

very useful place for family or friends to start a conversation. For instance, if the elderly person saw that his or her son had posted the status “Exhausted” on the “Friends’ Status” Page, the elderly person could enter the chat box and speak with their son about his mood and find out what things are bothering him.

#### 2.4.2 Keep-In-Touch System

Langdale, Kay and Kummerfeld first pioneered and proposed the idea of “Keep-in-Touch” System as an inter-generational communications appliance, which offers its users asynchronous messaging by recorded audio messages (Langdale et al., 2006). The notion of “inter-generational communications” means interactions between people of various ages and intellectual capacities, such as the very young and the very old, the technologically illiterate and the merely preliterate.

This paper is a continuous work in line with the idea of “Keep-in-Touch” System, which investigates current commercial products which are providing similar functionalities that can link communications between the younger generation and elders. This current goal fits the original “inter-generational” proposition as well.

#### 2.4.3 Hermes@Home



FIGURE 2.9. Hermes@Home Prototype by Saslis-Lagoudakis et al., 2006.

Hermes@Home, built by Sasilis-Lagoudakis et al. (2006), is another attempt to create a mechanism for promoting asynchronous, light-weight social contact between those at home and those who are mobile.

Built upon Fujitsu Siemens Lifebook TabletPC, Hermes@Home adds to the range of existing communication channels by offering a highly expressive and “always-on” messaging platform. As a channel for communication with that person that was always on and available, Hermes@Home offered an almost constant link to them.

The idea of “always-on” cannot be reflected on WeChat’s design, because of the fact that WeChat only opens the smartphone’s camera when the user starts a video call; Hermes@Home on the other hand, possess cameras to monitor user activities, in which many users expressed their concern in the interview about their privacy when using Hermes@Home system after the field study. However, both WeChat and Hermes@Home have “status” functionality.

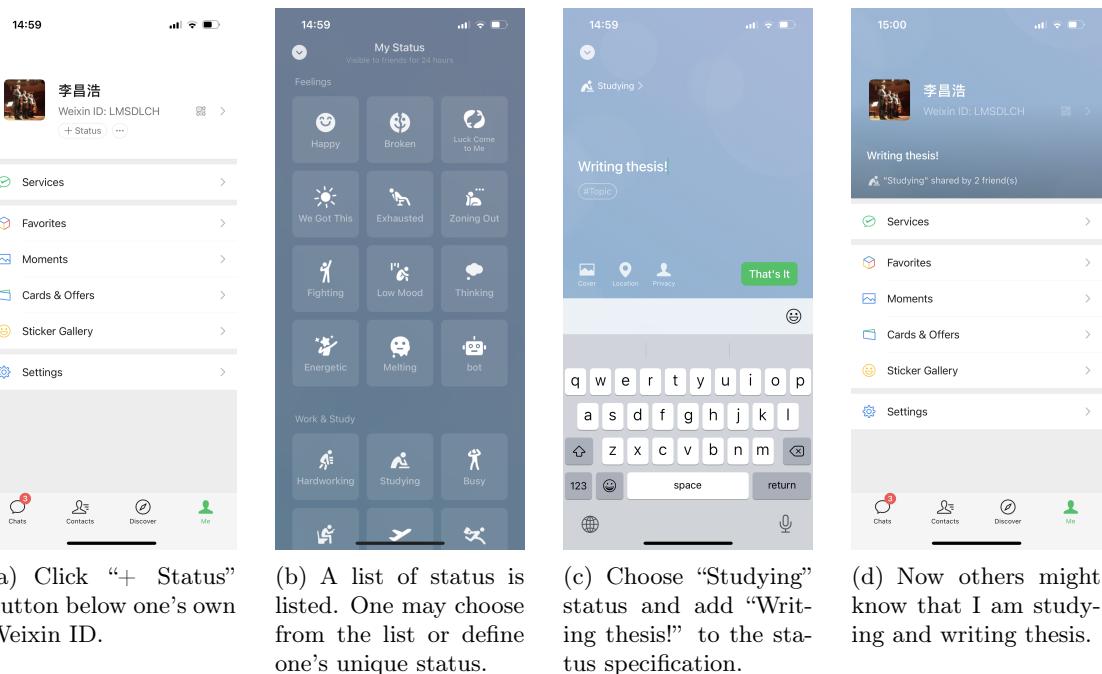


FIGURE 2.10. Sharing One’s Current Status on WeChat

The detailed process of WeChat users sharing their current status is listed in Figure 2.10: first, the user has to go to the User’s Personal Card page by clicking “Me” at the bottom row, then click “+ Status” sign to add current status. WeChat will show a whole list of available status options on the “My Status” interface. The user can choose anyone one prefers. For instance, I

chose “Studying” status and it jumps to another page that allows users to write individualized comments for the one-time status, which according to WeChat regulations, will be only available at most 24 hours, and users have the right to alter the status once they feel that their status changed or if they want to delete it. Finally, by clicking the green “That’s It” button, the status will be available to anyone who wants to see it.

#### 2.4.4 HomeNote

HomeNote was proposed by Sellen, Harper, et al. (2006) to look into the possibility of remote, location-based communications within the house. The HomeNote prototype was essentially a Toshiba Portégé Tablet PC housed in a wall-mountable frame that also accommodated GPRS and SIM cards.

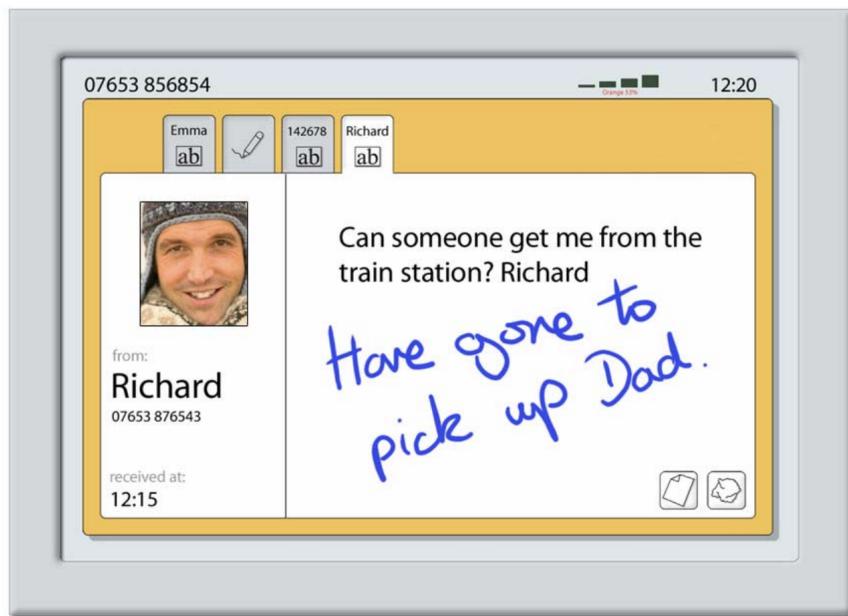


FIGURE 2.11. HomeNote Prototype by Sellen et al., 2006.

Given the fact that the authors of HomeNote highlighted the in-situ application of the technology, it served in several aspects as a technology probe so that researchers could use the message system to learn more about the social structure within the households and the kinds of communications that intertwine with such patterns and to learn about the moral as well as the social character of home relationships. In this sense, HomeNote was used to get access to everyday routines in

ways that interviews and observations alone can not always or readily provide: it served as a “Trojan horse” at the time.

WeChat, on the other hand, breaks the limitations of HomeNote given that it can probe both the social network and at-home relations simultaneously. WeChat users could classify other people in the friend list into instances such as family members, schoolmates, workplace fellows, etc. By doing so, the social structure of a user becomes clearer to researchers and home relations are more manageable.

#### 2.4.5 Whereabouts Clock

Sellen, Eardley, et al. (2006) also proposed the whereabouts clock in the same year with HomeNote. The concept of whereabouts clock is that it provides a new way for the family to socialize by using cell phones to share family members’ locations and activities to a home display.

One of the key conclusions Sellen proposed is that location awareness could enhance emotional connection. In the whereabouts clock design, Sellen used GSM cell ID to provide location data, which is widely available on mobile phones, so that users may be able to view others’ current location: “in the building”, “home” or “out”.

WeChat can give location information using both static and real-time map pointer data as shown in Figure 2.12, but it lacks relevant functions that allow users to display an *always-on* geographical data interface. Tencent may believe it is appropriate not to add such another sub-interface for always-on location information because WeChat does not have a huge screen to display such extra contents instead of Sellen’s whereabouts clock.

To share location with other users on WeChat, the user has to first identify which single user or a group of users, if necessary, one wants to share location with. Once confirmed the objective, the user may click the “+” button at the down-right corner of the screen, which opens a screen for all extra functionalities that are available on WeChat. The “Location” button is on the top-right corner of the functionality sub-interface. If the user clicks the “Location” button, two options will appear on the screen: “Send Location” and “Real-time Location”. The user could send static location information to the counterpart by choosing the “Send Location” option. The map will automatically show the current location if the user has enabled WeChat to read its geographical data under any circumstances and at any time. After the user choose which location one wants

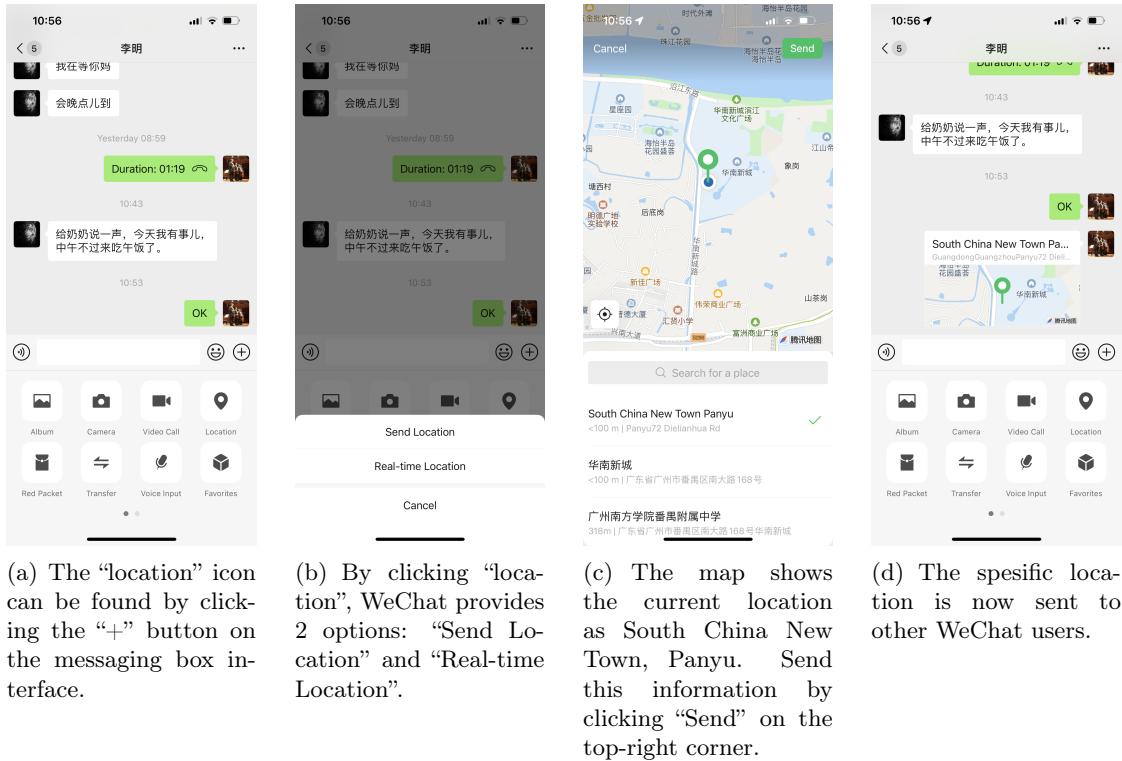


FIGURE 2.12. Sharing Static Location Information on WeChat

to send, the user simply needs to click the address one desires and press the “Send” button at the top-right of the entire screen. Eventually, the geographic data will be delivered to another end user.

Sellen’s whereabouts clock reminded the author of WeChat’s location-sharing functionality, thus inspiring to add part of the location-communication processes into the think-aloud study, which will be conducted in the user study period of this project.

#### 2.4.6 MarkerClock

Riche and Mackay (2009) highlighted the significance of peer support networks, or PeerCare, and the importance of being aware of one another’s routines and rhythms in order to maintain relationships. Riche and Mackay created a MarkerClock prototype, whose appearance is depicted in Figure 2.13, to address and support their argument.

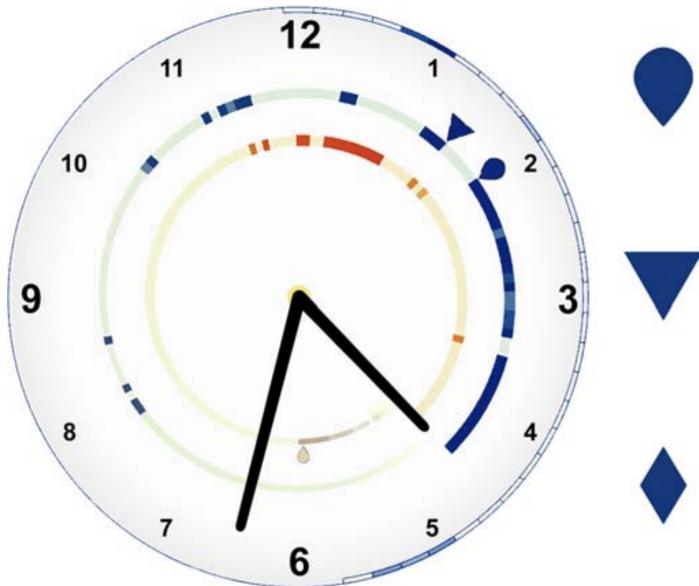


FIGURE 2.13. MarkerClock Prototype by Riche & Mackay, 2009.

In their PeerCare paper, Riche and Mackay argued that it is better not to monitor the elders. This idea, take from elder's perspective, inspired many HCI practitioners and researchers, including Dr Aloha Ambe from the Queensland University of Technology. In her PhD thesis, Dr Ambe argued that it is better to co-design future technologies and products alongside with elders so that we can transfer our ways to ensure elder's safety, security and well being from monitoring to really engaging with the elders (Ambe, 2020).

To study how exactly will daily routine awareness affects elders in maintaining their relationships with family and friends, we need to look for applications that are capable and equipped with relevant functionalities to conduct user studies. But currently, WeChat does not possess relevant functionalities that could show the daily routines of other users, as it could only share certain or real-time locations with others. The most relevant application right now is Zenly.

Zenly's Footprint functionality might be close to MarkerClock's idea: According to Zenly's description, user's footprints will become visible as they are discovered while they are exploring your world. The user must uncover the color that is present everywhere. If one has chosen to share, one's footprints are visible directly on the main map and are also accessible on their profile via User's World. On the footprints leader-board, users can see how one's exploits compare to those of their friends. This implies that the PeerCare concept, which holds that being aware



FIGURE 2.14. Zenly’s Main Interface

of one another’s routines and rhythms are a vital component to maintaining close relationships with family or friends, could somehow be comparable to Zenly’s footprint functionality.

The idea of “do not monitor the elders” and “aging-in-place” are gaining momentum both in academics and among real-life practitioners. More papers on the topic of “aging-in-place” will be reviewed in the following sections.

#### 2.4.7 Building Bridge

Doyle et al. (2010) built yet another clock-based prototype for elders communication named Building Bridge, then evaluated the device’s usability, investigated attitudes toward it, and gathered information on possible target user groups who could profit and thrive from such technology.

Through a shared viewing or listening experience of a video or radio broadcast, Building Bridge could offer senior citizens the chance to interact with their peers, families, and friends. The opportunity to join a group conversation is also available to listeners after each broadcast. Individual or group calls, a text messaging service, and most recently a “tea room” that functions as a discussion forum are additional features.

One of the important conclusions drawn from the study is that the Building Bridge user’s perspective may be improved by giving them feedback on whether or not their actions are being recognized by the system, according to Doyle, who specifically determined that offering mistake repair tools such as “Undo” function is of great importance.

WeChat, for instance, can recall messages that are wrongly sent or if the user changed one’s mind within 2 minutes, as 2 minutes is the time limit for a message recall. If time goes beyond 2 minutes, the WeChat user might not be able to recall a message anymore. The detailed instructions are shown in Figure 2.15. For instance, the user wanted to change the message when he or she sends a message into a chat group. The user can long press the message that one would like to recall and press the “Recall” icon to cancel any messages sent within the last 2 minutes. After the user confirms, the message will be recalled and the user can amend the original message by clicking “Edit” next to the notification “You recalled a message”.

Another aspect of the conclusion of this passage is that while usability is important for ensuring that elders use such technology, it’s equally important to comprehend their attitudes regarding utilizing communication technology. Doyle’s post-trial conversations with participants, as well as personal observation during volunteering activities, revealed that for older persons to feel driven to regularly utilize technology, the technology must be seen as beneficial in their existing life. Such findings reminded me of my volunteering experience in various social service station sites across Guangzhou city, as elders perceive smartphones as troublesome and a burden in their life. They might feel uncomfortable using WeChat when they are required to show health QR codes to the staff at Guangzhou Metro or bus drivers, since showing health QR codes in public locations is normal due to Covid-19 pandemic regulations in China. As a metropolitan and 4th largest city in China with a total population of 20 million people, Guangzhou’s Covid-19 handling is not considered loose, but not as strict as the capital Beijing or the financial hub Shanghai.

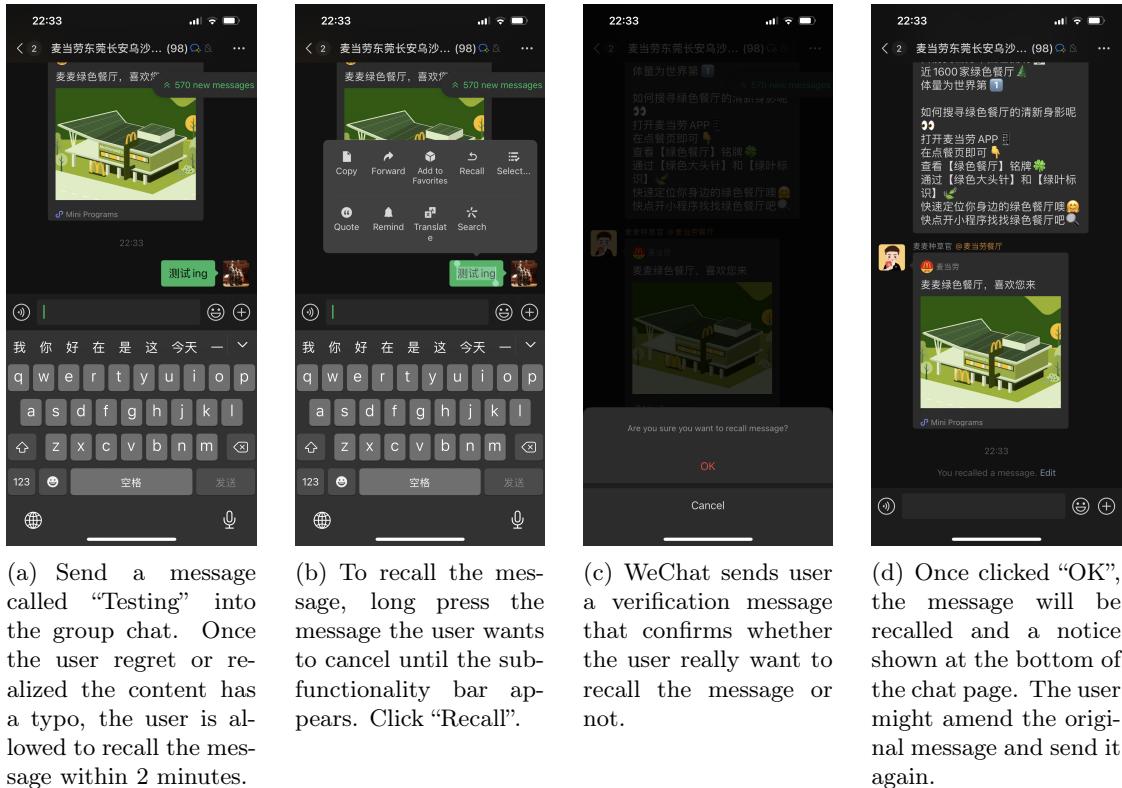


FIGURE 2.15. Recalling Messages on WeChat

In other words, once elders realized that modern technologies are doing good to their life, instead of troublemakers, elders might embrace the change brought by applications like WeChat and are willing to adapt to difficulties.

#### 2.4.8 Wayve

Lindley (2011) constructed a prototype called Wayve, which largely enables light communications utilizing a variety of media, including photos and scribbling, and was created for a family environment rather than for usage by elders.

Unlike Doyle’s project, who supported heavyweight device for elder-to-elder communication at home in the Building Bridge project, Lindley argued that younger generations are moving away from heavyweight forms of communication and toward lighter ones, and thus built a lightweight device for elder-to-family communication.



FIGURE 2.16. Wayve Prototype by Lindley, 2011.

According to the public-accepted definition of heavyweight and lightweight in the human-computer interaction community, heavyweight forms of communication include phone calls and long-form mail, whereas Lightweight forms of communication include texting, picture messages, status updates, and tweets. From this perspective, industrial practitioners might argue that WeChat consists of both heavy- and lightweight elements as a communication software. WeChat users could send email-style long texts to another user, as well as video calls which are similar to traditional phone calls. WeChat, on the other hand, is also famous for its convenient lightweight communication methods including short messages, voice inbox, status sharing, and so on.

As Internet age forms of communication are not intuitive for those without prior experience with similar interfaces, WeChat faced many complaints and criticisms from elders as the underlying operation logic is completely new to elder generations, who usually used paper letters or traditional telephones to keep in touch with others. In order to achieve this change in elder's mind and heart, WeChat must first bring convenience to elder's daily life in order to persuade elders psychologically to accept technological innovations.

#### 2.4.9 Family In Touch

Family In Touch (FIT) prototype, a research project that incorporates a photo frame with a touch screen display, LED message indications, and asynchronous messaging capabilities via tactile input, was developed and built by Baeker et al. (2014) to lessen social isolation and

loneliness. Family members who receive these emails might leave voicemails for the photo frame in response.



FIGURE 2.17. Family In Touch (FIT) Prototype by Baecker et al., 2014.

The paper proposed various reasonable and actionable suggestions for aging technology design. In order to make interfaces more relatable for elders, Baecker advises designers to employ tactile interfaces based on real-world things and practices, as similar suggestions have already been given by van Veldhoven (2008), in which the author reminded designers to show Neilson's heuristics so that products and services for elders somewhat reflect lives in the old times and awake elders' reminiscences.

Baecker also recommended that products be non-language specific. For older people, for instance, icons are a wonderful idea because they are more intuitive and simple to understand than words or sentences.

#### 2.4.10 Messaging Kettle

Brereton et al. (2015) presented the prototype of the Messaging Kettle to encourage interaction and conversation with an elderly friend or relative who lives far away.

As shown in Figure 2.18, the prototype consists of a tea bottle, tea packages and a screen for pen-writings. The intention is clear: when the elders are boiling morning tea on a daily basis, elders might take the waiting time to write messages on the board and send them to family and friends via the Messaging Kettle device. The Messaging Kettle's design incorporates the concept



FIGURE 2.18. Messaging Kettle Prototype by Brereton et al., 2015.

of “habituation”, making it an item that elderly people are already familiar with and routinely use.

As elders seek for straightforward, flexible interaction mechanisms that support asymmetric types of communication, the Messaging Kettle implemented such design and the concept was well received by elders in the experiment. Looking among current commercial solutions such as LINE, WeChat, Messenger and Telegram, all applications achieved such asymmetric communication methods and functions.

One of the paper’s highlight is that the design of Messaging Kettle delicately augmented existing routines of elders, instead of replacing them. The Messaging Kettle received good comments and feedback after the experiment. Elderly participants were all delighted about the message kettle and expressed gratitude for technology that took their older parents into account. The adult children were all in their 50s and 60s. The adult children preferred the voice and scribbling communications because some had hearing- and vision-impaired parents.

#### 2.4.11 xPress

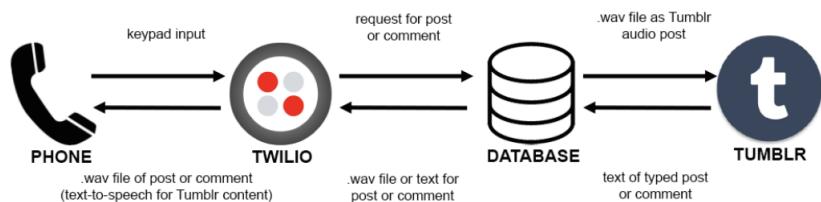


FIGURE 2.19. Design of xPress by Brewer and Piper, 2017.

Brewer and Piper (2017)’s xPress is a voice-based device for the vision impaired.

xPress contributed in the field of gerontology technology as Brewer and Piper questioned established accessibility norms (such as synthetic speech) and restrictions on participation by the sighted: due to concerns with stigma associated with vision loss and attitudes of sighted people, those with visual impairments find it challenging to form emotionally meaningful connections.

As vision-impaired elders are out of the scope of this thesis project, details of xPress and its link with WeChat on the functionality side will be overlooked in the thesis. However, highlighting the point that WeChat has voice-messaging function for all users is important. The procedures of sending voice messages to their users on WeChat is shown below in Figure 2.20.

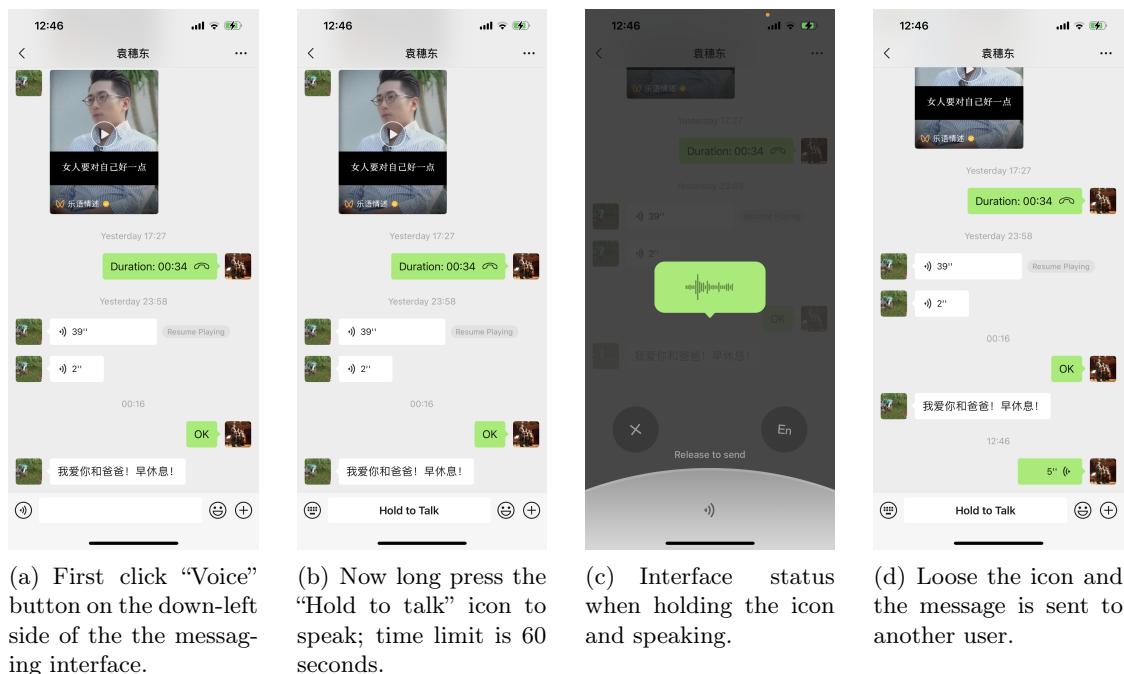


FIGURE 2.20. Sending Voice Messages on WeChat

To send voice messages on WeChat, the user first need to enter the individual or group chat interface, as user need to decide who the voice message will be sent to at the beginning. Once user entered the chatting interface, the user might see the default layout of the functionality bar at the bottom of the page: the default setting of WeChat is that WeChat automatically consider user sending text messages, instead of voice ones. In order to switch from text message to voice message functionality, the user must click “Voice” button at the down-left side of the page. After switching to the voice message interface, the user is able to see a long “Hold to talk”

icon. Literally, the user can long press this icon to speak up to 60 seconds. If the user speaks longer than 60 seconds, the voice message will be automatically stopped and sent.

As shown in Figure 2.20, the screen will turn dark and the speaker's volume can be seen on the voice-sending page. Once the user loose one's finger, WeChat will send the voice message to the other user. The counterpart user could click the voice message and listen.

#### 2.4.12 CoasterChat



FIGURE 2.21. CoasterChat Prototype by Diks et al., 2021.

Diks et al. (2021) presented CoasterChat, which is exclusively designed for dementia patients and their families. According to the paper, for persons with early-stage dementia and their families, CoasterChat became an experimental project in design that integrates asynchronous internet communication into a regular coffee ritual, which is similar to the Messaging Kettle.

Asynchronous communication method had been given credit to in the paper. Through the addition of a delay in communication, asynchronous communication offers chances for connecting persons with different schedules. Given the differences in the manner that the person with dementia and their family live, this may allow for more flexibility. According to Diks, a well-crafted artifact with appropriate interactions is necessary for asynchronous communication so that persons with dementia can have the structure in their daily lives. Family members can join in CoasterChat at their convenience, and the link to a regular activity encourages frequent communication.

CoasterChat has a similar design intuition with the Messaging Kettle, with both product focuses on enhancing elder's daily water-boiling procedure, whether for coffee or for tea.

**You have done an excellent job of coming to grips with a very large body of literature. You've also links that very tightly to WeChat. You need to add a short section with the title summary. This has to help the reader see the territory that you have covered in this chapter.**