support Healthy Communication and Relationships

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ABSTRACT

Computer Mediation Communication (CMC) applications are utilized to foster closer relationships between individuals. Various shared experience strategy designs were widely applied to technologies in order to enhance communications and interactions in family relationships. However, there needs to be more research on how shared experience approaches work in different family communication patterns. This paper presents insights into the effectiveness of three types of shared experience approaches for different family communication patterns and design considerations for game design from a diary study of Chatterbox Opener, the game we developed for families and couples to enhance communication orientation.

CCS CONCEPTS

• Human-centered computing → User studies; • Applied computing → Computer games.

KEYWORDS

shared experience, family communication, couple communication, relationship closeness, relatedness

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1 INTRODUCTION

Relationship patterns between romantic partners or family members take diverse forms depending on different backgrounds, cultures, personalities, and preferences. Each romantic couple and family dyad has its own communication pattern. Some prefer to interact through communication meditation techniques, such as texting or sending pictures [4], to show an abstract presence, while others might enjoy joint activities or share memories [13]. On the other hand, the formation of communication gaps in each romantic couple and family dyad is different as well. Some families have healthy communication patterns but still strive to improve their ability to communicate and connect, while other families have poor or unhealthy communication patterns and seek ways to bridge barriers to establish proper communication.

People who are geographically separated utilize mobile devices and computer-mediated communication technologies to create connections, maintain their relationships, and share their everyday life experiences [19, 23, 24]. However, there are various difficulties in this type of connection regarding individuals' expectations from the communication details, level of involving the remote person in the experiences, initiating conversations, and fostering communication effectively. For instance, separated romantic partners attempt to share their everyday events and talk with each other. Still, sometimes they find it difficult to remember the details, capture the moments, express their emotions verbally, or create a topic to talk about if no special events happen. Research has explored different ways to help people maintain relationships. For instance, Another example is communication between family members who are far from each other. There are challenges in family communication



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patterns because of their various personalities, preferences, values, and ages, leading to rare interactions and unwillingness to communicate. Avtgis's study [2] indicated family communication patterns who see communication as rewarding were positively related to conversation orientation, the degree of family members are encouraged to participate in interactions, and negatively related to conformity orientation, the degree to which family communication stresses a climate of homogeneity of values, from Revised Family Communication Pattern instrument (RFCP) [11]. Sometimes the difficulties result in avoiding communication to prevent arguments instead of maintaining intimate communication and resolving the problems. Therefore, relationship maintenance strategies use vary according to different relationship types. Canary et al.'s research supported that romantic partners and family members use specific maintenance behaviors, such as sharing tasks, openness, and cards/letters/calls, more than friends do [6]. The findings inspired us to look deeper into how shared experience approaches work in different families' and couples' communication patterns.

The effectiveness of technologies utilizing shared experience approaches has been proven to create feelings of relatedness and increase closeness in different relationships [3]. Among various types of applications, we found considerable research utilizing games as mediation to facilitate interaction and enhance relationships. From previous work, Haqq et al. found specific game mechanisms can mitigate barriers to social communication in a diary study of *Among Us* [15]. Saaty et al. emphasized the importance of social interactions and communication can benefit players by increasing closeness and motivation to exercise outdoors in *Pokémon Go* [25]. Wohn et al. investigated outcomes from social network games (SNGs) which are able to build connections for distant friends and relatives [30]. As a result, we believe game-mediated technologies provide several opportunities to improve communications and aid us in supporting healthy communication.

In this paper, we explored the potential use of a game-mediated platform *Chatterbox Opener* as a means of helping relational companions (family, romantic partners, etc.) overcome communication gaps and enhance communication orientation through diverse shared experience approaches. We designed an early prototype of the *Chatterbox Opener* digital board game, focusing initially on improving communication for families and couples. To play the game, players take turns drawing prompt cards (example prompt cards - figures 1 and 2) and then executing the task described on the card with their partner(s), including sibling(s), spouse, romantic partner, or parent(s). We aimed to understand how people with different communication patterns reacted to three types of shared experience tasks: memory sharing, joint activity, and empathic communication. Our goal was to observe whether these tasks can help collaborators better understand their partners and enhance their communication orientation.

We conducted a two-week diary study to evaluate how three types of shared experience approaches work in intimate or family relationships. We interviewed collaborators before and after the diary study to understand how the game helped them in fostering communication, what are the game design challenges and potential improvements, and dig deep into the diary study's outcomes. We describe our early findings about the effectiveness of shared experience approaches for different types of communication patterns

and circumstances. We also highlight design considerations about customized prompts in the game, follow-up tasks, and timing of prompts for the game that aim to increase closeness in intimate and family relationships through shared experience approaches.

2 RELATED WORK

This research is built on two domains: shared experience and intimate relationship communication patterns. To evaluate how the effectiveness of different share experiences can improve communication orientation in different communication patterns of close relationships, we examined the typology of marital and family communication patterns. To inform our study and design efforts, we reviewed various shared experience strategies, designs, and applications to understand the feelings and influence different share experiences will bring to people in different relationships.

2.1 Shared Experience Approaches and Applications

When apart, people use a variety of technologies and techniques to maintain their relationships with family, friends, and romantic partners. Some rely on computer-mediated communication (CMC), such as email [18, 28], video chat [19, 24], social media [5], or some combination [31]. Video Conferencing is a prevalent technology as it supports the sharing of presence and the sharing of experiences [19]. Various shared experience approaches have been applied to technologies as communication mediation techniques for closeness maintenance. Hassenzahl et al. reviewed 143 published artifacts and listed six design strategies, including awareness, expressivity, physicalness, gift giving, joint action, and memories, for creating a feeling of relatedness for users to create a relatedness experience that supports the design of technology-mediated relatedness in six ways [16]. Awareness is a feeling of relatedness created by different types of ambient information. Expressivity supports explicit expression and reflection of feelings and affections in an encoded or enriched way. We-Chi et al. presented the *Whisper Pillow* as an interactive artifact for emotional expression among couples [7]. The *Whisper Pillow* allowed users to leave messages and color codes for partners in an indirect approach. Kayne introduced *VIO* (Virtual Intimate Object), a single-bit communication medium for couples in long-distance relationships [20]. The *VIO* displayed states to help couples make rich interpretations from the colors. Physicalness improves closeness by mediating feelings typically derived through physical contact. Awareness, expressivity, physicalness, and gift-giving create an "abstracted presence" [9] by providing intimate, non-verbal communication to maintain closeness. Hassib et al. promoted awareness and empathy by augmenting mobile chat with heart rate data of conversational pairs [17]. Joint action allows intimate relationships to create behavioral interdependence through shared experiences or activities. Depping and Mandryk's research proves that cooperation and interdependence in game design mechanics can positively influence player relationships [8]. Social Network Games are taken as powerful tools to help strengthen bonds between different connections [30]. In Sobel et al's study, location-based mobile games allow families to hang out and facilitate both communication and bonding [27].

2.2 Empathic Communication

As mentioned above, technologies have become instruments for mediating intimate or family relationships [24]. There are applications able to transmit various signals, such as smell, vibrate, and light up. Families and couples separated by distance benefit from technological mediation. Abstracted presence provides link sharing without direct communication. However, abstracted presence provides less explicit forms of communication. Branham proposed an expanded design space for intimate partner technologies that includes two more characteristics: local partners and empathic communication [3]. “Unlike abstracted presence, empathic communication involves verbal, written, or similarly complex and nuanced communicative acts. Whereas the former is ephemeral, encouraging more decontextualized emotional or sentimental response, the latter is ongoing and built, encouraging a communicative grounding process that can contribute to mutual knowledge, beliefs, and assumptions.” Since we look forward to promoting people’s communication and improving the nature of conversations, empathic communication system designs might allow this study to evaluate users in creating deeper conversations for emotionally satisfying compared to indirectly shared experience designs. In this study, collaborators recognize the critical problem is provoking a healthy and positive communication orientation. We selected joint action, memories, and empathic communication as the shared experience strategy design in the game, allowing people to start conversational interaction directly.

2.3 Family Communication Patterns

In this study, we focus on examining the communication gaps in intimate relationships, including families and couples. We refer to Koerner and Fitzpatrick’s Family Communication Patterns Theory (FCPT) research results [21]. FCPT provides a clear typology of family communication patterns that cover different characteristics of each family type. FCPT applies to all family interactions and isn’t restricted to Western culture. In the Revised Family Communication Patterns instrument, Ritchie and Fitzpatrick categorized family communication patterns by two dimensions: conformity and communication orientation [11]. There are characteristics of each type of family [22]. Parents from consensual families, high on conversation and conformity orientation, are willing to learn about children’s feelings and thoughts but also believe they should make decisions for their children. Children in these families value family conversations and tend to adopt their parent’s values. Parents from pluralistic families, low on conformity and high on conversation orientation, allow children to make their own decision and are willing to let them participate in family decision-making, which leads to fewer conflicts. Children from these families value family conversation and be more independent and confident. Protective families, high on conformity orientation and low on conversation orientation, emphasize obedience to parental authority and pay less attention to open communication within their family. Children distrust their decision-making ability and learn little value in family conversations. Laissez-faire families are low on conversation and conformity orientation. Parents have little interest in their children’s decisions and conversations, which makes children

from these families not receive much support from parents. In addition, Fitzpatrick’s research shows significant evidence that marital types are highly correlated with family types [10].

3 CHATTERBOX OPENER

The game is an early prototype featuring a task drawing module. Recognizing that some people found communication and sharing with partners and family members difficult, we created a database of tasks to prompt or guide the conversational interaction between players. The tasks are based on eight topics commonly found in everyday conversations, including 1. schooling and work, 2. family and pets, 3. romance experience, 4. music, 5. people you know, 6. films and videos, 7. travel, 8. food and dining [14, 26]. We designed three tasks for each topic utilizing experience-sharing strategies: memories, joint activities, and empathic communication. We referred to self-disclosure and relationship-building task design in Aron et al.’s study [1] and created tasks through a brainstorming session. In the task-drawing module, collaborators can draw a task card to play with their partners.



Figure 1: Screenshot of an empathic communication task



Figure 2: Screenshot of a joint activity task

4 METHODOLOGY

We conducted a diary study to determine how effectively experience-sharing strategies can enhance communication orientation. Crafting a diary study enables us to collect qualitative data about participants’ behavior and experience over time. Participants are collaborators on the author list. Collaborators were tasked to play the game with a family member, such as parents or spouse, for two weeks. Collaborators were asked to play at least 7 tasks with their partners during these two weeks. The study was conducted in three stages: pre-survey, diary study, and focus group session.

In the pre-survey, collaborators describe their relationship with their partner, their preference for topics, how much they think they understand each other, the potential communication gap between them, and the frequency they chat or interact with each other per day. Our future purpose is to design a game that can encourage people to interact and communicate with their partners frequently and initiatively. Accordingly, we observed collaborators' difficulties and identified the challenges based on their communication patterns and the game design. The results from the pre-survey will be a baseline for further comparison.

In the second stage, during the diary study, collaborators played the Chatterbox Opener digital board game that we developed. Collaborators were allowed to create their own tasks in Chatterbox Opener if they felt tasks for specific topics were unsuitable for their communication pattern. In a diary, collaborators are asked to write down the process, their thoughts, and experiences for each task they participate in. The diary feature can help us observe their playtime process and feelings. Collaborators describe the process of conversations and interactions with their partners and reflect feedback about the task design for every task they drew. The first and second authors analyzed the diaries from collaborators utilizing initial coding methods [29] to categorize contents in diaries.

In the third stage, we recorded the focus group session to analyze the collaborator's overall experience and the influence on their communication pattern after playing the game. We compared the game's outcomes with their usual communication habits to understand their conversations' positive or negative effects. Additionally, during the focus group, we reviewed notification of the game design to prompt collaborators to play the game and look into prompts of tasks to understand how to guide players to expand and extend a conversation.

5 FINDINGS AND DISCUSSION

Three major themes emerged from our analysis: 1) Effectiveness of shared experience, 2) Customized content for different relationship types, 3) Follow-up tasks and crowd-sourced content, and 4) Timing of prompts. In the following subsections, we will discuss these themes and describe how these affect the evolution of our game and our future research direction.

5.1 Effectiveness of shared experience approaches

We found that tasks for sharing memories are the types that are suitable for a variety of relationship types (romantic partners, parent-child, family members). Memory-sharing tasks don't require players to play simultaneously, which is easier to start with. We found that sharing memories often led collaborators with higher communication orientation to extend their interaction by sharing other experiences related to the prompted topic. This led to more extended conversations, which helped collaborators feel more connected to the person they played the game with.

"I shared with him that I started my internship very recently and talked a lot about my challenges and experiences at work with him. Talking about my challenges

at work with him is always helpful for me, as he explains how I can deal with the difficulties and the good resources to learn new stuff." —Collaborator A

On the other hand, for collaborators with lower communication orientation, memory sharing became a prompt to start their conversation when they did not know what to discuss. We found that collaborators conversed more when drawing a card, prompting discussions of topics they were both interested in. Even if the conversation isn't related to the case at the end, the conversations do extend.

"My father isn't a communicative person, but my father enjoys this topic since it's very common for us to discuss my pets. Instead of the story, he said he wanted to see the cat through video more." —Collaborator C

Joint activities worked effectively for co-located players. During a joint activity, collaborators were asked to work on a task collaboratively, which allowed them to understand each other's habits and preferences on a topic.

"I enjoyed teaching him to cook a new dish as he can make more food in the future. Sometimes, I did micromanage him and didn't allow him to follow his strategy for cooking, which made him mad. And he uses a lot of dishes to cook something, making more dishes dirty. To reduce contention, I sometimes try to be away from him when he is cooking or fully aware of my reactions regarding micromanaging." —collaborator A

However, joint activities required collaborators to play with their partners together, which was difficult for remote groups. Collaborator D and Collaborator E both mentioned that playing joint activities through mobile devices could be more challenging when communicating. Many tasks of joint activities were also skipped due to external factors, like time zone, location issues, and difficulties in operations. Collaborators with lower communication orientation reflected that sharing experiences in joint activities is challenging due to personal feelings such as embarrassment.

Empathic communication tasks effectively improved the nature of communication depending on collaborators' preferences. Empathic communication in specific topics can derive more sharing and thinking. Deep conversations help collaborators learn about values and personalities.

"We liked this question because it involved future thinking and planning together. Among other things, my wife shared that she wanted us to visit England so that she could show me the places she enjoyed when she lived there. This would help us connect by sharing the past. It gave us opportunities to imagine our future together. It helps you also learn what your partner wants to do, their interests, etc." —Collaborator B

However, there is a situation in which empathic communication could be brief and meaningless if one of the players is not interested in the topic or feels uncomfortable sharing it. Collaborator D mentioned that they couldn't get into a deep conversation if the topic did not arouse both of their interests or without enough prompts, which required further study.

5.2 Matching the right content to the right relationship types

We found that type of content found on the card played a significant role in supporting communication and connection or disconnection between players. Some content topics were not suitable for certain relationship types. Collaborator E highlighted that his parents enjoy the playtime, which enables them to learn more about him and, at the same time, their conversations are no more just greeting.

"When playing the task "Share a song you have enjoyed recently with your partner." I shared a song that represented my mood at that moment with my partner. The lyrics resonated with my struggle. The discussion helped my partner understand the challenges I am dealing with and eventually derive an encouraging conversation."—Collaborator E

However, for different participants, the same task might result in different results. Collaborator D shared that the task did not positively affect their conversation.

"I share a song from my favorite band UNO, but my parent think it is too noisy and doesn't understand why I like it. My parent doesn't listen to new songs anymore because of the tech barrier, and they don't want to try new music, which decreases my willingness to share more stories about the song"—Collaborator D

The same situation happened when collaborators played with the tasks about romance topics. Collaborators who played with their spouses were more willing to share their thoughts and stories than collaborators who played with their parents. The circumstance implies the importance of matching the appropriate content to the proper relationship types. Shared experience approaches will only be effective when people's communication pattern fits. Collaborator A suggested that before players start the game, there should be an intelligent prompt analysis to help players filter the topics they do not want to discuss with their partner and customized options to choose topics based on players' preferences. Participants' communication patterns could be categorized using the measurement from RFCP. Combining with other filters such as culture, preferences, and habits. The game can adaptively pull out suitable tasks from the pool for players.

5.3 Follow-up tasks and crowd-sourced content

We found that collaborators will require direct task prompts to help them extend a conversation. During the focus group session, collaborators suggested that there could be more prompts under a task to help them come up with new topics when they want to continue a conversation but lack words.

"I was wondering if anyone else will talk about their pets with their partners. My partner and I usually only talk about our dog's health issues, but it would be nice if there were more following topics to extend the conversation with my partners."—Collaborator B

The feedback reflects a scenario where collaborators have high communication orientation but are clueless about extending their conversation. Building upon this concern, follow-up tasks and crowd-sourced content can become promising solutions. Collaborators

seek direct prompts to expand on related topics. Additionally, direct prompts in a task can mitigate the embarrassment in an activity or conversation. Collaborator C mentioned that it would be more comfortable for him and his partner if the task "sing a song together" changed into "sing a song with a karaoke app" with a more direct prompt. On the other hand, leveraging crowd-sourced content can help us to collect more prompts from others' discussions. By expanding the task pool from crowd-sourced content, the pool can generate more direct prompts for players, which will form a virtuous cycle.

5.4 Timing of prompts

Because we are doing a study, collaborators are requested to play the game, but in normal times, people will forget to play the game. Collaborators highlighted the necessity of notification features.

"I would want some automated features such as notifications that alert me to do things related to the game. Maybe based on time of date, context of awareness, or location information. If I am outside, I hope the game can remind me to take a picture so that I can share it with my partner at home."—Collaborator B

Taking communication orientation enhancement as a behavior change, pushing notifications and tasks is an appropriate mechanism. Freyne et al. proved that pushing notifications can help users engage with mobile technology [12]. Pushing notifications and reminders in various ways based on players' preferences, location info, and daily routines can encourage players' willingness to interact with their partners.

6 CONCLUSION AND FUTURE WORK

This paper presented preliminary findings from a diary study exploring an early version of an online board game designed to promote improved conversation between relational companions and enhance the communication orientation in different family types according to different shared experience designs. The game utilizes three types of shared experience approaches to generate tasks about common topics for players to start a conversation or interact with their partners. The gathered data show that accepting different shared experiences depends on family communication patterns, preferences, and habits. Memory-sharing offers lower barriers and enables players to extend the breadth of their conversations by recalling stories. Joint activities allow co-located players to learn more about each other's preferences and habits and increase feelings of closeness through interactions. If players and their partners are both interested in specific topics, empathic communication can lead to a deeper conversation, which can positively affect players' willingness to express their love during playtime. From this study, we discovered a number of considerations that will help us iterate on the game's design towards improving its ability to enhance and support healthy communication practices. In future work, we intend to implement a range of additional features, including intelligent and customized prompts. Providing suitable tasks for players adaptively based on their factors can motivate them to enjoy the process of interactions and communications. Although we refer to FCPT to understand the difference between communication patterns, we didn't precisely categorize players' communication pattern types

which also need to be studied. In this study, we pay more attention to improving the communication orientation dimension. In future work, we intend to explore the influence of conformity orientation and combine measurements from FCPT with factors such as culture and preferences to implement customized prompt and intelligent prompt features. Two collaborators discussed the influences of cultural norms and associated implications on task suitability and the overall play experience. Further attention must be paid to such cultural concerns in future studies. Second, follow-up tasks of a task can effectively help players expand their conversations by offering more detailed and direct prompts. Follow-up tasks can be collected from other players. Crowd-sourced content can form a cycle in the game mechanism, enabling the game to precisely serve appropriate prompts and tasks for different relationship types. In addition to in-game designs, external prompts reminding and encouraging players to play the game is essential. Willingness to communicate will decrease when people reduce the frequency of interactions. We must investigate how to continuously motivate players to interact with their partners in future work. The intention is to partner with domain experts such as relationship therapists. Lastly, although we analyzed different collaborator reflections, we did not measure whether communication improved. This will be also explored further in future work.

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