

---

# Family Members Sharing Activities Through Audio Narratives in Different Time zone

**Yasamin Heshmat**

Simon Fraser University  
102-13450 102<sup>nd</sup> Avenue  
Surrey, BC, Canada  
yheshmat@sfu.ca

**Carman Neustaedter**

Simon Fraser University  
102-13450 102<sup>nd</sup> Avenue  
Surrey, BC, Canada  
carman@sfu.ca

**Abstract**

Feelings of connectedness amongst family members often comes from doing activities together that show dedication, duty, and care for one another [9]. However, for family members over distance, reaching a high level of connectedness becomes challenging due to a lack of in-person communication [9,11]. When family members have time differences, such problems are highlighted and make synchronous communication difficult [3]. To help family members connect in different time zones asynchronously, we created a media sharing application called Mimo [4]. Mimo allows family members to capture and share moments with each other using audio narratives during indoor and outdoor activities. We evaluated Mimo with participants who thought about and reflected on its design in study sessions. Our results show how audio narratives can benefit family members to share activities over distance asynchronously.

**Author Keywords**

Families, home, asynchronous communication, outdoor activity.

---

Authors maintain the copyright.

Workshop on HCI Outdoors: Understanding Human-Computer Interaction in the Outdoors at CHI 2018, April 21, 2018, Montréal, Canada

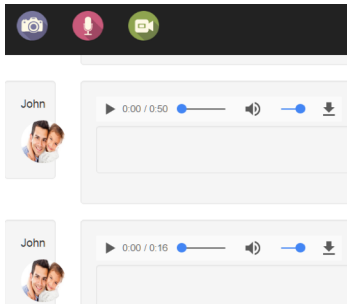


Figure 1: Mimo showing audio clips for a category, The top banner is for uploading new content either picture, audio or video.

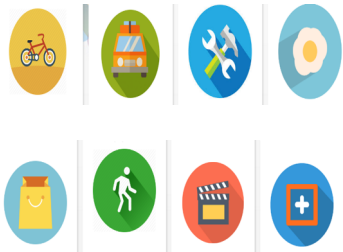


Figure 2: Activity board showing categories of activities. Activities includes: biking, commute, fixing items, cooking, shopping, walking, movies, life in general

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; See

## Introduction

Due to time zone challenges, several research projects have looked at the design of asynchronous communication systems for families (e.g., [2]). Most of these systems are used for bringing awareness and sharing information between family members. While there have been a few systems studied based on a single activity across time, such as co-dining [12], systems which are centered around the activity itself are missing [2,5]. As a result, we explored the possibility of connecting family members across periods of time, where they might be able to share any number of activities and feel like they are experiencing the activity together despite the exchange occurring asynchronously. We created a prototype called Mimo that focuses on tying conversations to an actual activity by using different categories such as outdoor recreation.

We recruited 21 participants to explore the design of Mimo. Each participant saw a demo of the system and interacted with Mimo during the session. Afterwards, they were interviewed about their reactions to it. Results point to the value in connecting people in a personalized way and encouraging people to share stories while participating in outdoor activities.

## Related Work

Sharing activities with family members can help strengthen family relationships [1]. Outdoor leisure activities have been reported to be a core element in creating a sense of cohesiveness for family members

[13]. They can also bring joy and connect family members together [10]. Due to such reasons, sharing activities are an important part of family connectedness over distance and new technologies can benefit families by providing them with options for sharing activities.

For sharing outdoor activities synchronously, mobile video systems such as Experiences2Go have been designed [6]. Yet the challenge with such systems is that people need to be available at the same time to use them, which is why asynchronous systems have been studied for connecting people within distance and specially in different time zones. For example, we have seen message boards used within and between home(s) [2]. Sharing a single activity such as dining together asynchronously has also been studied [12]. With the Family Window, always-on video was shared synchronously between two households while a time shifting feature recorded video such that it could be played back asynchronously [7].

Across all of this literature, what we do not see are ways of connecting family members asynchronously while where they can perform a range of activities, including outdoor leisure activities. We designed and studied a system called Mimo to address this gap.

## Mimo's Features

The goal for Mimo is to make asynchronous sharing feel as though it might be synchronous, where we connected users across time to share and listen to media containing personalized stories while doing an activity 'together' [4]. With Mimo, users record audio stories (Figure 1) while performing an activity, such as walking or cycling, and then share them with a family member. Mimo is imagined to be used between

parents and their adult children, or between adult siblings who have a close relationship, where conversations are often a key part of the relationship [3].

#### *Timeshifting*

Mimo lets users choose an expiration time and a release date and time for the media as a way of instilling a sense of 'preciousness' in the shared story. In this way, users might get motivated to look at the content before they will be gone.

#### *Categories*

When users share media through Mimo they can assign it to one of eight different activity categories defined in the system (Figure 2). When users receive shared media, notifications appear grouped by the same categories. We chose this design idea because we wanted to try to tie shared stories with a particular activity. The hope was that the person receiving a story would listen to it while they participated in the same activity as the sender. This might allow users to feel like they are doing the same activity together with the sender, e.g., a shared walk or bicycle ride.

#### *Usage Scenario*

Elena is a 27-year-old woman who lives in Malaysia. Her mother, Rose, lives in Canada. They have a 15 hour time zone difference with each other. Elena likes to share a walk with her mother while being apart and decides to use Mimo to share this moment and a conversation around it. Elena goes for a walk and uses Mimo on her mobile phone to record a story about her workday and how her family is doing. She finishes her walk and the recording is stored in Mimo. She then chooses when her mom can access the story. Here she

picks a time tomorrow, but sometime within the week. This means that Rose will have up to a week to listen to Elena's story. The next day, Rose wakes up and looks at Mimo. She sees that she has a new notification for her 'walking activity', which means a story from her daughter is waiting to be heard. She can listen to it if she goes on a walk, the same activity that Elena was doing when she created the story. Rose gets motivated and decides to go for a walk so that she can hear Elena's story. After she has listened to her daughter, Rose uses Mimo to record a response to Elena while still walking. This is shared back to Elena as part of their ongoing conversation. The exchange continues across a series of days and weeks while both Rose and Elena go for walks.

### **User Study**

We conducted semi-structured interviews with 21 participants (8 male, 13 female, age=23-55, average $\approx$ 31). Interviews lasted between 20 and 60 minutes including a demo of the system and a chance to try out the prototype directly. Interviews were audio recorded and notes were taken during the sessions. The interviews were transcribed afterwards. Next, a coding process was done where findings were labeled according to themes. Participant quotes are reported with a P# to maintain anonymity. In here we only report the findings related to shared outdoor activities.

### **User Study Results**

Participants highly valued Mimo's one-to-one style of connection rather than one-to-many. The idea of audio narratives received positive feedback but some participants were concerned about 'talking into a void' without being able to sense the presence of their family member.

*"I guess often the information exchanges are pretty one way often especially if it's a big catch of phone call with my mom or my dad... My dad he loves reading Shakespeare and stuff so if my dad record a weekly podcasts about stuff I'm reading about that I like to talk to [my daughter] about I would definitely listen to that just probably the same way I'd listen to my election podcasts." -P6*

*"To be honest I never have the patience to listen to a podcast from the beginning to the end ...I don't prefer a narrative like a podcast for communication." -P4*

Two participants liked the idea of having a group of audio stories ready for their weekend as they felt it could help them "catch up" with what their family members were doing during the week and what was interesting for them from exiting activities to what book they enjoyed reading. Some of our participants thought they could use Mimo with family members to start a conversation about a shared interest.

Mimo was imagined by participants to be useful for sharing beautiful scenery during a hike. Here participants thought they could share the essence of the experience with family members through audio narratives and some shared photos.

Participants felt that the audio narratives could encourage family members to be more active. This could help keep parents motivated to be physically active and enjoy the outdoors. In turn, active parents could help remind their adult children to keep active and motivate them through their stories.

*"Maybe you can encourage people with this for stuff*

*that they don't do!... So maybe this will encourage them. You know humans like to see something similar to them." -P2*

Participants favored the usage of Mimo for outdoor activities that did not need the person's constant attention during the activity. For example, one of our participants was strongly against using headphones while biking to hear the stories due to the risks of not hearing their surroundings.

Some participants thought of using Mimo to allow their grandparents to be part of outdoor activities, such as cycling or hiking, which they might not be doing regularly due to physical limitations. Mimo could also allow grandparents to hear the stories of such outdoor activities while they engage in a less intense activity such as while walking or gardening. However, others thought there would be a learning curve for older adults to use the system, which might discourage them from using it altogether.

## **Discussion and Conclusion**

Mimo has shown promising potential for encouraging family members to engage in outdoor activities and feel connected over distance across different time zones. Such a system can help families to share an experience seamlessly with more privacy and the ability for them to multitask while sharing an activity. Yet family dynamics can be different across families. This suggests that families need flexibility and the ability to personalize how they use such a system. Overall, our design and study results point to design opportunities for further exploring asynchronous media-sharing systems for sharing outdoor activities and experiences between family members.

## References

1. Joel Agate, Ramon Zabriskie, Sarah Agate, and Raymond Poff. 2009. Family Leisure Satisfaction and Satisfaction with Family Life, *Journal of Leisure Research*, Vol. 41 (2), National Recreation and Park Association, 205-223.
2. A.J. Bernheim Brush, Kori M. Inkpen, and Kimberly Tee. 2008. SPARCS: exploring sharing suggestions to enhance family connectedness. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*. ACM, New York, NY, USA, 629-638.
3. Xiang Cao. 2013. "Connecting Families across Time Zones." In *Connecting Families*, pp. 127-139. Springer London, 2013.
4. Yasamin Heshmat, Carman Neustaedter, Lillian Yang, and Thecla Schiphorst. "Connecting Family Members Across Time Through Shared Media." In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, pp. 2630-2637. ACM, 2017.
5. Hilary Hutchinson, Wendy Mackay, Bo Westerlund, Benjamin B. Bederson, Allison Druin, Catherine Plaisant, Michel Beaudouin-Lafon, Stéphane Conversy, Helen Evans, Heiko Hansen, Nicolas Roussel, and Björn Eiderbäck. 2003. Technology probes: inspiring design for and with families. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '03)*. ACM, New York, NY, USA, 17-24.
6. Kori Inkpen, Brett Taylor, Sasa Junuzovic, John Tang, and Gina Venolia. 2013. Experiences2Go: sharing kids' activities outside the home with remote family members. In *Proceedings of the 2013 conference on Computer supported cooperative work (CSCW '13)*. ACM, New York, NY, USA, 1329-1340.
7. Tejinder K. Judge, Carman Neustaedter, and Andrew F. Kurtz. 2010. The family window: the design and evaluation of a domestic media space. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. ACM, New York, NY, USA, 2361-2370.
8. Mamoun Nawahdah and Tomoo Inoue. 2013. Virtually dining together in time-shifted environment: KIZUNA design. In *Proceedings of the 2013 conference on Computer supported cooperative work (CSCW '13)*. ACM, New York, NY, USA, 779-788.
9. Neustaedter, C., Harrison, S., & Sellen, A. 2013. Connecting families: An introduction. In *Connecting Families* (pp. 1-12). Springer London.
10. Carman Neustaedter, Jason Procyk, Anezka Chua, Azadeh Forghani, and Carolyn Pang. "Mobile Video Conferencing for Sharing Outdoor Leisure Activities Over Distance." *Human-Computer Interaction* (2017): 1-40.
11. Tee, K., Brush, A. J. B., and Inkpen, K. M. Exploring Communication and Sharing between Extended Families, *International Journal of Human-Computer Studies*, 67(2), (2009), 128-138.
12. Hitomi Tsujita, Svetlana Yarosh, and Gregory D. Abowd. 2010. CU-Later: a communication system considering time difference. In *Proceedings of the 12th ACM international conference adjunct papers on Ubiquitous computing - Adjunct (UbiComp '10 Adjunct)*. ACM, New York, NY, USA, 435-436.
13. Patrick West and L.C. Merriam. 2009. Outdoor Recreation and Family Cohesiveness: A Research Approach, *Journal of Leisure Research*, Vol. 41 (3), National Recreation and Park Association, 351-359.

### **Author Biographies**

**Yasamin Heshmat** is a PhD Student in the School of Interactive Arts and Technology at Simon Fraser University. Her research is focused on connecting families over distance, specially in different time zones. Her current research involves slow technology and asynchronous communication.

**Dr. Carman Neustaedter** is an Associate Professor in the School of Interactive Arts and Technology at Simon Fraser University. His work has been focused on connecting people through technology and domestic computing. Through his projects he has also explored usage of technology for sharing outdoor activities such as geocaching.