

## CHAPTER 4

### Results.

## Result

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In this chapter, we will present the results of the user studies illustrated in Chapter 3.

I recommend that you write this in the past tense – you have done the work – the sentence before should be in the present tense.

Due to domestic travel restrictions, field studies ~~are~~ conducted within Guangzhou and restricted ~~towards~~ the Chinese population. For elements of statistics, Tableau is used as the primary tool for survey data visualisation; Weka is for classifier comparison; RStudio and Python are also used in situations where statistics and hypothesis testing are required for further analysis.

## 4.1 Preliminary Survey

The primary need-finding survey was conducted in September 2022.

For the paper-based survey, we distributed the printed survey around local supermarkets and nearby primary school gates, where many elders gather and chat with their peers. The length of the preliminary questionnaire has been eliminated so that elders might feel comfortable finish all the question within 2 to 3 minutes.

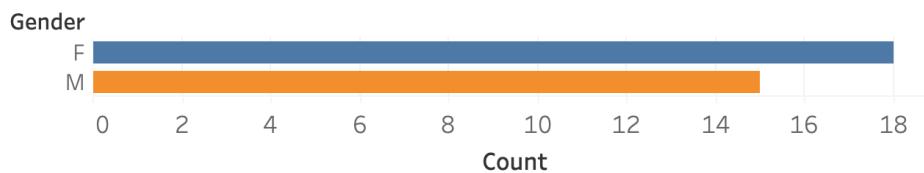
### 4.1.1 Demographics

The average age of the sample is 77.67 years old.

The size of the valid sample is 33, with 15 males (45%) and 18 females (55%). No elders identified themselves as LGBTIQ+ people, although the options are provided.

### 4.1.2 Initial Findings

The findings retrieved from the initial questionnaire is presented.

FIGURE 4.1. Age Distribution of Survey Samples ( $N=33$ )FIGURE 4.2. Gender Distribution of Survey Samples ( $N=33$ )

#### 4.1.2.1 Smartphone is not a must for elders

As referred in Figure 4.3, among all preliminary survey participants ( $N=33$ ), about 27% do not possess smartphone. Elders who are living with their children or never utilize public transportation, for instance, do not require a smartphone to continue living a normal life under Covid-19.

#### 4.1.2.2 Huawei is widely-used among Chinese elders, suitable for HCI Study

The Figure 4.3 also showed that among all elderly participants who use smartphone in their daily life, 50% uses Huawei. This dramatically impacts future studies as most user studies should better be conducted on Huawei devices, as about half of the elder participants use Huawei instead of other brands. Conducting future user studies using Huawei phones should represent majority user experience when the variable comes to phone brand.

WeChat has different interfaces and functionalities, depending on which version and brand the user has. For instance, WeChat users could leave the WeChat app with cameras still on and

image moving during a video call on Apple iPhone devices, but once Huawei's users leave WeChat during a video call, the video will be static to protect user privacy.

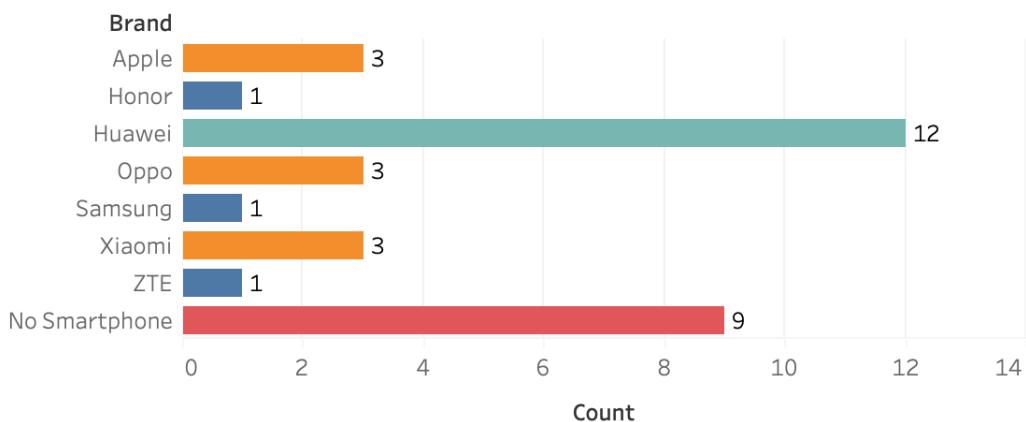


FIGURE 4.3. Smartphone Brand Distribution of Survey Samples ( $N=33$ )

You don't need this word here – all your participants are probably will describe does elderly.

#### 4.1.2.3 Almost all elderly participants who use smartphone also uses WeChat

Nine out of the 33 participants do not own or use cellphones regularly. Almost all older participants, with the exception of them, said WeChat (91.7%) when asked which communication method they use to stay in touch with their family members. In comparison, just 66.7% of people claimed to utilize the phone call feature integrated into their smartphones, and no one responded to emails, QQ nor provided other additional answers.

here, and when you first referred to as, I hope you explained a little bit more about what it is in case your examiners don't know. I gather it is A Tencent app similar to WeChat?

This may help to clarify our first study question, which asks which kind of communication was most common among Chinese elderly in 2022. According to this questionnaire study, WeChat is the most widely used communication tool for seniors to use daily to interact with their families. Researchers may discover that WeChat is the platform that is used the most frequently when compared to other platforms.

**Be careful of any claims that seem broad. You have done a very small study. If you can find some online data about the extensive use of these apps, you could include that as context for your work. And this section could say that the results are in line with ...**

#### 4.1.2.4 Other findings on Chinese elders

##### The participants

According to the survey's remaining questions, 36.4% of Chinese seniors live apart from their family members, but the participant's average UCLA Loneliness Scale scores are just 1.88 out of 5, suggesting that they are not particularly feeling lonely. Notice that 1 means that elders strongly disagree that they lack companionship, and assistance, and felt isolated or left out,

and 5, vice versa, indicates they are feeling strongly that they are alone, and could potentially develop other psychological illnesses such as depression.

## 4.2 Cognitive Walkthrough of WeChat

We conducted cognitive walkthroughs with three experts, each of whom completed 10 tasks. Due to Covid-19 restrictions and time constraints, two experts completed cognitive walkthroughs for just one persona, while another expert completed both.

### 4.2.1 Result of TASK A-01

Recall that TASK A-01 is:

*[WeChat is open and at the main page.]*

*Suppose you want to call your grandchildren, but you are not well dressed so you don't want your grandchildren to see you in the call. Please use WeChat to call your grandchildren now.*

There are 4 steps for participants to complete TASK A-01:

1. Select counterpart user;
2. Click "+" icon at the bottom-right corner;
3. Click "Video Call" button in the tool bar;
4. Select "Voice Call" under "Video Call".

The Figure 4.4 shows each step in detail:

Table 4.1 contains a summary of the expert thoughts to TASK A-01. Overall speaking, all experts agreed that it will be easy for our personas to check their progress in each area from the home page, but some experts argued that "Voice Call" should not be under the "Video Call", making elders difficult to find such button.

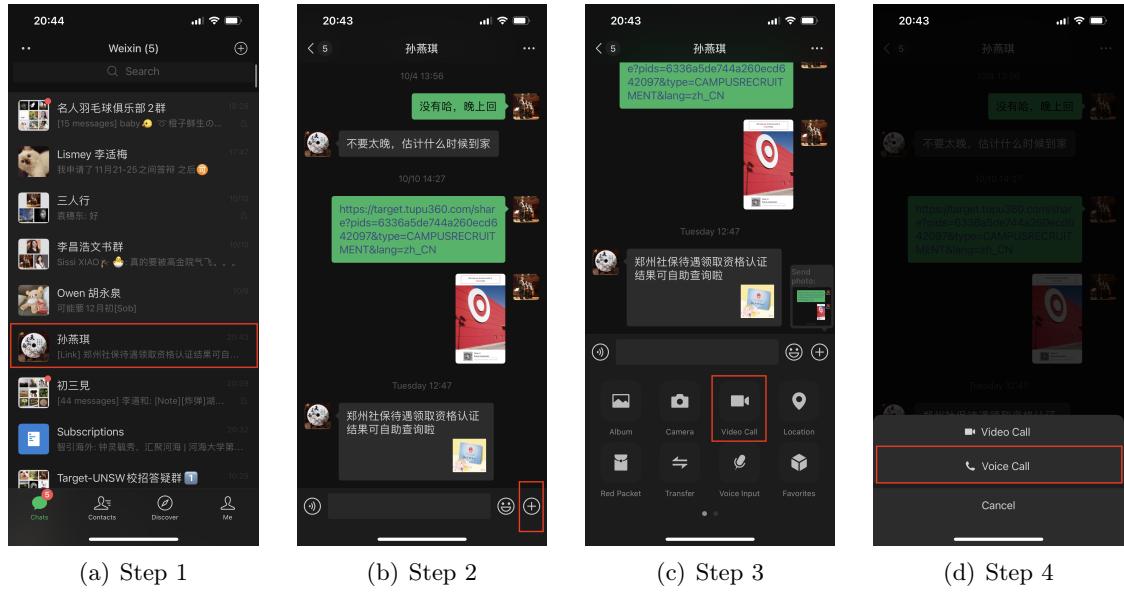


FIGURE 4.4. Illustration of Steps in TASK A-01

#### 4.2.2 Result of TASK A-02

Recall that TASK A-02 is:

*[WeChat is open and at the main page.]*

*Suppose you want to chat with your grandchildren and see their dancing in front of the phone.  
Please video chat with your grandchildren.*

There are 4 steps for participants to complete TASK A-02, similar to TASK A-02:

1. Select counterpart user;
2. Click "+" icon at the bottom-right corner;
3. Click "Video Call" button in the tool bar;
4. Select "Video Call".

Table 4.2 contains a summary of the expert thoughts to TASK A-02. In general, experts concurred that it will be simple for our personas to assess their progress in each area from the home page, but the structural logic of "Video Call" suffers from the same issue.

Users might need to focus on the "+" icon, as in most cultures including Chinese culture, "+" means add. One participant thought it might cause misunderstandings that our personas, or

I think it would be helpful to move tables like this to the appendix. It is quite good practice to just report the results the point to problems in the body. So in this case you would simply report here steps 2 and 3 - first question. See additional comments at the end of this section.

I'm unclear whether these results are pooled across all three experts? Did all the experts identify these problems? Or just one of them?

TABLE 4.1. Cognitive Walkthrough Result of TASK A-01

Step	Question	Response	Notes
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	The "+" icon might be ambiguous for elders.
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	No.  Yes.	"Voice Call" should not belong to "Video Call".
4	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	

generally all Chinese elders, might think they need to click "+" icon when they need to input, or "add", texts into the message box.

TABLE 4.2. Cognitive Walkthrough Result of TASK A-02

Step	Question	Response	Notes
1	Would our persona know what to do at this step? If the persona does the right action, do they know they have made progress toward the goal?	Yes. Yes.	
2	Would our persona know what to do at this step? If the persona does the right action, do they know they have made progress toward the goal?	Neutral. Yes.	The "+" icon might be ambiguous for elders.
3	Would our persona know what to do at this step? If the persona does the right action, do they know they have made progress toward the goal?	No. Yes.	A logical error by choosing "Video Call" twice.
4	Would our persona know what to do at this step? If the persona does the right action, do they know they have made progress toward the goal?	Yes. Yes.	

#### 4.2.3 Result of TASK A-03

Recall that TASK A-03 is:

*[WeChat is in the video chat mode, with the camera facing the user.]*

*Suppose you are travelling and the scenery around you is beautiful. Please turn your camera and show the surrounding environment to your grandchildren while seeing the grandchildren's facial expression.*

There are just 1 step for participants to complete TASK A-03:

1. Click "Switch Camera" icon.

This icon could be shown while during the video call interface:

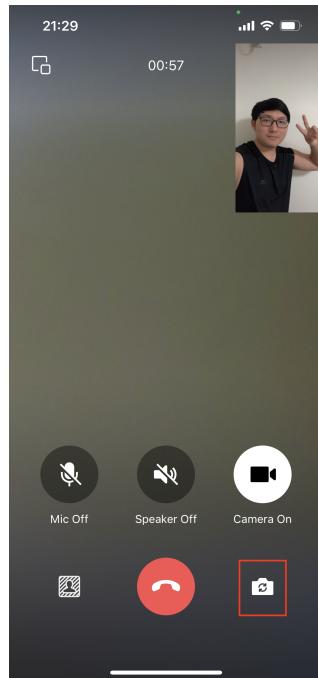


FIGURE 4.5. "Switch Camera" Icon for TASK A-03

TABLE 4.3. Cognitive Walkthrough Result of TASK A-03

Step	Question	Response	Notes
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	No.  Yes.	The position of "Switch Camera" icon varies before and during calls.

Unlike "Mic Off", "Speaker Off", and "Camera On" buttons, the "Switch Camera" icon does not have reminder texts beneath it. This violates accessibility principles as alternative, explanatory texts are not available for people who want to switch cameras.

**Problems with quotes – I won't keep barking number again I think - I have mentioned this before.**

It's also important to note that the "Switch Camera" icon's placement varies between before and after a call. The "Switch Camera" symbol is situated at the "Camera On" while a WeChat user contacts a video call with another user, but once the call is connected, it will be relocated to the location as shown in Figure 4.5.

The result summary of TASK A-03 is in Table 4.3.

#### 4.2.4 Result of TASK A-04

Recall that TASK A-04 is:

*[WeChat is in the video chat mode.]*

*Suppose you want to check whether you received new messages from others when you are still chatting with your grandchildren. Please check new messages while keeping the video call on.*

There are just 1 step for participants to complete TASK A-04:

1. Click "Minimize Window" icon.

This icon could be shown while during the video call interface, as shown in Figure 4.6.

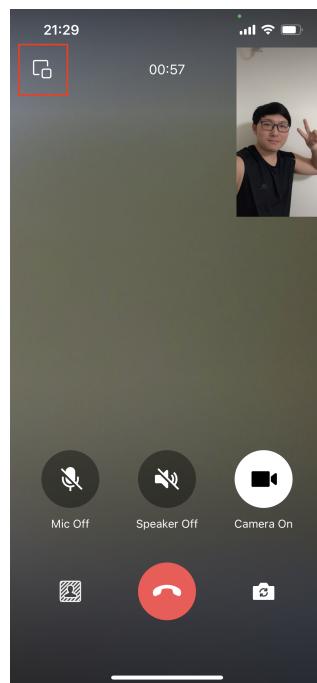


FIGURE 4.6. "Minimize Window" Icon for TASK A-04

The minimize window icon for WeChat is invisible, unclear, and peculiar, according to most experts. WeChat has already altered the symbol since the previous one, which was a "X" sign, could have been less clear than the new one.

TABLE 4.4. Cognitive Walkthrough Result of TASK A-04

Step	Question	Response	Notes
1	Would our persona know what to do at this step?	Neutral.	The "Minimize Window" icon is not intuitive or obvious.
	If the persona does the right action, do they know they have made progress toward the goal?	Yes.	

#### 4.2.5 Result of TASK B-05

Recall that TASK B-05 is:

*[WeChat is open and at the main page.]*

*Suppose you missed your grandchildren. Please send “I miss you so much” to your grandchildren.*

There are 4 steps for participants to complete TASK B-05, as shown in the Figure 4.7:

1. Select counterpart user;
2. Click white space to call keyboard up;
3. Type to input text messages;
4. Press "Send" after typing.

The expert opinions to TASK B-05 are summarized in Table 4.5. This task, according to experts' opinion, might be more difficult to achieve than other tasks due to the invocation of the keyboard. As typing text message is one of the most used and a core functionality, WeChat should do more to assist elders pull up the keyboard for them to type in.

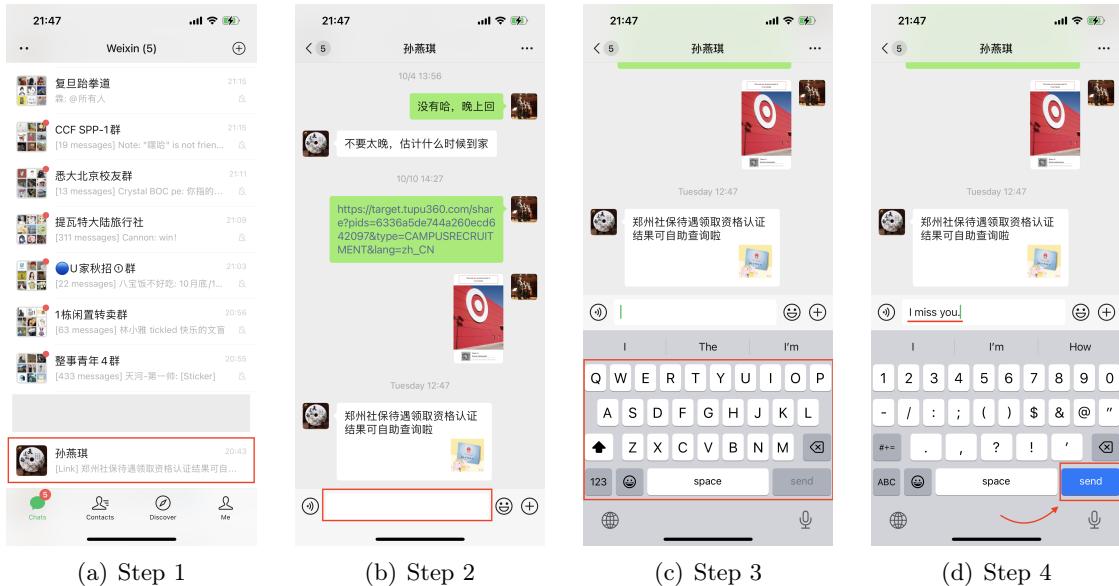


FIGURE 4.7. Illustration of Steps for TASK B-05

#### 4.2.6 Result of TASK B-06

Recall that TASK B-06 is:

*[WeChat's status is right after last task is completed.]*

*Suppose you then felt shy after sending the message. Please pretend that you did not want to send the message and take it back.*

There are 3 steps for participants to complete TASK B-06, as shown in the Figure 4.8:

1. Long press the message;
2. Click "Recall";
3. Confirm recalling in the warning box.

**As above, state the IDs of the experts.**

The majority of analysts believe that our persona will struggle to finish this mission. As the "long press" operation is highly uncommon compared to all other daily smartphone operations, some experts pointed out in the cognitive walk-through study that our persona, whether A or B, might not be familiar with it. For instance, when a logo or icon, such as the WeChat logo or keyboard buttons, appeared in their view, our persona might have known they should take action. The message could be retracted by long pressing, however there was no obvious

TABLE 4.5. Cognitive Walkthrough Result of TASK B-05

<b>Step</b>	<b>Question</b>	<b>Response</b>	<b>Notes</b>
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	No.  Yes.	Personas do not know how to invoke the keyboard.
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	Pinyin keyboard may be difficult as personas like handwriting.
4	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	The "Send" button is not shown when there is no input.

indication of this or any other tips for our persona. This makes it very difficult for our character to finish this work.

The summary of the study is in Table 4.6.

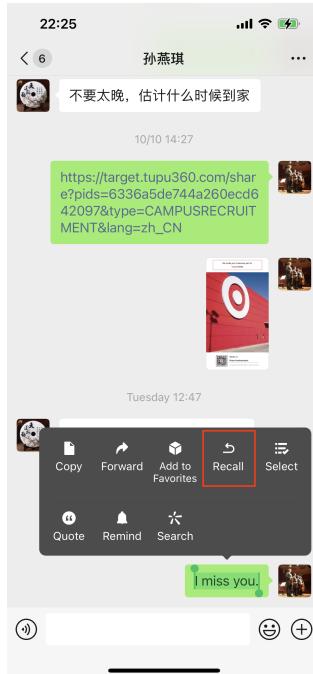


FIGURE 4.8. "Recall" Icon for TASK B-06

TABLE 4.6. Cognitive Walkthrough Result of TASK B-06

<b>Step</b>	<b>Question</b>	<b>Response</b>	<b>Notes</b>
1	Would our persona know what to do at this step?	No.	Long pressing the message is not a conventional action.
	If the persona does the right action, do they know they have made progress toward the goal?	Yes.	
2	Would our persona know what to do at this step?	Neutral.	"Recall" might not be visible to our persona due to its size.
	If the persona does the right action, do they know they have made progress toward the goal?	Yes.	
3	Would our persona know what to do at this step?	Yes.	
	If the persona does the right action, do they know they have made progress toward the goal?	Yes.	

#### 4.2.7 Result of TASK C-07

Recall that TASK C-07 is:

*[WeChat is showing an article.]*

*Suppose you are reading the article “Coke Zero Considered Harmful”, and you thought your grandchildren need to know this. Please share this article with your grandchildren.*

There are 3 steps for participants to complete TASK C-07:

1. Click "..." at the top-right corner;
2. Click "Send to Chat";
3. Choose which people to share.

The illustration of such processes is shown in Figure 4.9.

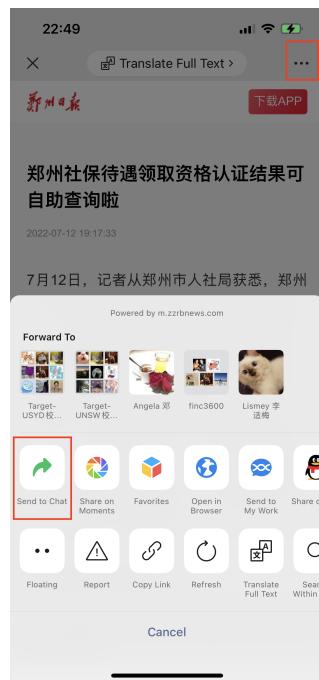


FIGURE 4.9. Sharing Article To User of TASK C-07

According to some experts, the elderly may not perceive the three dots, "...", or they may not grasp how it might be employed.

TABLE 4.7. Cognitive Walkthrough Result of TASK C-07

<b>Step</b>	<b>Question</b>	<b>Response</b>	<b>Notes</b>
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	The "..." might be ambiguous.
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	

Elderly people may experience a shift in thinking as a result of this exercise, an expert noted. Our personas must first search for the counterpart user before performing any further actions, such as making calls or sending messages to other users. To share an article, however, our persona must first locate the article and then decide with whom to share it. In order to successfully execute this user job, our persona must adjust to this shift in perspective.

#### 4.2.8 Result of TASK C-08

Recall that TASK C-08 is:

*[WeChat is showing an article.]*

*Suppose you liked this article and want all of your WeChat friends to know. Please share this article to everyone publicly.*

There are 3 steps for participants to complete TASK C-08:

1. Click "..." at the top-right corner;
2. Click "Share on Moments";
3. Confirm such operation.

There were several potential answers to this issue, which led to some misunderstandings among experts. Some claimed that if our persona did not have a large number of friends, he or she could simply send the article to everyone via "Send to Chat" by sharing it with each friend individually.

The intended illustration of such processes is shown in Figure 4.10.

The result of TASK C-08 is similar to TASK C-07.



FIGURE 4.10. Sharing Article to Moments of TASK C-08

TABLE 4.8. Cognitive Walkthrough Result of TASK C-08

Step	Question	Response	Notes
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	The "..." might be ambiguous.
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	

#### 4.2.9 Result of TASK D-09

Recall that TASK D-09 is:

*[WeChat is open and at the main page.]*

*Suppose you are at a new supermarket called “Meat Federation” and you want to tell your grandchildren to come here and help you with grabbing the heavy vegetables. Please share your current location with your grandchildren so that he or she could come and look for you.*

There are 4 steps for participants to complete TASK D-09:

1. Select counterpart user;
2. Click "+" icon at the bottom-right corner;
3. Click "Location" button in the tool bar;
4. Select target location and click "Send".

Table 4.9 is a summary of the answers provided by the experts to TASK D-09. Overall speaking, this function is intuitive and has less difficult steps compared with other user tasks.

TABLE 4.9. Cognitive Walkthrough Result of TASK D-09

Step	Question	Response	Notes
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	Our persona might not know that "Location" is under the "+" icon.
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
4	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	

#### 4.2.10 Result of TASK D-10

Recall that TASK D-10 is:

*[WeChat is open and at the main page.]*

*Suppose you are at home and you know a flower shop nearby. Your grandson asked you about a nearby flower shop and you want to share the shop's location with your grandson on the map. Please do that now.*

There are 4 steps for participants to complete TASK D-10:

1. Select counterpart user;
2. Click "+" icon at the bottom-right corner;
3. Click "Location" button in the tool bar;

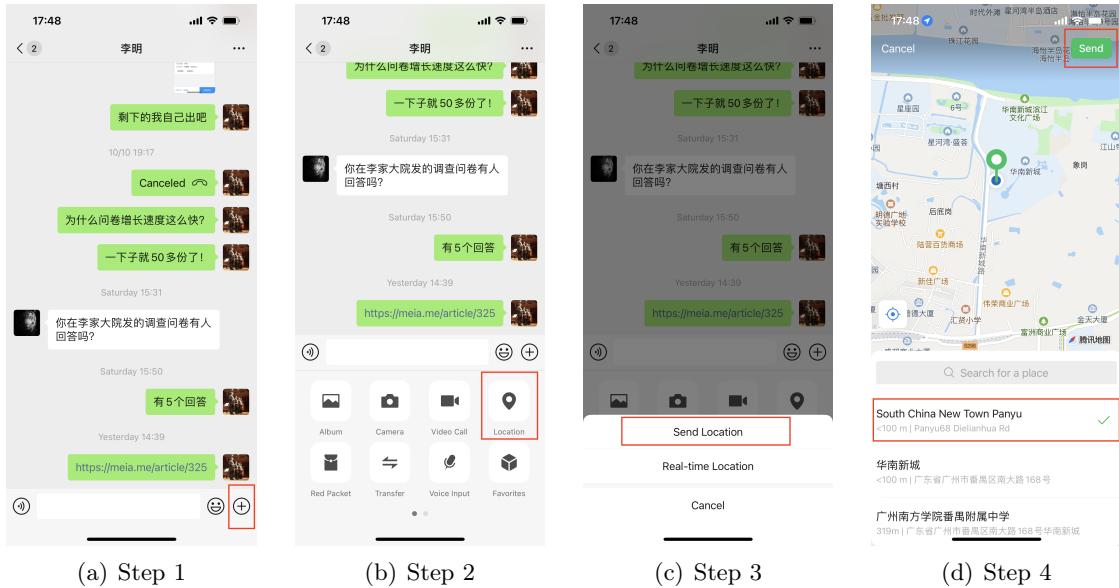


FIGURE 4.11. Illustration of Steps for TASK D-10

## 4. Select "Real-time Location".

Table 4.10 summarized the answers provided by the experts to TASK D-10. Our persona might find many difficulties when they are using the search bar to look for the desired location one is looking for.

The whole of this section would be much better if you change it to push the current text into an appendix. Then, for the body of the thesis, you explained the full details are in the appendix and you provide a summary of the key insights. The best way to do that would be similar to what you did in your presentation for COMP 5427 – have carefully chosen screens that are marked up to show the problems and a table of the problems - probably the table 1st to give the reader a sense of what is coming and then each row with the table would be explained in terms of relevant screenshots.

TABLE 4.10. Cognitive Walkthrough Result of TASK D-10

Step	Question	Response	Notes
1	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
2	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	Our persona might not know that "Location" is under the "+" icon.
3	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Yes.  Yes.	
4	Would our persona know what to do at this step?  If the persona does the right action, do they know they have made progress toward the goal?	Neutral.  Yes.	Elders might not know that one could search via the input bar.

### 4.3 Think Aloud of WeChat

Be more careful – they do not know. You do you have the word perhaps later but it would be better to say something like: After the heuristic evaluation, we have identified a set of usability problems that may pose problems for ...

Following the heuristic evaluation study, practitioners already know where users of our personas Ailing and Baogang can perhaps run into issues. Our primary research endeavor was the think-aloud experiment. Seniors who were unfamiliar with WeChat participated in this study and performed user activities while verbally expressing their opinions. We were better able to comprehend the elders' mental processes and their interactions with the WeChat user interface thanks to this, especially due to the fact that they study are conducted *in situ*, where elders are using WeChat under the environment they are much more familiar with than in laboratories.

The study practitioner selected each participant for the initial investigation on an individual basis. They belonged to the conductor's immediate family or other blood relatives. Participants had to have a smartphone, regardless of the brand or how frequently they use WeChat, as a

User ID	Age	Gender	WeChat Literacy	Mobile System	Persona
P1	85	M	Low	iOS	Baogang
P2	83	F	Medium	Huawei	Ailing
P3	90	M	None	Huawei	Baogang
P4	87	F	Low	Huawei	Ailing

TABLE 4.11. Participant Information of Think Aloud Study

recruitment condition. WeChat's literacy is actually one of the most important factors and criteria to evaluate WeChat's usability.

In order to reduce potential extraneous influences, the test was carried out in-person with a single person in October 2022. The pilot study has 4 participants and is enough to reveal most issues, as 3 to 5 participants are enough (Nielsen and Molich, 1990).

A brief demographic survey was completed by the individual before to the study. The survey asked about their gender, age, literacy with WeChat, and mobile operating system of their phone. Additionally, a persona based on their gender was allocated to each participant: Ailing for female participants and Baogang for male participants.

The variables explanation are listed below:

- User ID: A number used to identify each user specifically.
- Age: The age of the elder.
- Gender: M stands for male and F stands for female. No elders identified as LGBTIQ.
- WeChat Literacy: The user's previous experience with WeChat.
- Mobile System: The operation system of elder's smartphone.
- Persona: A (Ailing) or B (Baogang) is assigned based on elder's gender.

To sum up, I ran think-alouds with 4 users, with each user doing 10 tasks for one of the 2 personas. As a result, each user completed 10 tasks using the persona appropriate to their gender, making a total of 40 individual tasks.

The overall results are show in Table 4.12.

The specific results of each user task are noted in the following sections.

You should mention that they were from the relevant population. You should not say it is enough. You should say that this literature indicates it should reveal the most serious problems.

	A-01	A-02	A-03	A-04	B-05	B-06	C-07	C-08	D-09	D-10
P1 (B)	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Help
P2 (A)	Yes	Yes	Yes	Help	Yes	Yes	Yes	Yes	Yes	Help
P3 (B)	No									
P4 (A)	Help	Yes	Yes	No	Help	No	Yes	Yes	Help	Help

TABLE 4.12. Think Aloud Result Summary

#### 4.3.1 Result of TASK A-01

Recall that TASK A-01 is:

*[WeChat is open and at the main page.]*

*Suppose you want to call your grandchildren, but you are not well dressed so you don't want your grandchildren to see you in the call. Please use WeChat to call your grandchildren now.*

The user feedback of TASK A-01 is shown in Table 4.13:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Help.	Difficult to be aware of "+".

TABLE 4.13. Think Aloud Result of TASK A-01

P1 and P2 performed well in completing TASK A-01 because they have prior experience with WeChat calls, including voice and video conversations. They even used the word "easy" in this very beginning task. P3 and P4 struggle to locate this icon, particularly P4, who used WeChat just once two years ago and has since returned to using landlines.

**Better to say this as: P3 is 90 years old and found it impossible to read ...**

It's important to note that P3 is now 90 years old, making it impossible for him to read the words on a smartphone screen well. P3 won't be able to finish any tasks in the upcoming study.

#### 4.3.2 Result of TASK A-02

**I don't understand this sentence. But if you look at the comments I have above, it would be better to discuss the whole table and then you don't have to mention P3 in every single task. In addition, if you mention the difficulties in vision for P3, that could be at the very top and you don't need to repeat it for each of these tables.**

Recall that TASK A-02 is:

*[WeChat is open and at the main page.]*

*Suppose you want to chat with your grandchildren and see their dancing in front of the phone. Please video chat with your grandchildren.*

The user feedback of TASK A-02 is shown in Table 4.14:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Yes.	

TABLE 4.14. Think Aloud Result of TASK A-02

This task is similar to the last one, and P1 and P2 still have no trouble finding the video call symbol because it is just next to the voice call icon. P4 improved in this challenge as well because she now has a better understanding of how to make voice calls after completing the prior one.

#### 4.3.3 Result of TASK A-03

Recall that TASK A-03 is:

*[WeChat is in the video chat mode, with the camera facing the user.]*

*Suppose you are travelling and the scenery around you is beautiful. Please turn your camera and show the surrounding environment to your grandchildren while seeing the grandchildren's facial expression.*

The user feedback of TASK A-03 is shown in Table 4.15:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Yes.	

TABLE 4.15. Think Aloud Result of TASK A-03

This task's result is similar to the last one, and P1 and P2 still have no trouble finding the video call symbol because it is just next to the voice call icon. P4 improved in this challenge as well because she now has a better understanding of how to make voice calls after completing the prior one.

#### 4.3.4 Result of TASK A-04

Recall that TASK A-04 is:

*[WeChat is in the video chat mode.]*

*Suppose you want to check whether you received new messages from others when you are still chatting with your grandchildren. Please check new messages while keeping the video call on.*

The user feedback of TASK A-04 is shown in Table 4.16:

User ID	Result	Feedback
P1 (B)	No.	Too focused on bottom toolbar.
P2 (A)	Help.	Did not notice icon on top-left.
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	No.	Did not notice icon as well.

TABLE 4.16. Think Aloud Result of TASK A-04

Think aloud result revealed that participants typically have a great deal of difficulty finishing this user task. This is because participants' attention was mostly on the bottom toolbox bar and they failed to notice the single "Minimize Window" icon in the top-left corner of the screen. WeChat may need to make some big changes to this, such as enlarging the symbol or adding tutorials for seniors, etc.

#### 4.3.5 Result of TASK B-05

Recall that TASK B-05 is:

*[WeChat is open and at the main page.]*

*Suppose you missed your grandchildren. Please send "I miss you so much" to your grandchildren.*

The user feedback of TASK B-05 is shown in Table 4.17:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Help.	Did not invoke keyboard.

TABLE 4.17. Think Aloud Result of TASK B-05

Overall speaking, this user task is not as difficult as TASK A-04, and align with the cognitive walkthrough result that some participants might need help invoking the keyboard by pressing the white spaces in the input bar. Other users are generally familiar with such operation.

#### 4.3.6 Result of TASK B-06

Recall that TASK B-06 is:

*[WeChat's status is right after last task is completed.]*

*Suppose you then felt shy after sending the message. Please pretend that you did not want to send the message and take it back.*

The user feedback of TASK B-06 is shown in Table 4.18:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	No.	No idea to long press the message.

TABLE 4.18. Think Aloud Result of TASK B-06

As indicated in cognitive walkthrough, one participant was not able to perform long press action during the think aloud study.

#### 4.3.7 Result of TASK C-07

Recall that TASK C-07 is:

*[WeChat is showing an article.]*

*Suppose you are reading the article "Coke Zero Considered Harmful", and you thought your grandchildren need to know this. Please share this article with your grandchildren.*

The user feedback of TASK C-07 is shown in Table 4.19:

The author had anticipated that this task would be somehow challenging for participants to complete, but it turned out that they did fairly well considering that many of them frequently

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Yes.	

TABLE 4.19. Think Aloud Result of TASK C-07

utilize WeChat's "share" feature to send out things they find interesting to their friends and family once a day.

#### 4.3.8 Result of TASK C-08

Recall that TASK C-08 is:

*[WeChat is showing an article.]*

*Suppose you liked this article and want all of your WeChat friends to know. Please share this article to everyone publicly.*

The user feedback of TASK C-08 is shown in Table 4.20:

User ID	Result	Feedback
P1 (B)	Yes.	
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Yes.	

TABLE 4.20. Think Aloud Result of TASK C-08

Overall, no huge design flaws discovered in TASK C-08.

#### 4.3.9 Result of TASK D-09

Recall that TASK D-09 is:

*[WeChat is open and at the main page.]*

*Suppose you are at a new supermarket called "Meat Federation" and you want to tell your grandchildren to come here and help you with grabbing the heavy vegetables. Please share your current location with your grandchildren so that he or she could come and look for you.*

The user feedback of TASK D-09 is shown in Table 4.21:

User ID	Result	Feedback
P1 (B)	No.	Used different way to share.
P2 (A)	Yes.	
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Help.	No idea where is "location" icon.

TABLE 4.21. Think Aloud Result of TASK D-09

In this study, P1 simply typed the name of location and send it to the counterpart, but this was not the way the design of this task was intended. This task was designed to test the usability of WeChat's "location" icon in the toolbar. P4 was not even aware that the location is in the toolbar.

#### 4.3.10 Result of TASK D-10

Recall that TASK D-10 is:

*[WeChat is open and at the main page.]*

*Suppose you are at home and you know a flower shop nearby. Your grandson asked you about a nearby flower shop and you want to share the shop's location with your grandson on the map.*

*Please do that now.*

The user feedback of TASK D-10 is shown in Table 4.22:

User ID	Result	Feedback
P1 (B)	Help.	Did not know how to choose location.
P2 (A)	Help.	Used a different way to complete.
P3 (B)	No.	Cannot see the text clearly.
P4 (A)	Help.	Did not know how to choose location.

TABLE 4.22. Think Aloud Result of TASK D-10

In the last user task, P1 and P4 were unaware that they might search for and select a location pin to send them even if it was extremely far away from where they were at the time. Users might not be aware that they can choose another location by searching on the built-in Tencent Map because WeChat automatically determines the user's current location and sets it as the default.

**Having reached this point, I feel even more strongly you need to make the changes suggested earlier. It's very hard for a reader to see the big picture here and what you actually learnt. It will be very important that this section summarises new insights that you learnt from the think aloud - as well as explicitly discussing which ones are the same as those identified in the cognitive walk-through. There should be a short summary for this section and it should reflect on the similar and different lessons from the two methods.**

## 4.4 WeChat Usability Questionnaire

We used the WeChat usability questionnaire as our validation data source in order to confirm whether or not one of the WeChat's functionalities needed improvement in design. The results of the questionnaire showed that some aspects of the functionality in question did, in fact, need improvement. The results of the questionnaire are shown below.

**It is a long way from the description of this study so you should briefly provide a little more detail here to help remind the reader.**

### 4.4.1 Demographics

Among 150 participants in the WeChat usability questionnaire, 59.3% ( $N=89$ ) fully completed all the questions from the survey; among them, 44.9% are male and 55.1% are female.

Other entries are listed below.

TABLE 4.23. Marriage Status of WeChat Usability Survey Participants

	Single	Married	Bereft	Divorced	Total
Num	6	73	6	4	89

Among all 89 effective answers, 82% of participants are married, and others are either single, divorced or bereft.

TABLE 4.24. Living Status of WeChat Usability Survey Participants

	Live with Family	Live Alone	Live in Care Home	Total
Num	69	18	2	89

Most elder participants live with family under Covid-19; only 2 participants said that they are living in care home during the study period. Originally the study group intended to conduct user studies in care homes as elders in care home are the group of elders who needs frequent communication with their family members most, but due to Covid-19 restrictions and regulations of each care homes, any irrelevant or academic visits are strictly prohibited so that the spread of Covid-19 virus could be effectively eliminated in order to protect elder's health and safety.

TABLE 4.25. Education of WeChat Usability Survey Participants

	-Primary	Middle	High	Bachelor	Master+	Total
Num	8	26	24	28	3	89

The education distribution is in a bell shape and is normally distributed overall.

Finally, the age information are shown in Table 4.26. Notice that in this WeChat usability questionnaire study, the age limit has been loosen and those who identify themselves as elders could participate in this study. As Brandt et al. (2010) pointed out, the definition of seniors was found to be controversial among the academics, as they often found issues including identity, self-image and stigmatization. Almost no one between 55-75 years old identify as elderly, and many think that this definition was too much simplified and stereotyped. Moreover, the author pointed out that recruiting survey participant process was difficult, including in this very study.

TABLE 4.26. Age Distribution of WeChat Usability Questionnaire Participants

	Min	Q1	Mean	Q3	Max
Age	20	50	52.99	60	87

Therefore, we decided to loose the restrictions faced by survey participants, as our research group member Abraham Elias pointed out in a weekly meeting that instead of defining the elderly, or "elders," in terms of their chronological age for the sake of this study, it is preferable to correlate the term with certain social situations, a notion known as situated elderliness. For instance, these situations might be that: (1) they have few or no active social connections, (2) they have limited mobility, and (3) they are unable to engage in other types of digital communication due to technological limitations.

#### 4.4.2 Survey Results

Details of questionnaire results are shown in the following sections.

##### 4.4.2.1 "Press to Speak" serves as the most-used keep-in-touch functionality

First of all, participants are asked the frequency of them using the following keep in touch method: "Voice Call", "Video Call", "Share Location", "Press to Speak", and "Moments". Participants could rate their frequency from "Always", "Sometimes", "Once a while", "Rarely", and down to "Never". The results of frequency data is shown in Table 4.27.

In the questionnaire, 5 stands for "Always", and vice versa.

As one might see in the Table 4.27, "Press to Speak" ranks highest, as participants' most used functionality for elders to keep in touch with their family, and next comes "Voice Call" and "Video Call", separately. Apparently video call is less popular than voice call, due to

TABLE 4.27. Statistics on WeChat Functionality User Frequency

	Press to Speak	Voice Call	Video Call	Moments	Share Location
Ranking	No.1	No.2	No.3	No.4	No.5
Mean	3.4719	3.4494	3.0787	2.9775	2.6966
Median	3	4	3	3	3
Stdv	1.0881	1.0001	0.8149	1.0869	1.0379

Please reduce the number of significant figures in this table. I think one number after the decimal place would be better and you should show it for even the median so that the format is identical and it is easier for a reader to see.

usability problems discovered in previous think aloud and cognitive walkthrough studies. "Share Location" is also less used by study participants, align with previous issues of unfamiliarity when both experts and users conducted TASK D-09 and TASK D-10.

I think the table above needs more discussion in terms of what I would've predicted initially. For example, the last two columns are things that one would expect people to do less frequently. Recall the idea of bayesian thinking – state what you initially would've expected and why.



FIGURE 4.12. Frequency of WeChat Communication Functionality Usage

#### 4.4.2.2 "Press to Speak" also ranks highest in user usability ratings

The next step is to ask participants to rate some of the most popular features used by seniors to stay in touch with their family members, such as "Voice Call", "Video Call", "Share Location", "Press to Speak", and "Moments". The scores range from 1 to 5, with a score of 5 representing

the "easiest to use" feature in the participant's opinion and a score of 1 representing the opposite. The results are shown in Table 4.28.

TABLE 4.28. Statistics on WeChat Functionality User Rating

	Press to Speak	Voice Call	Moments	Video Call	Share Location
Ranking	No.1	No.2	No.3	No.4	No.5
Mean	3.7528	3.6966	3.6067	3.5955	3.1685
Median	4	4	4	4	3
Stdv	1.0144	0.9583	0.8609	0.9501	1.0139

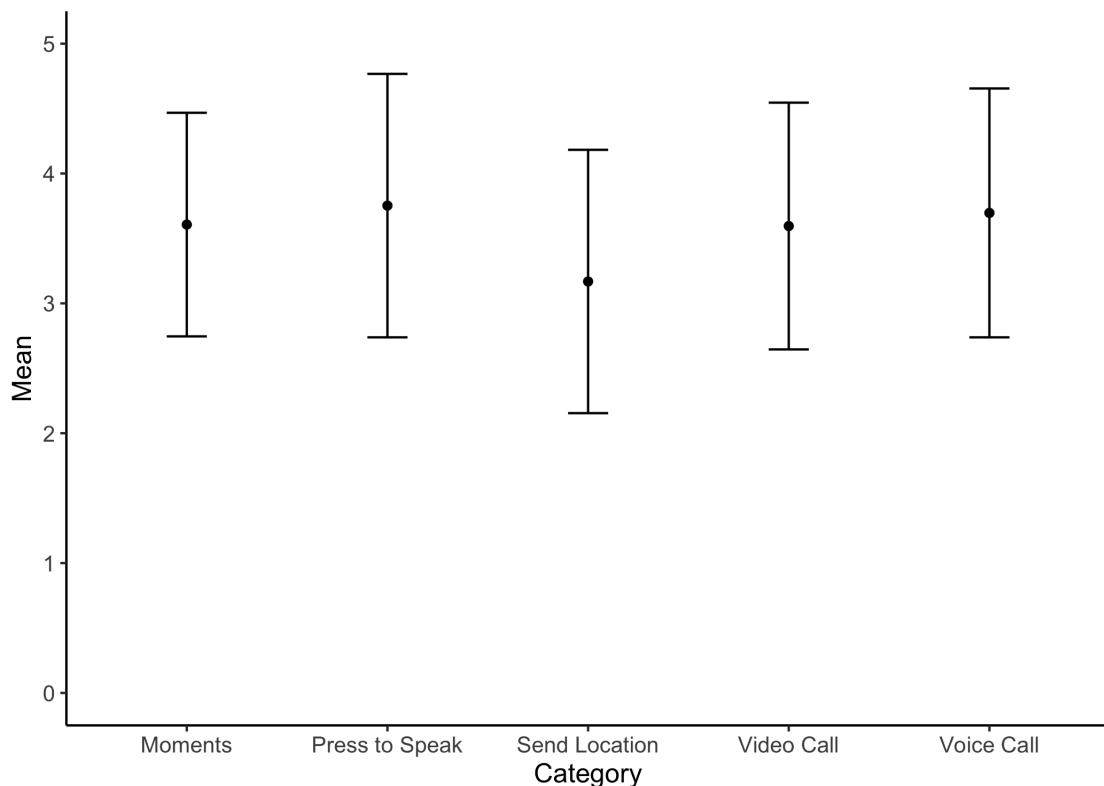


FIGURE 4.13. User Rating of WeChat Communication Functionalities

In order to further represent user's ratings on each of WeChat functionalities, we also presented the violin plot version of user ratings in Figure 4.14. This is partially because Correll and Gleicher (2014) argued that for inferential tasks, gradient plots and violin plots—which employ width instead of transparency to express uncertainty—are preferable to bar charts with error bars, as viewers' judgements about ambiguous data are strongly altered by the mean and error encoding.

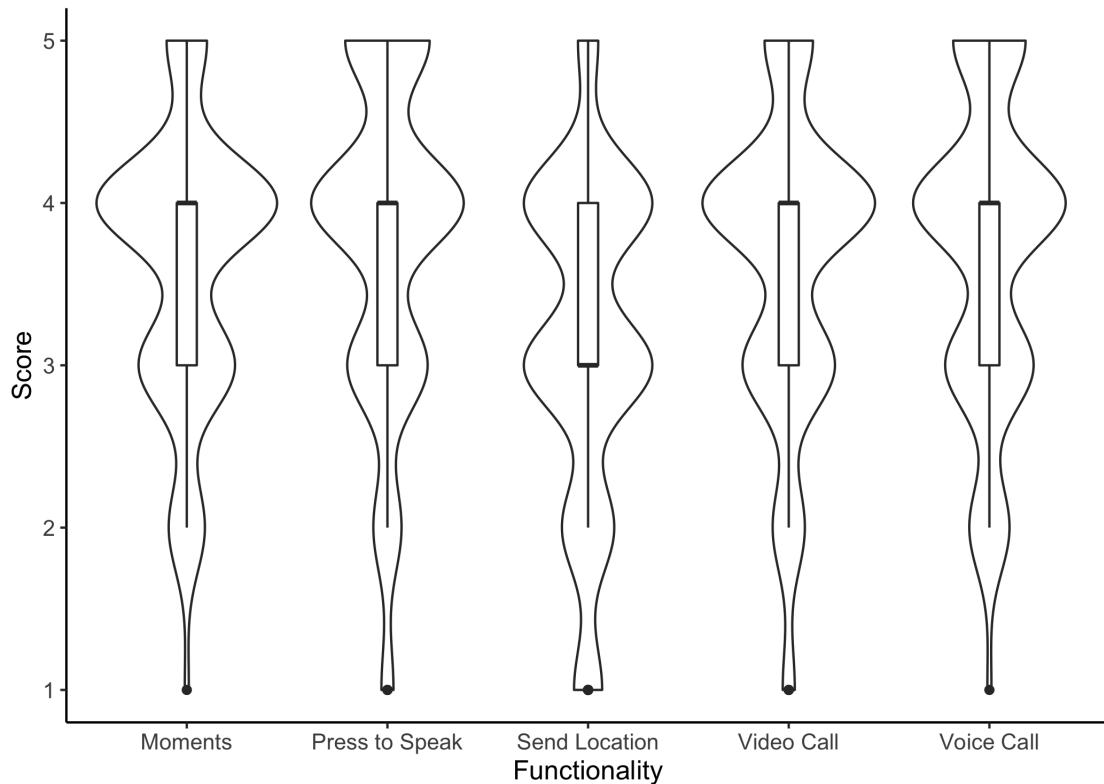


FIGURE 4.14. Rating of WeChat Communication Functionalities in Violin Plot

Here, two, I recommend unnumbered headings.

#### 4.4.2.3 Only 20.2% participants do not know how to switch camera in video calls

This finding align with think aloud and cognitive walkthrough results of A-03, as most of the elders are aware of the function.

I think that you could discuss the trade-offs between benefits and learning effort. Clearly if a person knows about functionality that would be very useful to them and they have an opportunity to learn how to get the benefits, we can see that usability weaknesses could be less of a barrier.

#### 4.4.2.4 Nearly half of participants do not know how to enlarge fontsize

In WeChat, users could enlarge its font size via two methods: either directly set WeChat's font size under Settings, or open "Care Mode" (also called "Easy Mode" in the iOS English version) so that both the font size and font colour will be changed to make elders easier to see the texts on WeChat, including larger font size, sharper colors and bigger buttons.

Our study revealed that 35.96% participants do not know the existence of font size adjustment function, and 49.44% were not aware of "Care Mode".

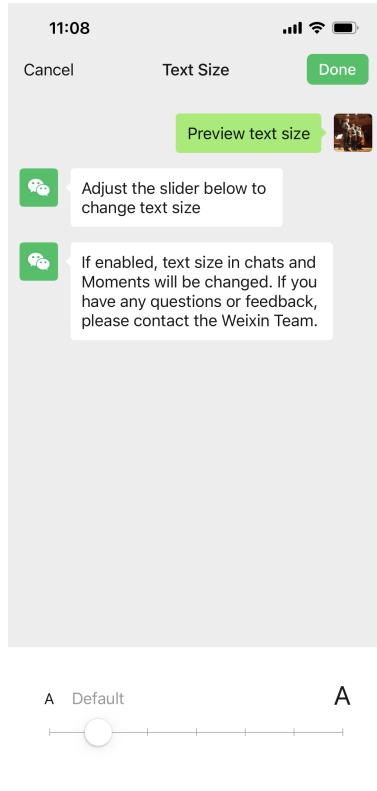


FIGURE 4.15. Text Size Adjustment Function in WeChat

#### 4.4.3 Survey Conclusion

I think this section needs a summary of the key insights so that it is easier for a reader to be sure they see them. Have a look through every place you have a number and check whether you really think the number of significant figures is justified. For example, on the page above, the percentage of participants could be simply reported as integers.

In this section, the author reported the result of the questionnaire using descriptive statistics; no hypothesis testing are conducted in this research project due to its controversy. Some argued that in order to maintain scientific integrity, it is time to stop the p value practice and abuse, such as the danger of draw a conclusion merely based on a p value, no report of both descriptive statistics (e.g., mean and standard deviation) of variables being tested and the values of statistics themselves (Zhu, 2012). Despite strong criticism in the literature and consideration in many journals' publication standards for the misuse and abuse of " $p < 0.05$ ," it appears that this improper practice is now even more pervasive. Therefore many suggested that it is time to put an end to the p value abuse and practice in order to preserve scientific integrity.

Limitations of this survey is reflected in the final chapter's Section 6.1.