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Use and Misuse of WeChat among Elderly Adults in Urban China

How to improve their critical use of WeChat
through media literacy

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Chapter 1: Introduction

1.1 Elderly adults and WeChat in China

New media has greatly changed people's lives and the way people live. With the popularization of smartphones, WeChat has become one of the biggest instant messaging in Asia soon after it was developed in 2011. WeChat is a free Chinese social media mobile application developed by Tencent and it emerges many functions into one. It contains instant messaging functions such as sending and receiving instant texts or photos, voice messages, and making free audio/video calls as in WhatsApp; and it is also a platform for socialization which is called "WeChat Moments". Like on Facebook, users can post words, photos, short videos, and share links in "WeChat Moments". Other users can comment and give "likes" to their posts, but they can only view their friends' WeChat Moments and view comments and "likes" sent by their mutual WeChat friends. Except for instant messaging and social media functions, WeChat integrates mobile payments, public services, games, and many other services as well.

When it comes to new media, the first thought possible landing is usually young people or the digital natives. However, it is worth noting that except for the young people, middle-aged and the elderly are becoming active cohorts of WeChat users. According to WeChat User Data Report in 2016, the average amount of messages sent from elderly adults is 44 items per person per day (WeChat, 2017a). In research conducted by Tencent research center and S-Tech research group, the young users use WeChat for an average of 1.86 hours, and the number of middle-aged and elderly users is 1.78 hours and 1.37 hours respectively. Those results indicate that more and more middle-aged and elderly people have entered the internet world and tried to connect to their social networks through the Internet.

Prior research shows that social media helps elderly adults strengthen their contact with their children and relatives, which helps promote relational communication in both families and society. In addition, it also helps break social isolation caused by retirement and some other reasons (Gui, Francesca, & Scarcelli, 2017; Ma, 2016). Accordingly, the social media feature of WeChat moments helps elderly adults to know their children and relative's life; meet the strong need of building emotional connections. to express opinions and meet the demand of getting attention and being cared for by others. Since there's such a tight relationship between WeChat and Chinese elderly adults, this study is trying to have a more inside look and provide more empirical findings on their WeChat use.

Although WeChat provides an alternative sphere and mass of information, it brings challenges as well. One of the great challenges is that rumors and misinformation are spreading on WeChat, especially among elderly WeChat users. Now that everyone can post information on the internet, the uncertainty of the internet is challenging people's ability of critical thinking and media literacy ability. Firstly, the popularity of social media has changed the way people get news and information. The ease of sharing and the anonymity make information on the internet mixed with misinformation, rumors, and fake news. Secondly, according to Lippmann, the media world is constructed. People have to rely on media to know the world, but information posted by the media is being selected and constructed. Donald Shaw and Maxwell McCombs further strengthened this idea and proposed agenda-setting theory which pointed out that media can influence people's perception of the world. People are easy to be influenced and led by agenda-setting functions if they are lacking the ability to critically thinking. Besides, profit-driven factors cannot be ignored. Much misinformation is driven by some profit factors and are misleading people's mind. Elderly adults, as new to this digital world, is more easily to be misled. Thus, the ability of critical thinking, and the awareness of always questioning is becoming ever more crucial (Livingstone, 2004).

There have been many attempts and a lot of effort has been put forward to improving media literacy in China. However, little attention has been paid to elderly adults, who urgently need to be paid attention to. According to Zhang & Yang's statistic on articles published in core journals on media literacy from 2000 to 2010 in China, 67% of research are focused on young people while only 8% on children and 25% on others (Liguo Zhang & Yang, 2011). Thus, their misuse, problems, and their ability in confronting misinformation are important as well.

By drawing the framework, in this thesis, the investigation will focus on the use and misuse of elderly adults in urban China. How do elderly adults in urban China use WeChat in daily life; what are their major problems in the use of WeChat and their ability in confronting misinformation will be investigated in this thesis. Then strategies for improving the critical use of WeChat will be proposed as well.

1.2 Why WeChat

There are many popular new media applications in China. However, the diversification of usage scenarios and the richness of useful functions have made WeChat a typical social application in China (Jinghong & Weipeng, 2020), especially among elderly adults. As Guo Lei stated in research on the use of WeChat among Chinese older adults: the unique feature of WeChat which provides a perceived “low barrier” user experience, made it more accessible to older adults rather than other social media platforms in China such as Weibo (like Twitter) which have a similar feature, and some elderly adults started to get and produce alternative information online instead of mass media because of WeChat (Guo, 2017).

In this section, some contextual information about WeChat will be introduced, and some basic functions of WeChat will be explained. The birth and evolution of WeChat

in China and statistical research of WeChat will be presented in the first part while the main functions of WeChat will be listed and detailed explained next.

1.2.1 The birth and evolution of WeChat in China

WeChat is a free Chinese social media mobile application developed by Tencent company. It was first released in 2011 and by 2017 it became one of the largest standalone messaging apps by monthly active users, with over 889 million monthly active users and available in 21 different languages (WeChat, 2017b). For comparison, Facebook Messenger and WhatsApp (two other competitive international messaging services) had only about one billion Monthly Active Users in 2016 (Economist, 2016). According to the latest official data, this number has raised to 1151 billion by September 2019, with a 6% increase over the same period last year. In 2017 it was reported that more than half of WeChat's users spend over 120 minutes daily on the app (WeChat, 2017b). Among them, middle-aged and elderly users are growing rapidly. The number of middle-aged and elderly people aged over 50 who use internet social applications is increasing year by year. According to the WeChat Data Report released by Tencent Co., in 2015, the number of monthly active users aged over 50 accounted for nearly 12.63 million. However, by 2017, according to the Research Report on Internet Life of Middle-aged and Elderly 2018, the number of monthly active users over 55 had reached 50 million.

1.2.2 Functions of WeChat

WeChat is widely known as one of the world's most innovative and versatile apps and China's "App for Everything", with numerous unique functions and platforms ranging from 'payment', 'social media', and 'services' to 'shopping' and more but merged into one. Users can send and receive instant text, pictures, voice messages, or make an

audio/video call via WeChat. Besides these basic functions, WeChat contains social media called “WeChat moments” in which people can update pictures and many other services (such as online money transfer, commerce, and payment services).

Except for chatting with friends, one of the most important features of WeChat is that people can follow official accounts, receive, and repost messages from these accounts. According to Tencent Browsing Index, “*chicken soup for the soul*” (76.51%), “*humor*” (72.02%), and “*news*” (67.00%) are the most favorite topics among elderly WeChat users, followed by “*entertainment*” (66.85%).

To have a better understanding of this research, the main functions of WeChat need to be introduced first. Here are some main functions of WeChat:

Instant Messaging

WeChat is firstly an app for instant messaging. Like WhatsApp, users can send free text messages, voice messages, stickers, photos, and videos, and share their locations.

Group chat

Except for one-to-one messaging, all the users can organize group chats on WeChat.

Free voice call & video call

Except for messaging, users can make free voice calls and video calls like FaceTime.

Luck money

Users can send lucky money pockets to others in chat or group chat. People who send luck money packages can make it a random amount in every package. In Chinese traditional culture, red pockets are usually sent during Chinese New Year because red pocket means good luck. In 2016, 3.2 billion lucky money pockets were sent over the holiday period, and 409,000 alone were sent at midnight on Chinese New Year (Fast Company, 2017). Now it’s more like a game and is popular, especially in group chats.

WeChat Pay

WeChat Pay is a digital wallet service incorporated into WeChat, which allows users to perform mobile payments and send money between contacts (Finance magnates, 2015). Users who have provided bank account information or linked WeChat with their card may use the app to pay bills, order goods and services, transfer money to other users, and pay in stores if the stores have a WeChat payment option. More than half of the WeChat users consider WeChat as a very important tool for paying (WeChat, 2017a). Now in China, from tiny street vendors to stores and large chains, people can buy things, pay taxi fees, and get many services by WeChat pay under many occasions.

□ Official accounts & mini programs

WeChat supports people and organizations to register as an official account, which enables them to push feeds to subscribers, interact with subscribers and provide them with services. In return, users can get access to information and services provided by the account subject.

There are three types of official accounts: service account, subscription account, and company account. Once users as individuals or organizations set up a type of account, they cannot change it to another type. According to WeChat official data, by end of 2016, the number of WeChat official accounts had reached 10 million (WeChat, 2017a).

In 2017, WeChat further provide “mini program” services that allow external developers to run their code and conduct business inside WeChat. This makes users can get access to more services from other apps (e.g., car-hailing, shopping, ticket services, etc.)

□ WeChat Moments

WeChat Moments is a function in WeChat for social communication. Users can post pictures, words, short videos, and share links in WeChat moments, and only their friends and see their posts. Like on Facebook, they can send comments and “likes” but users can only see comments and “likes” sent by their common friends.

□ Translation

WeChat provides translation services. Messages or words in WeChat in other languages can be translated into system language.

□ Other services

WeChat provides many other functions such as online games, news, etc.

1.3 Objectives, research question and hypotheses

1.3.1 Objectives

By drawing the framework, research questions of this study emerged: what are the motives and barriers among Chinese elderly adults in their use of WeChat in the Chinese context? Then what strategies can be applied to promote their media literacy? Hence, the core objectives of this study are proposed as follows (To be more accrual, each general objective is divided into several specific objectives):

Objective1: To find out how elderly adults in urban China use WeChat. (General)

- To find out their motivations for using WeChat. (Specific)
- To identify if gender, education background, and living conditions can be affecting factors in their use of WeChat. (Specific)
- To gather and analyze their experience in learning WeChat. (Specific)

Objective2: To find out the problems among elderly adults in urban China in their use of WeChat. (General)

- To find out the main barriers in their use of WeChat. (Specific)
- To identify if they can verify rumors and misinformation in their use of WeChat or not. (Specific)

Objective3: To identify strategies to improve elderly adults' misinformation verification ability in their use of WeChat in urban China. (General)

- To test if people will implement the experience from the misinformation verification training session in WeChat use and have a better misinformation verification ability. (Specific)
- To propose strategies for the government and society to promote elderly adults' critical use of WeChat. (Specific)

1.3.2 Research questions

This study aims to answer the following research questions; each general question is divided into several sub-questions:

RQ1: How do elderly adults use WeChat in daily life in urban China? (General)

- Why do they use WeChat? (Specific)
- Do their use of WeChat affected by gender, educational background, and living condition? (Specific)
- How do they learn to use WeChat? (Specific)

RQ2: What are the major problems among Chinese elderly adults in their use of WeChat? (General)

- What are the main berries in their use of WeChat? (Specific)
- Are they able to verify rumors and misinformation in their use of WeChat or not? (Specific)

RQ3: What strategies can be used to improve the media literacy of elderly adults in their use of WeChat? (General)

- Can the misinformation verification training helps promote WeChat use and have a better misinformation verification ability? (Specific)
- What strategies can the government and the society propose to promote their critical use of WeChat?

1.3.3 Hypothesis

Based on research questions, a hypothesis was proposed: Misinformation verification training session in WeChat use facilitates a better misinformation verification ability in adult and older people.

1.4 Organization of the Dissertation

In this dissertation, Chapter 1 introduces contextual information on WeChat and elderly adults, including contextual information on WeChat and research origins. Chapter 2 demonstrates the theoretical framework and literature review. In this Chapter, the main theoretical background is introduced. Then theoretical framework was introduced by developing into media literacy, the digital divide, and third-person perception. A literature review is developed into media literacy and elderly adults, and media literacy, elderly adults, and WeChat. Chapter 3 presents the methodology of this study. The findings from the survey are presented in Chapter 4 and findings from focus group discussions are presented in Chapter 5. Chapter 6 demonstrates strategies to enhance misinformation verification including findings from the test and findings from in-depth interviews with experts. The last Chapter (chapter7) is a conclusion and discussion of this study. The main findings, limitations, implications, and recommendations for future research are discussed in this chapter.

Chapter 2: Theoretical framework and Literature review

2.1. Theoretical framework

In this thesis, media literacy will be applied as the main theory to guide my research. In this section, previous studies on media literacy and media literacy of elderly adults will be discussed in depth. Media literacy will be discussed by what media literacy is and how to promote media literacy.

2.1.1 Media literacy

What is media literacy? From individual skills to social practice and new humanism

Before we talk about media literacy, we first need to definite what literacy is. In general, there are two large groups of thoughts in the understanding of literacy definition. In other words, we can call it a debate on whether literacy is a set of cognate skills or social practice (Cappello, 2017). In the 1960s and the early 1970s, literacy was mainly viewed as a set of skills that has a great influence on both individual and macro-social levels. Supporters of this view believe that education on literacy is a functional way to acquisition of a better social and professional position. However, in the late 1970s, this view is challenged because the schooling rate is raising, and literacy education can't be viewed as a functional way to a better social or professional position.

Likewise, media literacy has caused debate on its scope. Media literacy first appeared in the mass culture period in the book *Culture and Environment: The Training of Critical Awareness* by F. R. Leavis and his student Denys Thompson to educate the audience against media culture and draw the power of classical culture (Leavis & Thompson, 1933). Over the years, many definitions and versions of media literacy have been created to reflect different points of view, different approaches, and goals.

One group of researchers believes that media literacy is largely personal skills, and they mainly focus on people's skills of media use. However, some scholars argued that media literacy is not a set of cognitive skills but a social practice because it has to do with social, institutional, and cultural relationships. In recent times, some research further developed the scope of media literacy that media literacy can be viewed as one way to build citizenship and promote social participation, which is new humanism (José Manuel Pérez Tornero & Varis, 2010).

When it comes to specific practice definitions because there are many different versions of definitions to reflect different research aspects, no common definition has been set. Nevertheless, although there's a large debate on media literacy there has been little work on determining which definitions are most useful. Almost all of the ideas presented complement one another and there is little evidence of different groups of scholars arguing about which group has the best definition (Potter, 2013).

The definition most often cited is carried out by participants at the 1992 Aspen National Leadership Conference on media literacy. This conference is a remarkable landmark in the history of media literacy. In this conference, 30 leaders in media literacy research gathered in the US in December 1992 and shared perspectives, established relationships, and tried to put forward a cooperative action plan. Although media literacy was born in the US years before, the achievement of this conference--Aspen Institute Report was thought to be the official birth certificate. In this report, media literacy is defined as the ability to access, analyze, evaluate and create media in a variety of forms (Aufderheide,

1993). This definition is mainly on the personal skills level. Another landmark is the conference in 1999 in Vienna, in this conference, the scope of media education is expanded from solely mass media such as the press, cinema, radio, and television to “with all media and includes words, signs, sounds and still and moving images used as a vehicle by all kinds of technology.”(José Manuel Pérez Tornero & Varis, 2010) Although skills contain the ability such as to use, analyze, and critical thinking, when scholars refer to media literacy as a skill, they mainly refer to it as critical thinking (Potter, 2013).

In 2009, the European Charter for Media Literacy proposed a complex and detailed definition that contains much more skills. Media literacy is defined as the ability to:

- use media technologies effectively to access, store, retrieve and share content to meet their individual and community needs and interests;
- gain access to, and make informed choices about, a wide range of media forms and content from different cultural and institutional sources;
- understand how and why media content is produced;
- analyze critically the techniques, languages, and conventions used by the media, and the messages they convey;
- use media creatively to express and communicate ideas, information, and opinions;
- identify, and avoid or challenge, media content and services that may be unsolicited, offensive, or harmful;
- make effective use of media in the exercise of their democratic rights and civic responsibilities. (Available at: <http://www.euromedialiteracy.eu/charter.php?id=3> (accessed December 2018).

From this definition, it is obvious that media literacy is not just the ability to acquire certain skills but refers to social practice and social participation as well. In the US, the definition of media literacy has been expanded by the Center for Media Literacy (CML): “media literacy provides a framework to access, analyze, evaluate, create and participate with messages in a variety of forms — from print to video to the Internet.

Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy.”
 (Center for Media Literacy, 2015)

Since there are several aspects in the research of media literacy and the complex relationship in between, practitioners have worked to clarify this complex set of elements that converge in the definition and help assess the levels of competence. The pyramid of media literacy (Graph 1) was developed by Paolo Celot, José Manuel Pérez Tornero, and their research team (Celot & Tornero, 2009b). It takes the form of a pyramid to represent the various Criteria of media literacy and the ways that they are reliant on each other. The shape of the pyramid states that the upper items cannot exist without the lower ones (MILION, 2011). (Please see the graph on the following pages)

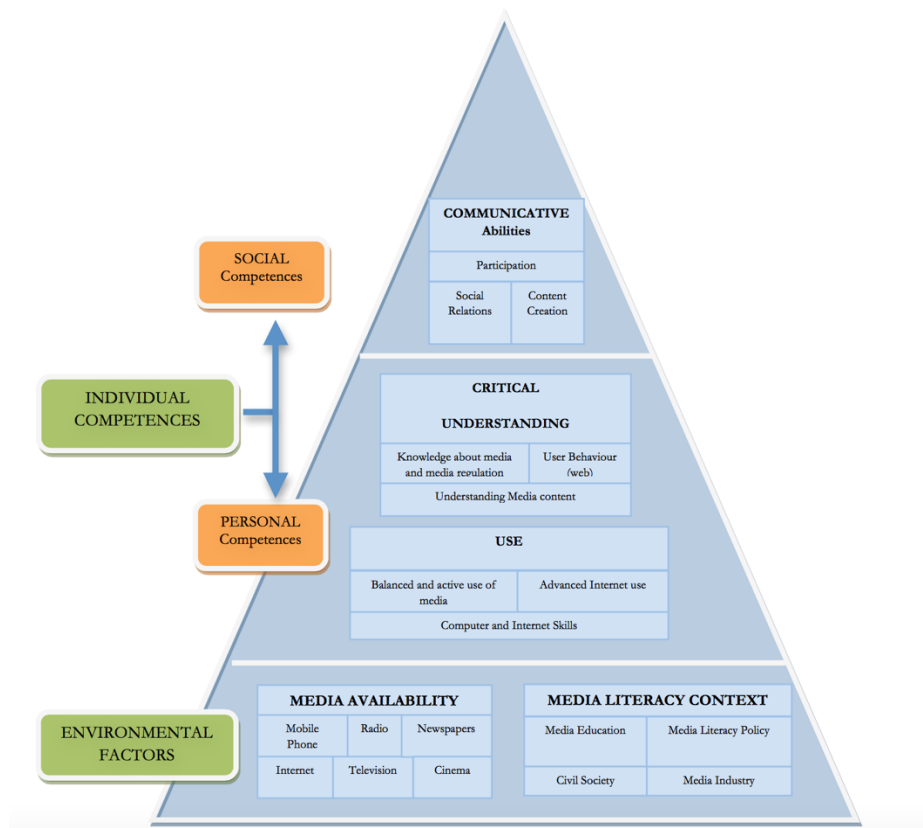


Figure 1: Structure of Media Literacy Assessment (Celot & Tornero, 2009a)

These Dimensions were broken down into criteria. Individual competencies are indicated by using, critical understanding and communicative abilities. Environmental Factors are constructed by Media Literacy Context and the Media Availability (MILION, 2011). Moreover, in this model, the top level of the pyramid shows the importance of the prerequisite of Individual Competence: Media Availability, which is the availability of media technology or services; and Media Literacy Context, which are the activities and initiatives of institutions and organizations to foster media literacy capacities (MILION, 2011). To avoid being precluded or unsupported, media literacy development should be built on these two criteria. Though as autonomous components, they are interrelated and on the same level. The context of availability and media literacy are mutually influenced.

This model will be applied as a model of this research because, in this model, media literacy is divided into 2 factors, individual and environmental, which matches the research questions in the study. Firstly, the Individual Competence part, which is defined as a personal, individual capacity related to exercising certain skills (access, analysis, communication), can be referenced for the first research question ‘how do they use WeChat? Secondly, the Environmental Factors part, as a set of contextual factors that affect individuals and relate to media education and citizens’ rights, can also be referenced to the second research question: ‘how they learn to use WeChat’. Furthermore, factors and the relationship between each factor will be referenced for investigating the problems in their use of WeChat and strategies as well.

To sum up, it is observed that generally there is a trend from individual to social level: from “a set of cognitive skills” to a “social practice” and social participation (Street, 2003); and from “instrumental access” to “qualified access”. At first, media literacy is more viewed as a set of individual skills, and research is mainly focused on instrumental access. With the development of society and the development of media literacy research, many studies started to discuss media literacy with social and cultural impacts, instead of solely personal skills. More and more researchers and institutes include social

practice and social participation in the scope of media literacy. The potential promotion and restriction of social and cultural impacts are considered affected factors in the discussion of media literacy. Synchronously, the focus is turned from barely instrumental access to qualified access.

As we come back to this research, my research is not only focused on Chinese elderly adults' instrumental access or WeChat using skills but their qualified use and social participation.

How to promote media literacy? From protectionist to human practice

After the detailed discussion of what media literacy is, here comes the question, how to promote media literacy?

Before the discussion on how to promote, the first question is whether media literate are born with people or need to be intervened. There have been some debates on this issue. Digital native supporters believe that children, especially young people acquire these skills by themselves instead of being intervened or supervised (Prensky, 2001). It is believed that young people know more about the digital environment than adults. However, this point of view is argued by many scholars. For example, Henry Jenkins argued that the digital native thesis seems to have ignored three “core problems”. The first core problem is the participation gap, i.e., the possibility and opportunity of young people's access to new media are uneven. The second is the transparency problem, which is based on the assumption that they can critically understand the potential effect of media on the world. The third one is the ethics challenge, which is the assumption that young people can act in the online community with responsibility. It is also believed by Potter W. J. **that no one is born media literate** (Potter, 2013). According to Potter, studies share great commonalities in media literacy intervention literature and there are three assumptions which are widespread across the media literacy studies (Potter, 2013). The first one is media exerts different kinds of influence including direct and indirect on both individuals and society. The second one is that many of these

natural effects are negative. The third assumption is that interventions can be applied to help people avoid these negative effects. According to Potter, media literacy must be developed, and this development requires effort from each individual as well as guidance from experts (Potter, 2013).

If media literacy needs to be intervened, then how does it intervene? James Potter has grouped interventions into natural interventions in use and constructed interventions (Potter, 2013). Natural interventions are mainly for the protection of parents to their children. According to Valkenburg et al., there are three types of natural interventions: restriction intervention, social co-viewing, and instructional mediation intervention (Valkenburg, Krcmar, Peeters, & Marseille, 1999). However, Nathanson argued that restrictions may have a negative effect on children's behavior (Nathanson & Cantor, 2000). The second one, co-viewing is rarely happened in reality. The last one— instructional mediation is thought to be the most useful way. Nevertheless, it rarely happens in reality either (Nathanson & Cantor, 2000).

When comes constructed intervention, it refers to some special treatments designed by researchers to improve certain targets' media literacy. However, there is disagreement on whether media literacy should be promoted in targeted training type or a humanistic approach (Potter, 2013). Some researchers believed that people need to be trained to distinguish harmful information while others argued that media literacy should be promoted in a humanistic approach which means exposing people to a wide range of information and ideas.

There have been many changes in theory and practice along with the process of media literacy development. Chinese researcher Lu Ye has divided the objective of media literacy into **4 paradigm shifts** – “protectionist stance” in the 1930s, which is also called traditional British “ Lewis style point”, “identification” in the 1960s; “critical thinking” since 1980 and “participating” after 1990 (Lu, 2010). The content of the fourth paradigm after 1990 is participatory action in the community, that is to switch

from critical thinking to empowerment (Severin & Tankard, 2001). During the 1980s and 1990s, the research literature on critical media literacy grew considerably (Alvermann & Hagood, 2000). Many scholars tried to research from different perspectives—from a cultural studies perspective (Kellner, 2003), a postmodern perspective (Sholle & Denski, 1995), or a feminist pedagogical perspective (Luke, 1994). But It is important to note that they have not referred to it as simply visual or critical viewing literacy, both of which are limited by their reliance on the outdated notion that audiences are passive to media messages (Alvermann & Hagood, 2000).

José Manuel Pérez Tornero and Tapio Varis summarized the three most important **predominant orientations in the media literacy movement** -- the protectionist orientation, the promoting orientation, and the participatory orientation (José Manuel Pérez Tornero & Varis, 2010). The purpose of media literacy is not just to help people to protect themselves from the potentially negative effects but also to empower them to use the media as a tool to achieve their own goals (Potter, 2013). This attitude is beginning to be viewed as an important part of deliberative democracy and the concept of active citizenship (José Manuel Pérez Tornero & Varis, 2010).

Regarding methods of being media literate, media literacy development requires effort from each individual as well as guidance from experts (Potter, 2013). Chinese sociologist Zhou Xiaohong proposed the concept of “culture feedback” based on Margaret Meed’s “post-figurative culture” in 1988. Traditional intergenerational relations have been ruptured by a new mode called “cultural feedback” or “cultural reverse feeding” in which the younger generation passes culture and its meaning on to living members of the older generation. Traditional intergenerational relations between the providers (parents) and the recipients (children) of educational cultivation are shifting (Zhou, 2000). Cultural feedback is one of the most important ways for reducing the digital divide. José Manuel Pérez Tornero and Tapio Varis summarized ways how people learn and are educated: people learn by setting models and imitating. Then they practice by trials and getting error right. When it comes to conversations and

communication, people learn “by asking, seeking, questioning, answering, and informing. Ultimately, people learn through curricula (José Manuel Pérez Tornero & Varis, 2010). “

As was discussed previously, media literacy involves social and cultural factors. Except for the factors already discussed above, **the role of society**, investment in universities for elderly adults, and user-friendly apps are put forward by scholars as strategies for improving media literacy. According to Livingstone et al., Policy should be grounded in the experiences of media use, learning, expression, and civic participation among citizens; and it should be developed and implemented through collaboration with academic stakeholders, schools, the media industry, and civil society (Livingstone, Papaioannou, Pérez, & Wijnen, 2012). These viewpoints have been proven in recent comparison research of Portugal and Estonia. This research shows that although Portugal has fewer Internet users than Estonia, once the effects of individual variables have been controlled for, the residence of persons aged 50 years and over in Portugal is associated with a higher probability of Internet use (Silva, Matos, & Martinez-Pecino, 2017). These results may have been affected by the significant investments made in Portugal over the past decade in technology programs (e.g., adult education, the provision of specific IT training by senior citizen universities, eGovernment).

Overall, through sorting out the development of media literacy intervention, it is observed that there is a trend from protectionist to human practice. The focus is turning from protectionism which means distinguishing harmful information to trying to understand people’s media use instead of punishment and then promoting the ability to analyze and critical thinking, and finally to reduce social stratification and promoting equal human rights.

To sum up, we can see a clear trend from individual and skill level to social and humanism level in the development of both the scope of media literacy and media literacy promoting objectives. It means that when considering media literacy, the

factors of society and culture should be taken into consideration. To further conduct this study, in the next section, media literacy in China and the Chinese social context will be introduced first.

Media literacy in China and the Chinese social context

In 1933, Leavis & Thompson proposed media literacy in Britain. However, it wasn't until 1997 that a scholar named Pu Wei with the Chinese Academy of Social Sciences introduced the concept of media literacy to China. 20 years have passed, media literacy research in China is still very limited and media literacy training has yet to be formally included in the education system. In 1997, Pu Wei published an article entitled "*On the Meaning, Content, and Methods of Media Education*" in the first issue of the *Journal of Modern Communication* and her article is thought to be the first academic article on media literacy in China and the beginning of media literacy study in China. Before 2003, the number of published articles on media literacy is less than 10. The year 2004 is thought to be a milestone in media literacy study in China. First China's international seminar on media education was held in 2004 and the achievement of this conference-*Media Literacy* which is the first proceedings on media literacy in China was published. In the same year, "2004-the development forum of media and Minors" was held and *The Declaration on Joint Creation of a Healthy Media Environment for Minors* was published in this forum. Nonetheless, in 2004, the first website in China on media literacy (www.mediaiteracy.org.cn) was built by a media literacy research group from Fudan University. At present, many universities in China, such as Fudan University, Shanghai Jiao Tong University, and the Communication University of China are now participating in the research of media literacy but mainly in the academic realm. Most research related to digital media in China still focuses on young generations.

As discussed above, when considering media literacy, the factors of society and culture should be taken into consideration as well. Hence, it is necessary to discuss the Chinese social and cultural context. One of the Chinese social contexts is China's one-child

policy which was taken into effect in the 1980s and ended in 2016. Most elderly adults are influenced by this policy which means that most elderly adults of this generation have only one child. Besides, with the migration of young people from their hometowns to big cities and even studying abroad, a lot of elderly adults are living geographically distant from their children. WeChat, the biggest instant message application in China, plays an important role in communication and social contact. Therefore, on one hand, the need of communicating with family members might be one of the motives that promoted elderly adults to use WeChat. On the other hand, when considering factors of Chinese family structure and cultural feedback, living without young people might be a non-ignorable barrier for them to enhance media literacy if they must rely on young people to help them deal with media.

2.1.2 Digital divide

When it comes to media and elderly adults, research on the digital divide needs to be put forward. It first appeared in a report entitled *Falling through the net: Defining the digital divide* by the U.S. Department of Commerce, National Telecommunications & Information Administration (NTIA) in 1999. "The digital divide—the divide between those with access to new technologies and those without—is now one of America's leading economic and civil rights issues. This report will help clarify which Americans are falling further behind so that we can take concrete steps to redress this gap." (TELEC, L., & TIO, 1999) Since the introduction of the NTIA reports, much of the early, relevant literature began to reference the NTIA's digital divide definition.

However, research indicated that the digital divide is more than just an access issue and cannot be alleviated merely by providing the necessary equipment. Cho Kim Mun & Kil Kim Jong pointed out that there are at least three factors at play: information accessibility, information utilization, and information receptiveness. That is, more than

just accessibility, individuals need to be willing and know how to make use of the information and communication tools once they exist within a community (Mun & Jong, 2001). Vahid Aqili & Isfandyari Moghaddam also referred to “utilization” in their article that information professionals can help bridge the gap by providing reference and information services to help individuals learn and utilize the technologies to which they do have access, regardless of the economic status of the individual seeking help (Vahid Aqili & Isfandyari Moghaddam, 2008). Likewise, G. Cappello stated in his article that researchers need to turn the focus from instrumental access to qualified access which means critical, creative, and cultural ability to compete and participate in the ICT society (Cappello, 2017).

Media literacy is one of the main research topics on the digital divide. Social media plays an enlightening role in digital development and shrinks the digital divide, which is conducive to the future development of society (Li, 2017). Sonia Livingstone stressed that today’s anxieties over the digital divide merely represent the latest steps in a long-standing struggle between critical and enlightenment positions whose outcome will influence the chance of benefiting from information and communication in this technological and mediated world (Livingstone, 2004b).

2.1.3 The third-person perception theory (TPP)

The third-person perception theory (TPP)

The third-person perception hypothesis was first introduced by sociologist Philip Davison in 1983. The hypothesis predicts that individuals tend to think that other people are easier to be influenced by mass media messages than themselves (Davison, 1983). This hypothesis has been supported by numerous research in different contexts. For instance, research on the behavioral component of the Third-Person Effect on the Preparations for Y2K (the year 2000) confirmed the idea that people believe that others would overprepare for the Y2K (Tewksbury, Moy, & Weis, 2004). Pham, Shancer &

Nelson applied qualitative and quantitative research methods, and TPP was found for undesirable behaviors on Facebook in user perceptions (Pham, Shancer, & Nelson, 2019). There have been some studies in the Asian context as well. Such as research conducted in Taiwan on the existence of TPP on the influence of avian flu news (Ran Wei, Lo, & Lu, 2008). Likewise, another study also conducted in Taiwan confirmed that the impact of the news on others was greater than on themselves by examining tainted food product recall news (Wei, Lo, & Lu, 2010).

Over the years, the third-person perception has been supported in different research topics such as advertising, political issues, news, and pornography. Generally, there are three main research domains (Wei et al., 2010): entertainment domain, such as pornography, media violence, and media use (e.g. (Caron & Light, 2016; Lev-On, 2017; Pham et al., 2019; Tsay-Vogel, 2016); persuasion domain, such as the effect of advertising; and news domain, e.g., avian flu news and fake news (Ham & Nelson, 2016; Henriksen & Flora, 1999; Jang & Kim, 2018; Ran Wei et al., 2008; Ștefăniță, Corbu, & Buturoiu, 2018). With the development of social media, researchers started applying TPP to the context of social media, for example, Facebook. However, there have been very few studies on TPP and the Chinese social media context.

Furthermore, research on this hypothesis has been extended from the perceptual component to the behavior component, including attitude, behavior intention, and actual behavior. The disparity of the perceived effect on others and themselves leads to some behavior, such as restrictions on media (Gunther, 1995), support for censorship, and parental mediation (Giles, David C. (Coventry University, 2009). Pham, Shancer & Nelson's study confirmed TPP on undesirable behaviors on Facebook (Pham et al., 2019).

As for the possible reasons why TPP exists, many possible explanations have been proposed by numerous researchers by applying different theories. For example, Henriksen and Flora explained the third-person perception as a product of a superiority

bias, which means the tendency to regard oneself as better, or better off, than others (Henriksen & Flora, 1999). Further, when theorizing about TPP and behavioral consequences such as support for censorship or regulations, paternalism was applied as a common possible reason to explain why people with TPP would support censorship for others. However, Golan & Banning hold the view that TPP can only be explained by paternalism for negative messages but a lack of strength when it comes to positive messages (Golan & Banning, 2008). They suggested explaining the behavioral aspect of TPP with Fishbein and Ajzen's Theory of Reasoned Action, which hold the view that people are trying to provide a favorable outcome to meet the social expectations of others (Fishbein & Ajzen, 1975). Similarly, Ye, Lijiang & Zhongdang explained the aim of such behavior as rectifying problematic situations (Ye Sun, Lijiang Shen, & Zhongdang Pan, 2008). In a comparative analysis study on TPP between Asia and the world, it is found that the most applied theories are social comparison theory and social identity theory (V. H. Lo, Wei, Zhang, & Guo, 2016). However, the explanations are like an umbrella, and no common explanation has been achieved.

TPP in the post-truth era

With the development of social media and the emergence of the "post-truth" era, some researchers turned the focus on TPP with fake news and misinformation. For instance, a study conducted in Romania confirmed the TPP that the effect of fake news is regarded as stronger on others than on themselves (Ștefăniță et al., 2018). Another research investigated the third-person effect of fake news and found that TPP led to different ways of combating fake news online: people who hold greater TPP were more likely to support the approach of media literacy instead of media regulation (Jang & Kim, 2018). Traditionally, social distance, perceived knowledge, and media exposure are the main factors examined in TPP studies (Connors, 2005). However, with the populism of social media and every person can be an information producer, critical thinking, such as media trust, fact-checking habits, and misinformation verification ability becomes vital in the post-truth era.

Some past studies have shown that media content credibility mitigates TPP. For instance, in Ran Wei et al.'s study on TPP and tainted food product recall news, the role of credibility was examined. This research revealed that message credibility helps reduce the perceived effect gap. With the higher perceived credibility of the messages, the perceived effect goes higher on both oneself and others, but the gap becomes smaller (Wei et al., 2010). Furthermore, one's perceived effect promotes people for further information-seeking behavior and taking protective action (Wei et al., 2010).

Moreover, demographic differences are worth noticing because individual differences may impact TPP in social media (Tsay-Vogel, 2016). Among those demographics, the gender difference is widely discussed. Previous studies have noted patterns of gender differences concerning the third-person perception effect. One typical example is researching pornography, as gender has always been identified as an essential factor in the strength of the TPP effect (Gunther, 1995; V. Lo & Wei, 2002). It is found that females tend to perceive greater negative effects of pornography on other males than females (V. Lo & Wei, 2002). Likewise, another research examining TPP in online games also shows that TPP on women is stronger than on men (Lin Zhang, 2013).

2.2 Media literacy and elderly adults

Recent developments in the media further broaden the interdisciplinary approaches to media literacy. Literacies based on computer, ICTs, critical thinking ability, creative expression, and political and civic participation was linked together (Celot & Tornero, 2009a). According to Livingstone, the struggle not only encompasses children and adolescents but also adults especially marginalized individuals such as immigrants and the elderly (Livingstone et al., 2012).

It is now commonly agreed that population aging is a significant and growing issue in many nations around the world, which raises significant problems such as how to better accommodate the needs and opportunities of large numbers of seniors, which comprise a larger proportion of the population (Baldassar, Wilding, Boccagni, & Merla, 2017). Elderly adults are becoming major users of media technology in this aging society but necessarily media literacy is not enough for them. According to a statistic, in China, research on media literacy mainly focuses on college students and young people, with only 8% of media literacy studies focusing on children and 25% on others (Liguo Zhang & Yang, 2011). Allowing for a large number of elderly people proportion, more attention to media literacy needs to be paid to these elderly adults. They have more spare time and many of them have fewer social activities, especially after retirement and they have a strong desire of using media (Ding, 2012). Elderly adults should not and will not be abandoned in the world of new science and technology, they should adapt to the latest trends as soon as possible and it would be a way to help to reduce the digital gap by improving media literacy (Li, 2017; Y. Zhang, 2012). It is not a problem that many older people deliberately don't use social media. However, social exclusion would be a problem that should be mitigated (Lüders & Brandtzæg, 2017).

Media literacy of elderly adults has raised researchers' attention and there have been many new studies and findings relevant to elderly adults, media, and media literacy in recent years. Previous research has investigated the enablers and barriers to elderly adults' media use and media literacy (Guo, 2017; Li, 2017; Lüders & Brandtzæg, 2017; Nimrod, 2017; Rasi & Kilpeläinen, 2015). Some studies show that demographics are powerful predictors (Y. Chen, 2017; Huang & Zhang, 2017a; Kim, Lee, Candace Christensen, & Merighi, 2017; Olsson, Samuelsson, & Viscovi, 2017). Among these demographic characteristics, gender, age, education level, and income are the most common factors discussed in the studies. While some researchers argue that media use and media behavior of elderly people cannot be explained only by demographic factors, but could evolve into a habitus or with a real generation effect (Helsper & Reisdorf, 2017; LaRose & Eastin, 2004; Rasi & Kilpeläinen, 2015; Schäffer, 2007) or with a

social impact (Silva et al., 2017). In those studies, the main research methods applied are questionnaires, in-depth interviews, and focus group discussions.

In this section, previous studies of media literacy and media literacy of elderly adults will be compared. Frameworks will be discussed and compared by time sequence, media use (including influence factors & barriers, and motives), impacts, and strategies.

2.2.1 General statistic information of publishing years

A considerable amount of literature has been published on media literacy (Dennis, 2004). However, the literature explicitly concerned with “media literacy” in adults is quite small in comparison with that of children and young people.

Before the literature review, a total number of 68 articles was selected from a comprehensive literature search process with sets of keywords such as “media literacy AND elderly adults OR WeChat”, and “media use AND elderly”. The figure below shows the relationship between published year and published article numbers. It is observed in the figure below that before 2015, very little attention was paid to media literacy and elderly adults. The number of published articles was less than 3 each year. Since 2015, more articles relevant to this study were published. The number went up suddenly from 2 to 14. In the year 2017, the number of published articles reached 18.

By considering the statistic of the published years and published papers, it is obvious that more attention has been paid to elderly adults’ media literacy and media use since 2015. Although more attention has already been paid, the quantity is still quite less than other aspects of communication research, such as media use and media literacy in the youth or children.

One of the main reasons for this big growth might be relevant to the growing popularity of digital media and social media. Before the year 2000, because the main media in people’s daily life was print media and mass media, research mainly focused on the impact of mass media on elderly adults and their attitude towards mass media. For example, in 1977, Hwang and John C. did research on the relationship between the elderly and mass media. They focused on print media because the newspaper was the main media they were using at that time. Then with the development of technology and society, the research context changed from print media to community radio, to computers, to the internet, and then to digital media and social media. After 2015, with the rapidly growing concern of aging society and the popularity of ICT and social media, media literacy and elderly adults entering the academic field.

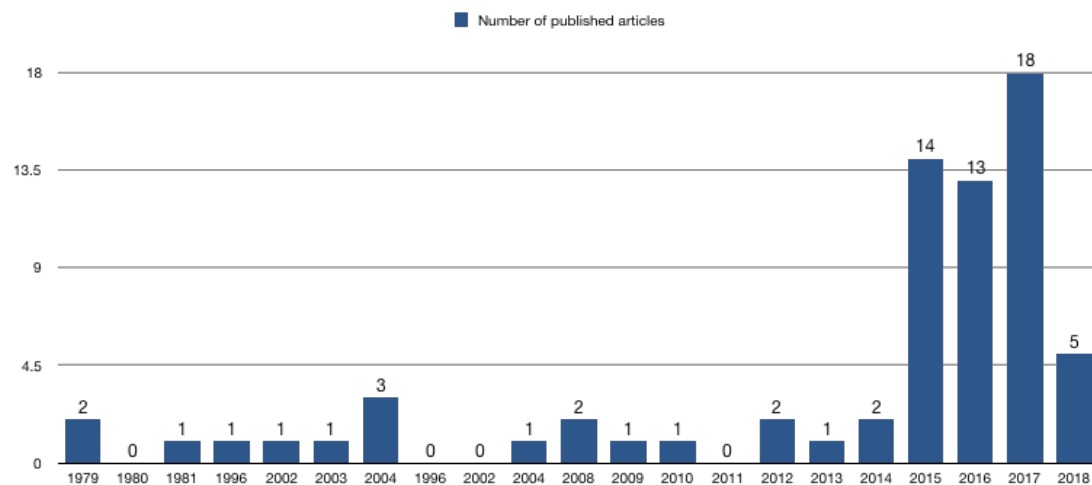


Figure 2: Year and Number of Published Articles

2.2.2 Media Use

Previous research has investigated the enablers and barriers to elderly adults’ media use and media literacy (Bosch & Currin, 2015; Casado-Muñoz, Lezcano-Barbero, & Rodríguez-Conde, 2015; Cui, 2016; Franco, Leiva, & Matas, 2015; Guo, 2017; Lüders

& Brandtzæg, 2017). Synchronously, numerous scholars have provided plenty of investigations about the motives and the needs of media use. This section will outline works of literature that deal with media use from aspects of influence factors & barriers and motives. Key writings in the literature that are relevant to media use will be highlighted in this section as well.

Influence factors and barriers

-Demographic factors

Some prior Studies show that demographics are powerful predictors (Colombo, Aroldi, & Carlo, 2015; Huang & Zhang, 2017a; Kim et al., 2017; Parida, Mostaghel, & Oghazi, 2016; Stephens, 1981; Tirado-Morueta, Hernando-Gómez, & Aguaded-Gomez, 2016; Young, 1979). The most discussed key demographic factors are age, gender, education level, and socio-economic status (such as income). For example, Parida, Mostaghel & Oghazi applied a large-scale questionnaire survey on 610 elderly individuals in Sweden and found that sociodemographic factors can positively influence elderly individuals' use of social media for health-related activities (Parida et al., 2016). Tirado-Morueta, Hernando-Gómez, & Aguaded-Gomez tried to investigate the senior citizens' capacity of accessing digital media in Spain. It was shown that demographic factors such as age, gender, education level, income, employment status, and work activity are powerful predictors and may lead to the digital divide. One of the possible reasons is that those factors and the environment can largely decide learning and communication opportunities (Tirado-Morueta et al., 2016). Moreover, this research further verified that education level may have a greater influence among those demographic factors on media competence (Tirado-Morueta et al., 2016). In addition, another research was done in Italian social contexts by Colombo Fausto, Aroldi Piermarco, and Carlo Simone. They investigated socio-demographic characteristics of young elderly Italian Internet users and factors related to their use of ICTs and found that stable economic and employment conditions are the most distinctive factors that differentiate digitalized

elderly from non-digitalized, followed by higher education level and good physical condition. In the Chinese context, there has been some significant research as well. For example, Huang Hanyun and Zhang Xiwen did research based on the theory of diffusion of innovations and uses and gratifications theory, and their findings are consistent with previous studies. The result shows that demographic variables (i.e., age, gender, and income) and personal innovativeness were significant predictors of the adoption and use of WeChat among the middle-aged.

Gender has always been one of the main focuses of academic research. Kim, Lee, Candace Christensen, & Merighi's research revealed that gender difference exists in technology access, use, and social engagement among older adults. According to their research, men were more likely to access and use ICTs than women (Kim et al., 2017). However, Olsson, Samuelsson & Viscovi's research on ICT access degrees and literacy among Swedish senior citizens indicated that there were no gender differences in access but may have some effects on ICT literacy (Olsson et al., 2017). This idea was supported by findings in Huang & Zhang's study. Although there was no significant difference in the adoption time between genders, distinctive differences between male and female media use were observed in Huang's study (Huang & Zhang, 2017a). Women showed a higher level of WeChat use and tended to make more effort in building their social image when compared with men (Huang & Zhang, 2017a). One of the possible reasons might be related to the design of WeChat Moment (a function in WeChat for social engagement) which is more "feminine" for middle-aged users. (Huang & Zhang, 2017a).

Another demographic factor that has been discussed a lot in previous studies is the effect of age. Some studies indicate that age is a powerful determining factor while some researchers argued that age cannot be regarded as the only, or even the main factor to determine internet technologies engagement (Sourbati, 2009). Sourbati states that the mainstream idea of classifying younger users and older non-users is simplistic and this can be wrong (Sourbati, 2009). In Mohamad & Zuliana's research, it has been observed

that there are differences in different aging groups in their using habits which means that differences may be caused by individual differences rather than age (Mohamad & Zuliana., 2016). In addition, the results of Olsson's research on ICT access degrees and literacy among senior citizens showed that the correlation between age, access, and literacy is negative which means that age has a negative effect on media literacy (Olsson et al., 2017). In essence, if age is a predictor of ICTs use, it is largely because the possibility of having health problems is raising with the increase of age. Some previous studies have indicated that healthy conditions might be a possible Influence factor or barrier to media literacy (Charness & Holley, 2004; Sun, Zhang, & Fan, 2016). For instance, it is shown in Sun Shaojing's research on media use, cognitive performance, and life satisfaction of the Chinese elderly that healthy conditions (e.g., disease history) had statistically significant effects on media-induced recovery outcomes.

-Attitude toward media

Except for socio-demographic factors, attitude towards media may influence media use and it is widely discussed especially in the technology acceptance model. Baxter noticed that socio-demographic, attitudinal, and psychological variables are rarely simultaneously analyzed in previous research. Attitude towards entertaining media is investigated as an influencing factor on elderly people's perceived ease of use of interactive media and moderate direct effects for technophobia were found in the research (Baxter, Hastings, Law, & Glass, 2012). Then Parida et al's study strengthened this idea. Results of Parida's research indicate that socio-demographic factors can positively influence elderly individuals' use of social media. Simultaneously, results show that attitude toward technology can strengthen the effect of social media use for health-related activities for the senior, regarding the general use of the technology (Parida et al., 2016). Furthermore, Lüders & Brandtzæg focused on social media non-users and it is revealed that most non-users deliberately do not use social media because they think it is useless. At the same time, non-users in this research who expressed interest in social media, believe that social media helps increase communication with

their friends and family members, however, they confirmed the perceived lack of competence as a barrier (Lüders & Brandtzæg, 2017).

-Media literacy barriers (including technology barriers and Media literacy training needs) including

Many studies have stressed the importance and need for media literacy. Some studies focus on technical obstacles. Technology obstacle here not only refers to physical access to the internet or media but more focus on the use of media and qualified use. Tirado explained this idea in their study on degrees of ICTs access and literacy among senior citizens. According to Tirado-Morueta, the digital divide (defined as physical access to the internet) has been surmounted in the researched countries but a new divide concerning the frequency of access to new media and its use is becoming apparent in terms of personal use and societal participation (Tirado-Morueta et al., 2016). Caron & Light's research on the experiences of Adults with Cerebral Palsy who use augmentative and alternative communication and social media confirmed the technology obstacle. In this study, technology was described as one of the barriers to social media use by the participants (Caron & Light, 2016).

Media literacy barriers call for a strong need to improve media literacy. For example, Del-Moral & Villalustre tried to identify media literacy levels through critical awareness, participation, and responsibility shown by a representative sample of women in Asturias (Del-Moral & Villalustre, 2013). Although people surveyed in the study believed that advertising lacks credibility and knew the channels for citizen participation, they did not know how to exercise their rights in the face of illegal content. Then this research pointed to the need to design a training plan for media literacy (Del-Moral & Villalustre, 2013). González-Oñate, Fanjul-Peyró, & Cabezuelo-Lorenzo proposed the hypothesis that there is a lack of ICT training for the elderly. They conducted this comparison research by analyzing elderly adults' main habits of use and consumption of new technologies in Spain, France, and the UK. The result shows that the media literacy level in Spain is lower compared to that in France and the UK. One

of the main possible reasons is the lack of media literacy training in Spain and this calls for enhancing media literacy education (González-Oñate, Fanjul-Peyró, & Cabezuelo-Lorenzo, 2015). Another study conducted in the context of Spain studied the habits of the elderly regarding access to ICTs by investigating a sample of 322 elderly adults. It confirmed the effect of the digital divide on these elderly adults and the need for media literacy training (Padilla-Góngora et al., 2017). Schreurs also highlighted the lack of skills and social support for media literacy training makes it difficult for elderly adults to use technology. Then a model was proposed in Schreurs' research which outlined the link between support and media literacy as an indicator of older adults' ICT use (Schreurs, Quan-Haase, & Martin, 2017). In addition, the need and the significance of media literacy support are stressed in a review study conducted by Franco, Leiva & Matas. They summarised some suggestions with a review of the digital learning needs of elder people (Franco et al., 2015).

In the Chinese context, Chinese scholars Zhimin, Yang, Lei, & Yang conducted research in Beijing, China, and highlighted the need of improving media literacy for the elderly. They analyzed the causes of elderly adults' low media literacy level from the communication perspective by applying surveys and interviews. Then they further strengthen how to enhance elderly adults' media literacy from both necessity and possibility aspects (Zhimin, Yang, Lei, & Yang, 2015).

The graphic below shows the main Influence factors or barriers discussed in previous studies:

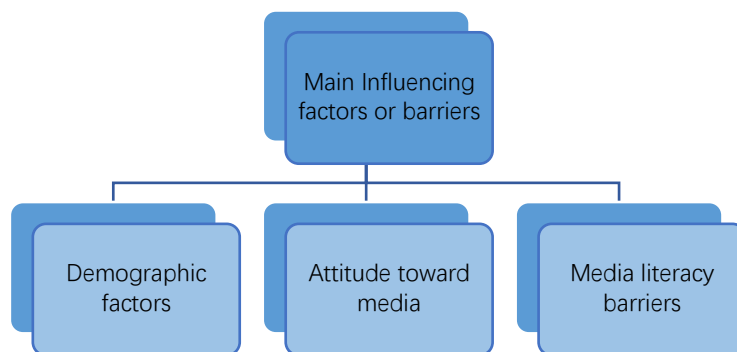


Figure 3: Main Influencing Factors or Barriers

Motives

Scholars have offered plenty of investigations on the motives and needs of media use. This section will outline works of literature regarding media use motives. Key writings in the literature that are relevant to media use motives will be highlighted in this section.

-Personal motives

Motives of ICT use, or certain media use have been discussed a lot in previous studies. A study on elderly villagers in remote rural Finnish Lapland conducted by Rasi & Kilpeläinen showed the motive of personal needs and desires. The author believed that the people interviewed in the study are not a homogenous group and the results indicated that their use of the digital device largely depended on their personal needs and desires (Rasi & Kilpeläinen, 2015). Personal motives can be a very important factor in media use. For example, Hilt & Lipschultz did an ethnographic study to have a deep understanding of elderly American and their use of the Internet. Results showed that older people in this research were more likely to seek information with their personal interests rather than visiting mass media sites when they surf the internet (Hilt & Lipschultz, 2004). This research was conducted in the early 2000s so although E-mail, TV news, information, and entertainment websites were included in this study new media such as social media was not included. Baxter et al turned the focus on the entertainment purpose of media use among elderly adults, such as the entertainment purpose of playing video games (Baxter et al., 2012).

Some research confirmed the motive of maintaining communication with families and friends. Such as Wei, Huang, & Zheng's research on the use of mobile social apps in China. Two motives, for acquiring information and for mobile connectedness with one's circles were found to be the strongest motives for reposting articles from WeChat public accounts (Wei, Huang, & Zheng, 2018). Bosch & Currin conducted a study on elderly

people in South Africa to investigate the main uses and gratifications getting from computers. Except for the motive of communication, results indicated that the motive not only involves communication but includes observation activities such as news, photographs, and discussions and keeping them informed as well. By applying UGT, this research found that elderly people in this study felt better connected with society through communication, observation activities, and keeping informed by using the internet (Bosch & Currin, 2015).

Further, the motive of information exchange (such as sharing memories) was indicated in recent studies. For example, four modes of WeChat interaction including general information exchange, experience articulation, technical support, and sympathetic companionship were identified in Cui's research of multimedia mobile instant messaging in close relationship management (Cui, 2016). In a rhetorical analysis of Chinese WeChat messages among midlife adults, four recurring themes including promoting status, sharing memories, forwarding information, and organizing activities were found by analyzing the online discussions in four alumni groups and posts (M. Zhang & Western, 2016).

In addition, Guo found that WeChat provides Chinese elderly adults with a semipublic alternative sphere and enables some of them to participate in civic life online by exploring their use of WeChat. It is found that WeChat enabled many elderly adults in China to get controversial information instead of official mass media only. (Guo, 2017).

To sum up, the main possible motives outlined in previous studies are for entertainment or interests purpose (Baxter et al., 2012; Casado-Muñoz et al., 2015; Hilt & Lipschultz, 2004), maintain contact/communication with family & friends (Bosch & Currin, 2015; Caron & Light, 2016; Wei et al., 2018), acquire knowledge (Casado-Muñoz et al., 2015; Franco et al., 2015), keeping formed (e.g. news, photographs.) (Bosch & Currin, 2015; Wei et al., 2018), information exchange (such as sharing memories) (Cui, 2016; M.

Zhang & Western, 2016), and as alternative information sphere to participate political discussion (Guo, 2017).

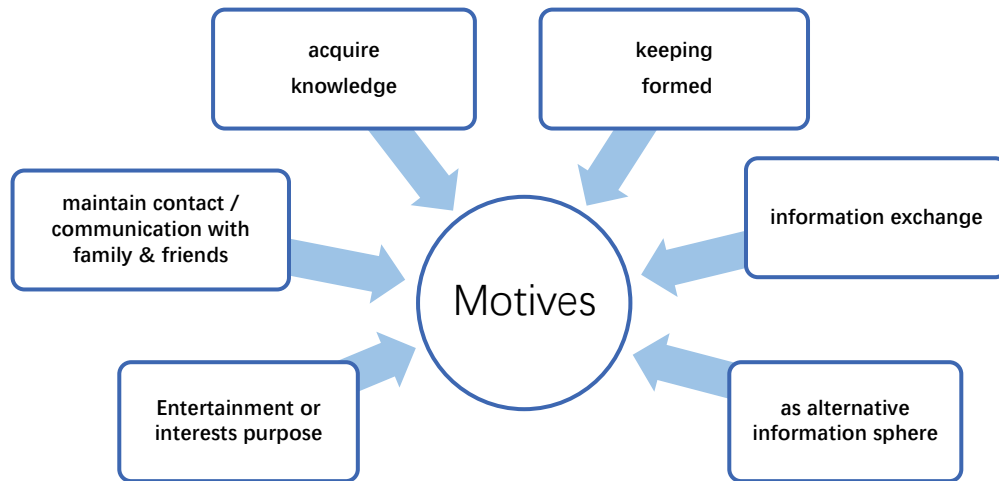


Figure 4: Motives

-Social influence

Except for the personal motives above, media use may be affected by social influence. Sourbati's research confirmed the crucial role of friends and family played in generating interest among non-users to try the internet (Sourbati, 2009). Schreurs et al. further strengthened the idea that support systems, such as family and peers, can help mediate older adults' reluctance with technology (Schreurs et al., 2017). Yu, Huang, & Liu integrated geographically distant and Chinese cultural contexts into the discussion and analyzed the interactions between Chinese young adults and their geographically distant parents through mobile instant messaging. This research is mainly focused on investigating communicative interactions between two generations, but it offers some reasons for elderly adults in China using WeChat. To have a better connection with their children at a geographical distance, the best choice is WeChat. (Yu, Huang, & Liu, 2017). Lisha, Goh, Yifan, & Rasli introduced Chinese culture and context into the study as well. Chinese concept "guanxi" theory was introduced to explore how Chinese guanxi social mechanisms influence Chinese users' continuance intentions in their use of WeChat. The result showed that "Ganqing" exerts a positive impact on perceived

usefulness and continuance intention while “Mianzi” has a negative effect on continuance intention but exhibits a positive effect on perceived usefulness (Lisha, Goh, Yifan, & Rasli, 2017).

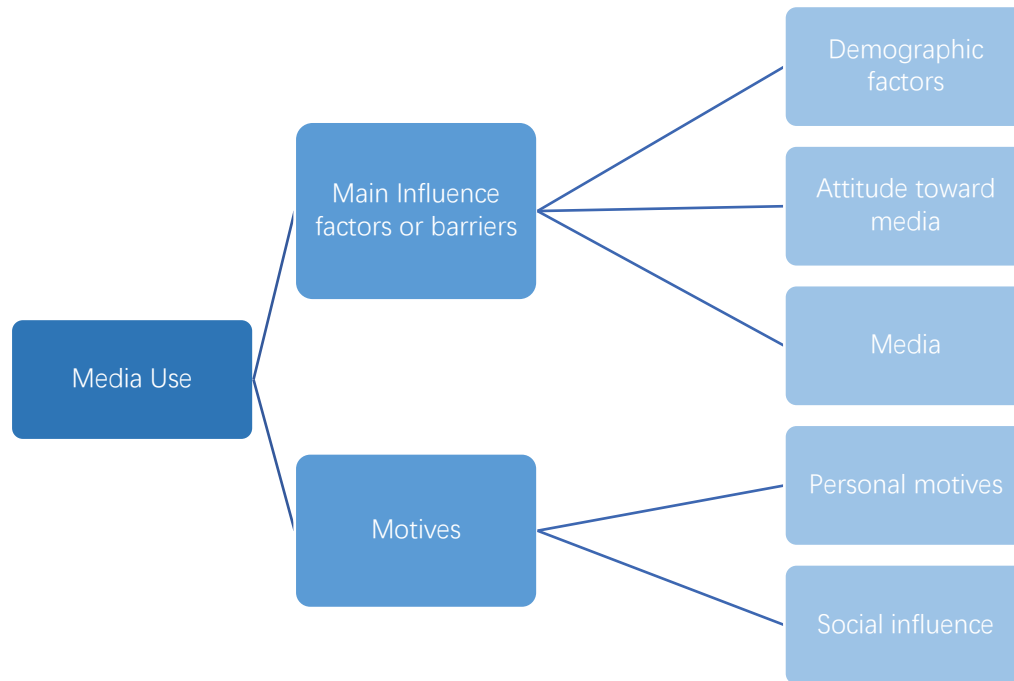


Figure 5: Media Use

2.2.3 Impact

Positive impact

Studies on elderly adults’ media literacy relevant to positive impact intervention share important commonalities. Many positive impacts such as improving social connectedness, facilitating online civic expression, improving communication, and improving the quality of life have been outlined in numerous previous research.

- To promote social connectedness and civic participation

Some research indicated that media use can help elderly adults build social connectedness and facilitate online civic expression. For instance, early ethnographic

research conducted by Tomoko Kanayama on the experience of Japanese elderly people online found that the immediacy of computer-mediated communication helped elderly adults build social connectedness. In addition, it was observed that some elderly people extended their relationships constructed from the virtual world to the physical world (Kanayama, 2003). The effect is confirmed by another study on media literacy of adults by Cruz Diaz et al. Results in their study revealed the important role of ICT on social participation. In particular, advantages such as interactivity, improved self-esteem, higher levels of social participation, and improving intergenerational relations which may incorporate ICT in life were described in the study (Cruz Diaz, Roman Garcia, & Pavon Rabasco, 2015). In addition, as it was mentioned above, Guo Lei's research on Chinese elderly adults' online civic expression via WeChat highlighted that social media is helping online civic participation (Guo, 2017).

- To improve communication

Numerous research has confirmed that media literacy can help elderly adults in communication. The study of elderly adults in South Africa indicated that the internet helps promote communication. The result shows that participating elderly adults communicated with more people than they had before by using the Internet (Bosch & Currin, 2015). In Caron's research of participants with Cerebral Palsy, social media was regarded as an important channel for communication and as a beneficial tool by those users (Caron & Light, 2016).

Moreover, studies in the Chinese context are worth noticing. Cui Di's research on the role of mobile instant messaging in close relationship management not only indicated motives for using MIM but the impacts of improving communication as well (Cui, 2016). In addition, in Yu et al.'s research on young adults and their geographically distant parents, it is outlined that the use of WeChat helps promote communication between two generations (Yu et al., 2017). Besides, some empirical investigation of WeChat uses further indicated that elderly adults, as digital immigrants with low digital

fluency tend to enjoy the use of WeChat and use WeChat to connect with their circles and fulfill their information needs (Liu, Li, & Ye, 2018; Wei et al., 2018).

- To improve the quality of life

In addition to the impacts listed above, media use may improve elderly adults' life quality. For example, a survey was conducted with 12 seniors who participated in a digital inclusion course in Brazil, and their perceived life quality was evaluated. Except for motives such as communication, information exchange, and maintaining existing relationships which were identified in this research, a significant role in improving the seniors' life quality was revealed as well (Machado, Leticia Rocha and Jantsch, Anelise and de Lima, José Valdeni and Behar, 2014).

Negative impact

Although much research has proven different kinds of the positive impact of media use on elderly adults, there are concerns about the negative impact such as media addiction, interpersonal communication, and unawareness of critical thinking. Studies on media addiction and interpersonal communication mainly focus on young people. To my acknowledgment, there is little research that specially focuses on elderly adults' media addiction or interpersonal communication. Only Dong et al. tried to investigate the impact of mobile SNS addiction on the individual's self-rated health and this research was conducted by a national survey with all age groups, not especially focused on the elderly. Results show that WeChat addiction is negatively associated with users' physical, mental, and social health. The negative effects are significant even after adjusting for the effects of the Big Five personality traits, years of using WeChat, and demographic variables such as age, gender, education level, and monthly income (Xue et al., 2018).

As for interpersonal contact, findings in Bosch & Corrin's research on elderly adults in South Africa showed that the use of computers did not weaken their interpersonal contact outside of computer use (Bosch & Currin, 2015). On the contrary, some previous research indicated that the use of media may help promote interpersonal communication, such as Cui's research on multimedia mobile instant messaging in close relationship management (Cui, 2016).

Nonetheless, some studies are focusing on their misuse of the media, such as the lack of critical thinking and their unawareness of rumors. Such as Del-Moral & Villalustre's research on media literacy in a sample of elderly women proposed the need for media literacy training for improving their critical thinking ability (Del-Moral & Villalustre, 2013).

2.2.4 Strategies

With the popularity of WeChat among middle-aged and elderly people, WeChat has brought convenience and problems. At present, access is not the most important digital gap, and even simple use is no longer the most important problem among elderly adults, but a deeper digital gap in critical use is emerging. One of the important things is misinformation verification in WeChat. The middle-aged and elderly people were once the hardest hit area of rumors and misinformation.

Some policies and strategies were launched to defend against misinformation online. In China, the main method to defend against misinformation is through laws and regulations. For example, the Regulation on WeChat External Link was published in 2016. By strengthening supervision, the spread of misinformation has been curbed to a certain extent in recent years. Of course, misinformation is not a problem that only exists in China; it is one of the serious problems the whole world is facing. Countries around the world have their strategies to combat misinformation. The table below

shows the main strategies in defending misinformation/rumors/fake news applied in China and several representative countries. It is worth noting that Western countries mainly target fake news, especially fake news involving elections and other political issues. Due to the different social contexts, China mainly targets misinformation and rumors.

China:

Action: Laws, regulations, online reporting portal

Focus: Misinformation/rumors

Anti-rumor platform, Applications. <http://www.piyao.org.cn/index.htm>

Canada: Media literacy, foreign disinformation campaigns

UK: Parliamentary report, embed media literacy training into the curriculum.

US: Proposed federal law, platform testimonies, state media literacy law, threat assessment, state media literacy initiatives, and state lawsuits

EU: *Final report of the High-Level Expert Group on Fake News Disinformation*
censorship should be avoided. Five aspects of actions. One of those five aspects is to promote MIL

Through research on strategies for combating misinformation in several prospective countries, we found that:

- Regulations are not enough.
- Strategies for improving media literacy are needed and are important

Thus, strategies for improving media literacy need to be explored in defending misinformation online. Scholars on media literacy have proposed some suggestions on how to promote media literacy. Some attempts have been made to promote media literacy in elderly adults in their early years. Traudel Günnel (2008) analyzed the experience and the evaluation of three projects funded by the EU, which aim to encourage the involvement of disadvantaged groups in community radio (Günnel,

2008). These programs were applied for promoting community radio. Although radio has been out of date the idea of encouraging course participants to constantly put themselves into the role of a trainer is worth noticing. It encourages course participants to constantly put themselves into the role of a trainer, enabling them to reflect on how they might design appropriate training activities for target groups with which they are already working, or intend to work in the future (Günnel, 2008).

The need for improving macro supports, such as the welfare systems and public policies in each country was outlined in research on the E-inclusion program in Portugal and Estonia. The author noted that most studies have only considered individual variables, such as age, gender, education, income, and health condition, while ignoring social variables, such as the welfare systems and public policies in each country (Silva et al., 2017). Simultaneously, the role of society, investment in universities for elderly adults, and user-friendly apps are put forward by scholars as strategies for improving media literacy. According to Livingstone, policy should be grounded in the experiences of media use, learning, expression, and civic participation among citizens; and it should be developed and implemented through collaboration with academic stakeholders, schools, the media industry, and civil society (Livingstone et al., 2012). These viewpoints have been proven in the comparison research in Portugal and Estonia. Results in this research show that although the number of internet users aged 50 years and over in Portugal is fewer than in Estonia, however, when the effects of individual variables have been controlled, there is a higher probability of Internet use in Portugal (Silva et al., 2017). One of the explanations could be ascribed to the great investments made in Portugal over the past decade in technology programs such as adult education, the support of specific IT training by senior citizen universities, and the eGovernment program (Silva et al., 2017).

Another example of media literacy promoting projects is noteworthy. A program was attempted in one city in Spain in 2011 to explore whether elderly adults were familiar with modern technology. In a designed course with ten lessons in length, the elderly

were instructed from barely using a computer to managing social networks independently in this program (Meiler-Rodríguez, Freire-Obregón, & Rubio-Royo, 2012). The pedagogical approach in this project is quite elaborated. One of the significant experiences of this project is that visual references can significantly reduce the learning time during the sessions, which means that it would be more useful to evolve more visual references in future media literacy projects.

In China, there are some attempts on preventing rumors and fake news from spreading via WeChat. For example, Yuan & Wang proposed a regulating model of "Rumors" preventing in WeChat Official Accounts. They outlined the importance of individuals' media literacy level because the ability of critical thinking is one of the vital bases for preventing rumors (Fangping & Rong, 2015).

Although there have been some attempts in improving media literacy, strategies often largely depend on certain social and cultural contexts. In the Chinese social context and for Chinese elderly adults, projects and strategies on media literacy are far from enough. It is needed to propose strategies with consideration of the Chinese context.

2.3 Media literacy, elderly adults, and WeChat

In this section, we will limit the scope to the Chinese context and the use of WeChat. Literature on media literacy, elderly adults, and WeChat will be discussed in detail. When the scope is narrowed down to media literacy, elderly adults, and WeChat, there is a small number of relevant literature. All these articles are published in recent years. Most of the articles are published in 2017 with one published in 2016 and another one published in 2018. (Please see the table below)

Table 1: Year and Number of Published Articles on Media Literacy, Elderly Adults, and WeChat

Publish Year	Number of articles
2016	1
2017	5
2018	1
TOTAL	7

Based on the existing studies, the main research methods applied in those studies are surveys and interviews. The table below shows the main research methods applied in previous relevant studies (the total amount is 13 because some studies apply more than one research method):

Table 2: Research Methods and Number of Published Articles

Research methods	Number of articles
survey	4
interviews	4
observation	2
focus group	1
communicative behavior records	1
content analysis	1
TOTAL	13

To be more specific, Mei Zhang analyzed WeChat messages among Chinese midlife adults. They analyzed posts and conversations in four alumni groups and then four main themes—promoting status, sharing memories, forwarding information, and organizing activities were outlined. This research is an attempt to analyze ways in which WeChat provides for communication.

Lei Guo explored how WeChat may promote Chinese elderly adults' online civic expression and its limitations. This research pointed out the user-friendly feature of WeChat which provide a "low barrier" and makes it more accessible when compared to other social media platform with similar features such as microblog in China (Guo, 2017). As we have discussed above, Guo noted that some elderly adults have begun to consume and even produce media content online because of WeChat (Guo, 2017).

Another two studies on the interaction and communication between two generations via WeChat are noteworthy because geographically distance context was taken into consideration in both studies. One is Yu et al.'s study on mobile instant messaging uses in the Chinese trans-local context. This research looks at Chinese families with geographical distance and ways of communication with the help of WeChat. Besides, consciousness among the young adults, intergenerational solidarity, and family values in the trans-local Chinese context were discussed in this research as well (Yu et al., 2017). Yu et al.'s study has provided an in-depth investigation of how the use of WeChat helps to manage and maintain the relationship between two generations. However, all the participants in the interviews in this study were young people (aged from 21 to 29) which means that this research is mainly from the perspective of the young generation instead of elderly adults. In my point of view, more research from the perspective of elderly adults should be included and it is worth attention. The other research of Baohua & Shihui focuses on family online content sharing on WeChat between two generations. The main research method applied in this study is an in-depth interview, which is the same as the previous one, but interviews of the order generation – parents, were included in this research. From the result, it can be found that this study strengthened the idea that distance is an important factor in the motivation to share online content with family members via WeChat (Baohua & Shihui, 2017). In addition, a comparison between two generations was outlined in this study. It is interesting to notice that the content sharing behavior featured is featured with parents' active sharing and children's passive receiving. Besides, mothers act as caregivers and share at a higher frequency in general while fathers usually define themselves as life coach and

share less. However, it is found that children do not share a similar behavioral experience for family online content sharing on WeChat as parents do. According to the author, one of the explanations for such phenomena is media literacy differences. Besides, it can be also explained by the different understanding of the use of WeChat in daily communication (Baohua & Shihui, 2017).

In addition, Hanyun Huang & Xiwen Zhang investigated the adoption and use of WeChat among middle-aged residents in urban China based on the diffusion of innovation theory and use and gratification theory. This research was conducted from a sample of 300 tourists aged from 36 to 60 in Xiamen province in China. The result of this research confirmed the significant relationship between demographic variables (i.e., age, gender, and income), personal innovativeness, and the adoption and use of WeChat among Chinese middle-aged individuals (Huang & Zhang, 2017b). Similarly, Liu et al. tried to investigate the motives for using WeChat, and this research was based on digital fluency and use and gratification theory (Liu et al., 2018). They firstly developed a model to explore the relationship between digital fluency and social media use. Then they tested the model by analyzing the results of a designed survey with a sample of 262 WeChat users. Results show that digital natives (individuals of high digital fluency) tend to use WeChat to broaden their social network while digital immigrants (individuals of low digital fluency) tend to enjoy the use of WeChat and to use WeChat to keep the friendship and fulfill their information needs (Liu et al., 2018).

From previous research, it is noteworthy that Chinese elderly adults, at least middle-aged, are transitioning from being negatively covered by media to becoming active users of social media (Li, 2017). Qin Li analyzed the motivations and hallmarks of Chinese middle-aged women (they are defined as “Chinese Dama” in the article) in social media activities. Findings in this study indicated that a growing number of Chinese elderly adults are learning to use social media and have formed thousands of social media communities. They are exerting significant influence on the wider media and social environment (Li, 2017).

Overall, demographic variables and personal innovativeness have been identified as influential factors in WeChat use. See Huang & Zhang's research (Huang & Zhang, 2017a). Motives such as maintaining contact/communication with family & friends; keep informed as alternative information spheres are discussed in previous research. In addition, positive impacts such as promoting connectedness and civic participation, for improving communication are discussed in the Chinese context as well.

The table below is the summary based on publication outlets, including title, author, publication year, source, and research method.

Table 3: Summary of Publications

Title	Author	Publication Year	Source	Research Method
A Rhetorical Analysis of Chinese WeChat Messages among Midlife Adults.	Zhang, Mei	2016	China Media Research	content analysis
From "connected presence" to "panoptic presence": Reframing the parent-child relationship on mobile instant messaging uses in the Chinese trans-local context	Yu, Qian; Huang, Peiyang; Liu, Liming	2017	Mobile Media & Communication	interviews & communicative behavior records
WeChat and Distant Family Intergenerational Communication in China: A Study of Online Content Sharing on WeChat	Zhou, Baohua; Gui, Shihui	2017	New Media and Chinese Society	observation, interview, and textual analysis.
The adoption and use of WeChat among middle-aged residents in urban China.	Huang, Hanyun; Zhang, Xiwen	2017	Chinese Journal of Communication	survey & interviews

WeChat as a Semipublic Alternative Sphere: Exploring the Use of WeChat Among Chinese Older Adults.	Guo, Lei	2017	International Journal of Communication	survey & focus group
Characteristics and social impact of the use of social media by Chinese Dama	Li, Qin	2017	Telematics and Informatics	survey, participatory observation, interview
Digital Fluency and Social Media Use: An Empirical Investigation of WeChat Use.	Liu, Aoyan; Li, Yan; Ye, Hua	2018	Proceedings of the 51st Hawaii International Conference on System Sciences	survey

To sum up, after I first had a literature review of previous studies on media literacy and elderly adults, we made a more detailed analysis especially focusing on elderly adults' WeChat use. From the analysis above we can see that research on media literacy, elderly adults, and WeChat is far from enough. Little strategies or projects have been applied to improve the media literacy of elderly adults.

In general, the literature on media literacy and elderly adults displays a great variety of ideas. Scholars have suggested a wide variety of ideas about media use motives, barriers, and strategies that can be proposed for promoting elderly adults' media literacy. After the analysis, we found that media literacy has a great impact on elderly adults and there's a significant need for media literacy training. However, although those studies are applied in different cultures and social backgrounds, there has been little work in the context of Chinese culture and society. Previous academic frameworks of media literacy and elderly adults are mainly in the context of western countries and only a very small number of studies exclusively focused on the Chinese context or WeChat.

Because of the ethnicity, social, and cultural context differences, experience in other contexts, especially in a western social context, may not be applicable in the Chinese context. Therefore, it is necessary to investigate the motives and barriers among Chinese elderly adults in the Chinese context and then consider what strategies can be applied for promoting their media literacy. Although it's impossible to simply apply experience from previous works of literature conducted in other contexts directly, it is still worth analyzing what framework of elderly adults' media literacy has done because their research experience and findings can be a great reference for further study in the Chinese context.

Chapter 3: Methodology

This chapter outlines research designs based on research questions and hypotheses, and the methodological approaches of this study. By describing the research design, procedures, and data analysis, the research techniques that have been adopted in this study are explained in this chapter.

3.1 Objectives, research questions and hypothesis

3.3.1 Objectives

After the literature review, several questions emerge: what are the motives and barriers among Chinese elderly adults in their use of WeChat in the Chinese context? Then what strategies can be applied to promote their media literacy? Hence, the core objectives of this study are proposed as follows (To be more accrual, each general objective is divided into several specific objectives):

Objective1: To find out how elderly adults in urban China use WeChat. (General)

- To find out their motivations for using WeChat. (Specific)
- To identify if gender, education background, and living conditions can be affecting factors in their use of WeChat. (Specific)
- To gather and analyze their experience in learning WeChat. (Specific)

Objective2: To find out the problems among elderly adults in urban China in their use of WeChat. (General)

- To find out the main barriers in their use of WeChat. (Specific)
- To identify if they can verify rumors and misinformation in their use of WeChat or not. (Specific)

Objective3: To identify strategies to improve elderly adults' misinformation verification ability in their use of WeChat in urban China. (General)

- To test if people will implement the experience from the misinformation verification training session in WeChat use and have a better misinformation verification ability. (Specific)
- To propose strategies for the government and society to promote elderly adults' critical use of WeChat. (Specific)

3.1.2 Research questions

This study aims to answer the following research questions; each general question is divided into several sub-questions:

RQ1: How do elderly adults use WeChat in daily life in urban China?

- Why do they use WeChat? (RQ1.1)
- Do their use of WeChat affected by gender, educational background, and living conditions? (RQ1.2)
- How do they learn to use WeChat? (RQ1.3)

RQ2: What are the major problems among Chinese elderly adults in their use of WeChat?

- What are the main berries in their use of WeChat? (RQ2.1)
- Are they able to verify rumors and misinformation in their use of WeChat or not? (RQ2.2)

RQ3: What strategies can be used to improve the media literacy of elderly adults in their use of WeChat?

- Can the misinformation verification training helps promote WeChat use and have a better misinformation verification ability? (RQ3.1)
- What strategies can the government and the society propose to promote their critical

use of WeChat? (RQ3.2)

3.1.3 Hypothesis

Based on research questions, a hypothesis was proposed: misinformation verification training session in WeChat use facilitates a better misinformation verification ability in adults and older people.

3.2 Research Methods

To answer the research questions above, this present study research applies a mixed methods approach to collect and analyze data. In general, this study includes 3 phases, which include qualitative and quantitative techniques.

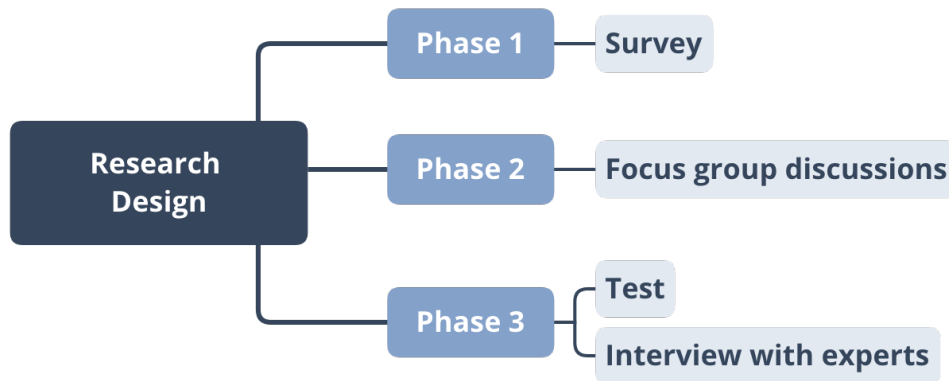


Figure 6: Research Design

The table below shows detailed research methods to reach research goals:

Table 4: Objectives and Research Methods

<p>Objective 1: To find out how elderly adults in urban China use WeChat.</p>	<ul style="list-style-type: none"> • Survey ($N=300$) • Interviews with experts • Focus group discussion among elderly adults (4 groups)
<p>Objective 2: To find out the problems among elderly adults in urban China in their use of WeChat.</p>	<ul style="list-style-type: none"> • Survey ($N=300$) • Focus group discussion among elderly adults (4 groups)
<p>Objective 3: To identify strategies to improve elderly adults' media literacy in their use of WeChat in urban China.</p>	<ul style="list-style-type: none"> • Interviews with experts in aging communication or media from European and China • Test

3.3 Phase 1: Survey

3.3.1 Justification of questionnaire design

To answer research questions (RQ1: How do elderly adults use WeChat in daily life in urban China; RQ2: What are major problems among Chinese elderly adults in their use of WeChat), a questionnaire is designed for this study to collect data. Before the questionnaire design, a systematical literature review was conducted beforehand based on previous studies and reports (e.g., Celot & Tornero, 2009; Del-Moral & Villalustre, 2013; Hong, Trimi, & Kim, 2016; Pérez Tornero, Simelio, Paredes, & Giraldo Luque, 2010; Tornero, Tayie, Tejedor, & Pulido, 2018). After the literature review, one study and one report were selected as main references for questionnaire

design, and many other studies were referenced as supplementary. One of the main references is a report on media use among elderly adults in China (Tencent media research institute, 2018). This is an official report provided by Tencent company, which developed WeChat. many factors on WeChat use among middle-aged and elderly people were measured in this report. This report is selected as one of the main references for questionnaire design because it is well designed and measuring items have been adapted to WeChat and the Chinese context. Many data on Chinese middle-aged and elderly people's general media use have already been provided in this report. However, most of the data in this report are descriptive data and no relationships between different factors are further in-depth analyzed. For the reason that much information about elderly people's WeChat use habitus and their user behaviors has already been investigated in this report, in my survey, I will be more focused on other aspects to raise measurement efficiency. Questions on misinformation verification are mainly referenced from "Indicators for Assessing the Critical Understanding of Media, in the European Model of Media Literacy" by Pérez & Tornero (Pérez Tornero et al., 2010). In their research, detailed questions, and indicators on knowledge of critical understanding were proposed. Some modifications were made to adapt Chinese context and elderly adults. In addition, instead of applying the Likert scale (from strongly agrees to strongly disagree) which has been widely used in measurement methods, options in this questionnaire have been adapted to an easier way of understanding.

After considering the research questions and literature review findings, a draft version of the survey questions was done, and it was first sent to three professors for validation, Prof. Yi Song and Prof. Jing Wang from China and Prof. Cristina Pulido from Spain. Prof. Yi Song is a professor in the School of International Journalism and Communication at Beijing Foreign Studies University. She is an expert in the field of quantitative research and interpersonal communication, especially in elderly people's communication. Prof. Jing Wang works in the School of International Journalism and Communication at Beijing Foreign Studies University as well. She has rich research experience in collective memory, cross-cultural communication, new media, and social

change. And Prof. Cristina Pulido is my director, and she is a professor in the department of Journalism and Communication Sciences of the Autonomous University of Barcelona. She has great research experience in media literacy education and communication.

After the validation and modification, finally, the questionnaire is designed under three broad categories:

- Part one contains questions of demographic information (9 items), including gender, age, education level, living place (urban or rural), living condition (living with whom), income, retirement, and previous experience with media/journalism. Most of the options are referenced from questions in previous research. Some of the questions and options have been slightly changed to adapt to this research.
- Part two contains questions on WeChat use, including the use behavior (3 items), motives of WeChat use (8 items), and problems (2 items).
- Part three is designed for testing participants' rumors and misinformation verification ability (15 items). The first five questions are designed for measuring participants' knowledge of rules and regulations, fact-checking habits, and trust degrees on the information in WeChat. Then there will be questions on the perceived frequency of misinformation sharing behavior from peers and reactions towards them, followed by self-reported ability on misinformation verification and self-reported misinformation sharing behavior. In the end, a mini-test is designed to test whether participants can verify rumors and misinformation in their use of WeChat.

Key Measurements

Demographic factors

To answer investigate if their use of WeChat is affected by demographic factors, participants will be asked to provide basic demographic information (9 items), including gender, age, education level, living place (urban or rural), living condition (living with whom), income, retirement which are commonly used as measurements in surveys. In addition, previous experience with media/journalism will be asked based on the aims of this study.

WeChat use duration

To investigate if WeChat use duration affects their WeChat use, questions on WeChat use durations are asked in the survey. For the convenience of the respondents, participants were asked when they started to use WeChat instead of asking the durations of use directly. As for daily average online time, participants were asked if they know their daily WeChat usage time and how long it was if they know.

Motives

To investigate the motives of using WeChat, participants will be asked to evaluate the importance of eight given motives concluded from the literature review for measurements.

Learned from whom

To answer the research question” how do they learn to use WeChat? “, participants were asked about from whom/ in which way they learned WeChat. This question is asked in focus group interviews as well for further investigation.

Barriers

To identify problems in their use of WeChat, participants were asked about the main barriers to WeChat use and how they solve problems. Those questions are multiple-choice questions and participants can choose more than one answer. Those questions are to generally know the main barriers and their ways of solving problems in participants' WeChat use. An in-depth investigation will be conducted in the focus group discussion part.

Knowledge of rules and rights

Before measuring participants' rumors and misinformation verification ability, knowledge of rules and rights were first measured. Questions and options was referenced from *Indicators for assessing the critical understanding of media, in the European model of media literacy* and "*WeChat external link content management regulations*" (Pérez Tornero et al., 2010)

Fact-checking habits

For fact-checking habits, participants were asked what they usually do with the information when they think it is important when reading news or articles from WeChat. Options range from "I usually do not search for information in other media"; "I usually look for information in other media that I consider reliable" and "I usually look for information from different sources and compare them". In this research, the latter is regarded as better fact-checking habits than the former one.

The importance of sources

Considering source may affect people's trust in information, participants were asked to evaluate the importance of different sources that matters regarding trust degrees in the information. Participants were asked to evaluate the affections of the agency/organism source; publishing account; and the person they got the information from when they consider their trust in the information (from 1=Not important to 5=Very important).

The trust in the information on WeChat

To access the trust degree on the information in WeChat, participants were asked to evaluate the information reliability in WeChat (1=I don't think any of them are reliable, 2=Little of them are reliable, 3=only some of them are reliable, 4=most of them are reliable, 5=all of them are reliable).

Perceived misinformation sharing behavior from themselves and peers

To access the perceived misinformation sharing behavior on WeChat of themselves, participants were asked to evaluate their frequency of sharing information without verification (1=never, 5=very often). Perceived misinformation sharing behavior on WeChat of others was measured by the question of evaluating the frequency of sharing rumors from peers (1=never, 5=very often). For the reason that people may rate a lower frequency of sharing rumors if they were asked directly, in this study, we did not use the same question, with “yourself” replaced by “peers,” as many previous researchers did (Chung, 2019; Jang & Kim, 2018). In this research, questions for measuring the self-perceived frequency of misinformation sharing behavior were adopted into “the frequency in sharing information without verification” to reduce the influence caused by questions.

Actions towards misinformation sharing behavior

Except for measuring perceived misinformation sharing behavior from themselves and peer, actions towards misinformation sharing behavior were asked in the questionnaire. This is a multiple-choice question and participants can choose more than one answer.

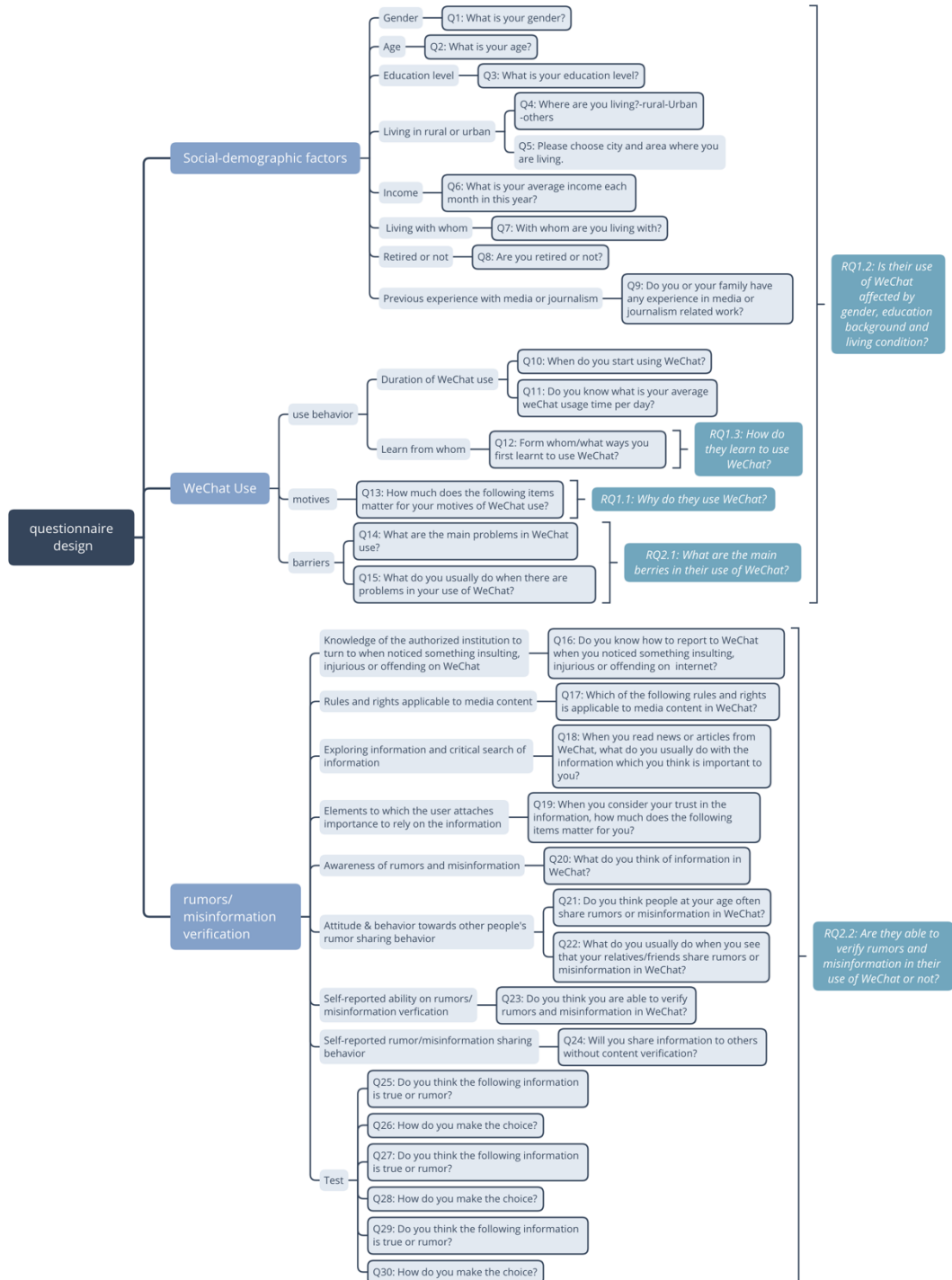
Information verification ability

The information verification ability consisted of a self-reported level and a mini-test. Firstly, one question is asked to report self-evaluated misinformation ability (1=not at all, 5=in all cases can). Then a test with three pieces of information was set in the survey

to test the information verification ability. Participants were asked to verify that the given articles from WeChat are real information or misinformation. Of these three questions, two of them are misinformation, and the other one is real.

(Please see the questionnaire design on the next page)

Questionnaire design



3.3.2 Samples and scopes

The planned amount of the survey is 300 because of considering the efficiency and according to and Sample Size Determination Using Table by Krejcie and Morgan, the required sample size increase little as the total volume increases and the required sample size stays at 384 for a population which is equal to or greater than 1,000,000. With consideration of the efficiency, 300 surveys will be prepared (Krejcie & Morgan, 1970).

The scope has been limited to people aged over 45 (including 45) living in urban China. 345 responses have been received in total and the number of valid responses is 317 which meets the expectation. Invalid data includes 9 responses from people aged below 45 and 28 responses from people who are not living in urban China.

- Scope: people aged over 45 (including 45) living in urban China.
- Survey design is reviewed by three experts: Prof. Cristina Pulido (UAB, Spain); Prof. Yi Song (BFSU, China); and Prof. Jin Wang (BFSU, China)
- A pilot test with 30 responses was first conducted before the full-scaled survey
- Full scaled survey started on 9th April and ended on 7th May
- Number of expected questionnaire replies: 300
- Number of actual questionnaire replies: 345
- Number of valid questionnaire replies: 317

3.4 Phase 2: Focus group discussion

3.4.1 Justification of the focus group discussion

Focus group discussion is an important qualitative technique that is commonly used in communication studies. Quantitative research provides general statistical information, and qualitative research exploration allows us to understand and explain reasons. To have a more insightful view of elderly adults' experience with WeChat use, problems in their use, and their attitude towards misinformation in WeChat, the technique of focus group interview is applied in this research.

Based on research questions in this research, the main objectives of the focus groups are under three broad categories:

- Gaining information on respondents' WeChat use, their motives, and general experience.
- Gaining information about problems in their WeChat use
 - Gathering information on problems and their solutions when encountered a problem,
 - Investigating their attitude towards misinformation in WeChat.
- Gaining information about strategies they would like to be provided to improve their use.

Thus, some of the main questions in the focus group are proposed as follows:

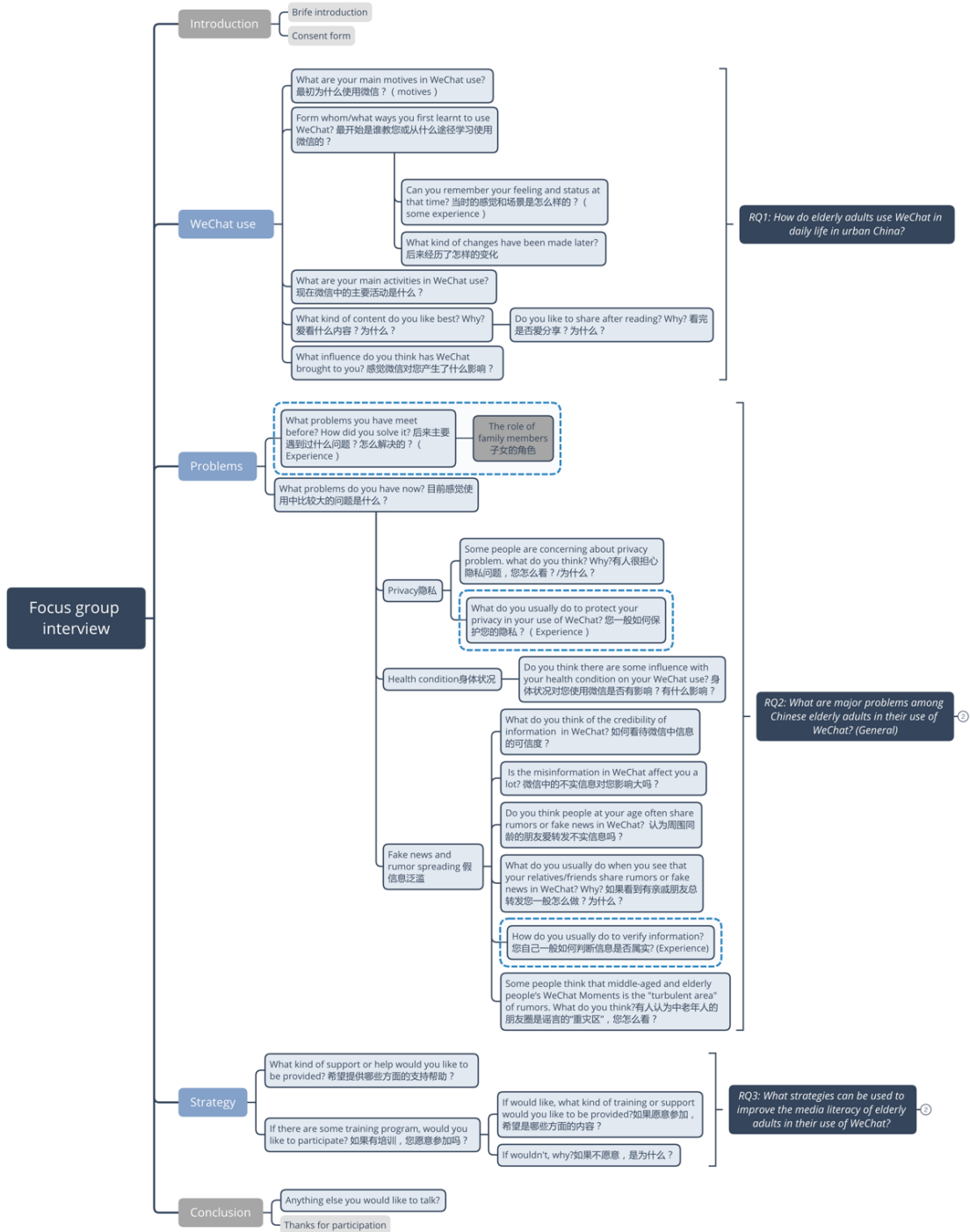
- Why do you use WeChat? What is your first motive? 最开始为什么用微信？
- From whom/ what ways you first learned to use WeChat? 最初是谁教您使用的？
- How do you solve problems with the use of WeChat? 后来遇到问题怎么解决？
 - 子女在身边吗？
- What are your main activities in WeChat use? What kind of content do you prefer? 主要

从事哪些活动？主要关注哪些方面的内容？

- 对于比如健康养生等信息，会去实践吗？
- Do you post/ repost on your WeChat moments? What kind of content do you like to post? (If don't post, why?) 平时发朋友圈吗？主要是哪些内容？如果一般不发，为什么？
- Someone has mentioned the privacy concern, what do you think of this? 刚才有人提到会涉及到隐私，对这个问题大家怎么看？
- Do you use WeChat pay? Have you linked your bank card to WeChat? What do you think of this kind of mobile payment? 绑定银行卡了吗？是否使用微信支付？对这个问题怎么看？
- What do you think of the information in WeChat? 对于微信中的信息怎么看待？
 - What do you think is the credibility of information in WeChat? 信息可信度高吗？
- What is your source of getting informed? 各位主要的新闻和信息获取来源是哪里？
- Do you rely on WeChat of getting news and information? Why? 会将微信作为新闻及信息获取来源吗？为什么？
- What do you think of misinformation in WeChat? 对于微信中虚假信息您怎么看待？
 - Is the information in WeChat affect you a lot? 对您影响大吗？
 - Do you think people often share misinformation? 感觉您周围转发虚假信息的人多吗？
 - What do you usually do when you see someone often share rumors or misinformation on WeChat? 如果看到有人总转发，您一般怎么做？
- What do you usually do to verify information? 您自己如何判断信息的真实度？
- What impact has WeChat brought to you? 微信给您带来了怎样的影响？
- Are there any changes during your use of WeChat? 在使用方面开始时和现在感觉一样吗？是否经历过什么变化？

- Are there any problems with the use of WeChat? 现在使用中还有什么问题吗？
- If there are some training programs, would you like to participate? 如果有使用培训您愿意参加吗？为什么？

Focus group interview design:



3.4.2 Participants

In practice, six groups of focus group discussions have been conducted in total. Each group consists of 4-5 participants except for one special case with 2 participants. This special case was planned with 4 participants as well. However, one participant couldn't come that day without informing in advance. Another participant came but he didn't join the conversation because he doesn't like smartphone or WeChat and don't want to talk much about the use of WeChat, so I did an individual interview with him. Detailed information on focus group interviews is as follows:

Group 1

Date: 04 June 2019 Place: Changzhi, Shanxi, China Number of participants: 4

Name	Gender	Age
G Wei	Male	55
JY Ren	Male	55
LP Liu	Male	56
XZ Wang	Male	51

Group 2

Date: 04 June 2019 Place: Changzhi, Shanxi, China Number of participants: 5

Name	Gender	Age
HN Wang	Male	49
XJ Zhang	Male	49
JJ Liu	Male	47
WG Tian	Male	53
J Yuan	Male	54

Group 3

Date: 05 June 2019 Place: Changzhi, Shanxi, China Number of participants: 5

Name	Gender	Age
ZG Zhao	Male	54
XP Song	Male	54
FX Guo	Male	51
YY Gao	Female	48
SH Zhang	Male	45

Group 4

Date: 05 June 2019 Place: Changzhi, Shanxi, China Number of participants: 5

Name	Gender	Age
XH Gao	Female	51
JHWang	Female	45
YY Xu	Female	48
LL Li	Female	55
LP Zhang	Female	57

Group 5

Date: 06 June 2019 Place: Taiyuan, Shanxi, China Number of participants: 2+1

Name	Gender	Age
JH Shi	Male	70
SJ Geng	Male	71
LS Li (individual talk)	Male	76

Group 6

Date: 07 June 2019 Place: Taiyuan, Shanxi, China Number of persons: 4

Name	Gender	Age
SF Gong	Female	61
JK. Zhang	Male	61
XF Liu	Female	59

JiK Zhang	Male	59
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3.5 Phase 3: Test

3.5.1 Justification of the test design

To answer the research question, “what strategies can be applied to improve elderly adults’ misinformation verification ability in their use of WeChat in urban China”, frameworks and literature on promoting media literacy are reviewed beforehand. After considering the research questions and the actual situation, a draft version of the test design was done, and it was first sent to two Chinese professors and one professor from Spain for validation: Prof. Yi Song from Beijing Foreign Studies University, Prof. Rui Gao, a visiting professor in Harvard University; and Prof. Cristina Pulido from the Autonomous University of Barcelona. After the validation and modification, the test is designed, and some minor modifications have been made according to the actual situation.

Literature review and test design

To answer the research question, “what strategies can be applied to improve elderly adults’ misinformation verification ability in their use of WeChat in urban China”, frameworks and literature on promoting media literacy are reviewed beforehand. There have been many specific strategies, projects, or training programs applied for promoting media literacy or critical awareness, such as:

- Youth 4 Europe.
<https://youthforeurope.eu/idea/education-in-media-literacy/>
- Commonsense Education.
<https://www.commonsense.org/education/toolkit/news-and-media-literacy>
- Ofcom <https://www.ofcom.org.uk/home>
- Citizens online project. <https://www.citizenonline.org.uk/>
- CML: “MediaLit moments”--27 media literacy activities for K-12 classrooms
- UNESCO: Media and Information Literacy.
<https://en.unesco.org/themes/media-and-information-literacy>

- Curriculums
-

However, most of those training programs focus on students and in the classroom environment. It is impossible to extend the existing strategies from students/youth to elderly adults, because:

- Elderly adults hold their own dispositions. Unlike students in schools, most seniors are significantly molded by years of social conditioning and media messaging (Newaz, 2018);
- They not only need to learn media literacy tools but also need to unlearn what they have practiced—conditioned social norms about the role of news and information (Newaz, 2018);
- Long-term, high energy-consuming training proposal does not apply to elderly adults.

For the reasons above, not all program for promoting media literacy is applicable when it comes to elderly adults. In this research, as the focus is on how to enhance Chinese elderly adults' critical use of WeChat, strategies and training programs that might apply to the elderly would be referenced. There have been some projects focusing on adults or citizens. Such as the Citizens Online Project in the U.K. (<https://www.citizensonline.org.uk/>), NALA (National Adults Literacy Agency) in Ireland (<https://www.nala.ie/>), Cyber-Seniors Project in Canada (<https://cyberseniors.org/>) and the DigiUP Project (<https://digiupproject.eu/>). However, some of those projects are mainly focusing on digital inclusion, digital access, and primary use of ICT instead of critical use. Although those working plans do not apply to this research directly, some experience such as how to motivate people and how to organize the training procedure can be generated. For instance, one of the key issues from experiences of motivating learners in adult education is the atmosphere. The atmosphere is better to be respected, trusted, and learner-centered because "adults learn

best when the decision to return to learning is their own and the environment is supportive, relaxed and friendly”(T. Byrne, O’Grady, & Roche, 2016)

Among those numerous projects, two are vital to this current research. One is **Learn to Discern project (L2D)** led by **IREX** (<https://www.irex.org/>), which includes Citizen Media Literacy Project (CMLP), Learn to Discern in Schools Project, and some other projects. The main idea of this project is to strengthen individuals’ critical information consumption skills through training. L2D Project was first successfully applied in Ukraine and then applied in many other countries such as Serbia, Tunisia, Jordan, Indonesia, and the U.S. Results from the L2D project in Ukraine confirmed that the training not only has a short-term effect but also a long-term effect on individual’s verification ability as well. This project has many similarities with this research because: firstly, it is adaptable to adults; secondly, it focuses on information verification, and thirdly, it has a long-term effect. Research experiences such as self-rating questions in the pretest, questions from the warp-up session of Train's guide, and **measurement** of disinformation news media assessment are referenced from this project. **Another one** is a project aiming at promoting media literacy for citizenship provided by **EAVI** (<https://eavi.eu/>). In the report of this project, a very detailed media literacy workshop plan is provided for reference. Although this workshop plan is designed for students, a section called “spot fake news” in the plan is worth taking for reference. In this section, pupils are given news articles and asked to use the checklist to spot whether it is fake news. In addition, many other useful sources for verification methods are provided on the website. For instance, the infographic “Beyond the Headlines” (“Beyond the Headlines: the Online News Verification Game,” 2017) provides practical and efficient ways of verification. (Please see the graphic below)

BEYOND THE HEADLINES

THE ONLINE NEWS VERIFICATION GAME

RULES: START WITH 36 POINTS AND SUBTRACT OR ADD POINTS ACCORDINGLY AS YOU ANALYSE YOUR CONTENT. COMPARE YOUR RESULTS WITH OTHERS.






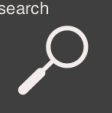
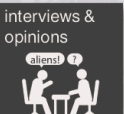


headlines 	<ul style="list-style-type: none"> the headline makes use of ALL CAPS or excessive punctuation!!!??? -1 the headline promises secret information, surprise, happiness, outrage? -2 	images 	<ul style="list-style-type: none"> these are stock images or there are no captions on the images -1 the images have been doctored or relate to different events -2
url 	<ul style="list-style-type: none"> the publication does not have its own domain name or uses a free blog platform -1 the domain is counterfeit, eg. bbc.com.co -2 	ads 	<ul style="list-style-type: none"> the article is sponsored by a company or organisation -1 there are many intrusive banner or pop-up ads or the ads look questionable and cheap -2
author 	<ul style="list-style-type: none"> there are no examples of their work elsewhere online -1 there is no identifiable author or the author is using a pseudonym -2 	text 	<ul style="list-style-type: none"> there are many spelling or grammar errors or the appearance looks unprofessional -1 the text frequently uses emotional, hyperbolic or sensationalised language -2
date 	<ul style="list-style-type: none"> there is no date on the article -2 the information in the article is no longer relevant or current -2 	search 	<ul style="list-style-type: none"> there are no links or the links point to questionable sources -2 there are no examples of this story elsewhere online -2
BONUS ROUND			
interviews & opinions 	<ul style="list-style-type: none"> the content quotes sources and names them +2 the interviewee is qualified to speak with authority on the topic or more than one opinion was represented in the article +3 	graphs & statistics 	<ul style="list-style-type: none"> refers to a study which is named and linked or you can find the study online +2 represents accurately the results of a study or graphs and statistics are clear and precise +3
BONUS QUESTION			
Can you find out who owns the publication? YES +3 NO -3			
			

Figure 7: Beyond the Headlines: The Online News Verification Game

Besides projects, many studies on promoting media literacy are worth noticing. Compared to large-scale projects, those academic studies provide more practical research methods to identify the effect of media literacy training. Generally, experimentation is most widely applied to test if media literacy interventions can affect people's attitudes, intentions, or abilities. In previous studies, one of the most common ways to conduct the experiment on media literacy intervention is to set an experiment group and a control group. For instance, Seth Ashley, Mark Poepsel, and Erin Willis conducted a study on how increased knowledge of media ownership may affect people's credibility judgments in print news by experimenting with 80 undergraduate

journalism students. Students are divided into an intervention group and a control group randomly by being given different reading materials. Students from the intervention group are given an article about media ownership, while students from the control group are given some nature poems to read before evaluating the news articles (Ashley, Poepsel, & Willis, 2010). Another study conducted by Tracy Marie Scull & Janis Beth Kupersmidt examined the efficacy of media literacy education through a one-day training workshop experiment for late elementary school teachers (Scull & Kupersmidt, 2011). Like Seth et al.'s study, that research is conducted by comparing data from the experiment group and control group.

Likewise, in this current study, **the research method of test** is applied to identify if misinformation verification training can improve people's misinformation verification behavior. However, the test is better to be conducted in the way of self-control instead of between-groups comparison because the object of this research is elderly adults. Rather than students and schoolteachers, which can be usually regarded as homogeneous groups, elderly adults differ a lot in demographic factors and their life experience differs a lot. It is much more difficult to be regarded as homogeneous groups (Gao, He, Zhu, & Wang, 2019). For the reason that those differences might affect the experiment results (Murrock, Amulya, Druckman, & Liubyva, 2018), it is better to conduct this experiment by the way of **self-control** instead of setting a control group.

As for the **test procedure** in practice, there have been some examples in previous studies. Some research is conducted in the form of long-term training, and media literacy training projects usually take this form with a specially designed long-term curriculum. Such as Learn to Discern Project in Ukraine and Cyber-seniors Project in Canada. Academic studies are usually conducted with short-time experiments or interventions. Such as one-day workshops (Scull & Kupersmidt, 2011), interventions by giving reading materials or watching intervention videos (Ashley et al., 2010; S. Byrne, 2009), online training, or other activities (Mingoia, Hutchinson, Gleaves, & Wilson, 2019). For the reason that long-term, high energy-consuming training

proposals do not apply to elderly adults, the model of **the one-day workshop** is most applicable in this research.

No matter what kind of interventions are applied, the effect of interventions is usually measured by quantitative analysis of results from pretest and posttest in most of the studies. There have been some different measurements in tests relevant to misinformation verification. For instance, Ashley et al. applied a credibility scale, which includes judgments of truth, superficiality, general accuracy, and completeness in their research to measure news credibility (Ashley et al., 2010). This credibility scale offers very detailed measurements but more focus on the evaluation of news credibility rather than misinformation verification. In comparison to Ashley et al.'s study, test questions from Scull & Kupersmidt's study on the evaluation of media literacy training workshops are more relevant to this research. Questions consist of 3 parts: self-reported evaluations such as relief in the importance of media literacy education and familiarity with media literacy, media construction skills, and evaluation of the training program (Scull & Kupersmidt, 2011). Questions from self-evaluation and evaluation of the training can be referenced in this research, but the measurement of media deconstruction skills is more focused on the decoding and deconstruction of media instead of verification. Likewise, questions from Eshet-Alkali & Amichai-Hamburger's experiment on information skills focus on media deconstruction as well. Participants are given seven internet news resources and were asked to analyze them, look for a biased attitude and report an overall summary of their opinions of the quality and reliability of the given news (Eshet-Alkali & Amichai-Hamburger, 2004). Among all the relevant studies, the L2D project is worth noticing. In this program, participants were given a news article followed by 16 questions for measuring disinformation news media assessment (Murrock et al., 2018). In addition, questions from the wrap-up session provide examples of evaluation of the training program. Questions such as "What knowledge/skills will you use now" will be referenced in the interview section of my research. However, although this evaluation method is better than others because

it is more objective, most of those test questions still focus on the deconstruction of news.

Except for quantitative approaches, some researchers involve qualitative approaches for more in-depth investigation since quantitative analysis only presents the results and It is difficult to understand the processes and meanings behind the behavior (Gao et al., 2019) For example, in Scharrer and Ramasubramanian's study, they introduced qualitative approaches of on-going research by Scherrer on early adolescents who took part in a media literacy curriculum on stereotype (Scharrer & Ramasubramanian, 2015).

Although quantitative analysis is generally applied in many studies, it is worth noticing that the test is usually conducted with quite a large number of participants, and participants are usually paid for attending the experiment unless they are students. In addition, this research is conducted during the epidemic of COVID-19 in China and it's impossible to involve large scales of people to participate in the test. For the limitation above, this research will be a pilot test with a relatively small group that cannot provide an adequate sample for quantitative analysis. Besides, the reason that the objective is not only to know the results but to have a better understanding of how the participants verify misinformation, it is better to involve a qualitative approach in the study. Thus, the test in this research is conducted with pretest and posttest, but the measurement is more qualitative. In other words, the investigation will not only focus on the test results but will be more generated from qualitative approaches. To be more specific:

- A pretest and posttest on misinformation verification will be conducted before and after training, respectively. For the reason that the primary goal of this study is to test if the training can improve participants' misinformation verification ability, test questions should focus on misinformation verification. With consideration of the sample scale, questions on misinformation verification will be directed on if participants can verify whether the given articles are real or misinformation.

- During and after the test, qualitative approaches, including interviews and

observations, will be applied to investigate how the participants verify the given information, and if the verification training can improve or affect participants' misinformation verification ability.

3.5.2 Procedures

Guided by the concept of the test design above, the detailed **process** is proposed as follows:

Environment

The environment for experimenting should be a relaxed and friendly atmosphere, which is similar to other studies. In addition, adapted from the strategies for motivating learners in adult education in Ireland that “adults learn best when the decision to return to learning is their own and the environment is supportive, relaxed and friendly”(T. Byrne et al., 2016), the experimental atmosphere should be respect, trust and learner-centered.

Participant

A convenience sample of 6 elderly adults living in urban China aged over 50 participated in this study.

Goals/Objectives

The participants will implement the experience from the misinformation verification training session and have a better misinformation verification ability.

Procedure and Content of Training

- Warm-up video on misinformation verification. **5 minutes**
<https://www.youtube.com/watch?v=JYdpQ4A-VEU>
- Possible impacts/ dangers of misinformation. **10 minutes**
introduce some cases as examples
- Why is misinformation so spreading? **10 minutes**
 - Social media makes it more challenging to find the source
 - It may satisfy people's particular preference

- Fear and social insecurity concerns. e.g., food safety problems, medical treatment
 - Express concern to friends or family members. "what if it is true?"...
 - The worldview backfires effect (confirmation bias): people process information in biased ways. When one debunks one's worldview, those most fixed in the views can double down.
 - Others
- How to verify misinformation?

Verification with the following skills:

It might be misinformation when:

15 minutes

- Headlines: be aware of eye-catching heading, e.g., clickbait
 - the headline promises secret information, surprise, happiness, outrage?
 - the headline makes use of excessive punctuation such as "!!!???"
- Author
 - there are no examples of their work elsewhere online
 - there is no identifiable author, or the author is using a pseudonym
- Date
 - there is no date on the article
 - the information in the article is no longer relevant or current
- Image: check with "Baidu Image."
 - these are stock images, or there are no captions on the images
 - the images have been doctored or relate to different events or people
- Text
 - there are many spelling or grammar errors, or the appearance looks unprofessional
 - the text frequently uses emotional, - hyperbolic, or sensationalized language
- Ads
 - the article is sponsored by a company or an organization
 - there are many intrusive banners or pop-up - ads or the ads look questionable and cheap

Check sources and evidence:

10

minutes

- Search
 - Search if there are any links or if the links point to questionable sources
 - Search if there are any examples of this story elsewhere online
- Evidence

There is a lower possibility of misinformation when:

 - it refers to a study that is named and linked, or you can find the study online
 - it represents accurately the results of a study or graphs and statistics are clear and precise
 - the content quotes credible sources (e.g., publications, official websites or media outlets) and names them in interviews or opinions
- Source: where this information comes from

With the help of misinformation verification platforms/apps/official accounts/mini-programs in WeChat. **15 minutes**

e.g., the official account in WeChat: Anti-rumors platform (Chinese name: 互联网联合辟谣平台); mini program in WeChat: WeChat Anti-rumors Assistant (Chinese name: 微信辟谣助手)

➤ Main references:

- EAVI- Media Literacy for Citizen Project "Beyond the headline".
- video of misinformation verification.
- Chinese Anti-rumors platform.
- A guide to anti-misinformation actions around the world by Poynter.
<https://www.poynter.org/ifcn/anti-misinformation-actions/>
- MOOC course by Knight Center, "Navigating misinformation: how to identify and verify what you see on the web."
- etc.

Measurements

➤ Part 1: Quantitative Approach

Before testing, a brief explanation of what is “media literacy”, “critical thinking”, “rumor” and “misinformation” is introduced beforehand.

The pretest is composed of two parts. The first part is a series of self-reported evaluations, including the familiarity with media literacy, the importance of critical thinking, and the confidence in misinformation verification ability. The second part is a test on misinformation verification. Participants are given six articles from WeChat and are asked to verify that each of the given articles is true information or misinformation. Two of the selected articles are true, while the others are misinformation. The options are “true”, "misinformation," and "I don't know".

The posttest is composed of three parts. The first and second parts are the same as in the pretest. Another six articles selected from WeChat will be given to participants for verification in the second part of the posttest. The third part consists of questions on the evaluation of the training. Questions in this part are referenced from previous studies. such as “was the training interesting to you” and “have your expectations been met”

PRETEST	
Questions	References
Q1: How familiar are you with media literacy? (Rate your familiarity with media literacy) 1) Not familiar at all 2) not quite familiar 3) hard to say/on average	Adopted from the question "Familiarity with media literacy" (Ref: An evaluation of media literacy program training workshop for late elementary school teachers" by Tracy & Janis, 2012.)

<p>4) Fairly familiar</p> <p>5) Very familiar</p>	
<p>Q2: How important is critical thinking to you? (rate the importance of critical thinking)</p> <p>1) Not important at all</p> <p>2) not very important</p> <p>3) just so so</p> <p>4) Fairly Important</p> <p>5) Very important</p>	<p>Adopted from the question "Belief in the importance of media literacy education" (Ref: An evaluation of media literacy program training workshop for late elementary school teachers" by Tracy & Janis, 2012.)</p>
<p>Q3: Do you think you can verify rumors and misinformation in WeChat? (rate confidence of misinformation verification ability)</p> <p>1) Not at all</p> <p>2) Almost not</p> <p>3) Sometimes can</p> <p>4) In most cases can</p> <p>5) In all cases can</p>	<p>Adopted from the question "you're your confidence of misinformation verification ability" (Ref: report of L2D program)</p>
<p>Q4-Q9: (Articles from WeChat)</p> <p>The article above is:</p> <p>1) True</p> <p>2) Misinformation</p> <p>3) I don't know</p>	
POSTTEST	
Questions	References
<p>Q1: How familiar are you with media literacy? (rate your familiarity with media literacy)</p> <p>1) Not familiar at all</p> <p>2) Not very familiar</p>	<p>Adopted from the question "Familiarity with media literacy" (Ref: An evaluation of media literacy program training workshop for late elementary school teachers" by Tracy & Janis, 2012.)</p>

<p>3) just so so</p> <p>4) Fairly familiar</p> <p>5) Very familiar</p>	
<p>Q2: How important is critical thinking to you? (rate the importance of critical thinking)</p> <p>6) Not important</p> <p>7) not very important</p> <p>8) just so so</p> <p>9) Fairly Important</p> <p>10) Very important</p>	<p>Adopted from the question "Belief in the importance of media literacy education" (Ref: An evaluation of media literacy program training workshop for late elementary school teachers" by Tracy & Janis, 2012.)</p>
<p>Q3: Do you think you can verify rumors and misinformation in WeChat now after ...? (rate confidence of misinformation verification ability)</p> <p>1) Not at all</p> <p>2) Almost not</p> <p>3) Sometimes can</p> <p>4) In most cases can</p> <p>5) In all cases can</p>	<p>Adopted from the question "you're your confidence of misinformation verification ability" (Ref: report of L2D program)</p>
<p>Q4-Q8: (Articles from WeChat)</p> <p>The article above is:</p> <p>1) True</p> <p>2) Misinformation</p> <p>3) I don't know</p>	
<p>Q9: How much was this training interesting to you? (in 1st posttest only)</p> <p>1) Not interesting at all</p> <p>2) Not very interesting</p> <p>3) It's OK</p>	<p>Ref: Trainer's guide of L2D project</p>

4) Fairly interesting 5) Very interesting	
Q10: Have your expectations of this training been met? (in 1st posttest only) 1) Yes 2) No	Ref: Trainer's guide of L2D project
Q11: Will you tell your family and friends about the knowledge you have acquired from this training? (in 1st posttest only) 1) Yes 2) No	Ref: Trainer's guide of L2D project

Some studies on media literacy only focus short time effects while some measure both short time and long-term effects. For instance, Byrne measured the effect of media literacy intervention on the willingness to use aggression by taking posttests right after the intervention and retesting after six months of the intervention, respectively (S. Byrne, 2009). For a reason that long-term effect is important in this research, the test will be conducted with the first post-test right after the intervention training and retests after the post-test.

It's worth noticing that the effect of the short time training might be limited because it is always difficult, and it takes time to change people's behavior in their daily life. However, the intensification of new "Refutes Rumors" columns after the outbreak of COVID-19 happened to provide a natural and complementary intervention as misinformation verification "training". This helps provide more evidence for testing the hypothesis.

In this study, the pretest, the training session, and the post-test were conducted in early February, which was just the beginning of the outbreak of COVID-19 in China. After the outbreak of COVID-19, a lot of strategies aimed at fighting the infodemic applied on social media. In most of the frequently used apps, such as WeChat, Sina Weibo, and Alipay, specialized channels of anti-infodemic were created to spread denials of false information about COVID-19. Although the short time training might not indicate a very strong effect, the rapid creation of those anti-infodemic channels can be regarded as natural and complementary misinformation verification interventions **because:**

- 1) Those anti-infodemic channels are one sort of misinformation verification training. Anti-infodemic channels were largely scaled and set up in early February which is close to the pretest time in my study. Thus, it can be considered that people are exposed to a lot of Anti-infodemic channels after the pretest.
- 2) It always takes time to make people change their behavior. This is a long-time intervention and will have a clearer result than short-time training.

Thus, to better investigate the long-term effect of the interventions, the 1st retest was conducted 6 weeks after the training (the end of March) which was in the middle stages of the outbreak of COVID-19 in China. Based on findings from the 1st retest that the critical awareness raises, 2nd retest is conducted in the middle of May when the epidemic is basically under control for a period to investigate if the effect still lasts after the attention on epidemic information went down.

Timeline	Activities
Time 1 (week 1)	<ol style="list-style-type: none"> 1. Pretest 2. Intervention (training)

	<p>3. Posttest</p> <ul style="list-style-type: none"> • Self-evaluation • Verification (observation) • Evaluation of the training
Time 2 (week 3)	<p>1st Retest</p> <ul style="list-style-type: none"> • Self-evaluation • Verification (observation)
Time 3 (week 7)	<p>2nd Retest</p> <ul style="list-style-type: none"> • Self-evaluation • Verification (observation)

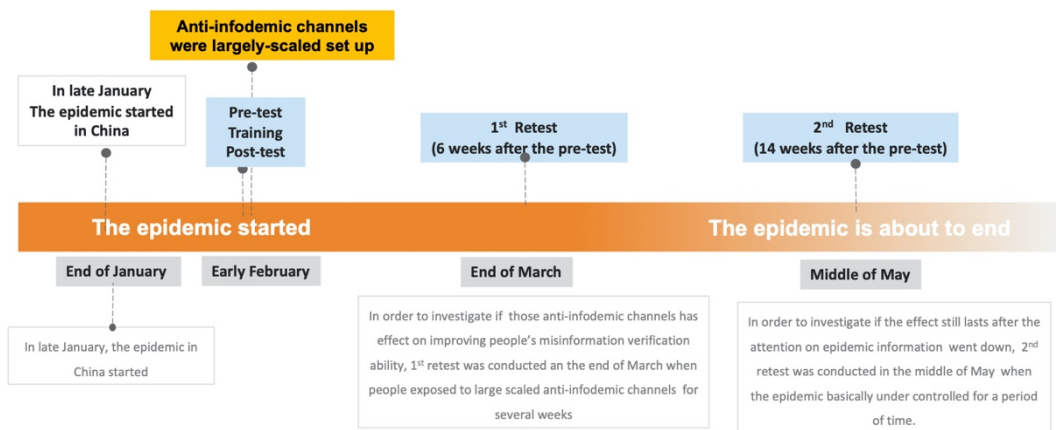


Figure 8: Timeline of the Test

➤ **Part 2: Qualitative Approach**

In this research, a qualitative approach will be applied to have a deeper understanding of how the intervention may affect participants' misinformation verification ability. The qualitative approach here includes observations and conversations during the test and short interviews after training.

Possible interview questions are proposed as follows (Referenced from Trainer's guide of L2D project; Tracy & Janis, 2012; Scharrer & Manian, 2015):

- Why do you think this is misinformation?
- What is the most enjoyable part of the training?
- What is the most useful part of the training?
- Will you tell your family and friends about the knowledge you have acquired? Why?
- Are there any changes in your WeChat use after the training? For example, are there any changes in trust degrees on information and fact-checking habits?
- Do you have any questions, or are there any other ideas you would like to share?

3.5.3 participants

In the end, a convenient sample of 6 people (3 males and 3 females) living in urban China aged around 60 participated in this test. Due to the epidemic situation of COVID-19 in China, and to avoid gathering and avoid the chance of infection as much as possible, the process of this test was conducted one by one instead of conducting in groups. Detailed information about the participants is as follows:

Information on participants in the test

Participant	Gender	Age
Participant 1: Mr. Hao	Male	56
Participant 2: Mrs. Zhang	Female	57
Participant 3: Mrs. Liu	Female	59
Participant 4: Mr. Zhang	Male	59
Participant 5: Mrs. Gong	Female	61
Participant 6: Mr. Jun	Male	61

Timetable:

Pretest, Training session, and the Posttest: early February 2020

1st retest: 6 weeks after the training (the end of March 2020)

2nd retest: 14 weeks after the training (in the middle of May 2020)

3.6 Phase 4: Expert interview

3.6.1 Justification of the expert interview

The expert interview is one of the commonly applied research methods in the field of social science. It has been used as a qualitative empirical research method to explore expert knowledge since the early 1990s (Meuser & Nagel, 2009). In this research, to answer the research question: “what strategies can be applied to improve the media literacy of elderly adults in their use of WeChat”, the research method of expert interview is applied to get professional experience and suggestions.

The expert interview applies semi-structured in-depth interview: an interview outline is prepared in advance and follow-up questions are conducted based on the content and the progress during the interview to get more detailed knowledge. Thus, some of the main questions in expert interviews are proposed and the questions will be adjusted slightly according to the different professional fields of the experts.

Experts

Expert 1: Ramon Flecha from Barcelona University is one of the main researchers of the INCLUD-ED research project which focuses on school education. He has rich experience in education and minorities.

Expert 2: Sally Samy Tayie from The Arab Academy for Sciences, Technology and Maritime. Her research focuses on journalism, Media and Information Literacy, news literacy, misinformation, and youth's political engagement.

Expert 3: Liang He is from Hangzhou Normal University, and he is also a part-time teacher at Zhejiang Vocational College of Special Education. His research focuses on media literacy and minorities.

Expert 4: Yuying Wang from the School of Cyber Security, Changchun University, and her research focuses on information security in cyberspace and communication.

Expert5: Lei Li from Beijing Foreign Studies University and she is also the associate senior editor of *Area Studies and Global Development*. Her research focuses on social development.

Expert6: Qi Zhang from the College for the Seniors has 5 years of teaching experience in education for the elderly.

Main interview questions:

1. In my focus group interviews, when I asked how they verify misinformation online, many of the participants said that they could verify with their own experience and knowledge because they have rich life experiences. This answer surprises me because elderly adults are often regarded as a weaker group in the digital world. What do you think of this? Do you think there are any possibilities to connect this strong point (i.e., their life experience) with better digital competence?
2. When I'm doing my research on Chinese older adults' WeChat use, I found that most people are not very motivated to learn more about how to use WeChat. Although most of the participants confirmed that they enjoy the facility of WeChat and feel the stress of new technologies, when asked if they want to improve their use, most of the answers are no. What do you think about this answer?

3. In a lot of cases, there is a gap between the attitude and the actual behavior (i.e., "what we should do" and "what we would do"). In the case of anti-misinformation online, although we know that we should be critical with information, however, we might be too lazy to double-check especially in this information explosion era. What do you think of this gap?

4. As elderly adults are much different from students, it is difficult to motivate them to go to classrooms or to learn independently. Results from the interviews also indicated that they don't have much intention to learn more functions or learn misinformation verification. Are there any methods to promote people's motivations?

5. What are the major challenges that you think of in promoting media literacy and in anti-misinformation? How could these challenges be addressed? What strategies do you think could be implemented to promote media literacy and misinformation verification online, especially for adults?

Chapter 4. Findings from Survey

As previously stated, this study relies on mixed research approaches using a survey as a quantitative method and focus group discussions, in-depth interviews, and the technique of test as qualitative methods. In this section, findings from the survey will be presented and analyzed first.

4.1 Motives

To investigate the motives of elderly adults in their use of WeChat in daily life in urban China, in the survey, participants were asked to measure the importance of several given motives summarized from the literature review. Findings of the survey revealed that **communication with children** is the most important motive for WeChat use, with 50.5% regarding the motive of “communication with children” as “*very important*” and 35.4% as “*fairly important*”. This is followed by “**communication with others**” where 27.4% reported “*very important*” and 53% reported “*fairly important*”. Except for communication, “**payments or other transfer**” and “**to keep informed**” were reported as a quite high level of importance. In the survey, most people regard “**commercial and other life services**”, “**as alternative sphere**” and “**for working and studying purpose**” as medium important. Compared with other motives, the motive of “**entertainment**” is less important where most people in the survey regard it as “*important*” or “*slightly important*”.

Table 5: Motivations

	Not important	Slightly important	Important	Fairly important	Very important
To communicate with children	1.26%	2.84%	10.41%	35.02%	50.47%
To communicate with others	0.95%	2.21%	16.4%	53%	27.44%
For e-commercial and other life services	3.79%	12.93%	35.96%	36.28%	11.04%
Payments or other transfer	3.15%	7.26%	24.29%	39.12%	26.18%
Entertainment	17.98%	27.76%	38.49%	11.67%	4.1%
Keep informed	2.52%	9.78%	2.84%	42.59%	16.4%
For working or study purpose	5.68%	14.83%	35.96%	31.55%	11.99%
As alternative information sphere	4.73%	14.51%	33.12%	35.96%	11.67%

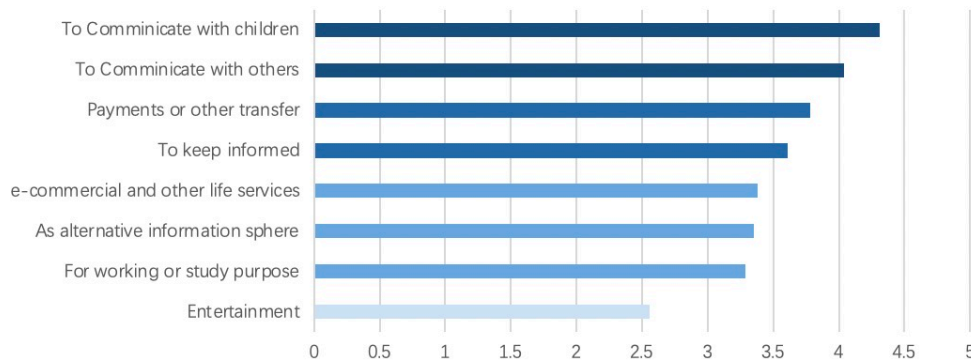


Figure 9: Importance of Different Motivations

To sum up:

- **The most important motivation for WeChat use is communication**
- **Followed by "electronic payment or transfer" and "access to news and other information"**
- **The motivations of “commercial and other life services”, “as alternative sphere” and “for working and studying purpose” were regarded as medium important.**

- Compared with other motives, the motivation for **entertainment is lower**.

This indicates that the sociality of WeChat is still the most important driven motivation. The motivations of being informed and for entertainment which is widely discussed in society may not be as important as we imagined.

4.2 The way they first Learned WeChat

To investigate how elderly adults learned about WeChat use, respondents were asked questions about the ways they first learned to use WeChat and the way they solve problems in their use. Those questions will be further discussed and analyzed in qualitative research as well.

In the survey, the result indicates that most of the respondents learned WeChat use from others while 27.1% of the respondents were **self-taught**. Nearly half (43%) of the respondents **first learned WeChat from their children** and about 1/5 of the respondents (20.2%) reported that they **first learned from friends or other relatives**. A small number of the respondents (7.9%) **first learned from their husband/wife/partner**. This indicates that the role of children is very important when elderly adults learn to use WeChat.

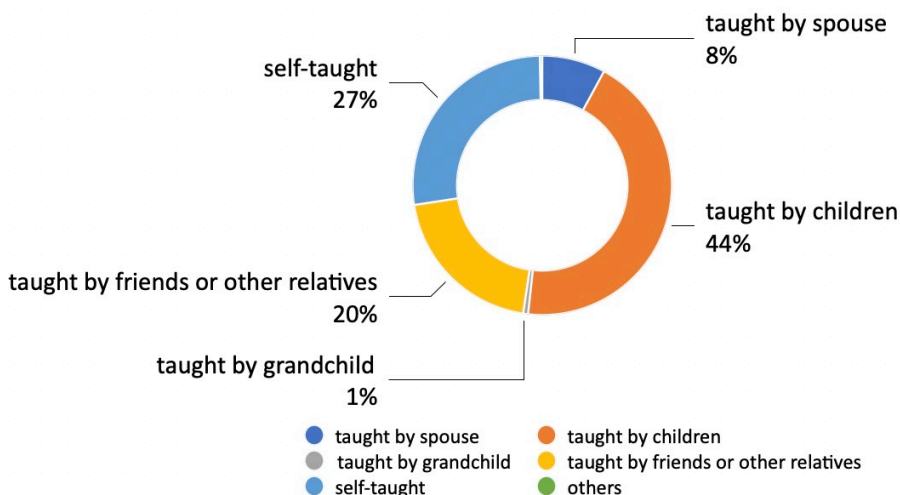


Figure 10: The Way First Learned WeChat

4.3 Barriers

To find out problems in their use of WeChat, participants were asked about the barriers or problems they encountered. It is found that except for the physical cause, which is consistent with the expected result, the privacy issue is a major concern. In the survey, participants report **privacy concerns** (48.58%) and **poor health conditions** (45.43%) as **the main barriers** they faced in their WeChat use. About 1/4 report “**I don’t know how to solve problems**” (26.18%) or “**lack of ways for learning functions**” (22.71%). Only less than 2% of the participants report that they **don’t like or don’t want to use it**. It is worth noticing that nearly a quarter (24.9%) of the respondents reported that they **don’t have any problems or concerns** with their use.

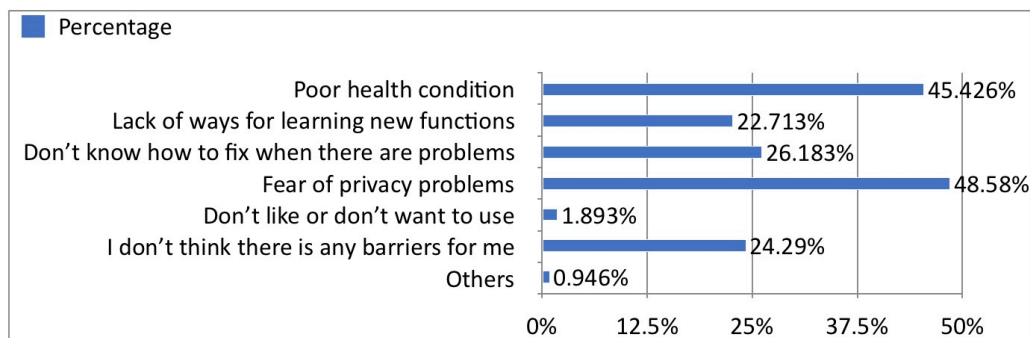


Figure 11: Barriers

4.4 Problem solving/When encountering a problem

When asked what they usually do when encountering a problem, nearly 60% of the respondents reported that usually **ask their son/daughter for help** and some of the respondents **ask other relatives or friends (36.23%) for help** or **get help from their spouse (19.55%)**. Except for getting help from others, it is worth noticing that more than half (53%) of the respondents **try to solve by themselves**. Findings here reveal that:

- Firstly, like the previous results on WeChat learning and using, children play

the most important role in helping elderly adults learn to use WeChat, and children also play the most important role in helping them solve problems encountered in WeChat.

- Secondly, it is shown that not everyone is passively in need of help from others, and many of the elderly adults (53.3% of the respondents) have the initiative to think and try to solve by themselves.

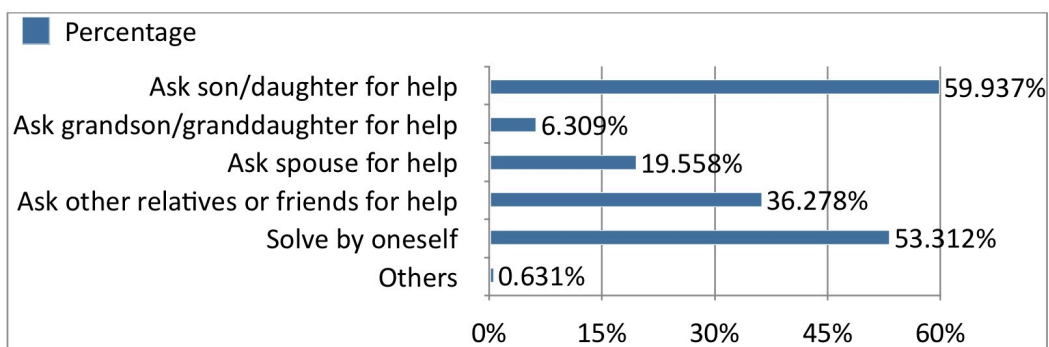


Figure 12: Problem Solving Methods

4.5 WeChat use and demographic factors

4.5.1. Gender vs Problem-solving

Women are more likely to ask children for help while men are more likely to solve by themselves.

As we have discussed above, in the survey, it is shown that most of the respondents usually ask their children for help or try to solve it by themselves. To further investigate the relationship between gender and their problem solving, tests on gender and those two major ways of problem-solving were further tested respectively.

A chi-square test of independence was performed to examine the relationship between gender and if they usually ask children for help when facing problems. The relation between these variables was significant, $\chi^2(1, N=317) = 13.973, P < .001$. There is a weak correlation between gender and whether they usually ask their children to help solve the problem, Cramer's $V = 0.210, P < .001$. That is, **women are more inclined to seek help from their children when they encounter problems.**

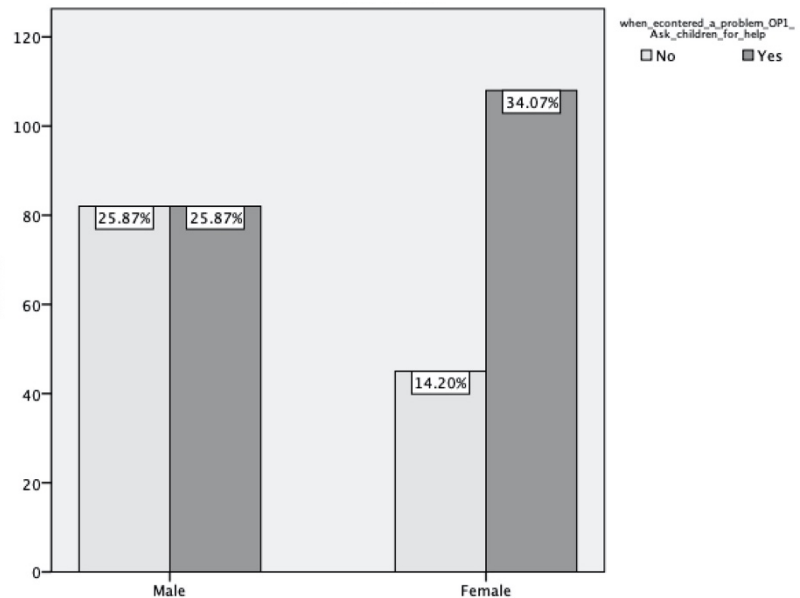


Figure 13: Gender and Problem Solving - ask children for help

Then, another chi-square test of independence was performed to examine the relationship between gender and if they usually try to solve by themselves when facing problems. The relation between these variables was significant, $\chi^2(1, N=317) = 10.772, P < .001$. There is a weak correlation between gender and whether they usually try to solve the problem by themselves, Cramer's $V = 0.184, P < .001$. That is, **men are more likely to solve by themselves when encountering problems.**

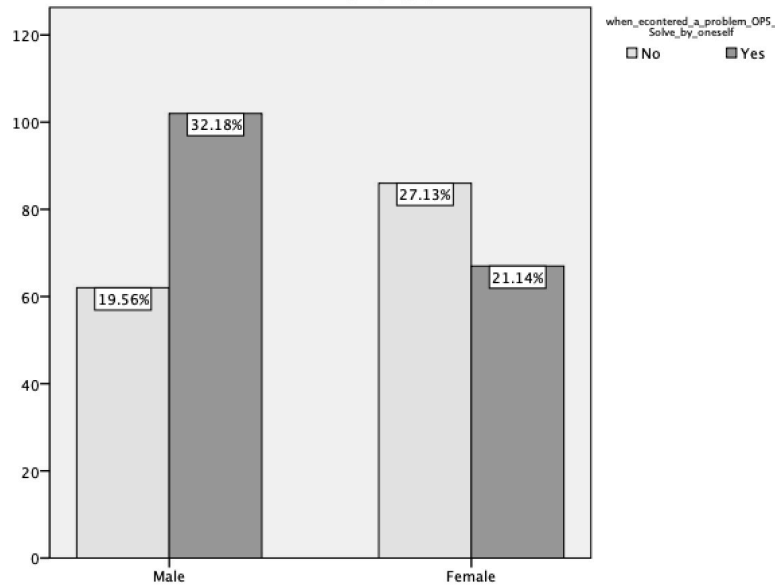


Figure 14: Gender and Problem Solving - try to solve by oneself

4.5.2. Living conditions VS Problem solving

To investigate whether living with their children may affect their autonomy in problem-solving, chi-square tests were applied in this research. A chi-square test of independence showed that there was no significant association between living conditions (with their children or not) and if they usually ask their children for help when encountering problems, $X^2 (1, N = 317) = 0.722, p = .422$. Analogously, no statistical differences were observed in living conditions (with their children or not) and whether they usually try to solve problems by themselves, $X^2 (1, N = 317) = 1.163, p = .310$.

Thus, no relationships between living conditions and problem-solving preferences were observed here.

4.5.3. Education level VS Problem-solving

Education level is one of the vital variables in demographic factors. It was widely measured in previous research as a representative of social status. Thus, we will test if the education level affects the autonomy of problem-solving. A chi-square test of independence was performed to examine the relationship between education level and the autonomy of problem-solving. Significant differences

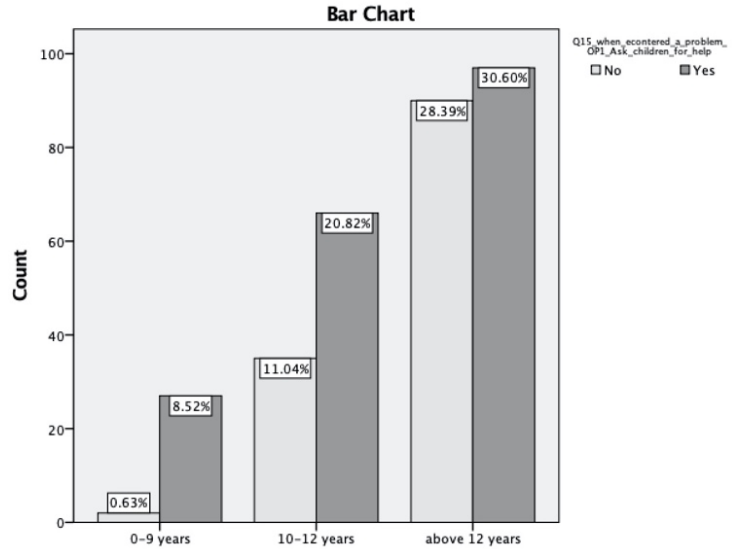


Figure 15: Education Level and Problem Solving - ask children for help

were observed in different education levels when it comes to whether they usually ask children for help when encountering problems. $\chi^2(2, N=317) = 19.582, P < .000$. There is a weak correlation between those variables, Cramer's $V = 0.249, P < .000$. That is, **people with shorter education time are more inclined to seek help from their children when they encounter problems than those with longer education.**

In addition, there are differences in different education levels when it comes to whether they usually try to solve problems by themselves. $X^2(2, N=317) = 14.655, P < .001$. There is a weak correlation between those variables, Cramer's $V = 0.215, P < .001$. This indicates that **people with a longer education time are more inclined to solve**

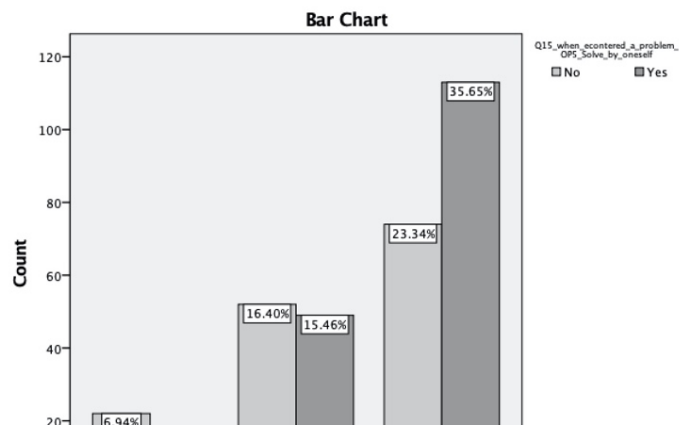


Figure 16: Education Level and Problem Solving - try to solve by oneself

problems on their own than those with a shorter education time.

In summary, **people with longer education time are more inclined to solve problems on their own than those who have been educated for a short time. Those who with a shorter education time are more inclined to seek help from their children instead of trying to solve it on their own.**

Misinformation Verification

The following part is to investigate participants' misinformation verification ability (15 items). The first five questions are for measuring participants' knowledge of rules and regulations, fact-checking habits, and trust degrees on the information in WeChat. Then participants were asked to answer questions on the perceived frequency of misinformation sharing behavior from peers and reactions towards them. Those questions are followed by self-reported ability on misinformation verification and self-reported misinformation sharing behavior. In the end, a mini-test is designed to test whether participants can verify rumors and misinformation in their use of WeChat.

4.6 Knowledge of Rights and Rules

When asked about their knowledge of rights, **less than half** of the respondents reported that they know how to report to WeChat when noticed something insulting, injurious, or offending on WeChat.

When it comes to knowledge of rules and rights on media content in WeChat, about 2/3 of the respondents know that content on injury (73.8%), content on sexual (66.9%), and inconsistent text and vulgar content (69.1%) are constricted in WeChat. About one-half of the respondents report that content inducing sharing and content regarding privacy and intimacy are constricted in WeChat, too. However, it is indicated from that result that the awareness of **paid voting** and **advertising on alcoholic brewages and tobacco** needs to be improved because more than 2/3 of the respondents don't know that the content is constricted on WeChat.

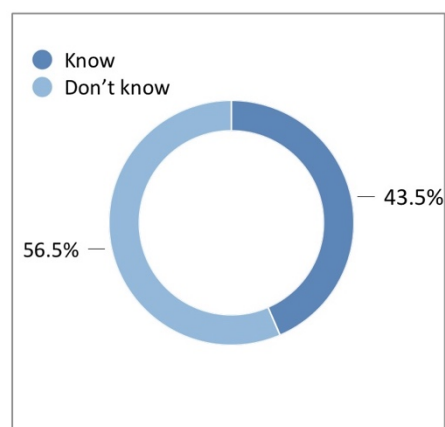


Figure 17: Knowledge on Rights

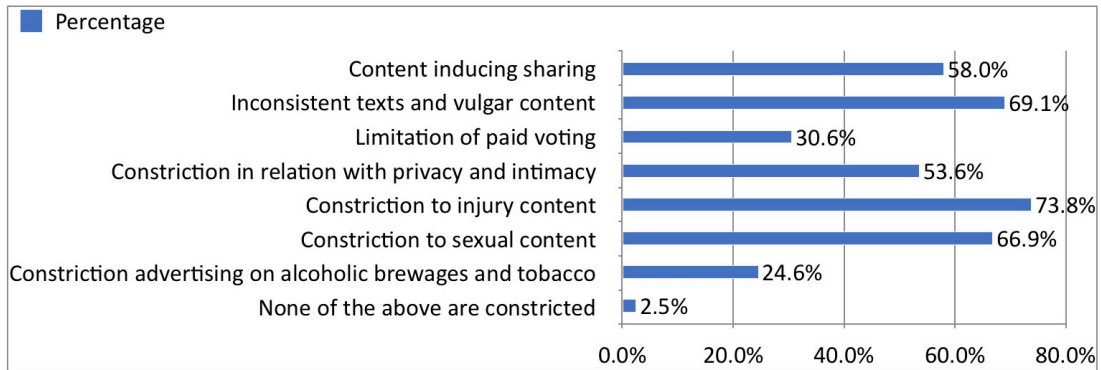


Figure 18: Knowledge of Rules

4.7 Fact-checking habits

To know their critical awareness of information in WeChat, 3 options are provided for measuring different levels of fact-checking habits. Based on the results shown below, more than 1/5 of the respondents **usually don't search for information from other media (22.1%)**. About one-half of the respondents **usually try to look for information in other media that they believe reliable (53.3%)** and about 1/4 of the respondents reported that they **usually look for information from different sources and compare them (24.6%)**.

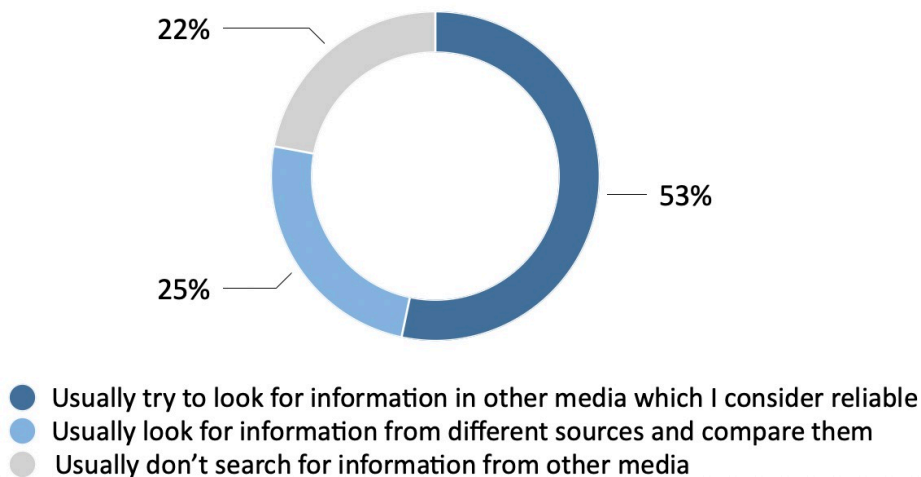


Figure 19: Fact-checking Habits

4.8 Source and trust degrees

To further explore elements to which the user attaches importance to rely on the information, participants were asked to evaluate the importance of the given items (information source) that matters to their trust in information in WeChat. Instead of 5-point Liketer Scales which might be different for elderly adults to understand, we replaced numbers to different degrees. As results shown in the figure below, compared to the other two, agency/organism or the author are regarded as the highest important items in influencing their trust: 58.7% of the respondents regard **agency/organism or the author** as *very much important* (18.9%) or *much important* (39.7%), 28.1% of the respondents rate it as little important, and 13.2% reports as *very little important* (11.7%) or *don't care* (1.6%). Followed is the **official account on which articles were published**, with 55.2% of the respondents rated as *very much important* (12.6%) or as *much important* (42.6%) for trusting. 35.6% of the respondents rate it as little important, and 8.8% report it as *very little important* (6.9%) or *don't care* (1.9%). Compared to the other two, **from whom people got the information** is not regarded as that important in trusting degrees, with only 40.4% of the respondents rated as *very much important* (8.2%) or as *much important* (32.2%). Most of the respondents rated it as *little important* (41.0%) in the survey and nearly 1/5 (18.6%) of the respondents rated it as *very little important* (16.1%) or *don't care* (2.5%).

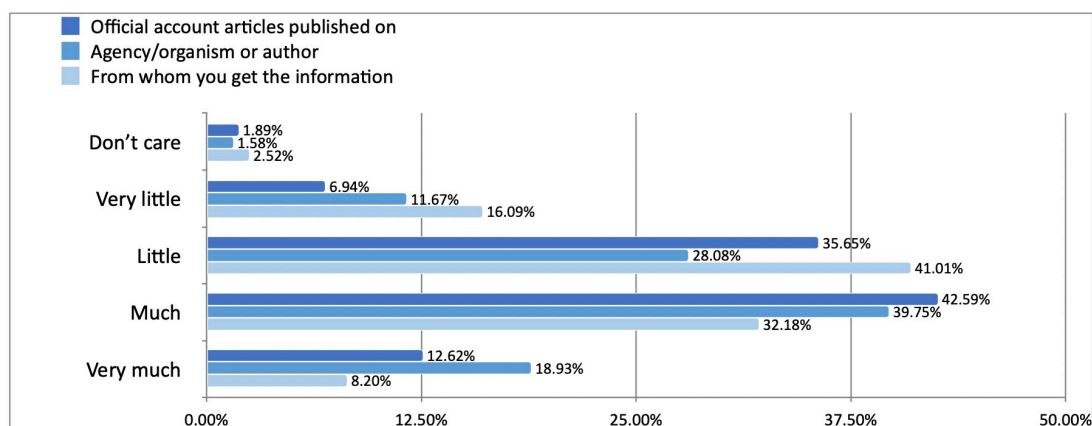


Figure 20: The Impact of Source on Trust Degrees (detailed)

Taken together, in terms of whether to trust a certain piece of information, the **source organization or the author of the article has the greatest influence**, followed by **the official account that published the article**, and the influence of **the intermediaries (from whom you got this message)** is slightly lower than the former two.

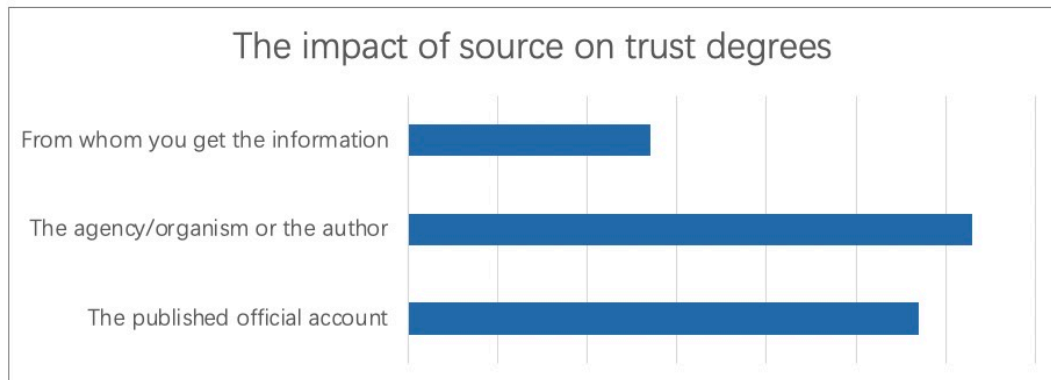


Figure 21: The Impact of Source on Trust Degrees (general)

4.9 Trust degrees on information from WeChat

When it comes to trust degrees on information on WeChat, most respondents rated information on WeChat as a medium to high trust degree. More than half (53%) of the respondents believe that **only some of the information in WeChat is believable**, and more than 1/3 of the respondents (35%) believe that **most of the information is reliable**. Only a small number of the respondents hold an extremely high or extremely low level of trust degrees, with 10% of the respondents believing that **little of the information on WeChat is believable**, and 2% believing that **all the information is reliable**.

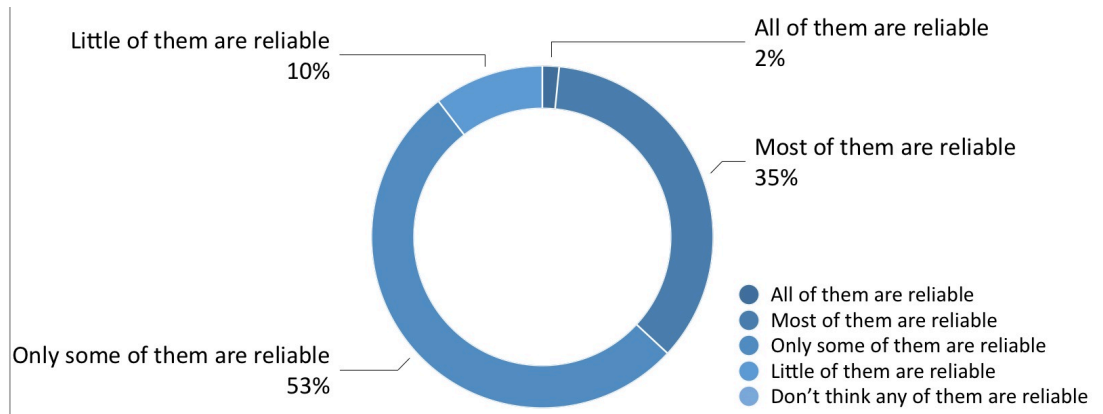


Figure 22: Trust Degrees on Information from WeChat

4.10 Perceptions of misinformation sharing behavior

self-reported misinformation sharing behavior from peers

To investigate the perception of misinformation sharing behavior, questions on the frequency of misinformation sharing behavior from peers and themselves were asked in the survey. Considering that the objective of this questionnaire is middle-aged and elderly adults, Likert 5-point scale may be difficult for them to understand, we adopted the 5-point scale more understandably. Instead of asking "my peers often sharing rumors" and answers ranging from "strongly disagree" to "strongly agree," we adapted this question into rating the frequency of sharing rumors from "never" to "very often" to reduce the difficulties in understanding the questions. For the reason that people may rate a lower frequency of sharing rumors if they were asked directly, in this study, we did not use the same question, with "yourself" replaced by "peers," as many previous researchers did (Chung, 2019; Jang & Kim, 2018). In this research, the question for measuring the self-perceived frequency of misinformation sharing behavior was adopted into "the frequency in sharing information without verification" to reduce the influence caused by questions.

When asked about the frequency of sharing misinformation from peers, most of the respondents rated it as medium frequency: 41.3% of the respondents reported that their peers “*sometimes*” share misinformation. 19.9% of the respondents think that their peers “*often*” share misinformation and 2.2% regarded it as “*very often*”. About 1/3 of the participants in the survey think that their peers “*seldom*” (30.3%) or “*never*” (6.3%) share misinformation on WeChat.

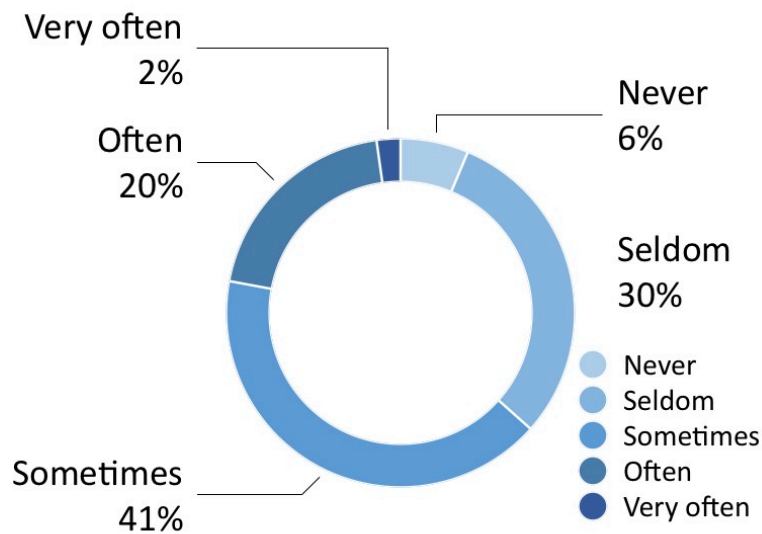


Figure 23: Self-Reported Misinformation Sharing Behavior from Peers

When it comes to self-reported misinformation sharing behavior from themselves, there is a clear trend along with the frequency of self-reported misinformation sharing behavior: fewer people believe that they often share misinformation. Most people believe that they “*never*” (43.2%) or “*seldom*” (32.5%) shares misinformation; 17% of the participants reported that they “*sometimes*” share misinformation and only about 7% of the respondents reported that they “*often*” or “*very often*” share misinformation. This result is reasonable and may support the idea of self-other perception bias and self-confidence.

Table 6: self-reported misinformation sharing behavior from oneself

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Never	137	43.2	43.2	43.2
Seldom	103	32.5	32.5	75.7
Sometimes	54	17.0	17.0	92.7
Often	22	6.9	6.9	99.7
Very often	1	.3	.3	100.0
Total	317	100.0	100.0	

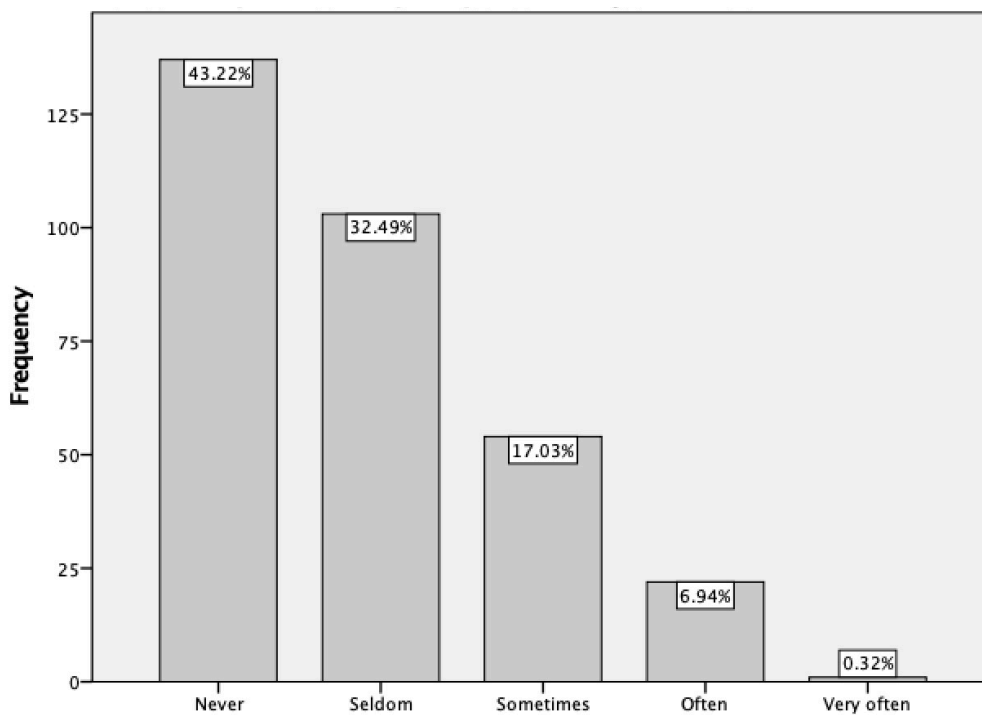


Figure 24: Self-Reported Misinformation Sharing Behavior from Oneself

4.11 Actions towards misinformation sharing behavior

In the question asking about people’s actions towards misinformation sharing behavior, participants were asked to answer what they usually do when their relatives/ friends share rumors/misinformation on WeChat. Results show that nearly half of the respondents (47.6%) reported that they will tell him/her that this is a rumor or misinformation. About 30% of the respondents answered that they will explain to

him/her how to identify rumors and misinformation, and 13.9% of the respondents replied that they will find articles with opposite opinions to support their ideas. About 1/3 of the respondents choose to ignore and won't take any action, and about 1/5 of the respondents reported that they will take other actions.

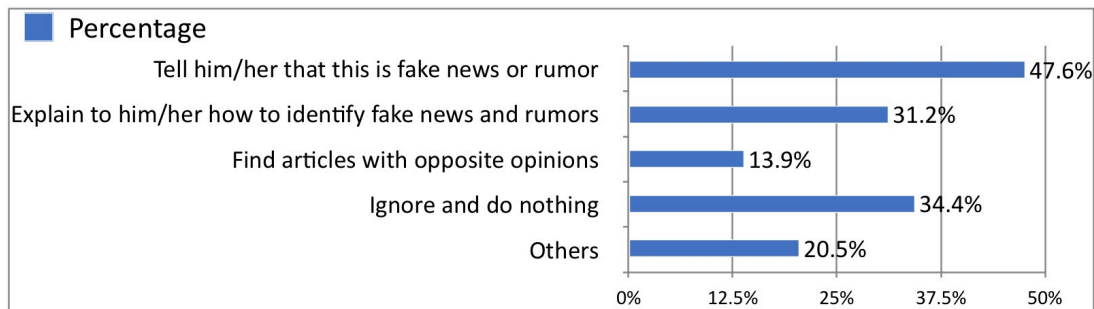


Figure 25: Actions towards Misinformation Sharing Behavior

4.12 Misinformation verification ability

To investigate if they can verify rumors and misinformation in their use of WeChat or not, a set of questions were asked in the survey, Questions consisted of self-reported misinformation verification ability and three misinformation verification tests.

Self-reported Misinformation Verification Ability

Firstly, results of the self-reported misinformation verification ability show that most of the respondents believed that they can “sometimes” verify or “in most cases” can verify: 48.6% of the respondents believe that they can verify “*in most cases*” and 20% thinks they can “*often*” verify. A small number of respondents (6.3%) reported that they can verify “*in all cases*”; And there is a small percentage of people reporting that they can “*almost not*” verify (8.2%) or “*cannot verify at all*” (0.9%).

Table 7: Self-reported misinformation verification ability

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not at all	3	.9	.9	.9
Almost no	26	8.2	8.2	9.1
Sometimes can	114	36.0	36.0	45.1
In most cases can	154	48.6	48.6	93.7
In all cases can	20	6.3	6.3	100.0
Total	317	100.0	100.0	

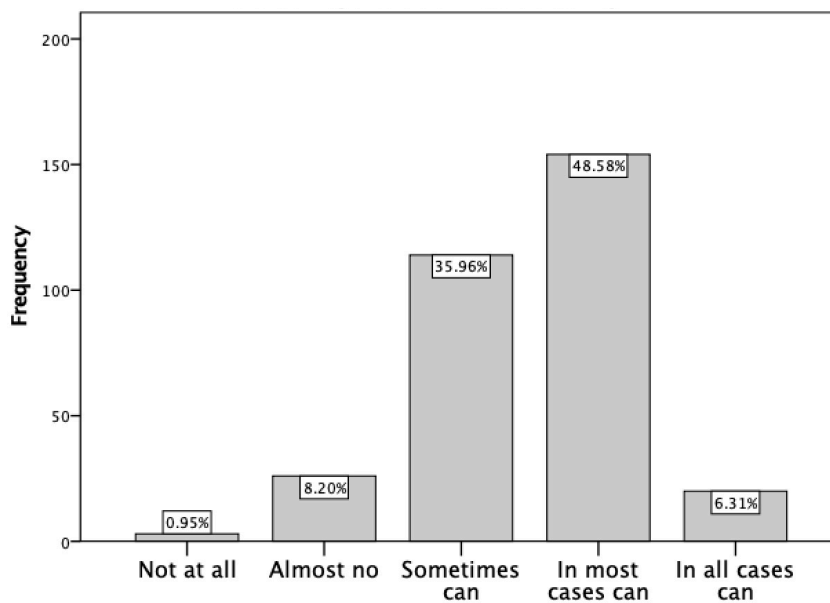


Figure 26: Self-Reported Misinformation Verification Ability

Misinformation Verification: test scores and methods

In the survey, three tests were set to test if people can verify misinformation. Test 1 was a piece of health misinformation. The result shows that the accuracy rate of test 1 is quite low, with only 28.4% of the correct rate. The majority was concentrated in the middle hesitation zone. Nearly half (49.8%) reported that they are not sure to make judgement. Test 2 was another misinformation on health information. The correct rate of test 2 is 76.3% which is much higher. The correct rate of test 3 is high, too. Test 3 is a piece of hard news published on CCTV News’ official account. The accuracy rate of test 3 is 79.2% which is the highest.

Table 8: Tests and Scores

Tests	Content-Type	Published on an official public account or not	Correct	Incorrect	Unsure/unable to verify
Test 1	Health information	No	28.4%	21.8%	49.8%
Test 2	Health information	No	76.4%	3.8%	19.9%
Test 3	Hard news	Yes	79.2%	1.3%	19.6%

When we further compare the verification method, there are some points worth noting. First, it is shown that people largely rely on their knowledge for misinformation verification especially when the content is not published on official public accounts. Second, the official account that publishes the information is an important indicator for information verification when the content is published on an official public account. People have high trust in content from official public accounts so they can make the judgment easier on this occasion. Third, the ratio of people verifying misinformation by the tones of the content and the adequacy of evidence is constant. About half of the participants reported that they verify by evaluating the sufficiency and reliability of the content, and about 20%~30% of the participants reported that they made the judgment by the tone of the content.

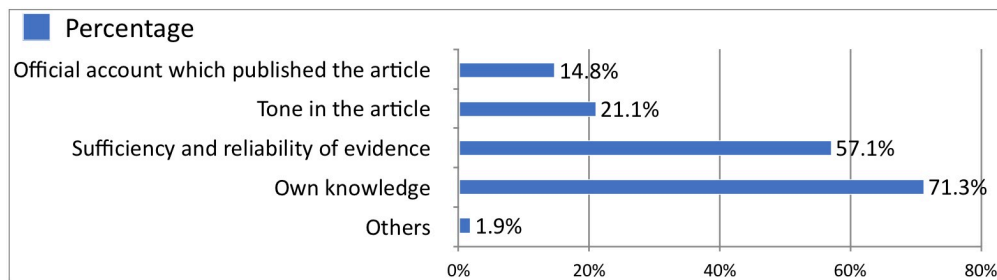


Figure 27: Main Verification Methods (test 1)

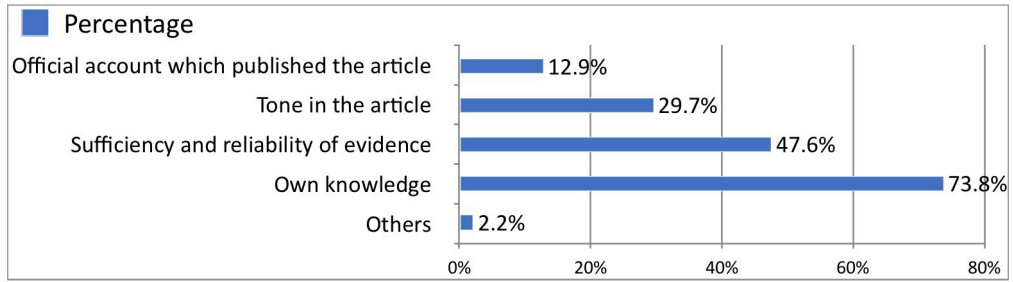


Figure 28: Main Verification Methods (test 2)

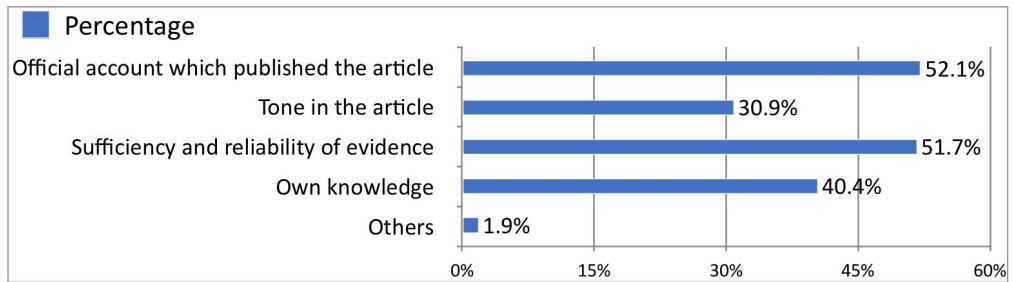


Figure 29: Main Verification Method (test 3)

4.13 Perceptions of misinformation sharing behavior:

The third-person perception of misinformation sharing behavior and critical awareness

The third person perception (TPP):

Frequency of sharing rumors from peers VS. Self-reported frequency of sharing information without verification

In this study, when comparing the perceived frequency of sharing misinformation from oneself and peers by running a paired T-Test analysis, the statistical results from the survey found that the scores of the perceived misinformation sharing the behavior of themselves ($M=1.89$, $SD=0.948$) are significantly lower than that from their peers ($M=2.81$, $SD=0.900$, $P<.01$). This perception gap between oneself and others is called the third-person perception. In other words, the third-person effect is observed in misinformation-sharing behavior.

TPP vs. Fact checking habits

When comparing the results of the TPP effect and fact-checking habits, we can see that the TPP effect goes stronger in people with better fact-checking habits ($M=0.67$, $SD=1.04$; $M=0.88$, $SD=1.27$; $M=1.26$, $SD=1.26$). ANOVA table shows there are significant differences between groups ($P<.01$), so post hoc tests were run to identify if each group is significant different from the others. Results show that the TPP effect on people who usually do not search for information in other media is significant larger than the effect on people who usually look for information from different sources and

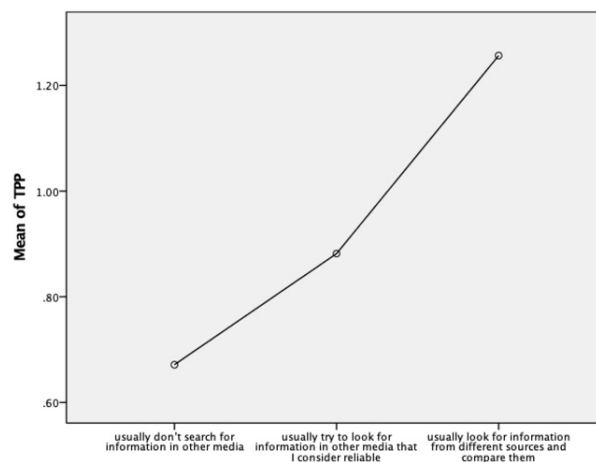


Figure 30: Means of TPP on People with Different Fact-checking Habits

compare them ($p < .01$). The effect on people who usually try to look for information in other media they consider reliable is medium ($M = 0.88$, $SD = 1.27$) between those three groups ($M = 0.67$, $SD = 1.04$; $M = 1.26$, $SD = 1.21$). Thus, **the third-person perception effect is stronger in people with better fact-checking habits.**

Because TPP is measured by two aspects, we did further analysis to investigate if the gap in TPP mainly comes from the evaluation of others or themselves. As shown in the figure below, people with better fact-checking habits are more likely to rate a lower frequency of misinformation-sharing behavior of themselves ($P < .05$). As for the evaluation of others, there is no statistical difference between people with different levels of fact-checking habits ($M_1 = 2.76$, $M_2 = 2.79$, $M_3 = 2.91$, $P > .05$). However, there is a slight trend

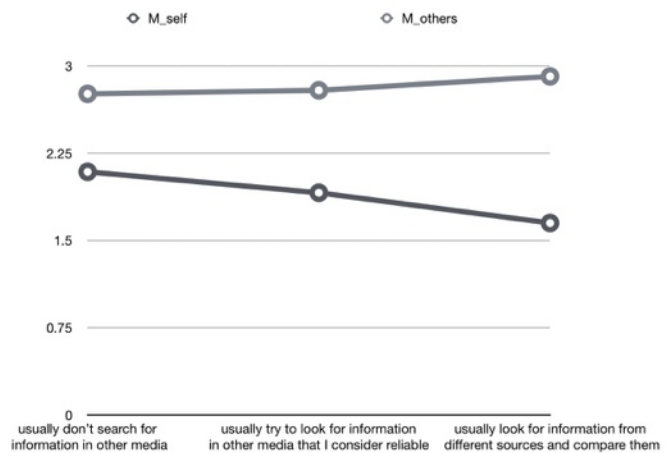


Figure 31 : Fact-checking Habits and Mean Estimates of Misinformation Sharing Behavior of Self and Others

that people with better fact-checking habits rated higher frequency of misinformation sharing behavior from peers.

Table 9: Means of TPP on People with Different Fact-checking Habits

Fact-checking habits					F	Sig.
	(1) Usually don't search for information in other media	(2) usually try to look for information in other media that I consider reliable	(3) usually look for information from different sources and compare them			
self	2.090	1.91	1.65	4.029	0.019	
others	2.76	2.79	2.91	0.631	0.533	
TPP	0.67	0.88	1.26	9.008	0.003	

TPP vs. degrees of trust in the information in WeChat

When we compare the third person perception effect and trust levels on the information in WeChat, we found that there is a clear trend of decrease as the trust degree on the information in WeChat goes higher. In particular, people do not think any of the information in WeChat is reliable: $M=2.0$; people who think little of the information in WeChat is reliable: $M=1.46$, $SD=1.3$; people who think only some of the information in WeChat is reliable: $M=0.99$, $SD=1.21$; people who think most of the information in WeChat is reliable: $M=0.7$, $SD=1.10$; people who think all of the information in WeChat is reliable: $M=0.2$, $SD=1.64$. That means the TPP effect is stronger on people in this test with lower trust in the information in WeChat.

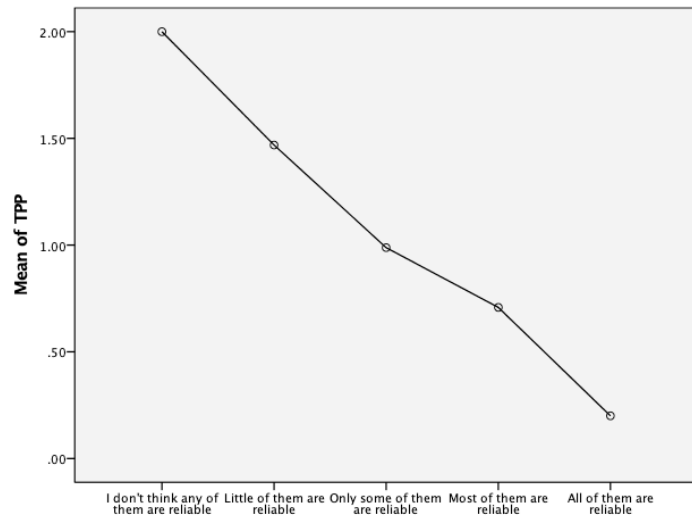


Figure 32: Means of TPP on People with Different Degrees of Trust on Information in WeChat

With the way we analyze TPP and fact-checking habits, we did a further analysis of trust degrees in information from WeChat. As is shown in the figure, people with a lower trust degree in the information on WeChat, tend to rate others with a higher possibility of sharing misinformation on WeChat while rating themselves with a lower possibility. In other words, the gap between different perceptions comes from both sides, others, and themselves.

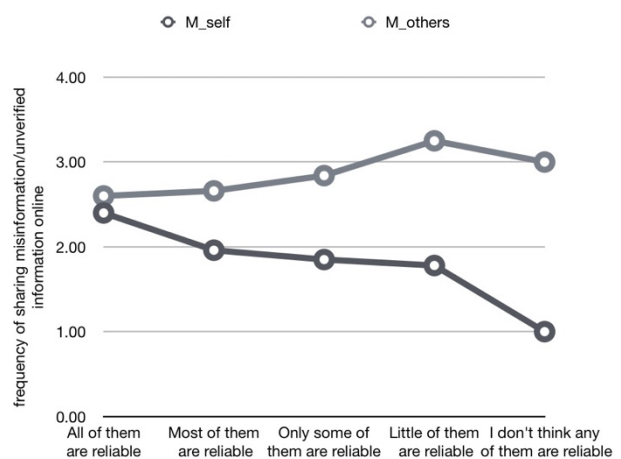


Figure 33: Information Reliability on WeChat and Mean Estimates of Misinformation Sharing Behavior of Self and Others

Table 10: Means of TPP on People with Different Trust Degrees on Information in WeChat

	Trust on Information in WeChat					F	Sig.
	(1) I don't think any of them are reliable	(2) Little of them are reliable	(3) Only some of them are reliable	(4) Most of them are reliable	(5) All of them are reliable		
self	1.00	1.78	1.85	1.96	2.40	0.890	0.466
others	3.00	3.25	2.84	2.66	2.60	2.838	0.025
TPP	2.00	1.47	0.99	0.70	0.20	13.018	0.000

TPP vs. information verification ability

Firstly, as shown in the table below, there are not any significant trends or relationships between the strength of TPP and self-reported verification ability. With the different levels of self-reported verification ability, the mean value of the third-person perception fluctuated irregularly.

Table 11: Means of TPP on People with Different Self-reported Verification Ability

Self-reported verification ability	Mean	N	Std. Deviation	% of Total N
Not at all	1.3333	3	1.52753	0.9%
Almost no	.3846	26	1.23538	8.2%
Sometimes can	.5789	114	1.03816	36.0%
In most cases can	1.2792	154	1.21804	48.6%
In all cases can	.8500	20	1.22582	6.3%
Total	.9274	317	1.20827	100.0%

However, in the test of information verification ability, with the mean value of the third-person perception goes higher, the score of the test goes higher ($M_0=0.696$, $M_1=0.712$, $M_2=0.902$, $M_3=1.294$) and the differences are significant ($P<.05$). This result indicated that the third-person perception effect is stronger on people with better information verification ability.

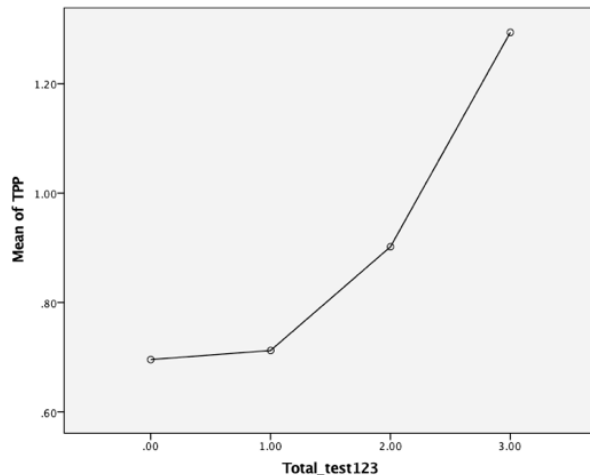


Figure 34: Means of TPP on People with Different Misinformation Verification Test Scores

Unlike the findings above, with the test score going higher, the mean value of the perceived frequency of misinformation-sharing behavior from others goes higher. However, as shown in the figure, the evaluation of sharing uncertain information from themselves does not fluctuate a lot.

In other words, people with higher test scores, which can be roughly regarded as higher misinformation verification ability in this research, tend to believe that there is a higher possibility of others sharing misinformation on WeChat, and the evaluation of themselves is quite even with different levels of misinformation verification ability.

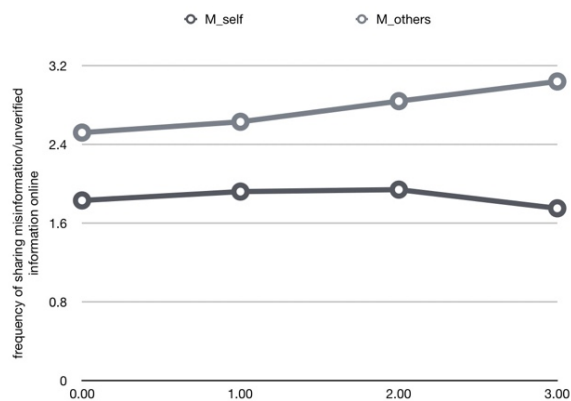


Figure 35: Misinformation Verification Ability and Mean Estimates of Misinformation Sharing Behavior of Self and Others

Thus, this gap might have mainly resulted from the perception of others instead of from both sides.

Table 12: Means of TPP on People with Different Misinformation Verification Test Scores

	Test scores				F	Sig.
	0	1	2	3		
self	1.83	1.92	1.94	1.75	0.695	0.555
others	2.52	2.63	2.84	3.04	3.436	0.017
TPP	0.70	0.71	0.90	1.29	8.189	0.004

TPP vs. Gender

To investigate if there are any gender differences in the gap in the perceived frequency of misinformation-sharing behavior, an analysis of the T-Test was run. Results show that there are no significant gender differences in TPP on misinformation sharing behavior ($P=0.17$), and the mean value of TPP on males ($M=1.02$, $SD=1.15$) is slightly stronger than that on females ($M=0.83$, $SD=1.26$). Because TPP consists of two items, we wonder, are there any gender differences in self-reported frequency of sharing information without verification behavior or in the perceived frequency of sharing rumors from peers? For this reason, we did further analysis.

Firstly, we tested if there are gender differences in the perceived frequency of sharing misinformation behavior from peers by running a t-test. Results show that there are no significant differences in mean value between males ($M=2.76$, $SD=0.87$) and females ($M=2.87$, $SD=0.93$) in this item ($P>.05$). Then we run another T-Test with gender and perceived misinformation sharing behavior in WeChat. A gender difference is observed in this item: females' self-reported frequency of sharing information without verification ($M=2.04$, $SD=1.01$) is higher than that of males ($M=1.74$, $SD=0.87$, $P<.01$).

Table 13: Gender and Mean Estimates Of Misinformation Sharing Behavior

	male	female	t	Sig.
self	1.74	2.04	-2.802	0.005
others	2.76	2.87	-1.059	0.291
TPP	1.02	0.83	1.388	0.170

Gender vs. misinformation verification ability

Firstly, we compared the mean values of self-reported verification ability between different genders by running a T-Test. Results show that males rated a little bit higher ($M=3.56$, $SD=0.823$) on their self-reported verification ability than the females ($M=3.46$, $SD=0.716$), but the difference is non-significant ($P=0.235$).

Then, from the crosstabulation of gender and tests-based misinformation verification ability, we can see that 22.6% of male participants answered all of the three test questions correctly, which is higher than that of females (20.3%). Besides, 50.6% of male participants answered two of the test questions correctly, and this rate is much higher than that of females, too (45.8%).

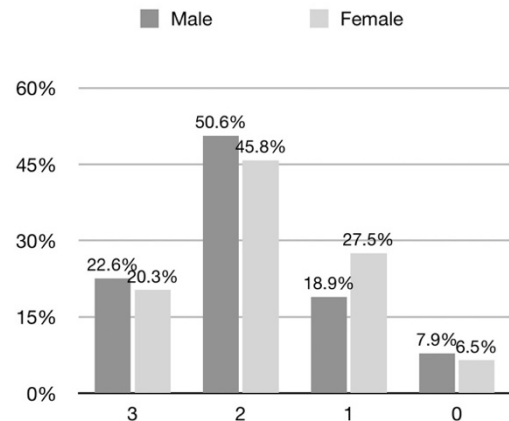


Figure 36: Misinformation Verification Test Scores and Percentage Between Different Genders

Discussion on the perceptions of misinformation sharing behavior

Consistent with Davison's (1983) third-person perception hypothesis, which has been supported in numerous previous research (i.e., Lev-On, 2017; Schweisberger, Billinson, & Chock, 2014; Tewksbury et al., 2004), data from this study provide initial empirical support for the third-person perception of misinformation sharing behavior in the context of social media, Chinese society, and elderly adults. It indicated that the third-person perception is held for misinformation sharing behavior, such that others are perceived as performing this undesirable behavior less frequently than oneself on WeChat. Furthermore, the third-person perception is found to vary following different degrees of fact-checking habits, trust degrees, and verification ability. Firstly, the TPP effect on people with more active fact-checking habits, which can be regarded as more critical towards information, is found to be stronger. Accordantly, the TPP effect on people with a lower trust of information in WeChat is stronger than on people with

higher trust degrees. The same is true that the TPP effect on people with higher objectively misinformation verification ability is more likely to be stronger. There is no clear relationship between self-reported misinformation verification ability and the strength of the TPP effect. These results are accordant because people with lower trust in the information in WeChat are more likely to check information from other more trusted sources, and people with better fact-checking habits are more likely to be more critical of information and have better misinformation verification ability. Findings are also accordant with previous research that media content credibility mitigated the third-person effect (Wei et al., 2010).

As we have discussed previously, the possible explanations of the third-person perception are various and no common explanation has been achieved. This happened here might be because of the bias of self-other perception. This may lead to the perception that others are more likely to share misinformation on WeChat, but themselves are less likely to do so. However, why this effect is stronger on more critical people? There have been few empirical studies discussing third-person perception and critical awareness. One of the possible explanations might be the self-other perception bias and self-confidence, which lead to an increase in the gap in third-person perception. As we have discussed previously, people with better fact-checking habits and with lower trust in information in WeChat, tend to give a higher rate of themselves and a lower rate to others. When it comes to the relationship between the TPP and misinformation verification ability, results in the test show that people with higher verification ability tend to rate others lower and the rate of themselves is quite even, not float a lot. As for self-reported misinformation verification ability, although no clear relationship between self-reported misinformation verification ability and the strength of the TPP effect is observed in this research, however, it is shown in our further analysis that people who rate themselves higher in misinformation verification ability tend to believe that they are less likely to share unverified information. Those initial findings may support the idea of self-other perception bias and self-confidence. However, from another perspective, another possible explanation might be that people

who are more critical of information would always question information and would be more cautious in sharing information online. A further empirical investigation of the explanations is needed in future research.

In addition, the role of gender in TPP and misinformation verification ability has been demonstrated in the study. There are no significant gender differences in the third-person perception effect in misinformation sharing behavior observed in this research. The mean value of TPP on males is even slightly stronger than that on females despite that the difference cannot be regarded as statistically significant. Although the result is not consistent with previous findings, it is understandable. Previous research is mainly focused on games and pornography (i.e., V. Lo & Wei, 2002; Zhang, 2013), in which stereotypes are generally considered to be more appealing to males while misinformation-sharing behavior does not have such "radical" gender bias.

Furthermore, because TPP consists of two aspects, we did a further investigation. No significant gender differences were observed in the presumed frequency of sharing rumors from peers, but females' self-reported frequency of sharing information without verification is observed significantly higher than that of males. However, there are no significant differences between males and females in self-reported misinformation verification ability as hypothesized that men might be more confident with themselves. Furthermore, when comparing objective misinformation verification ability, men's objective misinformation verification ability is higher than that of women.

Chapter 5. Findings from Focus Group

Discussions

Focus group discussion is an important qualitative technique for providing a comprehensive understanding of the potential reasons. This type of research further aims at investigating individual motivations, enabling the researcher to get a clearer picture of the respondents' behaviors and attitudes (Tayie, 2016). This serves the purpose of this study which seeks to investigate Chinese elderly adults' motives, experiences with WeChat, and experience with misinformation. In this section, findings from the focus group interviews will be discussed by main themes. Data collected from focus group interviews are analyzed by the widely used qualitative analysis software NVivo 12.

5.1 Motives

Driven power of WeChat acceptance (Direct motives/inducement)

In the qualitative part of this study, participants were able to share their stories and thoughts which can provide supplements on their direct motives to use WeChat for the first time; motives for continuous use; and motives for better use. As it is shown in the survey, *communication* was regarded as the most important motive to use WeChat, which was consistent with findings from qualitative research. However, qualitative data here provides a more inside look at the driven power of communication motivation for WeChat acceptance. Based on the qualitative data, the driven power of WeChat acceptance (direct motives) could be deducted from discussions into the following 4 types:

- WeChat as an updated/alternative product of SMS/QQ. Many people have used

SMS, QQ, MSN, or Fetion to send messages before, and they started to use WeChat as an updated or alternative instant messaging product.

- The need to join groups of classmates or comrades pushed them to start using WeChat.
- Persuaded by children or friends
- Motived by their curiosity when they see other people use WeChat make they start to use it.

As an updated/alternative product of SMS/QQ:

In the focus group interviews, the majority expressed that they started to use WeChat because it is free to send instant messages with their smartphone while sending SMS costs money. WeChat is regarded as an alternative instant messenger:

“I used to use SMS, but WeChat is more advanced than SMS. It costs money to send a text message by SMS. WeChat is much more advanced than SMS and it does not cost any money.” (G1-3, male)

Many participants mentioned that they used to use some other free instant messengers, such as MSN/QQ/Fetion to send messages or photos before the outcoming of WeChat. They started to use WeChat as an updated or alternative product:

“At first, I felt it was very convenient. When communicating with people, it is very convenient to use, and it is also very convenient to post pictures. In the earliest days, before the outcoming of WeChat, we all used to use QQ, and even Fetion, but after we started to use WeChat, we felt that this tool was so good. With the improvement of WeChat, I think its functions will become more and more consummated.” (G6-1, male)

It is worth noticing that for many elderly adults, WeChat is not a brand-new thing, they have had a similar experience before using WeChat. Before the advent of WeChat, they

used other instant messaging software or applications, and WeChat was regarded as an upgraded version of something that they are already familiar with. Thus, the findings here remind us that it is inappropriate to regard WeChat as a brand-new thing to elderly adults but to take their previous experience with instant messaging into consideration.

Motivated by joining groups of classmates or comrades

In focus group discussions, many of the participants expressed that they were motivated by joining groups of their classmates or comrades. This point is important and unique because it has much to do with the life background of this generation. When they were adolescents, they lived in an era before the popularization of mobile phones and instant messengers. The main methods to keep in contact with others at that time were sending letters, telegraphs or by landlines phones followed. The inconvenience of communication and removals at that time has made it extremely difficult to communicate and maintain contact:

“I was born in south China and then I moved to north China when I was a child. There are some people that I want to find. I miss them, but I cannot find them. In the past, people kept in contact by writing letters. It was inconvenient and there are many limitations. After we started to use WeChat, I felt that it provides me a very convenient way to find someone that you miss.” (G6-3, female)

The need of joining groups and keep in touch with their former classmates or comrades is extremely strong especially among elderly adult because many of them have lost contact with many of their classmates or comrades for decades. As one of the participants said:

“For example, our comrades-in-arms have not been able to communicate with each other for more than 40 years. In the past, it would be very difficult to get their phone numbers, and it costs money to make phone calls. With WeChat, some of my

comrades-in-arms organized a WeChat group first. Then people joined this chat group, and they invited our comrades-in-arms to this group one by one. I read messages (in our group chat) every day. Although we are living across the country and we can't meet each other, we can keep in contact.” (G5-2, male)

Sometimes, when people's peers organized a group, it pushes people to start using WeChat. They were highly motivated to use WeChat by the pressure of being “included”:

“I need to use it! In 2014, I attended a training, and our classmates organized a WeChat group at that time. First, my mobile phone is not a smartphone. Secondly, I don't have any internet data plans for my mobile phone (it was very expensive to get access to the internet with mobile phones for the ones who don't have data plans) . After I came back, I was a little bit irritated. I used to think that it didn't matter (if you don't use WeChat), but I felt that it was necessary (to use WeChat) when I came back.” (Group1-2, male)

In focus group discussions, we found that the need to join groups of their classmates or comrades is a powerful motivating force, especially for people who are more passive to new technologies. The possibility of finding old friends who have lost contact for decades is a strong motivation or attraction to this new technology. In addition, the pressure of being “included” further strengthen the motivations and pushed many people who were not that motivated. The need of joining groups reflects the need for communication with their social circles and some of the participants even formed new social circles via WeChat. Those factors will be deeper discussed in motivations for continuous use in the next section.

Persuaded by children or friends—“If other people all use it, how can I keep being outside alone?”

When talking about how they started to use WeChat for the first time, many of the participants expressed that they were persuaded by children of friends:

G3-1: I can't remember who asked me: "don't you know how to use WeChat yet?" I said: "no". "You can download it, and you can chat with others via WeChat" (G3-1, male)

G3-1: "If other people all use it, how can I keep being outside alone? At first, someone told me that WeChat is popular."

G3-2: "Yes, it's convenient."

G3-4: "It's convenient to share information or view information."

G3-3: As one way of contact.

WeChat is a close-tie application, and its strong tie attribution may make it more effective in acquaintance recommendations. Many of the participants expressed that they refused to use it at first, but were finally persuaded by children/friends or persuaded by social pressure:

"I didn't plan to use WeChat at first, because I thought that it was something only for young people. I already retired and I don't want to use it (WeChat). I just make a phone call or something.....Then people talked about WeChat a lot, and it seems that if I don't use it, it may affect my communication with others in some way." (G5-2, male)

When people all use it, the pressure of non-users being unable to communicate with others motivated their use to a certain extent. The motivation to avoid being "excluded" motivates them to start to use WeChat and this is also a manifestation of communication needs.

Motivated by self-curiosity

Compared to many of the participants who are passively preserved in the acceptance of WeChat, some of the participants are more positive about new technologies: They expressed that they started to use WeChat because of their curiosity when they see others use it:

G3-5: I tried to download it by myself. My colleague recommended it. Several people said that WeChat is good to use. I downloaded it by myself, and I tried to use it. I tried to know the functions and tried to use them. And later, I found that I can't live without it now. (G3-5, male)

G6-2: I started to use WeChat in 2013, and I send my first WeChat message in 2013. I remember that it was 1st October (National Day) , and I was in Shanghai. I saw some people post pictures with WeChat and I thought that it was quite interesting. I was watching a performance in Shanghai at that time. I thought I should try to post some pictures (to WeChat Moments) and to know how's the feelings. (G6-2, female)

Although those motivations above are all about the need for communication essentially. In the focus group discussion, we found some deeper different types of motivators under the motivation of communication. Such as motivated by the need to join groups of classmates or comrades; as an updated/alternative product of SMS/QQ; persuaded by children or friends; or motivated by self-curiosities. Many of the motivations reflect the need of being “included” and worries about being “excluded”. It is especially worth noting the need to join groups of classmates or comrades, which is stronger at this age and in their living background. In addition, the previous experience in instant messaging apps needs to be aware of in their use of WeChat while elderly adults are usually regarded as digital immigrants and lack of experience.

Motives for continuous use

After the direct motives for WeChat use have been discussed above, motives for continuous use will be further discussed and investigated in this section. In focus group discussions, when talking about *motives for continuous use*, participants repeatedly highlighted the keyword "**convenience**". Almost all of the participants expressed that WeChat is indeed very convenient and has offered many facilities in their life. As one of the participants expressed: "*Once you start using it, you can't leave it.*" (G3-5, male) The facilities in communication and life have led to the continuous use and even the reliance on the use of WeChat. **This also confirms the vision of WeChat: "WeChat, is a lifestyle."**

When asked if they are highly motivated by communication with children, most participants, especially females in the discussions, confirmed that keeping in contact with children is one of the biggest motivations for WeChat use. **This is consistent with the result from the survey that the child is the first motive to use WeChat. However, participants further explained that it doesn't mean that they use WeChat only for communication with their children.** "*It's not a two-way logic.*" (G3-1, male) The importance and convenience of communication with other people, acquiring information, and entertainment are important factors and motivations in their WeChat use as well.

Except for communication and entertainment, some participants expressed that they **realized their dreams or new life values through WeChat**. For example, one participant shared her stories in realizing her dreams through WeChat:

G6-3: "What I have benefited most (from WeChat) is that I realized many dreams (via WeChat). One is that my writings can reach my relatives and my friends. This is how I have benefited from WeChat..... I am a literature lover, and I like to express my emotions, and my thoughts, and make some literature creations..... I

think that WeChat is a good platform to express myself. I like to express my thoughts after reading, or my inspirations when I saw some people or something. I wrote about my stories in my memory, especially memories about my father. It can be regarded as sustenance because I didn't have a chance to get love from my father when I was a child..... WeChat offers me a platform to write and express my feelings. Some of the articles have been published on WeChat and online. This is a big benefit.” (G6-3, female)

Another participant is a group owner of 500 people. she formed a singing group after her retirement. She is the administrator of this group, and she organized online and offline activities to integrate online and offline life:

G4-4: “We usually sing in “WeSing” (a mini program in WeChat). I set up a virtual singing room for our group. Every night I set up virtual singing rooms for them.” (G4-4, Female)

Except for online activities, they organize many offline activities as well:

G4-4: we have an organization, a team, with 40 people, and we often go to perform in the countryside.

Host: 40 people?

G4-4: Ah 40 people, wow!

G4-4: Yes, we registered a company.

Host: You even registered a company?

G4-4: Yes, but I'm not the leader. I am only in charge of the account book, detailed ledgers, and some business affairs.

This is not a single case. Many of the participants stated that have participated in different groups, such as poetry groups, travel groups, square dance groups, etc. Among those groups, the most common one is the square dance group because square dance is

one of the most popular activities among Chinese elderly adults. Like the singing group we have talked about above, many elderly adults join square dance groups and formalize online and offline communities via square dance. Many of them participate in online and offline activities regularly. Those groups and virtual community life enrich the retirement life on one hand, and on the other hand, it helps some people realize their previously unfulfilled dreams.

Motives for better use

During the focus group discussion, it is observed that all the participants can use the basic functions and they have been very familiar with those basic functions. However, when it comes to learning new functions or to learning for better use, they are not much motivated. When asked if they want to learn for better use, few of them have the such willingness. Most of the participants expressed that they only learn when it is very necessary. *“I don't think it is necessary and I don't have a strong motivation to learn.”*

Many of the participants expressed that **knowing the basic operations is enough** and there is no need and no motivation to know more:

G6-2: “At my age, I learn things only when, for example, there is a strong need to use it, then I want to learn to use it. I search in Baidu and try to find out how to use it and try to know what it is. However, I won't take the initiative to learn anything new.”

G6-3: “Yes, I don't know how to search online, and I don't know how to shop online. I don't know those operations even for now, but I don't want to learn.”

Some of the participants expressed that **“I will learn only when I need it.”** (G2-3, male) because functions are always being updated and there will always be something new after learning:

G2-3: *“I will learn only when I need it. Because this kind of thing is improving, like the computer, it is evolving and improving all the time. If you learn something new today, however, for tomorrow, it may be outdated again, and you have to learn the new things again.”*

G2-1: *“It means that the functions are always being updated.”*

Some participants further explained that they don't need to learn because they don't even know that there are such functions. In other words, **they won't know those new functions until they must use those functions:**

G2-3: *“You don't even know that there are such functions, so you don't need it..... I don't use it because I don't know that there is such a function in WeChat..... Without knowing, there are no problems.” (G2-3, male)*

In addition, it is worth noticing that **the help of skilled people may affect motivation.** On one hand, the skilled people around can help in solving problems, however, on the other hand, the dependency on getting help from more skilled ones may decrease the motivation in learning new things. For example, some participants shared their experience with Didi taxi-hailing service:

G2-4: *In big cities, you won't get a taxi if you don't use Didi taxi-hailing application.*

G2-1: *If you go with someone, you don't need to (learn) because you can rely on others.*

G2-3: *But if you go outside only by yourself, you may have to use Didi taxi-hailing service.*

G2-Everyone: *Yes, (if the companions know how to take a taxi) you don't need to worry about it.*

In general, those results indicate that the **perceived usefulness of learning new functions is relatively low**. Participants are **satisfied with the current situation** and **not much motivated in learning for better use**. In addition, it is also indicated that the dependency on getting help from more skilled ones may decrease the motivation in learning new things.

Having demonstrated such findings, a response to the research question RQ1.1 (RQ1.1 Why do they use WeChat?) emerges:

As deduced from the literature review, personal motives such as entertainment or interests purpose (Baxter et al., 2012; Casado-Muñoz et al., 2015; Hilt & Lipschultz, 2004), maintain contact/communication with family & friends (Bosch & Currin, 2015; Caron & Light, 2016; Wei et al., 2018), acquire knowledge (Casado-Muñoz et al., 2015; Franco et al., 2015), keeping informed (e.g. news, photographs.) (Bosch & Currin, 2015; Wei et al., 2018), information exchange (such as sharing memories) (Cui, 2016; M. Zhang & Western, 2016), as alternative information sphere to participate political discussion (Guo, 2017) and social influenced have been identified as main motives for media use. Compared to these reasons, results from the survey confirm the importance of communication as a strong motive for WeChat use. In the survey, it is indicated that the most important motivation for WeChat use is communication, followed by "electronic payment or transfer" and "access to news and other information". When compared with other motivations, entertainment motivation is lower.

In the focus group interview, it is observed that **4 main factors** that motivated them to WeChat adoption. The factors that could be deduced from the discussion are: 1) the need to join groups of classmates or comrades; 2) as an updated/alternative product of SMS/QQ; 3) being persuaded by children or friends; 4) being motivated by self-curiosities. It is especially worth noting the need to join groups of classmates or comrades, which is stronger at this age and in their special living background. In addition, the **previous experience in instant messaging apps** needs to be aware of in

their use of WeChat because elderly adults are usually regarded as digital immigrants and lack experience.

After the adoption, the facilities in communication and life have led to the continuous use and even the reliance on the use of WeChat. Although “to keep in contact with children” is shown in the survey as the biggest motivation for WeChat use, participants further expressed that the importance and convenience of communication with other people, acquiring information, and entertainment are also important aspects of their WeChat use. Exception for basic communication, some participants expressed that they realized their dreams or new life values through WeChat. WeChat offered them a new space to express themselves and build new social relationships.

As for motivations for better use, there are low motivations for better use. The majority are satisfied with the current status and will only try to learn when they have to use it. In addition, it is found that the help of skilled people may affect the motivations. Besides that the skilled people around help in solving problems on the one hand, however, on the other hand, the dependency on getting help from more skilled ones decreases the motivation in learning new things.

5.2 WeChat learning, barriers and problem-solving

5.2.1 WeChat learning

In the survey, the result indicates that most of the respondents learned WeChat from others. Nearly half (43%) of the respondents first learned WeChat from their children and about 1/5 of the respondents (20.2%) reported that they first learned from friends or other relatives. A small number of the respondents (7.9%) first learned from their husband/wife/partner. It is worth noticing that a considerable number of people learned on their own (27.1%, second only to "children's help"), without relying on any others, which is inconsistent with the image of the elderly as technological laggards and are always passive to new technologies. To further investigate the way that they first learned WeChat, we had discussions on this question in focus groups.

In focus group discussions, when asked about the way they first learned WeChat, the majority reported that they **first learned from their children.**, which is in accordance with findings from the survey. Except for children, some of the participants reported that they **first learned from their colleagues, former classmates, and friends.** The most notable thing here is the role of classmates. As we have discussed previously on the motivations, joining classmate groups was one of the main initial motivations for their first use. When asked about the first time learned to use it, many participants reported that they were taught to use WeChat when their classmates build groups in the reunite. Findings here strengthen the important role of classmates once again. In addition, we had some of the participants reported that they **learned WeChat by themselves** in the discussion. This percentage is a little bit lower than that was found in the survey (16% of the participants in focus group discussions). The participants who reported that they learned to use it by themselves were all males and all these participants also reported that they usually like to think and explore new things by themselves.

5.2.2 Barriers and problem-solving methods

Findings from the survey indicate that **privacy concern** (48.58%) and **poor health condition** (45.43%) was regarded as 1st and 2nd **main barriers** to WeChat use. Followed by “**I don’t know how to solve problems**” (26.18%). Nearly 1/4 of the respondents reported that they “**don’t have any problems or concerns**” (24.9%) and 22.71% reported that they “**lack ways for learning functions**” (22.71%).

In focus group discussions, when talking about problems in their daily use, findings are consistent with findings from the survey. Problems and concerns mentioned in the discussions are mainly within the scope of the above aspects, but more detailed explanations were outlined.

Limitation of health conditions

During the discussion, many participants mentioned that one of the biggest problems they face is the health problem:

G3-1: I’m getting older. Some kinds of restrictions of older age are arising. It is not consciously, it is unconsciously.

G3-2: One of the advantages of listening instead of reading books and the news is that you don’t need to read with your eyes. When you read, your eyes may be (tired).

G3-1: Now the main organ with receiving function in older people are the ears. On the contrary, the eyes are a bit..... Maybe that’s because of the influence of age, the influence of the age group.

Eyesight and spine problems caused by aging make it impossible to use mobile phones for a long time on one hand. On the other hand, a long time watching aggravated the spine and eyesight problems. In this regard, many people have changed to listening to

the news, and some people adjust by restricting their use time. Those problems reflect the necessity of providing suitable reading methods for middle-aged and elderly people, such as larger fonts, listening and reading functions, etc.

G6-2: My eyes don't allow me to use it (for a long time). I usually use WeChat in the morning. Anyway, during a specified period. I can't watch it all the time, otherwise, my eyes will be hurting me. (G6-2. female)

Difficulties in solving problems

Unlike computers and other media, the portability and ease of use of WeChat have lowered the barrier to use. All the participants stated that they can use the basic functions of WeChat. Nevertheless, many of the participants reported that they have some difficulties in solving problems. When encountering a problem, although some expressed that they usually tried to think about how to solve it by themselves, search on Baidu or try to solve it by themselves, most of the participants reported that mainly **rely on their children's help**. Regarding the situation that many of their children live away from themselves, some of them stated that they tried to get help from their children via video chat; some reported that they usually ask colleagues or young people for help, and some said that they have to wait until their children come back home:

G2-1: I'll wait for (my child) to come back from the holiday and then help me with all the problems. Last year, I forgot my password, and I must wait until my son came back and help me to reset it. I don't understand (how to solve it).

Host: So, you wait until he came back to help you solve it?

G2-1: Yes. (Other participants laugh) Waiting for him to deal with it, but he doesn't want to help me, haha (laugh). (G2-1, male)

About New functions

As aforementioned, during the interview, it is found that many participants stated that they can only use a small part of the functions and don't know how to use many functions such as taxi hailing. But as explained earlier, even so, they usually learn to use it only when it is necessary. If not, they are not much motivated to actively learn to use it. *"I know, I know everything, but I don't want to learn."* As the following dialogue in the focus group discussion:

G6-1: You can pay gas bills, you can pay the TV bills, you can...(in WeChat)

G6-3: I know, I know everything, but I don't want to learn.

G6-1: How do you pay the gas bill? If you need to pay the gas bill, you can pay it directly here (in WeChat).

G6-3: I don't need to do this kind of thing in my home, so I'm not pushed to that stage.

G6-1: You can buy train tickets, take a bus, buy clothes, book hotels, and many other things, all here (on WeChat).

On the other hand, some participants further explained that they don't know there is a function like this. *"I don't know WeChat has this function, and without knowing, there are no problems."*

G2-3: These things, only when you encounter problems (that you can know you have this problem) For example, you don't know that there is a such function in WeChat, so you won't ask others. [other participants agree] For example When I met someone, and he asked me to send my position to him, then I can realize that I don't know how to send positions..... Otherwise, if you don't need to use it, you won't know it. If you don't need to send your positions, you don't have such problems. You can only find the problem when you need it. [other participants agree]

Privacy concerns, privacy paradox and strategies

Privacy Concern

Previous studies have found that privacy concerns have a significant impact on privacy behavior including many aspects, such as financial risks, reducing psychological burdens, strengthening a sense of control, establishing a deep sense of control with specific audiences, creating a personalized page, expressing yourself, etc. In this study, privacy concerns are mainly reflected in **self-expression** and **financial risks**.

Privacy concern on social activities: Discreet self-expression

Consistent with findings from the survey, it is found that privacy concern is one of the most important factors that affect participants' use. In focus group discussions, many participants expressed that **it is not because they don't know how to use the functions, but because of privacy concerns**. For example, most of the participants state that they are very discreet in posting in WeChat Moments. Some of them explained that not posting anything is one of their major strategies for avoiding unnecessary problems:

G2-3: I don't post anything (in WeChat Moments), I rarely post.

G2-1: I rarely post (in WeChat Moments).

G2-5: Sometimes I just read (others' posts), but don't post on WeChat.

G2-1: Me too (don't post on WeChat Moments)

G2-5: We don't like to take pictures

Host: Do you mean that you don't want to take photos, or you don't want to post?

G2-1: Don't like to take photos.

G2-5: I don't like to take photos, too.

G2-2: Neither taking photos nor post photos.

G2-4: (... ..) People who were born at the same age as your dad, when we were our age, we relatively speak in the public sphere, anyway, not quite, we always feel

insecure. Anyway, I won't touch this kind of thing... I just read it, but I will not take any actions (repost), we will not.

G2-2: This may also be related to our professions. Some of us were public security officers and we are members of the party. We will never repost any comments on sensitive things.

G2-1: Regarding politics, these things are sensitive, and we won't....

One of the participants shared a story of his own on the reasons that he stopped posting his traveling photos on WeChat:

G1-2: I like to take photos of good scenery or places where I walked through. I like to share and introduce some local customs and characteristics. I went traveling several times last year, and I posted photos on WeChat Moments. I went traveling some time ago this year, but I didn't post.

Host: Why?

G1-1: (Because) we will know that he (G1-2) went to travel again.

G1-2: Because most of our classmates have been retired, and when they go traveling together, they asked me to go with them..... I don't feel anything wrong when I go traveling at my own expense. However, some people have reminded me not to post this (tourist photos). It is not good. In fact, I feel that I am not traveling on public funds. I go traveling at my own expense, with my classmates. But when I went traveling this time, I didn't post a single photo, while I posted a lot of photos last year. This is because of considering others, although personally, I want to share.

Thus, we can see that the interviewees present high privacy concerns in social activities, such as worrying that others will know their opinions, and worrying that the published content will cause others to speculate. This high level of privacy concerns is probably related to the prudent words and deeds that China has advocated since ancient times, the implicit and introverted cultural background, and the obvious collectivist ideas embodied in this generation.

In terms of privacy protection ability, the participants generally showed quite low privacy protection ability. Although there are settings such as "only share with" or "not share with" in WeChat to establish a deep sense of control with specific audiences, as Park (Park, 2013) observed in his research, compared younger users with better new media literacy, older people have more significant obstacles of privacy settings.

In social media activities, users' privacy protection behaviors are mainly divided into two types (Y. K. Chen & Wen, 2020): one is preventive privacy protection behavior (preclusion) (Brandtzæg, Lüders, & Skjetne, 2010). Another privacy protection behavior is mainly operated through privacy settings to protect. Studies have found that middle-aged and elderly people who try to protect privacy are more inclined to use the first preventive protection method, that is, by reducing the frequency of posting on their WeChat, carefully choosing what they post or not posting, and some other simple ways to circumvent potential risk. Elderly adults seldom use more complex protection strategies, such as setting differentiated visibility and deleting old content because it requires much more skills. Some of them have set the visible duration of their WeChat Moments, but few of them have ever set any distinctions of the visible groups of their posts. This result is very similar to the findings in a privacy study of 3.3 million Twitter users worldwide: in a social environment that advocates collectivism, people disclose less privacy on Twitter and take fewer privacy protection measures; In a social environment that advocates individualism, people disclose their privacy on Twitter to a higher level and take privacy protection measures to a lower level (Liang, Shen, & Fu, 2017). Through the above analysis, we can find that the respondent presents a state of "privacy paradox" with high privacy concerns and low privacy protection capabilities. In other words, the high privacy concern and low privacy protection ability have led to the "privacy paradox" which means "the difference between people's expressed privacy concerns and actual disclosure behavior" (Oetzel & Gonja, 2011).

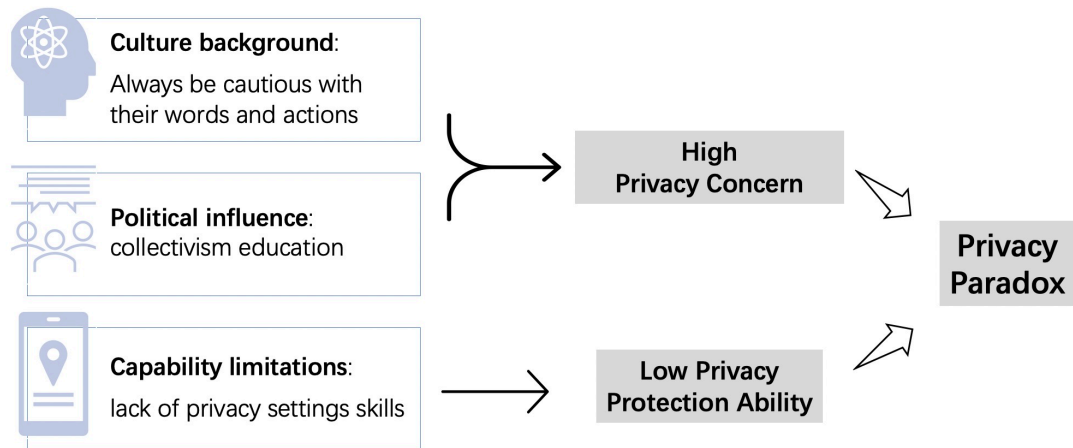


Figure 37: Privacy Concern, Privacy Protection Ability, and Privacy Paradox

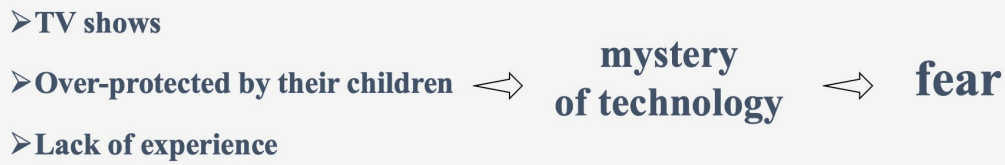
Privacy concerns on financial risk

Except for privacy concerns in social activities, **privacy concerns are reflected in financial risk concerns and personal information.** This concern is largely enlarged by TV shows on fraud, over-protection by their children, and the lack of experience. *“There are many TV programs introducing cases that victims’ money was transferred away by some special technologies. Many people still have concerns about it. (G1-4, male)”* Some people expressed that they had been "scared" by their children in the past, and they were afraid of operations involving financial affairs. However, after contacting them, they found that it was not that dangerous after using: *"In fact, if you use a lot, you will know what it is like."* (G4-4)

G4-4: In the past, when I haven't started using smartphones, my son 'scared' me: 'You'd better not do this, you'd better not do that.' In fact, if you are not greedy, it won't be dangerous. My kid said that if I added my bank card to WeChat, and if my phone was stolen (my money will be transferred). In fact, it is not like that. Not like that.

G4-1: Sometimes it makes me afraid of doing anything.

G4-4: Yes, in fact, if you use it a lot, you will know what it is like.



However, findings from focus group discussion further indicated that in many cases, people have to put down their concerns because they are pushed by social and digitalization pressures. Although there are high privacy concerns, most of the participants stated that they finally compromised despite the concerns. Some of the participants stated that they must accept it under the push of society, and some highlighted that their privacy has already been leaked and they don't have the ability to control it. *"We are not able to protect our privacy, it's passive."* *"We are already like running nakedly."*

G5-2: I think that it is difficult to control now. Privacy does not lie in that you stop posting online. It lies in many aspects. I always feel like being controlled by others, such as big data or something like this. No matter where you go, and where you are sitting right now, if they want to find you, they can find you immediately.

Nevertheless, many of them are not fully accepted. They also have their resistance strategies for the conflicts and trade-offs between the concerns and the compromises, which will be described in detail in the next section.

Strategies Towards Privacy Concerns

As analyzed above, most of the interviewees chose to compromise despite privacy concerns. However, it is worth noticing that the compromise is not a result of lacking privacy awareness. On the contrary, the participants generally have a higher awareness of vigilance. Many of them must compromise due to social and digitalization pressures.

In addition, the compromise of many people is not a complete passive compromise, but a strategic compromise.

In social media activities, The user's emphasis on privacy can usually be implemented through several common strategies, such as differentiated visibility, private chat instead of messages, etc. (Y. K. Chen & Wen, 2020). There are mainly two directions of users' privacy protection behaviors (Y. K. Chen & Wen, 2020). One is preventive privacy protection behavior (preclusion), where social media is regarded as the front stage. All the content uploads and updates are given priority to whether they meet the expectations and positions of the audience (followers) and will not cause trouble to their reputation. Therefore, they will avoid sharing relevant information, but non-offensive and low-controversial public topics (conformity) to maintain their privacy (Brandtzæg et al., 2010). Another privacy protection behavior is mainly realized through operating privacy settings, such as reducing the identifiable personal information on the personal page, creating multiple sub-lists in the friend list, differentiated content visibility, and changing the acceptance of friend invitations. The threshold for setting up multiple accounts with differentiated content updates and follower segmentation, using code words that are only known to a certain level of friendship or a specific circle of friends (Stutzman, Gross, & Acquisti, 2013; Vitak, 2012). In this research, it is found that participants' privacy protection strategy mainly lies in the first protection behavior--preclusion. Very few participants have tried to protect their privacy by changing privacy settings, some of the participants changed the viewable time but few of them differentiated the visibility of their "WeChat Moments". The protection behavior mainly lies in preventive measures, that is, to avoid the risk, some people will reduce or stop public sharing but send the content in private chats.

Except for social media activities, the struggle for privacy protection is more embodied in the financial aspect. It is found that their protection against financial risks mainly adopts the following strategies:

1) Accept WeChat Pay but no bank card binding

The convenience of WeChat payment and the pressure of online payment, especially the entertainment and social functions such as grabbing red envelopes (lucky money), enable all the participants to use the WeChat payment function in WeChat. Among them, 88% of the participants use WeChat Pay on a daily basis. However, there are a lot of concerns about privacy and the financial risks because “it is invisible”. After weighing the pros and cons, some people have adopted strategies of disconnecting their bank cards to WeChat to strike a balance. In focus group discussions, many participants stated that they use WeChat Pay but refuse to link their bank cards to WeChat. When the balance in the WeChat account is insufficient, they exchange cash with their children or friends to ensure the use of WeChat payment. *“There are concerns about bank cards, so I will not bind it. If your banking information is leaked, you would lose all the money, and it will never be refunded, even the police can’t help you to get your money back.” (G3-1, male)*

2) Bind the bank card, but only a small amount of money is stored in the bound bank card to prevent and control risks.

In the interview, about half of the people stated that they have bounded their bank cards. However, almost all of those who have bound a bank card expressed that the balance in the card is strictly controlled although the bank card is bound. For example, some link cards only with a small balance and some try to avoid binding credit cards or salary cards; those who have linked their salary cards to WeChat expressed that they usually transfer their salary out every month in case of any risks. *“After binding, you can withdraw your large amount of money to another unlinked card and keep the rest as pocket money.” (G1-4, male)*

To sum up:

- Middle-aged and elderly people are presented to be highly concerned about privacy problems and worrying about the leakage of their privacy on the one hand, on the other hand, the phenomenon of "privacy paradox" is emerged caused of the

inability to protect their privacy and other reasons.

- In addition to social needs and self-presentation needs, for middle-aged and elderly people, the lack of effective privacy protection capabilities is an important reason for the privacy paradox. This raises the importance to enhance their media literacy.
- In this research, we have seen the helplessness of middle-aged and elderly people facing the pressure of digitalization and the need to improve their privacy protection capabilities, but we have also seen the autonomy (privacy computing) and complexity behind their negotiation.
- The research also reflects that middle-aged and elderly people have high expectations for the country, the government, and the important role of their children. In addition to taking on the responsibility of digital back feeding and providing patient assistance to middle-aged and elderly people, children should also appropriately “empower” and “fault-tolerant” to give middle-aged and elderly people some room for trial and error.
- In addition, the government should also strengthen privacy supervision, and help promote enterprises to optimize design and operations. For example, to provide necessary facilities that adapt to middle-aged and elderly people, such as larger fonts and more reading functions. In addition, privacy settings and operating methods that are more suitable for middle-aged and elderly people should be provided as well. Furthermore, a variety of options, including non-digital operations, should be provided to help middle-aged and elderly people truly enjoy the digital age instead of being pushed forward to digitalization.

Based on the findings above, answers to the research question on how they learn to use WeChat and **the main problems in their use of WeChat emerge:** .

RQ1.3 How do they learn to use WeChat

In the survey, the result indicates that the majority of the respondents learned WeChat from others while 27.1% of the respondents were self-taught. Nearly half (43%) of the respondents first learned WeChat from their children and about 1/5 of the respondents (20.2%) reported that they first learned from friends or other relatives. A small number of the respondents (7.9%) first learned from their husband/wife/partner. This indicates that the role of children is very important when elderly adults learn to use WeChat.

In focus group discussions, the majority reported that they **first learned from their children.**, which is in accordance with findings from the survey. Except for children, some of the participants reported that they **first learned from their colleagues, former classmates, or friends.** The most notable thing here is the role of classmates. As we have discussed previously on the motivations, joining classmate groups was one of the main initial motivations for their first use. When asked about the first time learned to use it, many participants reported that they were taught to use WeChat when their classmates build groups in the reunite. Findings here strengthen the important role of classmates again. In addition, we had some of the participants reported that they **learned WeChat by themselves** in the discussion. This percentage is a little bit lower than that was found in the survey (16% of the participants in focus group discussions). The participants who reported that they learned to use it by themselves were all males and all these participants also reported that they usually like to think and explore new things by themselves. This shows that not all in this group are passively accepted, and the autonomy here shown needs to be paid attention to.

RQ2.1 What are the main problems in their use of WeChat

In the survey, participants report **privacy concerns** (48.58%) and **poor health conditions** (45.43%) as **the main barriers** they faced in their WeChat use. Followed

by “**I don’t know how to solve problems**” (26.18%) and “**lack of ways for learning functions**” (22.71%). It is worth noticing that nearly a quarter (24.9%) of the respondents reported that they **don’t have any problems or concerns** with their use.

Findings from the survey show that privacy and physical factors are two important problems. In the interview, it is further explored and found that:

First, physical factors, mainly the cervical spine, eyes, and other factors limit their use of mobile phones for a long time. The function of reading aloud is very important to them, and many people started to change to the form of listening instead of reading or started to limit their use time because of physical health problems. This put forward the need for adjustments to adapt to the elderly. For example, to provide necessary facilities that adapt to middle-aged and elderly people, such as larger fonts and more reading functions.

Second, great privacy concerns and awareness of privacy were identified in focus group discussions. The compromise on privacy is not because there are no privacy concerns, but because of the low privacy protection ability and the high digitalization pressure. The high privacy concern and low privacy protection ability lead the elderly users into a “privacy paradox” which calls for the demand of improving their privacy protection ability. In addition, privacy settings and operating methods that are more suitable for middle-aged and elderly people should be provided as well.

Third, the reason for the formation of this "privacy paradox" is not due to a lack of awareness of risks, nor the ignorance of long-term risks due to immediate benefits, but the result of the combined effect of digital pressure and insufficient protection capabilities. It was found in the interview that the interviewee rationally measured the convenience, pressure, and privacy disclosure risks that could be obtained, and made the decision to maximize benefits or minimize risks, that is, "privacy computing". Respondents will try to weigh the complex relationship between risk, convenience, and digital pressure, and conduct strategic negotiations. It is also worth noting that in

“WeChat Moments,” the reason why many people rarely post on “WeChat Moments” is not that they don’t know how to use this function, but because of concerns and cautious self-expression. In this research, we have seen the helplessness of middle-aged and elderly people facing the pressure of digitalization and the need to improve their privacy protection capabilities, but we have also seen the autonomy (privacy computing) and complexity behind their negotiation.

Fourth, in terms of functions, the basic functions have been mastered and they have been relatively familiar. For new functions, most participants expressed that can use the basic function, but they are not much motivated to learn for better use. Many functions are forced to learn and only learn when they are needed, and they will not actively learn when they are not needed. In addition, many people expressed that they only learn when they are much motivated, or it is very needed.

Fifth, children play the most important role in helping elderly adults learn to use WeChat, and children also play the most important role in helping them solve problems encountered in WeChat. However, the current situation is that many parents and children are in a state of geographical isolation due to the urbanization process. As a result, many people must ask their colleagues or wait until their children come back home. Thus, in addition to taking on the responsibility of digital back feeding and providing patient assistance to middle-aged and elderly people, children should also appropriately “empower” and “fault-tolerant” to give middle-aged and elderly people some room for trial and error.

In addition, the government should also strengthen privacy supervision, and help promote enterprises to optimize design and operations. Furthermore, a variety of options, including non-digital operations, should be provided to help middle-aged and elderly people truly enjoy the digital age instead of being pushed forward to digitalization.

5.3 The role of WeChat in communicating with the next generation

The strong need for communication in the trans-regional context in China

With the rapid development of China's economy, the migration and flow of China's population have become more active. China's urbanization process and population flow are accelerating rapidly. According to the Chinese National Bureau of Statistics, data from the 7th Chinese national census in 2020 shows that there has been a total of 376 million floating population in China 2020, with an increase of 69.7% from the results of the sixth census in 2010, which means that about one in four people will be migrants (National Bureau of Statistics, 2021). At present, China generally presents a trend of "gradient transfer of population". That is the trend of migration from rural and the central -western regions of China to megacities; the concentration of population from third and fourth-tier cities to coastal central cities, and the concentration of rural population to urban areas and counties (Yao, 2021). Thus, in this current trans-regional context in China, the strong need for low-cost and easy-to-use media for communication is raising. WeChat, with the properties of free, convenient, and video chat functions can meet this demand to a great extent and provide technical conditions.

"Sharing" Links

One of the features of WeChat is that users largely share links via WeChat. As discussed above, the growth experience with collectivism and communism of the participants helps and motivates their sharing behavior in some cases. *"When I read something good and positive, I hope to share it with others."* In the focus group discussion, when talking about sharing links, many participants said that they would like to share with others, and they would share good content at least with their family members. However, when asked about their children's responses, most of the participants stated that they can seldom get any responses from their children, and their children rarely take the initiative to share. In that case, one of the participants further speculated that it might be because "they don't know whether they should say it is true or wrong."

G3-1: I will share. If I read something good, I will share it.

G3-2: I would share good things with my family group.

G3-4: The good ones will be shared.

Host: Sometimes maybe you won't share it in WeChat Moments, but you may share it with your family members.

G3-1: Yes. From this perspective, the supervision of WeChat should be strengthened.

Host: What are the reactions of your children when you share something with them?

G3-2: No one replies. I often post something on health, but nobody replies to me.

G3-1: It may be that they don't know what to say, and they don't know whether they should say it is true or wrong.

G3-3: They (children) just read it and they won't reply.

G3-1: There are neutral points of view, and they don't know what to say.

Host: What do your children usually post in your family groups? Do they share something with you?

G3-Everyone: My kids don't share.

Very few.

Rarely.....

Except for the heartfelt emotion to share with more people, one of the participants mentioned that she tried to express her thoughts and concerns by sharing links. She tries to **express what she wants to say or is embarrassed to say by sending relevant links**. As one of the participants (G3-2) expressed: “there is something that is not easy to speak out, but when you write it in WeChat, it feels much easier to express, just like writing letters.” In Chinese culture, Confucian is more appreciated, and the Chinese are usually unwilling to express their feelings and thoughts directly. This new way of communication help promotes communication and expressions between two generations. Compared to face-to-face and direct communication, this non-face-to-face communication method of WeChat helps relieve embarrassment, especially for implicit parents and children.

The blocked “WeChat Moments”

When discussing their children’s “WeChat Moments”, participants checked their children’s WeChat Moments and most of the participants replied that they were blocked or partly blocked (can see only some of their children’s posts in WeChat moments) by their children’s WeChat moments. “I think that I’m partly blocked. She only shows me what she would like me to know.”

Circumspect parents

The convenience of WeChat has made it possible to keep in contact anytime and anywhere. However, in the discussion, it is found that many participants don’t choose to contact their children directly but are very circumspect in communication with their children. For example, one of the participants said that she always tries to check her daughter’s availability by sending an indirect message first, such as a link or a meme. “If replied, I know that she has time now and I will call her. If not replied, it means that she might be busy now and I won’t disturb her for the moment. “(G4-5).

Speculate on their children's daily activities by using “WeRun” (WeChat Movements)

Some of the participants mentioned that they tried to speculate on their children's daily activities by using “WeRun” (A plug-in to measure daily steps) in WeChat.

G4-3: I open “WeRun” every day. The main purpose is to know how many steps my son walks today. Then I can probably know (what he has done today) by his walking steps. He is a student, so the distance between him from the dormitory to the school is quite fixed every day. I can figure out how far he goes (by his steps). On Friday (when I chat with him via video calls), I can tell him what he has done this week. I

primarily focus on my son, because you can't show your concerns to your children very intuitively, and you can only know their daily life from the side. (G4-3, female)

G4-1: That's mainly because you two (you and your son) live too far away, if you two live closer, this problem won't exist. (G4-1, female)

In another group when I asked whether they use “WeRun” to detect their children's life, an interviewer answered: “yes! Of course! I watch it every day. Your mother must watch yours too, right?” (G6-1)

G6-1: I know that he walks at least 3,000 steps every day, this means that he went to work today. If he walks 10,000 steps, I will ask him if he went out or has done some exercise, just ask him. One more thing is that if he goes abroad, it is even more important to know if he moves around. I asked him to keep it (WeRun) visible, so then I can know what he has done every day..... We may not make a phone call for several days, but we must know his walk steps every day to know if the steps are as usual. (G6-1, male)

Thus, the findings above illustrate that WeChat helps people to better understand their children's lives in the special context of geographical isolation. It provides better conditions for people to make free phone calls anytime and anywhere and functions such as video are convenient and more intuitive to understand. Children who love to express themselves, share a lot of their daily life with their parents. For the ones who are not too expressive, parents usually try to know their children's lives from indirect aspects. Here, women in particular have shown more concern for their children. As parents, especially those who are in geographical isolation from their children, although they want to know more about their children's daily life, they have a lot of concerns such as affecting their children's work and study and affecting their children's lives. Therefore, rather than asking directly, more direct methods such as chat or video choose to learn from the side. WeChat Moments was originally a channel to learn about life

from the side. However, during the interview, it was found that most of the interviewees were blocked or partially blocked Moments by children. As a result, many people try to get to know their children's lives in other ways. For example, by monitoring WeRun (WeChat sports), they try to predict whether the child's life is as usual or not through the number of steps. This has not been mentioned in previous studies.

This reveals the ways, concerns, and strategies of middle-aged and elderly people to communicate with their children through WeChat under the background of geographical isolation. On the one hand, it shows the concern of Chinese parents for their children. On the other hand, it also shows the caution and reservedness of parents in expressing their concerns.

5.4 Changing Attitude towards information in WeChat

Like the acceptance and the use of other new technologies, the acceptance and use of WeChat by elderly adults is not a static process. Based on the focus group discussions, it is found that the attitude towards information in WeChat has undergone a changing process, too.

When talked about the scenes that they first started to use WeChat, many participants laughed. Many of the participants stated that they **took every message very seriously** and **have high trust degrees in information** from WeChat at that time. But now their attitude has changed and their trust degrees on information in WeChat reduces. Overall, most of the participants reported that their attitude has gone from being serious to “casually read”; the trust degree changes from high to low:

G3-3: At first, there wasn't so much information in WeChat, and I read most of them carefully. Then the amount of information in WeChat becomes too large, and it is

not easy to distinguish (if it is true or fake). I can't read all of them, I really can't. I can't read all the information I got from WeChat even if I read all day long.

G6-3: My daughter used to say: "you read all of the posts no matter who posts it, and you give likes and make comments to all of them!" I think this is because of courtesy. I think that since they posted it, then I should read it if I have time. If I don't have time to read, I should at least give likes to their posts. I think this is because of courtesy. But if I kept doing this, I would be too tired.

G2-3: When I first started to use WeChat (I have high trust in information in WeChat)

G2-4: I took it very seriously in the initial stage.

G2-2: I feel that everything is new and fresh to me [other participants in this group all agree]. Send this here, and then send that there. It felt it was fresh to me. Later, when information becomes more and more there, there is no credibility.

G2-1: Yes, I gradually feel that it is boring.

Based on the focus group discussions, **three main reasons for these changes** are outlined as follows:

One is that **with the freshness at the initial stage of use fading, interest naturally weakens**. In the initial stage, everything is new, and people like to read and explore, but after a period, some of them "*gradually feel that it is boring*".

The second is that **the amount of information is increasing incredibly**. The exploding quantities of data and the popularity of WeChat among elderly adults in recent years drowned people in the great daily volume of information. Facing such a large amount of information, it is impossible to read all the information carefully.

The third is because of **the experience generated after using WeChat for a period**. Using experience makes people realize that not all the information on WeChat is credible, and there is a lot of spam and misinformation. A large amount of misinformation leads to a decrease in the desire to read and the decrease in trust degrees.

For example, one of the participants repeatedly stated that many articles published on official accounts in WeChat are full of mistakes, and many of them even have lots of language errors. "The writing is messy; it is not carefully checked." In addition, as for health information that middle-aged and elderly people are more concerned about, many people reported that they found that there are different statements on health care information after they have read a certain amount of health information:

G3-4: There should be no (pseudo-knowledge) in terms of health preservation.

G3-5: A lot of false health information (in WeChat)!

G3-2: Yes! Today is this point of view, tomorrow is that point of view, which is different. That's why I haven't tried anything introduced in WeChat. I don't know which one is right.

G3-5: Just like the health program of CCTV-10, some doctors said it is good to eat this, some doctors said that it is good to eat that one, some said that drinking is good, some said that drinking is not good, which one do you think is better? It's just a lie! Just feeling good for your physique is enough.

G3-3: I doubt why the opinions are so different. Maybe it is just like writing a paper, I write my opinion and I corroborate it.

G3-5: It represents one's personal opinions as well. I don't know how much it is reliable.

G2-3: It is just for your reference. It is said today that this thing is better for you to eat, and tomorrow it may change to be harmful for you. Can you fully believe it?

G2-2: There are a lot of so-called "secret recipes from ancestors" in WeChat.

G2-4: Can the ancestral secret recipe be discovered for you??

G2-3: It is better to just read occasionally.

Thus, findings here confirmed changes in attitude towards information in WeChat. In the initial stage, when they first came into the WeChat world with such information, most people experienced a period of freshness and curiosity. They are serious and have a high degree of trust in information in WeChat. After using it for a period, the freshness fades naturally, the amount of information gradually increases, and more importantly, the accumulation of experience makes them realize that the amount of information in WeChat is too large, and there is so much misinformation mixed there. These factors and experiences have caused changes in the attitude towards information: from being “serious” to “reading casually” and the deepening of the understanding of the mixed truth and false information in it also leads to a decrease in trust in the information.

Findings here remind us to notice that perhaps the elderly people are no longer the ones who have always been described as people who love to repost rumors and false health information. Like young people, they are gradually "growing" after experiencing the initial stage and are becoming experienced users.

5.5 Source of information, not a source of news

"Just for entertainment. WeChat means that you can only slightly believe."

When talking about the credibility of information from WeChat, most of the participants stressed that WeChat can be regarded as a source of information, but it cannot be regarded as a source of news. *"I think you can get some information in WeChat, but you have to corroborate from other organizations before trusting the information". "Because most official information will not come from WeChat."* In focus group discussions, participants regard getting information from WeChat as socializing or entertaining purposes **rather than counting on it for obtaining information to build opinions on.** *"Just for entertainment. WeChat means that you can only slightly believe."* *"Just browsing and I'll just slide over (G4-1).*

G4-1: I just browsing, and I'll just slide over. In fact, when I need to know something, I still go to get information from formal agencies. I won't try to know something from WeChat directly.

G4-4: Yes

G4-3: I just took a look at WeChat Moments but won't fully trust the information there.

[Everyone agrees: Yes.]

Host: Will you check the information that you are interested in from other trusted media?

G4-all: Yes!

Thus, overall, although people get information from WeChat, the credibility of information from WeChat among the participants is not high. WeChat is not regarded as a credible information source or source of news. In this aspect, WeChat is more regarded as a media for socializing and entertaining, rather than news acquisition or counting on it for obtaining trusted information to build opinions on.

5.6 Misinformation verification:

Experience in misinformation verification

“I can verify with my own experience” — experience in misinformation verification

5.7.1 Attitude towards misinformation

In focus group discussions, participants show **degustation with misinformation**, some of them expressed the concerns that misinformation poses **great challenges to national governance** because of the dissemination of misinformation promoted by fast disseminating information.

G5-2: The speed and scope of dissemination of some unreal and negative things, is fast and large. People tend to have this kind of psychology: there is no need to share positive things because the mainstream media would report it. But for some bad or negative things, it's better to post it quickly and let everyone watch it.

Host: Do you mean that negative things may spread faster?

G5-2: It poses a great challenge to the governance of our country. It is difficult to control public opinion, and it is impossible to control it at all.

Although participants show degustation with misinformation, in terms of influence, most of them feel that it has little effect on them. People believe that it has much to do with one's surrounding circle, self-cultivation, and one's judgment ability. In addition, many interviewees expressed their high trust in mainstream media again.

Regarding the **reason for forwarding misinformation**, some participants believe that **misinformation was not reposted deliberately, but because of the low ability in misinformation verification:**

G4-1: Actually, sometimes I think that he didn't send misinformation news intentionally. He might just repost it from wherever he got it. He can't distinguish whether it's true or false, right?

However, some people think that **it is related to one's education level**, and they believe that "people with a brain would know it is misinformation at first glance, and it is impossible to repost it."

G1-3: I think it has something to do with one's education level. For example, most of my colleagues are quite well educated, so there is very little misinformation spreading in our working groups. Misinformation such as murder and arson are relatively few. It has something to do with one's education level.

G1-2: People with a brain would know it is misinformation at first glance, and it is impossible to repost it and it is meaningless. You just read it and that's all, you won't repost it.

5.6.2 Verification Methods

When talking about misinformation verification methods in focus group discussions, we found that there are several main views they hold and some methods they usually apply:

- a) If it can only be viewed by forwarding, or if you must vote or turn to other links, don't read it.**

G1-2: It is easy to verify. If you must vote or turn to other links, or your personal information is needed before reading the full content, I'm sorry, I won't play with you. If it can only be read after you repost it first, I won't read it.

- b) "There is no such thing as a free lunch." If you don't be greedy, you won't be**

afraid of getting into any traps.

G4-4: Don't be greedy, and a) you won't be afraid of getting into any traps.

don't be afraid of accidents. If someone is greedy, he will get into traps sooner or later.

G4-2: There is no such thing as a free lunch.

c) To verify based on their life experience

Experience in misinformation verification

In focus group discussions, we found that their life experience plays an important role in misinformation verification because elderly adults usually have rich life experiences. This has been rarely mentioned in previous studies:

G2-2: We have lived for such a long time, at least from personal [G2-3: (from personal) experience, knowledge] to make a judgment.

G2-2: And now that we, at this age, can make a judgment. We have experienced a lot and we know what's going on.

G3-5: It can be judged from several aspects. Sometimes misinformation can be easily distinguished, by our experience.

G3-1: We usually verify based on our knowledge. It's the foundation laid before. Not as kids, as they would believe in whatever they have been taught. That's it.

d) To verify directly based on the tone of the article, with the accumulation of using experience

Many of the participants stated that they can verify directly from the tone of the article, and this ability is raising with the accumulation of using experience:

G4-4: For example, misinformation in my WeChat group, I can verify whether it is true or false. I can feel that this is misinformation based on my feelings.

Host: Is it based on your knowledge? Or something such as the tone of the article?

G4-4: Yes, I can tell that it is misinformation based on the tone. It feels like misinformation. If you read a lot, you will know that this information is misinformation at once

Host: Is it easy for you to verify when you first started using WeChat?

G4-4: No, it's difficult to verify at the beginning.

The following dialogue shows participants' verification methods specifically:

Host: How do you verify misinformation?

G6-3: I usually verify based on my own life experience.

G6-1: Own life experience and some common sense.

Host: So, you mainly rely on your knowledge in misinformation verification, right?

G6-1: Yes. You must have some common sense. Some things are impossible to happen, and it must be misinformation, right?

G6-3: And sometimes it is said that something happened in some place. However, you can find that it's not the accent of that place. How can it happen in that place? For example, someone said that there are fights in some places, but the accent is not right, and it can be easily verified!

G6-2: I think it's okay for us to have this kind of misinformation. I can verify now is just because I used WeChat for a long time, and I now have the experience (in verification). However, many people of this age just started to use WeChat and they don't have enough experience.

5.7.3 Actions toward misinformation

In the above part, we have discussed the attitude towards misinformation and verification methods, thus, we wonder, what action will people take towards

misinformation? In the focus group discussions, 3 main actions were concluded as follows:

a) Manage themselves and be wary in reposting

As we have discussed before, this generation is more accustomed to self-regulation. Therefore, regarding the dissemination of misinformation, most people mainly take action from themselves instead of pointing it out directly: they must try to be self-starting and be wary in reposting messages.

G3-5: We should try to be self-starting!

G3-1: Yes, I can only say that I won't spread it, won't expand it, and won't be the one who contributes to the flames. But I can't control others' behavior.

In addition, people show a high degree of trust in the government on this issue. They expressed their belief that the state will improve its control measures, and they only need to take some actions at a personal level. They would trust the state and won't believe in or spread any rumors and misinformation, try to spread "positive energy", and refuse any emotional incitement.

G6-2: Generally speaking, WeChat has brought us great convenience, but it will improve. The bad side depends on how you treat and control it. For us, what we can only do is not to believe in any rumors, not to spread any rumors, not say anything that is not good for the country and people, and not spread this kind of information. That's it!

Host: Do you think that there are many people sharing misinformation around you?

G6-1: Yes, but I never spread or share these kinds of information that I consider unreliable. I only want to share the things that I consider reliable and positive. For example, I won't post anything that shows dissatisfaction with our country, dissatisfaction with people, or shows personal anger. I will not post. I'd only like to

post inspirational things with others. I won't share things that make people feel sad or angry after watching them because you may not know if it is misinformation. I won't repost information before I know it is true or false.

b) When it comes to their friends, people may point it out directly

When the person who shares misinformation is in a more intimate relationship, such as friends, many of the participants reported that they would point out that it is misinformation and don't share it:

G5-2: There is much uncertain information in the group chat. We may not be familiar with all the people in our WeChat contacts, however, in WeChat groups, people seem to be less scrupulous. Many people just repost information within groups without careful verification. Sometimes when someone posts some misinformation in our comrade-in-arms group, others may point out that this is misinformation, and it has already been clarified.

c) Delete directly or filter it out:

Although many of the participants reported that they would point it out directly if their friends share misinformation, however, in most cases, participants tend to filter it out or just delete it directly instead of pointing it out. This may largely relate to the character of the Chinese because the Chinese tend to be more euphemistic, and it is not very acceptable to point out other people's mistakes directly:

G6-1: It mainly depends on one's circle. Different people share different kinds of things. For example, I'm in a group where different kinds of people are mixed in this group. Some people in that group always send misinformation there and there is a lot of misinformation shared in that group. What I can do is just ignore that misinformation, just delete directly and filter it out.

Thus, RQ2.2 was answered here as well:

RQ2.2 (Are they able to verify rumors and misinformation in their use of WeChat)

Findings from the Survey:

Self-reported Misinformation Verification Ability

Firstly, results of the self-reported misinformation verification ability show that the majority of the respondents believed that they can “sometimes” verify or “in most cases” can verify: 48.6% of the respondents believe that they can verify “*in most cases*” and 20% thinks they can “*often*” verify. A small number of respondents (6.3%) reported that they can verify “*in all cases*”; And there is a small percentage of people reporting that they can “*almost not*” verify (8.2%) or “*cannot verify at all*” (0.9%). This indicates that respondents generally rate their misinformation verification ability as medium to a high level.

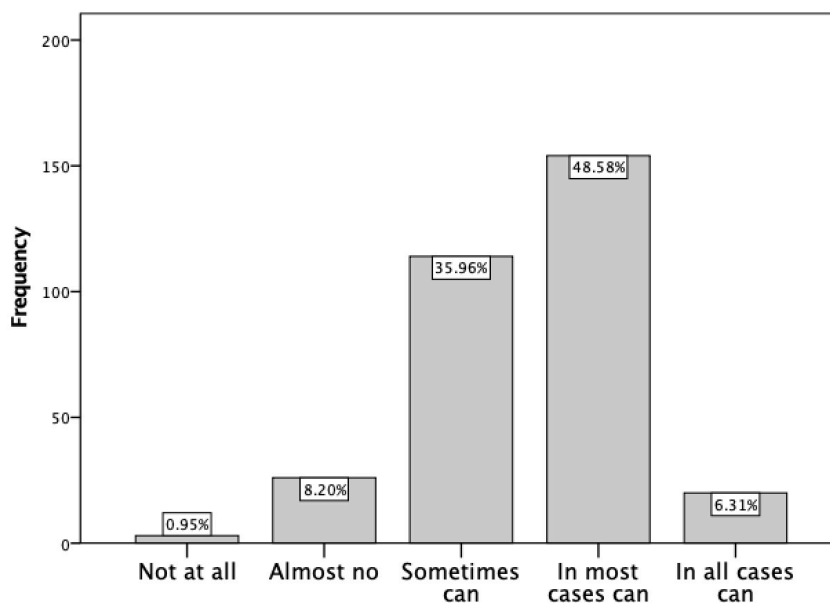


Figure 38: Self-Reported Misinformation Verification Ability

Misinformation Verification: test scores and methods

In the survey, three tests were set to test if people can verify misinformation. Test 1 was a piece of health misinformation. The result shows that the accuracy rate of test 1 is quite low, with only 28.4% of the correct rate. The majority was concentrated

in the middle hesitation zone. Nearly half (49.8%) reported that they are not sure to make the judgment. Test 2 was another misinformation on health information. The correct rate of test 2 is 76.3% which is much higher. The correct rate of test 3 is high, too. Test 3 is a piece of hard news published on CCTV News’s official account. The accuracy rate of test 3 is 79.2% which is the highest.

Table 14: Tests and the Scores

Tests	Content-Type	Whether published on an official public account or not	Correct	Incorrect	Unsure/unable to verify
Test 1	Health information	No	28.4%	21.8%	49.8%
Test 2	Health information	No	76.4%	3.8%	19.9%
Test 3	Hard news	Yes	79.2%	1.3%	19.6%

When we further compare the verification method, there are some points worth noting. First, it is shown that people **largely rely on their knowledge of misinformation verification** especially when the content is not published on official public accounts. Second, the **official account** that publishes the information is an important indicator for information verification when the content is published on an official public account. People have high trust in the content from official public accounts so they can make the judgment easier on this occasion. Third, the ratio of people verifying misinformation **by the tones of the content** and the adequacy of evidence is constant. About half of the participants reported that they verify by evaluating the sufficiency and reliability of the content, and about 20%~30% of the participants reported that they made the judgment by the tone of the content.

In the survey, it is also found that in terms of the degree of influence on whether to trust a certain piece of information, the source organization of the article or the

author of the article has the greatest influence, followed by the official account of the article, and the source of sharing or reposting has a slightly lower influence than the former two.

In the interview, the verification process was further discussed and investigated. It is found that:

- a) In misinformation verification, they usually verify only based on their own experience directly and the tone of the article. Among them, the judgment by the tone is mainly based on the accumulation of experience after using WeChat for a period. Many participants expressed that they could not directly verify at the initial stage of WeChat use, but after the accumulation of experience, they can directly make judgments according to the tone. In addition, it is worth noting the role of previous experience in misinformation verification. This is also consistent with the test results in the questionnaire that largely rely on their knowledge of misinformation verification. As the "new entrants" of digital media, in real life, middle-aged and elderly people usually have richer life experiences than the young. These rich life experiences are the main basis for their judgment, which is also unique to them. "Read it with my previous knowledge, and then verify with the original idea and concept, it is actually because of the foundation of my previous experience. However, for the youth, they may think what they see and what they are told is real." Middle-aged and elderly people are usually considered weak in the digital era. It is undeniable that compared to young people who were born in the digital media era, their use of digital devices would be a challenge for them. However, they are also improving and have strong points. After experiencing the confusion of the first entry, they are improving, and they can use their experience to help them verify directly through the tone. On the other hand, when young people are accustomed to using search engines to find information, these may be part of elderly adults' existing experience or something that can**

be directly distinguished and verified through existing experience. Those are their unique strong points, but the initiative is often overlooked in previous studies.

- b) In daily browsing, elderly adults usually make a basic judgment generally based on the existing experience or the tone. Many people expressed that they don't make any judgment because they "read it casually" or "only for entertainment". WeChat is usually regarded as a supplemental channel for information acquisition instead of a reliable information source.
- c) It is observed that there is a high level of trust in the mainstream media, and it is the main way for elderly adults to obtain news. There is a very high trust degree in information from mainstream media, no matter whether it is broadcasted on TV or published on WeChat official accounts. This is also consistent with the test results in the questionnaire. "There won't be any fake news or misinformation released by People's Daily." In addition, it is worth noticing that some of them have the critical awareness that there might be misinformation under the guise of official media. For example, some participants expressed that there is some misinformation released under the guise of "People's Daily." "Some people repost information, posted in the name of People's Daily are not credible and cannot be trusted."

Thus, generally, the verification ability is at a medium level in the surveys, and the ability to verify information released by the official media in the test is the strongest which shows their high trust in mainstream media. After an in-depth understanding of the verification process in the interview, it can be found that elderly adults have certain degrees of awareness and verification ability. In misinformation verification, they usually make the judgment directly based on **their life experiences** and **the tone of the article by the accumulated using experience**. As the "new entrants" of digital media, in real life, they have richer life experiences than the youth. These rich life experiences are the main basis for their judgment. This is their unique advantage, but this initiative is often overlooked. Of course, one's own experience is not a panacea. When it comes

to the knowledge that is generally less understood by the public, such as medical knowledge, the effect of experience is limited, and it is difficult to verify only based on one's experience. The habit of relying only on experience without verification makes misinformation even more confusing.

An in-depth understanding of how middle-aged and elderly people judge information helps to investigate how to better improve their ability to discriminate information. On the one hand, their initiative and the power of experience should be paid attention to, and at the same time, hidden dangers of only relying on experience for verification should be aware of as well, for example, the potential risks of misjudgment of medical information. On the other hand, for the reason of the high level of trust in the mainstream media, which plays a role as a benchmark, being information gatekeepers, ensuring the quality of information, and publishing information in a timely and accurate manner will help improve their misinformation ability.

Based on the findings and analysis above, research question 1.2 has also been answered: RQ 1.2 (Do their use of WeChat affected by gender, educational background, and living conditions?)

Living conditions & WeChat use

In the survey, no relationships between living conditions and problem-solving preferences were observed. Results show that there was no significant association between living conditions (with their children or not) and if they usually ask their children for help when encountering problems, $X^2(1, N = 317) = 0.722, p = .422$. Analogously, no statistical difference was observed in living conditions (with their children or not) and whether they usually try to solve problems by themselves, $X^2(1, N = 317) = 1.163, p = .310$.

However, in focus group discussions, we found that children play an important role in their WeChat use. Most participants reported that they first learned WeChat from their

children. This role becomes more important when the elderly encounter problems in their daily use. They highly rely on children to help them in solving problems. Some of the participants even must leave problems until their children come to help them. It is also worth noticing the problem of geographical isolation because of the process of urbanization in China. Many of the young study and work from the countryside to cities, and from small cities to bigger cities. This isolation makes it more difficult for the elderly to get help from their children. Thus, findings from focus group discussions support the idea that living conditions or living with their children or not affect elderly adults' use of WeChat.

Education level & WeChat use

Education level is one of the vital variables in demographic factors. It was widely measured in previous studies as a representative of social status. Findings from the survey in this study confirmed the influence of education level on WeChat use. Significant differences were observed in different education levels when it comes to whether they usually ask children for help when encountering problems. There is a weak correlation between those variables, that is, **people with shorter education time are more inclined to seek help from their children when they encounter problems than those with longer education.**

This finding is further supported by the findings from focus group discussions. In focus group discussions, many of the participants expressed their ideas on the influence of education level on the use of WeChat. They believed that education level influences people's WeChat use, especially in the spread of misinformation. Most of the misinformation comes from people with little education around. People who are not well educated are more likely to share misinformation and spam, and those with good education are less likely to share misinformation around. Thus, we can see that findings from both quantitative research and qualitative research all support the idea that education level influences elderly adults' WeChat use. People with shorter education

time are more inclined to seek help from their children when they encounter problems, and they are more likely to share misinformation than those who with better education.

Gender & WeChat use

In the quantitative study of this research, gender was confirmed as an influencing factor in WeChat use. In the survey, results show that women are more inclined to seek help from their children when they encounter problems. Accordingly, men are more likely to try to solve problems by themselves. In addition, some gender differences were observed in WeChat use and some assumptions about gender differences have been overturned when people confront misinformation. In the analysis of gender and the third-person perception of misinformation, no significant gender differences in the third-person perception effect in misinformation sharing behavior were observed. The mean value of the third-person perception of males is even slightly stronger than that of females despite that the difference cannot be regarded as statistically significant. This result is not consistent with previous findings, but it is understandable. Previous research is mainly focused on games and pornography (i.e., V. Lo & Wei, 2002; Zhang, 2013), which in stereotype are generally considered to be more appealed to males while misinformation sharing behavior does not have such "radical" gender bias.

Furthermore, no significant gender differences were observed in the presumed frequency of sharing rumors from peers, but males' self-reported frequency of sharing information without verification is observed significantly lower than that of females. This result is accordant with findings from some previous research that females are more likely to have less confidence in themselves. However, there are no significant differences between males and females in self-reported misinformation verification ability as hypothesized that men might be more confident with themselves. Furthermore, when comparing objective misinformation verification ability, men's objective misinformation verification ability is higher than that of women.

In quantitative research, the findings of women are more inclined to seek help from their children when they encounter problems. While men are more likely to try to solve problems by themselves as observed in focus group discussions. Almost all the female participants in focus groups confirmed that they like to ask their children or friends to help them solve problems while some of the male participants expressed that they like to try to solve by themselves before asking for help. In addition, on the issue of dissemination of misinformation, male participants also showed more self-confidence. Almost all the expressions about other people's love to share false information come from male participants, and the expressions are mostly mixed with the ideas of differences in education levels and social classes.

Age and WeChat

The social status level is often regarded as a key factor of demographic factors in sociological studies. However, when it comes to the elderly, the influence of age is often discussed as a crucial factor. In focus group discussions, when talked about WeChat use, many of the participants highlighted the influence of aging. Most of the participants believe that young people are much better in frequency and proficiency than themselves:

G5-1: In terms of computer use, young people are much better than us, because we learned very little at that time (when we were young), and then we learned it by ourselves, without formal training. We know little about it (digital technologies), and we are not as good as young people in this aspect. They (young people) may use more, and they use it more frequently.

However, this doesn't mean that elderly adults believe that age is the only decisive factor. At the same time, participants further state that **being mentally young** help in the proficiency of WeChat use. In return, *"if someone doesn't know how to use WeChat, he/she will be regarded as a bit outdated and unfashionable"* (G5-1):

G4-1: Age is not the only decisive factor; I think it is related to the individual's interest. [others agree] For example, Mr. Li, is the same (age) as your father, and he uses WeChat very well. He is good at hailing taxis, finding locations, and other functions.

G2-1: Yes, he uses a lot!

G4-1: Yes, Mr. Li uses WeChat pretty well at his age.

G2-5: (agrees) Mr. Li is mentally young.

Thus, the findings here help provide an inside look at the perceptions of elderly adults on aging and WeChat use. It is observed that while acknowledging the influence of aging, on one hand, they also highlighted the key role of mentality on the other hand.

Chapter 6. Strategies to enhance misinformation verification ability

6.1 Misinformation verification training in improving misinformation verification ability-- findings from the test

As discussed above, regulations only are not enough in enhancing misinformation verification ability, and media literacy is needed and is important. In this post-truth era, the ability of misinformation verification is the key to media literacy. Hence, in order to test if people will implement the experience from misinformation verification training in WeChat use and have a better misinformation verification ability (hypothesis), a pilot training session was organized accompanied with a pretest, a posttest and two retests. In general, findings in the test support the idea that people will implement the experience from misinformation verification training (including the training session and other interventions as supplementary training) in WeChat use and have a better misinformation verification ability. The specific findings will be introduced below:

Findings from the pretest

Before the test, a brief explanation on what is “media literacy”, “critical thinking”, “rumor” and “misinformation” is introduced beforehand. Then the pretest is composed of two parts. The first part is a series of self-reported evaluation, including the familiarity with media literacy, the importance of critical thinking, and the confidence of misinformation verification ability. The second part is a test on misinformation verification. Participants are given six articles from WeChat and are asked to verify that each of the given articles is true information or misinformation. Two of the selected articles are true, while the others are misinformation. The options are “true”, “misinformation”, and “I don't know”. In addition, conversations and observations on

how the participants made the verification were conducted along with the pretest. Through the results of the pretest and combined with the qualitative analysis, it is found that:

- Only one (Participant 6#) of the participants (6 participants in total) check information with searching engines such as Baidu or fact-checking platforms. This participant (Participant 6#) has good information checking habits and he likes to point it out when people share misinformation.
- Most of the participants expressed that “**source is important**” in the process of verifying the given information. They have high trust in “mainstream media”. If the given information comes from “mainstream media”, they believe that it must be true information.
- People largely rely on their **own experience** in misinformation verification. They mainly make the judgement by their judgement logic **based on their previous experience**. For example, when participant 1# verifying the given information on anti-ageing medical breakthroughs, he made a judgment without any hesitation. *“At a glance, I know it can't be true. How can there be a miraculous cure for all diseases?”* When verifying article 2# in a recipe for treating knee pain with pepper water, participants 2# expressed that it is obviously misinformation because *“If it could be cured by this recipe, doctors wouldn't be needed.”*
- When it comes to information that beyond their knowledge, they try to convert the unknowing knowledge to their **similar previous experience** and make the judgement via analogy. For example, when judging the authenticity of an article (Test Article 1#) taking about hot bath can help reduce the COVID-19, many participants convert the unknowing knowledge on COVID-19 to their previous experience when they caught a cold. Someone estimated it to be true because: *“taking a hot bath will at least clean the body and will help prevent the growth of the virus.”* Someone estimated it to be misinformation because *“you can't get*

better with a hot bath when you have a cold.”

Findings from the posttest

The posttest is composed of three parts. The first and second parts are the same as the pretest. In the second part of the posttest, another six articles selected from WeChat were given to participants for verification. The third part is consisted with questions on the evaluation of the training. Questions in this part are referenced from previous studies, such as “was the training interesting to you” and “have your expectations been met”

After we analyzed the results of the pretest and the qualitative data, we found that:

- When compare self-evaluations to Q1-Q3 in pretest and posttest, we can find that: there are no changes in the self-evaluation of the participant 3# and Participant 6#; participant 1# and participant 5# rated higher in the evaluation of the importance of critical thinking in the posttest; participant 2# rated lower in the self-evaluation of her verification ability in the posttest. When asked about the reasons why participant 2 rated lower on her verification ability, she expressed that she was so surprised to know that there were so many “traps” in the information after the training and she feels that she may overrated her verification ability in the past.

Table 15: Results of The Pretest and the Posttest

Questions	Pretest			Posttest		
	Q1: How familiar are you with media literacy? (1~5, from not familiar at all to very familiar with)	Q2: How important is critical thinking to you? (1~5, not important at all to very important)	Q3: Do you think you are able to verify rumors and misinformation in WeChat? (1~5, not at all to in all cases can)	The same as Q1 in pretest (1~5, from not familiar at all to very familiar with)	The same as Q2 in pretest (1~5, not important at all to very important)	The same as Q3 in pretest (1~5, not at all to in all cases can)
Participant 1	3	3	4	3	4	4

Participant 2	3	4	4	3	4	3
Participant 3	3	4	4	3	4	4
Participant 4	3	3	4	4	4	4
Participant 5	2	4	4	3	5	4
Participant 6	4	4	5	4	4	5

- After the training, all the participants confirmed that their expectations have been met and it is useful and interesting to know some new ways of misinformation verification. All the participants expressed that they would like to share the knowledge they acquired in the training with their friends and their family members.

Table 16: Results of the Posttest

Questions	Q9: How much was this training interesting to you? 1. Yes 2. No	Q10: Have your expectations of this training been met? 1. Yes 2. No	Q11: Will you tell your family and friends about the knowledge you have acquired from this training? 1. Yes 2. No
Participant 1	1	1	1
Participant 2	1	1	1
Participant 3	1	1	1
Participant 4	1	1	1
Participant 5	1	1	1
Participant 6	1	1	1

- All the participants know how to check from Baidu and anti-rumors platforms after training intervention after training.
- In the post test, participants paid more attention to the tones and details. In the pre-test, many participants did not read the article carefully, and made most of their judgments directly based on the titles or the general ideas. In the post-test,

participants read the article more careful. They paid more attention to the tone of the article, paid more attention to details, and carefully considered about the details.

- However, it is worth noting that most of the participants are not so motivated to check information from other sources in their daily life, although they know how to check from other platforms. *“I just read for fun, and I don’t care whether it is true or fake.”*

In general, this test proved the hypothesis that the short time training helped enhance some of the participants’ awareness to a certain extent. Nevertheless, it’s always difficult to change people’s behavior and it is difficult to see big changes in participants’ behavior in their daily life. In addition, the effect of a short time training is always limited. However, the intensification of “Refutes Rumors” strategies after the outbreak of COVID-19 happened to provide a natural and complementary intervention as misinformation verification “training”. This helps provide more evidence on testing the hypothesis.

In this study, the pretest, training session and the posttest were conducted in early February, which was just at the beginning of the outbreak of COVID-19 in China. The 1st retest was conducted 6 weeks after the training (the end of March) which was in the middle stages of the big outbreak of COVID-19 in China.

After the outbreak of the COVID-19, a lot of strategies aiming at fighting with infodemic applied in social media. In most of the frequently-used apps, such as WeChat, Sina Weibo and Alipay, anti-infodemic channels was created to stop the spreading of misinformation on COVID-19. Thus, although the short time training might not indicate a very strong effect, the rapid creation of those anti-infodemic channels can be regarded as natural and complementary misinformation verification interventions **because:**

1) Anti-infodemic channels were largely scaled set up in early February which is close to the pretest time in my study. Thus, it can be considered that people are exposed to a lot of Anti-infodemic strategies after the pretest.

2) It always takes time to make people change their behavior. This is a long-time intervention and will display a clearer result than a short-time training.

Findings from the 1st retest

6 weeks after the training (end of March 2020)

At the end of March, 6 weeks after the training, we had our 1st retest with the participants. Since participants already read the test articles in the pretest and posttest, it will be meaningless to use the same text which they have been very familiar with. Thus, we changed the test articles in the retest. To test the effect of the anti-infodemic strategies after the pretest, we changed the test articles into 5 test articles on COVID-19 and 2 articles not related to COVID-19. From the results of the 1st retest and the qualitative data, we can find that:

- **Knowledge on epidemic is directly improved.** In the 1st retest, it is found that Knowledge on epidemic is much improved. People have high level of knowledge on epidemic information.
- **Motivation of misinformation verification raises** from “don’t care” to “check actively”. For example, in the pretest, participant 5# expressed the idea that getting information from WeChat is just s an entertainment. She didn’t have many motivations to check if the information is fake or true and she didn’t care about it. *“I don’t want to spend any time on information verification.”* However, in the retest, she stated that she started to pay more attention to misinformation, and she checks the updates of anti-infodemic mini program in WeChat every day.

- Although the short-time training intervention in this study can't change people's behavior immediately, **it helps raise people's awareness on misinformation verification** to a certain extent. For example, 3 weeks later after the training, one of the participants (Participant 3#) shared a link of "Anti-Rumor Daily Report" to our family group in WeChat. She said that she has benefited a lot from the training, and she started to pay more attention to misinformation verification. In addition, she shared some useful misinformation verification skills to me.
- Many of the participants have **improved their checking habit**. Motivated by the acquisition of epidemic information, many of the participants are motivated to check information from checking platforms actively. In addition, the timely updated information in the anti-misinformation column has further promoted their checking motivations.,
"There is a lot of information floods to me every day. I check information in "WeChat Healthy" because information there was timely updated. When I read about some misinformation, refutes on that information have already been there."
- Most of the participants emphasized the importance of multiple channels to debunk misinformation; transparency and keeping timely update are **useful ways to raise trust degrees on information and defending misinformation**. *"Now all the information is updated quickly and transparently, thus, we can find trust information there."*
- Participants **become more critical**. Influenced by the traditional ideology and their education experience, participants are more accustomed to following the crowd, and not accustomed to expressing their own opinions. After the training and the anti-misinformation intervention during this period, some of the participants reported that they become more critical. *"I don't like to express my opinions a lot because of my education experience. I was taught since I was young to express my*

opinions carefully. In the past I don't care much about politics but now I start to express my views from different angles sometimes."

- As for participant who already checks information from searching engines, he (participant 6#) uses anti-infodemic platform in WeChat to help him find reliable information more easily. *"It's much easier for me to find reliable information in WeChat. I don't need take a lot of time to search in searching engines now."*
- In addition, he has always been cautious in making the judgement. I asked him read the same article and make the judgement in the retest. Although he knows that that information he has already read, he read carefully in case there are some little changes this time. He checks the date and some details in Baidu before making the judgement.

Findings from the 2nd retest

14 weeks after the training (middle of May 2020)

After 14 weeks after the training, which is in the middle of May 2020, we had our 2nd retest with the participants. From the results of the 2nd retest and the qualitative data, we can find that:

- The **motivation** for verifying information is not as high as the first retest but is much higher than before (before the training).
- Most of the participants expressed that their attention to the epidemic information has diminished. But after this time, they start to be aware of the importance of misinformation. Their **awareness** of misinformation verification increases after the training, and it remains high in the 2nd retest.

- In the 2nd retest, it is observed that participants' fact-checking habits and critical awareness remain higher than before.

6.2 Findings of strategies to combat misinformation

Findings from the test

Based on findings from the test, the following strategies to combat misinformation can be drawn:

- A short time training may not change participants' behavior immediately, but it can raise the awareness on misinformation. Influenced by the traditional ideology and their education experience, participants are more accustomed to following the crowd, and not accustomed to expressing their own opinions. After the training and the anti-misinformation intervention during this period, people become more critical. In addition, the training and Anti-infodemic strategies have long effect in improving their awareness of misinformation verification, fact-checking habits, and critical awareness.
- There have been some programs improving elderly adults' digital media capability. However, it's far from enough for the moment. More support should be provided and, as well as more teachers and volunteers should be trained to provide more training programs for the elderly.
- People generally have high trust in information from mainstream media. This calls for the **mainstream media to strengthen fact-checking, reflect on their own work and take the responsibility of being a "gatekeeper"** of information, to keep their credibility and help people to obtain credible information.
- It is found from the test that multiple channels to debunk misinformation;

transparency and keeping timely update are **3 useful ways** to raise trust degrees on information and defending misinformation.

In light of this it is essential to point out to the fact that there already are national fact checking platforms and WeChat services to against disinformation online which allows consumers to look up reliable information and check for epidemic information. This mini program helps to against misinformation online, especially in the epidemic, the reasons why it has positive impact on citizens as analyzed by observation are:

- It's an **official** platform disproving false online content
- Information is **timely updated**.
- Information on epidemic is **open and transparent**.

Findings from the expert interview

Based on findings from the expert interview, some more strategies to combat misinformation have been drawn. In general, it calls for the cooperation of many aspects, including the government, the society, the industry, the academia, and the individuals:

On the level of the government and the society, here are some possible strategies provided from the expert interview:

First, necessary education on media literacy should be provided and the education should not only for early ages but also for the adult as well. More support on education for adults need to be provided. For example, to provide training courses, to train professional teachers and to establish more training institutions well-trained teachers.

Second, the society should try to be more patient and provide more support which start from the angle of elderly adults. For example, some tools that are easy, accessible, and fast, such as training programs, or verification games, can be embedded in their most used apps. In this way, people can access it easily and get informed instead of wasting much of their time.

Third, a good atmosphere that **welcomes critical thinking in the society** is helpful in debunking misinformation. as Prof. Ramón Flecha from Barcelona University expressed in the interview: “when the whole society form a positive atmosphere encouraging critical thinking and different perspectives and views, can people have the courage to put forward their own opinions and can promote critical thinking.”

On the academia level, more attention should be paid to the elderly adults and more research on elderly adults, especially empirical studies, should be done instead of only focusing on the youth. As Liang He from Hangzhou Normal University, who is also a part-time teacher at Hangzhou Special Education College, expressed in the interview: “research cannot rely on our inherent cognitions. For example, we may find that marginalized groups may not as weak as we think.” Those studies may call for attention to the marginalized groups on one hand, but to find their strengths and abilities on the other hand.

On the level of industry, similar to what we have mentioned earlier, it is expressed by many experts that the news media must maintain the professionalism and authenticity of news and be a good "gatekeeper" of information.

As for the individuals, we need to enhance people’s awareness on misinformation. It is worth noting that the awareness is not at a macro level, but at a specific individual level. That is, to realize the danger behind misinformation and let them know that people’s life is impacted because of misinformation.

Chapter 7: Discussion and Conclusion

In this chapter, findings-based conclusions according to research questions and hypotheses proposed by this study will be presented. Then, implications of the study, recommendations, and future research are included in this chapter.

This study focused on WeChat use and barriers among elderly adults and their media literacy capabilities, as well as strategies to improve their misinformation verification ability. By utilizing the qualitative and quantitative research methods, I divided my research into three parts: Part One examines motivations, barriers, and media literacy capabilities. Part Two allows us to understand the reasons behind behaviors. Part Three studies some strategies to enhance misinformation verification ability.

Compared with the previous studies that mainly focused on young generations, the findings in this study provide updated and empirical information on Chinese elderly adults' digital media use. On one hand, the barriers and needs identified in this study call for efforts and support from many aspects, including the young generation, the whole society, and the coordination of the government. On the other hand, their initiative was also revealed in the study, which is different from the stereotyped image of media use among middle-aged and the elderly and is often overlooked in previous research.

6.1 The main findings

In this research, we investigate Chinese elderly adults' motives, barriers to WeChat use, and strategies to enhance misinformation verification ability. Based on the findings above and research questions, some main findings are outlined in this section.

1. Motives (RQ1.1 Why do they use WeChat?)

Based on findings above, a response to the research question on **motives (RQ1.1 Why do they use WeChat?)** emerges:

In general, it is confirmed in this study that communication is the primary motivation in WeChat use and this motivation is not only reflected in the communication with their children. Communicating with their old friends is an important motivator, especially for their first-time use. After the adoption, the convenience of communication and the effect of WeChat in expanding social interaction and realizing new life value has led to the continuous use and even the reliance on the use of WeChat. In addition, different from the image that elderly adults are usually regarded as digital immigrants and lack digital experience, the motivation for use as an upgrade product identified in this study calls for our attention to their previous experience in instant messaging apps.

In the survey, results from the questionnaire confirmed the importance of **communication** as a strong motive for WeChat use. As deduced from the literature review, personal motives such as entertainment or interests purpose (Baxter et al., 2012; Casado-Muñoz et al., 2015; Hilt & Lip schultz, 2004), maintain contact/communication with family & friends (Bosch & Currin, 2015; Caron & Light, 2016; Wei et al., 2018), acquire knowledge (Casado-Muñoz et al., 2015; Franco et al., 2015), keeping informed (e.g. news, photographs.) (Bosch & Currin, 2015; Wei et al., 2018), information exchange (such as sharing memory) (Cui, 2016; M. Zhang & Western, 2016), as alternative information sphere to participate political discussion (Guo, 2017) and social influenced have been identified as main motives for media use. Compared to these reasons, results from the questionnaire indicated that the most important motivation for WeChat use is communication, followed by "electronic payment or transfer" and "access to news and other information". When compared with other motivations, entertainment motivation is lower.

In focus group discussions, **4 main factors** were further identified as motivations in WeChat adoption: the need to join groups of classmates or comrades; as an

updated/alternative product of SMS/QQ; persuaded by children or friends; or motivated by self-curiosities. It is especially worth noting the **need to join groups of classmates or comrades** and their **previous experience in instant messaging apps**. Many people have lost contact with their friends because of their special living background and the need to **join groups of classmates or comrades** and to get in contact with their old friends is much stronger than in the young generation. Furthermore, different from the image that elderly adults are usually regarded as digital immigrants and lack experience, their previous experience in instant messaging apps needs to be paid attention to.

After the adoption, the facilities in communication and life have led to the continuous use and even the reliance on the use of WeChat. Exception for communication, some participants expressed that they realized their dreams or new life values through WeChat. WeChat offered them a new space to express themselves and build new social relationships.

When it comes to motives for better use, the motive for better use is relatively low. They only try to learn new functions or improve their use under unavoidable circumstances. Therefore, whether they can get help from skilled people is an influencing factor of the motive for better use. On one hand, the skilled people around can help the elderly adults in solving problems, however, on the other hand, the dependency on getting help from more skilled ones decreases the motivation in learning new things.

2. WeChat use & demographic factors (RQ1.2: Do their use of WeChat affected by gender, education background and living condition?)

My research question on **WeChat use and demographic factors (RQ1.2: Do their use of WeChat affected by gender, education background and living condition?)** try to investigate if demographic factors influence WeChat use. Results here indicate that: **1)** In the survey, no relationships between living conditions and WeChat use were

observed. However, findings from focus group discussions support the idea that living conditions or living with their children or not affect elderly adults' use of WeChat. **2)** Findings from both quantitative research and qualitative research all support the idea that education level influences elderly adults' WeChat use. People with shorter education time are more inclined to seek help from their children when they encounter problems than those with longer education and those findings are further supported by the findings from focus group discussions. **3)** Gender was confirmed as an influence factor in WeChat use. Results show that females are more inclined to seek help from their children while males are more likely to try to solve problems by themselves. In addition, men show more self-confidence than women when confronting misinformation. **4)** It is observed that people believe aging influences WeChat use, but this effect can be mediated by mentally young.

➤ *Living conditions & WeChat use*

In the survey, no relationships between living conditions and problem-solving preferences were observed. Results show that there was no significant association between living conditions (with their children or not) and if they usually ask their children for help when encountering problems, $X^2(1, N = 317) = 0.722, p = .422$. Analogously, no statistical differences were observed in living conditions (with their children or not) and whether they usually try to solve problems by themselves, $X^2(1, N = 317) = 1.163, p = .310$.

However, in focus group discussions, we found that children play an important role in their WeChat use. Most participants reported that they first learned WeChat from their children. This role becomes more important when the elderly encounter problems in their daily use. They highly rely on children to help them in solving problems. Some of the participants even must leave problems until their children come to help them. It is also worth noticing the problem of geographical isolation because of the process of urbanization in China. Many of the young study and work from countryside to cities, and from small cities to bigger cities. This isolation makes it more difficult for the

elderly to get help from their children. Thus, findings from focus group discussions support the idea that living conditions or living with their children or not affect elderly adults' use of WeChat.

➤ *Education level & WeChat use*

Education level is one of the vital variables in demographic factors. It was widely measured in previous studies as a representative of social status. Findings from the survey in this study confirmed the influence of education level on WeChat use. Significant differences were observed in different education levels when it comes to whether they usually ask children for help when encountering problems. There is a weak correlation between those variables, that is, **people with shorter education time are more inclined to seek help from their children when they encounter problems than those with longer education.**

This finding is further supported by the findings from focus group discussions. In focus group discussions, many of the participants expressed their ideas on **the influence of education level on the use of WeChat.** They believed that education level influences people's WeChat use, especially in the spread of misinformation. Most misinformation comes from people with little education around. People who are not well educated are more likely to share misinformation and spam, and those with good education are less likely to share misinformation around. Thus, we can see that findings from both quantitative research and qualitative research all support the idea that education level influences elderly adults' WeChat use. People with shorter education time are more inclined to seek help from their children when they encounter problems, and they are more likely to share misinformation than those with better education.

➤ *Gender & WeChat use*

In the quantitative study of this research, gender was confirmed as an influencing factor in WeChat use. In the survey, results show that women are more inclined to seek help from their children when they encounter problems. Accordingly, men are more likely

to try to solve problems by themselves. In addition, some gender differences were observed in WeChat use and some assumptions about gender differences have been overturned when people confront misinformation. In the analysis of gender and the third-person perception of misinformation, no significant gender differences in the third-person perception effect in misinformation sharing behavior were observed. The mean value of the third-person perception of male is even slightly stronger than that of females despite that the difference cannot be regarded as statistically significant. This result is not consistent with previous findings, but it is understandable. Previous research is mainly focused on games and pornography (i.e., V. Lo & Wei, 2002; Zhang, 2013), which in stereotype are generally considered to be more appealing to males while misinformation sharing behavior does not have such "radical" gender bias.

Furthermore, no significant gender differences were observed in the presumed frequency of sharing rumors from peers, but males' self-reported frequency of sharing information without verification is observed significantly lower than that of females. This result is accordant with findings from some previous research that females are more likely to have less confidence in themselves. However, there are no significant differences between males and females in self-reported misinformation verification ability as hypothesized that men might be more confident with themselves. Furthermore, when comparing objective misinformation verification ability, men's objective misinformation verification ability is higher than that of women.

In quantitative research, the findings of women are more inclined to seek help from their children when they encounter problems. While men are more likely to try to solve problems by themselves as observed in focus group discussions. Almost all the female participants in focus groups confirmed that they like to ask their children or friends to help them solve problems while some male participants expressed that they like to try to solve by themselves before asking for help. In addition, on the issue of dissemination of misinformation, male participants also showed more self-confidence. Almost all the expressions about other people's love to share false information come from male

participants, and the expressions are mostly mixed with the ideas of differences in education levels and social classes.

➤ *Age and WeChat*

The social status level is often regarded as a key factor of demographic factors in sociological studies. However, when it comes to the elderly, the influence of age is often discussed as a crucial factor. In focus group discussions, when talked about WeChat use, many of the participants highlighted the influence of aging. Most of the participants believe that young people are much better in frequency and proficiency than themselves:

However, this doesn't mean that elderly adults believe that age is the only decisive factor. At the same time, participants further state that **being mentally young** helps in the proficiency of WeChat use. In return, *“if someone doesn't know how to use WeChat, he/she will be regarded as a bit outdated and unfashionable” (G5-1):*

Thus, the findings here help provide an inside look at the perceptions of elderly adults on aging and WeChat use. It is observed that while acknowledging the influence of aging, on one hand, they also highlighted the key role of mentality on the other hand.

3. WeChat learning (RQ1.3: How do they learn to use WeChat)

My research question 1.3 focused on **WeChat learning (RQ1.3 How do they learn to use WeChat)**. Based on the findings above, answers to the research question on how they learn to use WeChat emerge:

In general, most elderly adults first learned WeChat from their children which stressed the importance of children in helping elderly adults with WeChat adoption. In addition to the help from their children, many elderly adults first learned from their former classmates when their classmates build groups in the reunite, and this emphasized the emotional need to communicate with their old friends again. Except for the ways above,

it is worth noticing that some elderly adults first **learned WeChat by themselves**, but the initiative is often overlooked in previous studies

In the survey, we found that most of the respondents learned WeChat from others while 27.1% of the respondents were self-taught. Nearly half (43%) of the respondents first learned WeChat from their children and about 1/5 of the respondents (20.2%) reported that they first learned from friends or other relatives. A small number of the respondents (7.9%) first learned from their husband/wife/partner. This indicates that the role of children is very important when elderly adults learn to use WeChat.

In focus group discussions, results obtained from the questionnaire were further confirmed. Most elderly adults **first learned WeChat from their children**. It's worth noting that some elderly adults first learned from their former classmates when their classmates build groups in the reunite. In accordance with the motive to join classmate groups as one of the main initial motivations for their first use, findings here strengthen the important role of classmates again. Synchronously, the initiative in WeChat learning identified among elderly adults is worth noticing. We had some of the participants report that they **learned WeChat by themselves**. This percentage of self-taught in the focus group discussion is a little bit lower than that was found in the survey. However, it is identified that men have more initiative than women. The participants who reported that they learned to use it by themselves were all males and all these participants also reported that they usually like to think and explore new things by themselves. Findings here call for the attention that not all elderly adults are passively accepted, and the autonomy here needs to be paid attention to.

4. Barriers and problem-solving (RQ2.1: What are the main berries in their use of WeChat?)

In the investigation on barriers and problem-solving, we have obtained comprehensive results answering my research question 2.1 about the main barriers in their use of WeChat (RQ2.1: What are the main barriers in their use of WeChat?):

In general, **privacy** and **physical factors** are two important problems. Specifically, physical problems, such as the cervical spine, and eye problems have limited their use of mobile phones for a long time, and this put forward the need for adjustments to adapt to the elderly, such as larger fonts and more reading functions. As for privacy concerns, the high privacy concern and low privacy protection ability lead the elderly users into a “privacy paradox”. It is worth noticing that the reason for the formation of this "privacy paradox" is not due to a lack of awareness of risks, nor the ignorance of long-term risks due to immediate benefits, but the result of the combined effect of digital pressure and insufficient protection capabilities. Thus, we can see their helplessness when facing the pressure of digitalization on one hand, but we need also to pay attention to their autonomy (privacy computing) and the complexity behind their negotiation.

Furthermore, children play the most important role in helping elderly adults learn to use WeChat and problems solving. However, the geographical isolation due to the urbanization process has made it hard for elderly adults to seek help from their children.

In addition, it is worth noting that not everyone is passively in need of help from others, and many elderly adults have the initiative to think and try to solve it by themselves. When encountering problems, genders and education levels might be influencing factors in problem-solving. It is found that men are more likely to solve by themselves while women are more likely to ask children for help. And people with longer education time are more inclined to solve problems on their own rather than seek help from their children than those who have been educated for a short time.

To be specific, in the survey, we found that privacy and physical factors are two important problems. **Privacy concerns** (48.58%) and **poor health conditions** (45.43%)

were regarded as two main barriers to WeChat use which put forward some need for adjustments to adapt to the elderly. Findings from the focus group discussion are consistent with findings in the questionnaire but those two factors were further discussed and explained. It is further explored and found that:

- Physical problems, such as the cervical spine, and eye problems have limited their use of mobile phones for a long time. Many people started to change to the form of listening instead of reading or started to limit their use time because of physical health problems. This put forward the need for adjustments to adapt to the elderly. For example, to provide necessary facilities that adapt to middle-aged and elderly people, such as larger fonts and more reading functions.

- Great privacy concerns and awareness of privacy were identified in focus group discussions. The compromise on privacy is not because there are no privacy concerns, but because of the low privacy protection ability and the high digitalization pressure. The high privacy concern and low privacy protection ability lead the elderly users into a “privacy paradox” which calls for the demand of improving their privacy protection ability. Moreover, privacy settings and operating methods that are more suitable for middle-aged and elderly people should be provided as well. The government should also strengthen privacy supervision and help promote enterprises to optimize design and operations. Furthermore, a variety of options, including non-digital operations, should be provided to help middle-aged and elderly people enjoy the digital age instead of being pushed forward to digitalization.

- The reason for the formation of this "privacy paradox" is not due to a lack of awareness of risks, nor the ignorance of long-term risks due to immediate benefits, but the result of the combined effect of digital pressure and insufficient protection capabilities. It was found in the focus group discussions that the interviewees rationally measured the convenience, pressure, and privacy disclosure risks that

could be obtained, and made the decision to maximize benefits or minimize risks, that is, "privacy computing". Respondents will try to weigh the complex relationship between risk, convenience, and digital pressure, and conduct strategic negotiations. In addition, we found that many elderly adults rarely post their life on WeChat Moment. The reason is not that they don't know the operation, but because of their concerns and cautious self-expression. In this research, we have seen the **helplessness of middle-aged and elderly people facing the pressure of digitalization and the need to improve their privacy protection capabilities**, but we have also seen the **autonomy (privacy computing) and complexity behind their negotiation**.

- It is found in this research that all of them have mastered basic functions. However, passive learning is mainly adopted. They have a low willingness to learn actively, and they will only learn when it is very needed.
- Children play the most important role in helping elderly adults learn to use WeChat, and children also play the most important role in helping them solve problems encountered in WeChat. However, the current situation is that many parents and children are in a state of geographical isolation due to the urbanization process. As a result, many people must ask their colleagues or wait until their children come back home. Thus, in addition to taking on the responsibility of digital back feeding and providing patient assistance to middle-aged and elderly people, children should also appropriately "empower" and "fault-tolerant" to give middle-aged and elderly people some room for trial and error.
- It is worth noting that not everyone is passively in need of help from others, and many of the elderly adults (53.3% of the respondents) have the initiative to think and try to solve it by themselves. When encountering problems, differences in different genders and education levels were observed: men are more likely to solve

by themselves while women are more likely to ask children for help. In addition, people with longer education time are more inclined to solve problems on their own than those who have been educated for a short time. Those who with a shorter education time are more inclined to seek help from their children instead of trying to solve it on their own.

5. Misinformation verification (RQ2.2 Are they able to verify rumors and misinformation in their use of WeChat or not?)

Based on findings in this study, we have obtained comprehensive results on elderly adults' misinformation verification ability, which answers my research question 2.2 (RQ2.2 Are they able to verify rumors and misinformation in their use of WeChat or not?). Generally, findings from the questionnaire demonstrate that their verification ability is at a medium level, and the ability to verify information released by the official media in the test is the strongest which shows their high trust in mainstream media. After an in-depth understanding of the verification process in the interview, it can be found that elderly adults have certain degrees of awareness and verification ability. In misinformation verification, they usually make the judgment directly based on **their own life experience** and **the tone of the article by the accumulated using experience**. As the "new entrants" of digital media, in real life, they have richer life experiences than the youth. These rich life experiences are the main basis for their judgment. This is their unique advantage, but this initiative is often overlooked. Of course, one's own experience is not a panacea. When it comes to the knowledge that is generally less understood by the public, such as medical knowledge, the effect of experience is limited, and it is difficult to verify only based on one's experience. The habit of relying only on experience without verification makes misinformation even more confusing.

➤ *High perceived misinformation verification ability with their own experience*

Most of the participants think that they **have a high level of misinformation verification ability**. When asked how to verify, most of them believe that they **can verify by their own experience and knowledge**.

➤ *Changes in their use of WeChat and their verification ability*

In the initial stage of using WeChat, they have higher trust in information in WeChat and they take it quite “seriously”. However, with the explosion of information, they become critical to information shared in WeChat.

An in-depth understanding of how middle-aged and elderly people judge information helps to investigate how to better improve their ability to discriminate information. On the one hand, their initiative and the power of experience should be paid attention to, and at the same time, hidden dangers of only relying on experience for verification should be aware of as well, for example, the potential risks of misjudgment of medical information. On the other hand, for the reason of the high level of trust in the mainstream media, which plays a role as a benchmark, being information gatekeepers, ensuring the quality of information, and publishing information in a timely and accurate manner will help improve their misinformation ability.

In addition, consistent with Davison’s (1983) third-person perception hypothesis, which has been supported in numerous previous research (i.e., Lev-On, 2017; Schweisberger, Billinson, & Chock, 2014; Tewksbury et al., 2004), data from this study provide initial empirical support for the third-person perception of misinformation sharing behavior in the context of social media, Chinese society, and elderly adults. It indicated that the third-person perception is held for misinformation sharing behavior, such that others are perceived as performing this undesirable behavior less frequently than oneself on WeChat. Furthermore, the third-person perception is found to be stronger in people following higher degrees of fact-checking habits, lower trust degrees in information in WeChat, and better verification ability. These results are accordant because people with lower trust in the information in WeChat are more likely to check

information from other more trusted sources, and people with better fact-checking habits are more likely to be more critical of information and have better misinformation verification ability. Findings are also accordant with previous research that media content credibility mitigated the third-person effect (Wei et al., 2010).

6. Strategies to enhance misinformation verification ability (RQ3: What strategies can be used to improve their critical use of WeChat among elderly adults? & Hypothesis: Misinformation verification training session in WeChat use facilitates a better misinformation verification ability in adult and older people.)

Based on findings from Phase 3, we have provided further evidence that misinformation verification training session in WeChat use facilitates a better misinformation verification ability in adult and older people (Hypo) and proposed some strategies to improve their critical use of WeChat among elderly adults (RQ 3).

Hypothesis: Misinformation verification training session in WeChat use facilitates a better misinformation verification ability in adult and older people.

In this study, it is proved that our **hypothesis** on misinformation verification training sessions in WeChat use can facilitate a better misinformation verification ability in adults and older people is **true**. Test in this study proved the hypothesis that the short time training helped enhance some of the participants' awareness to a certain extent. A short time training may not change participants' behavior immediately, but it can raise awareness of misinformation. Influenced by the traditional ideology and their education experience, participants are more accustomed to following the crowd, and not accustomed to expressing their own opinions. After the training and the anti-misinformation intervention during this period, people become more critical.

Strategies to enhance misinformation verification ability (RQ3: What strategies can be used to improve their critical use of WeChat among elderly adults?)

In this study, some strategies to improve the critical use of WeChat among elderly adults can be proposed based on our findings:

➤ **To provide training courses and supports specifically for the elderly adults**

As we have discussed above, a misinformation verification training session can raise awareness of misinformation and facilitate a better misinformation verification ability. Thus, providing more training courses specifically for elderly adults can be a useful way to improve their critical use of WeChat. In addition, considering the current situation of the shortage of training support, more support for education for adults needs to be provided. The support includes not just to providing training courses, but training professional teachers and establishing more training institutions for well-trained teachers.

➤ **To embed tools such as training programs, or verification games that are easy, accessible, and fast in their most used apps**

Society should try to be more patient and provide more support which starts from the angle of elderly adults. For example, some tools that are easy, accessible, and fast, such as training programs, or verification games, can be embedded in their most-used apps. In this way, people can access it easily and get informed instead of wasting much of their time.

➤ **More research on elderly adults should be done instead of focusing on the youth only**

On the academic level, more attention should be paid to the elderly adults and more research on elderly adults, especially empirical studies, should be done instead of only focusing on the youth. As Liang He from Hangzhou Normal University, who is also a part-time teacher at Hangzhou Special Education College, expressed in the interview: “research cannot rely on our inherent cognitions. For example, we may find that marginalized groups may not be as weak as we think.” Those studies may call for attention to the marginalized groups on one hand, but to find their

strengths and abilities on the other hand.

➤ **The mainstream media need to be a good "gatekeeper"**

In the test, we can find that people generally have high trust in information from mainstream media. This calls for the **mainstream media** to **strengthen fact-checking, reflect on their work and take the responsibility of being a "gatekeeper"** of information, to keep their credibility and help people to obtain credible information.

➤ **Multiple channels to debunk misinformation; transparency and keep timely update**

It is found from the test that multiple channels to debunk misinformation; transparency and keeping timely updates are 3 useful ways to raise trust degrees on information and defend misinformation:

In light of this, it is essential to point out the fact that there already are national fact-checking platforms and WeChat services against disinformation online. For example, Anti-rumor platforms, Ali Health, and WeChat Health. In WeChat, The Mini Program WeChat Health allows consumers to look up reliable information and check for epidemic information. This mini program helps against misinformation online, especially during the epidemic, the reasons why it has a positive impact on citizens as analyzed by observation are:

- It's an official platform disproving false online content
- Information is timely updated.
- Information on the epidemic is open and transparent.

➤ **A good atmosphere that welcomes critical thinking in the society**

Furthermore, a good atmosphere that **welcomes critical thinking in society** is helps debunk misinformation. When the whole society forms a positive atmosphere encouraging critical thinking and different perspectives and views, can people have the courage to put forward their own opinions and can promote critical thinking.

➤ **To enhance people’s awareness of misinformation at a specific individual level.**

As for individuals, we need to enhance people’s awareness of misinformation. It is worth noting that the awareness is not at a macro level, but at a specific individual level. That is, to realize the danger behind misinformation and let them know that people’s life is impacted because of misinformation.

7.2 The Study Limitations

Despite essential findings, this study has limitations. The conducted study has some limitations as follows:

First, the sample size of the questionnaire is around 300, and the sampling process cannot be regarded as entirely random.

Second, for the reason that there might be significant differences between rural and urban China, this current research limited the scope to urban China only. Thus, findings from this research cannot be generalized to the whole population of Chinese elderly adults. Further research could include people from rural China.

Third, being an exploratory investigation and because of the limitation of current conditions, the study used a purposive sample with a small number of participants with a short training time for the test. This means that generalization should be carefully done to the whole.

Forth, in this research, relationships between each factor were tested and some of the explanations were further analyzed in focus group discussions. However, the explanation is limited to the results of group interviews, and there are few interpretations from the perspectives of history and culture.

7.3 Implications

This study is inspired by the fact that under the pressure of digital society and information overload, middle-aged and elderly people are facing multiple crises and challenges in media use and information identification. In particular, misinformation is a symptom of the alarming phenomenon of harmful content woven into people's daily information diets, especially in the online sphere. This, coupled with the popularization of social media platforms among elderly adults, presents a red flag that calls for awareness and action. In light of this, this research focused on the media usage, barriers, and strategies for promoting media literacy among elderly adults in this digitalization process, especially on the strategies to improve their misinformation verification ability when misinformation prevails and threatens the world.

In the study, it is found that the **young generation** plays a major role in helping elderly adults to better use WeChat. This calls for them to take responsibility and help middle-aged and elderly people move smoothly into the digital society through "digital feedback" and appropriate "decentralization". On the other hand, we should also note that due to the acceleration of urbanization in China, most people are geographically isolated from their children, and we cannot rely solely on the children. Thus, this calls for our society to take responsibility and play an active role. In the study, it is found that the intervention of media literacy such as training and multi-channel rumor refutation is powerful to strengthen elderly adults' awareness and improve the initiative of information verification and their awareness of critical thinking. Therefore, **society and our government should provide more training activities, embed some training activities or games in their most used apps, and provide multiple channels to refute rumors and provide reliable information verification platforms** to help middle-aged and elderly people. Furthermore, our findings in the study also emphasize the importance that information verification platforms must be **transparent and keep timely updated** so that people can easily verify and find credible information in a short

time, which is conducive to the public forming the habit of verifying information on this platform.

In addition, we can see from the research that elderly adults maintain a very high degree of trust in mainstream media. Therefore, the mainstream media should take advantage of its credibility. This requires the **mainstream media to strengthen fact-checking, reflect on their work and take the responsibility of being a "gatekeeper"** of information, to keep their credibility and help people to obtain credible information.

Furthermore, a good atmosphere that **welcomes critical thinking in society** is also important. The whole society should create a positive atmosphere in critical thinking that encourages thinking and puts forward different perspectives and views actively, rather than passively accepting all.

7.4 Recommendations and Future Research

Considering the demonstrated implications and findings, this study puts forward recommendations to citizens, society, and the government:

➤ In this research, we have seen the helplessness of middle-aged and elderly people facing the pressure of digitalization and their needs, but we have also seen the autonomy (privacy computing, wisdom in misinformation verification, etc) and complexity behind their negotiation.

➤ The research also reflects that middle-aged and elderly people have high expectations for the country, the government, and the important role of their children. In addition to taking on the responsibility of digital back feeding and providing patient assistance to middle-aged and elderly people, children should also appropriately “empower” and “fault-tolerant” to give middle-aged and elderly people some room for trial and error.

➤ In addition, the government should also strengthen supervision, for example in privacy and in disproving false online content and help promote enterprises to optimize design and operations. For example, to provide necessary facilities that adapt to middle-aged and elderly people, such as larger fonts, reading functions, and users' easy fact-checking platforms. Furthermore, a variety of options, including non-digital operations, should be provided to help middle-aged and elderly people enjoy the digital age instead of being pushed forward to digitalization.

In addition, several lines of future research emerge from the results of the thesis:

1. Due to the limitation of our current conditions, the sample size and training time are limited. We look forward to practical research with a larger sample size and longer training time in the future.
2. Although there have been many studies on the use of WeChat in the past, most of them focused on young people, and less attention was paid to middle-aged and elderly people. In recent years, with the rapid development of the digital society, it is urgent to pay more attention to the use of media by the middle-aged and elderly. In the research results, we can also see that middle-aged and elderly people are not completely passive and powerless as imagined. Therefore, this kind of empirical research is necessary and needed. We look forward to more empirical research on middle-aged and elderly people, but not just appeals.
3. Since there may be differences between urban and rural areas in China, this research is limited to urban only. Further research may provide research on WeChat use among elderly adults in rural areas and some comparative research on urban and rural areas.
4. Forth, in this research, relationships between each factor were tested, but

we have not done all the further investigation on why it happens. Further research may provide some empirical studies and include more theories from the different academic fields to offer more general views and more exact explanations.

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Annex: Questionnaire

中国城镇中老年人微信使用情况调查

Survey on WeChat use among elderly adults in urban China

您好！首先非常感谢您抽出宝贵时间参与本次调查。这是一份关于微信使用情况的学术调查问卷，调查将以匿名的方式进行,仅供学术研究分析之用，您的信息将被完全保密，请放心填答！本问卷共分三个部分，可能占用您 10~15 分钟时间协助填写，再次感谢！

Thank you very much for taking the time to participate in this survey. This is an academic survey questionnaire on the use of WeChat. The survey will be conducted anonymously, and this questionnaire is for academic research analysis only. Your information will be completely confidential. Please feel free to reply! I'd be much appreciated if you could take 10-15 minutes to accomplish this questionnaire, thank you again for your great help!

第一部分：基本情况 Part 1: General Information

*共 9 道题目，请根据你的真实情况将答案写在横线上或在最相符的答案前划勾。

*There will be 9 questions in total, please answer according to your true situation.

1. 您的性别 What is your gender: 1) 男 Male 2) 女 Female

2. 您的年龄 What is your age: _____ (岁 Years)

3. 您共接受过多少年的正规教育 How many years of formal education have you accepted?

_____ (年 Years) (一般高中毕业是 12 年 high school graduation is 12 years in general.)

4. 您主要居住在 You usually live in:

1) 城镇 Urban 2) 乡村 Rural 3) 其他 Others _____ *

5 您主要居住的省份与城市是 Please choose city and area where you are living:

_____ 省 Province _____ 市 City [填空题] *

6. 您去年的平均月收入是（包括工资或退休金以及子女供养等）

What is your average income each month in this year? (including pension and support form children, etc.):

_____ (元 Yuan) *

7. 您主要的居住状况是（您主要与谁一起居住） With whom are you living with?

- 1) 独自居住 I live alone
- 2) 与配偶一同居住 I live with my spouse
- 3) 与子女一同居住 I live with my sons/daughters
- 4) 与子女以及配偶一同居住 I live together with my husband/wife/partner and with my sons/daughters
- 5) 其他 Others _____ (请写明 Please note)

8. 您是否已经退休? Are you retired or not?

- 1) 已完全退休 I have been retired
- 2) 已退休但仍从事兼职或义工等社会工作 I have retired but I'm doing part-time job or work as a volunteer
- 3) 未退休 I haven't retired

9. 您或您的家人之前是否有过与媒体或新闻传播方面相关的工作经验?

Do you or your family have any experience in media or journalism related work?

- 1) 我有但我的家人没有 I have and my family number don't have
- 2) 我没有但我的家人有 I don't have but some of my family number have
- 3) 我和我的家人均有 Myself and my family member both have
- 4) 我和我的家人均没有 None of us have

第二部分：微信使用情况 Part 2: WeChat use

*共 6 道题目，请根据你的真实情况将答案写在横线上或在相符的答案前划勾。

*There will be 6 questions in total, please answer according to your true situation.

10. 您是从何时开始使用微信的？（请在下方横线处填入您开始使用微信的日期）

When do you started use WeChat?

_____年 Year _____月 Month

11. 一般而言，您知道每天使用微信的时长吗？ **In general, do you know how long you use WeChat everyday?**

1) 不知道 I don't know

2) 知道。是多久？ _____ 小时(请填写) I know. It's _____ hours.

12. 最初是谁教您使用微信的？ [可多选] * Form whom/what ways you first learned to use WeChat? [you can choose more than one answer]

1) 配偶 From my spouse

2) 子女 From my children

3) (外) 孙或(外) 孙女 From my grandchildren

4) 朋友或其他亲戚 From friends or other relatives

5) 自学 Self-taught

6) 通过培训项目 By training program

7) 其他 Others _____ *

13. 以下因素对于您使用微信的重要性分别有多大？（请选择每道与您情况相符的选项）

How much does the following items matter for your motives of WeChat use? (Please select each option that matches your true situation.)

	完全不重要 Not important	不太重要 Slightly important	一般 Important	重要 Fairly important	非常重要 Very important
1.与子女保持联系 To Communicate with children					
2.与他人社交/保持联络 To communicate with others					

3. 电子商务或其他生活服务 For e-commercial and other life services					
4. 电子支付或转账 Payments or other transfer					
5. 玩游戏等休闲娱乐 Entertainment (play games)					
6. 获取新闻等资讯 Keep informed (read news, information)					
7. 工作/学习目的 For working/ study purpose					
8. 作为获取非官方媒体报道信息与观点的途径 As alternative information sphere					

14. 您在微信使用中的主要障碍是? [可多选] * What are the main problems in your WeChat use? (you can choose more than one answer)

- 1) 如视力等健康状况限制 Poor health condition such as eye sight
- 2) 缺乏学习使用的渠道 Lack of ways for learning
- 3) 担心信息泄漏 Fear of privacy problems
- 4) 不喜欢/不想用 Don't like or don't want to use
- 5) 没有障碍 I don't think there is any barriers for m
- 6) 其他 Others _____*

15. 当微信使用中遇到问题时您一般如何解决? [可多选] * What do you usually do when there are problems in your use of WeChat? (you can choice more than one answer)

- 1) 子女帮助 Ask son/daughter for help
- 2) 孙儿女帮助 Ask grandson/granddaughter for help

- 3) 配偶帮助 Ask spouse for help
- 4) 朋友或其他亲戚帮助 Ask other relatives or friends for help
- 5) 自己通过查看教程或上网查询等方式解决 Solve by myself by viewing tutorials or searching on the Internet
- 6) 其他 Others _____ *

第三部分：信息鉴别能力 Part 3: Misinformation verification

*共 15 道题目，请根据你的真实情况将答案写在横线上或在相符的答案前划勾。

*There will be 15 questions in total, please answer according to your true situation.

16. 当您在微信上发现侮辱，伤害或冒犯的内容时，您是否知道应该如何投诉举报？ Do you know how to report to WeChat when you noticed something insulting, injurious or offending on WeChat?

- 1) 不知道 No
- 2) 知道 Yes

17. 在微信中，下列哪些内容可能受到监管与限制？ [可多选] * Which of the following rules and rights is applicable to media content in WeChat? (you can choice more than one answer)

- 1) 诱导分享类内容，如“不转不是中国人”，“必转”等 Content inducing sharing, with title such as " Chinese must repost", "must repost", etc.
- 2) 题文不符、内容低俗的信息 Inconsistent texts and vulgar content
- 3) 有偿投票 Paid voting
- 4) 关于隐私的内容 Content in relation with privacy and intimacy
- 5) 暴力相关内容 Injury content
- 6) 性相关内容 Sexual content
- 7) 烟酒广告 Advertising on alcoholic beverages and tobacco
- 8) 以上均无限制 None of the above are constricted

18. 当您阅读微信中您认为重要的新闻或文章时，您一般： When you read news or articles from WeChat, what do you usually do with the information which you think is important to you?

- 1) 不会另外去查找信息 I usually don't search for information in other media
- 2) 会尝试在其他我认为可靠的媒体中查找一些相关信息 I usually try to look for information in other media that I consider reliable
- 3) 会从不同来源寻找信息并进行比较 I usually look for information from different sources and compare them

19. 以下因素对您是否信任某条消息的影响程度是？（请选择每题与您情况相符的选项）

When you consider your trust in the information, how much does the following items matter for you: (Please select each option that matches your true situation.)

	完全不重要 Not important	不太重要 Slightly important	一般 Important	重要 Fairly important	非常重要 Very important
1. 发布文章的公众号 platform (published on which official account)					
2. 文章来源机构或文章作者 Source (agency/ organism author)					
3. 分享或转发给您的人 From whom you get the information					

20. 您认为微信中的信息： What do you think of information from WeChat?

- 1) 全都是可信的 All of them are reliable
- 2) 大多数是可信的 Most of them are reliable
- 3) 只有一些是可信的 Only some of them are reliable
- 4) 只有很少一部分是可信的 Little of them are reliable
- 5) 都不可信 I don't think any of them are reliable

21. 您认为您的同龄人分享假讯息或者谣言频率是？ Do you think people at your age often share rumors or misinformation in WeChat?

1)从不 Never 2)很少 Seldom 3)偶尔 Sometimes 4)比较多 Often 5)经常 Very often

22. 当您看到您的某位亲友经常分享假讯息或谣言时，您会： [可多选] * What do you usually do when you see that your relatives/friends share rumors or misinformation in WeChat? (you can choice more than one answer)?

1) 直接回复指出这是假信息/谣言 Tell him/her that this is misinformation or rumor

2) 向她/她讲解如何辨别假信息/谣言 Explain to him/her how to identify misinformation and rumors

3) 找出相反的观点回应 Find articles with opposite opinions

4) 不作回应 Ignore and do nothing

5) 其他 Others _____ *

23. 您认为自己可以分辨微信中的谣言以及虚假信息吗？ Do you think you are able to verify rumors and misinformation in WeChat?

1) 完全不可以 Not at all

2) 基本不可以 Almost not

3) 有时可以 Sometimes can

4) 大多数情况下可以 In most cases can

5) 完全可以 In all cases can

24. 您会不经内容核实就将信息转发给他人吗？ Will you share the information to others without content verification?

1) 从不 Never 2) 很少 Seldom 3) 偶尔 Sometimes 4) 有时 Often 5) 经常 Very often

25. 您认为下方的这条信息是真实信息还是谣言？

Do you think the following information is true or rumor?

【生活】多吃碱性食物 对各种癌症说“NO”

肝博士 2016-08-08



你知道吗?在我们的身边有一类食物, 随手可得, 但它却可有效预防肥胖、色斑、高血压、高血脂、糖尿病等慢性病的发生, 甚至能有效预防癌症, 它就是“碱性食物”。

据相关研究表明, 多食碱性食物可促使体液的PH值呈弱碱性, 与酸性体质的人群相比, 碱性体质的人罹患恶性肿瘤的几率大大减小。那么生活中有哪些食物是碱性的呢?



其却是典型的碱性食物。



在我们的因素结构中, 很多食物都会改变我们人体的酸碱度, 使其偏离正常的PH值, 我们把降低机体正常PH值的食物称之为酸性食物, 提高机体正常PH值的食物称之为碱性食物。

酸性体质是百病之源, 碱性体质为健康加分, 所以要保

酸性体质是百病之源, 碱性体质为健康加分

“民以食为天”、“吃穿住行”、“饮食男女”, 各种论点都在阐述“吃”的重要性。吃好, 睡眠会好, 面容会好, 身材会好, 身体也会好, 吃好是人体健康美丽的第一大保障, 那么怎么吃才算好?

PH值是关键, 我们都知道健康人体组织的PH值应是在7-7.4, 血液的PH值在7.35-7.45之间, 呈中性偏弱碱性, 而这也是健康人体的酸碱度。

各种论点都在阐述“吃”的重要性

在很多人的常规意识中, 常常会把酸味的食物归为酸性食物, 其实这是一个误区, 比如柠檬, 虽然口感是酸味, 但

证机体拥有健康的PH值, 就要多吃碱性食物。那么生活中哪些食物是酸性、哪些是碱性的呢?如何快速检测?

食物酸碱性快速检测

一般而言, 对于食物的酸碱性有一个粗略的划分, 我们通常把除牛奶外的动物性食品归为酸性食物;把除五谷、杂粮、豆类以外的植物性食物归为碱性食物;把油、盐、糖、咖啡、茶等归为中性食品。



但是，这只是一个粗略的划分，因为有些水果如李子等，虽属植物性，但它却是酸性食物，而豆腐虽为豆制品却是碱性食物。对于常见食物的酸碱性，归纳如下：

▶▶ 强酸性食物

牛肉、猪肉、鸡肉、蛋黄、乳酪、甜品、乌鱼籽、柴鱼、金枪鱼、牡蛎、比目鱼、米、麦、面包、酒类、花生、核桃、薄肠、糖果、饼干、白糖、啤酒等。

▶▶ 中酸性食物

奶油、巧克力、葱、空心粉、炸豆腐、红小豆、萝卜、甘蓝菜、洋葱、鸡蛋、龙虾、章鱼、鱿鱼、鲑鱼、鳗鱼、河鱼、火腿、马肉等。

您认为该条信息为： This piece of information is:

- 1) 真实信息 True
- 2) 谣言 Rumor
- 3) 不确定 Don't know, not sure.

26. 您的判断依据是？ [多选题] * How do you make this choice? (you can choice more than one answer)

- 1) 公众号名称 Official account which published the article
- 2) 文章语气 Tone in the article
- 3) 证据的充分性与真实性 Sufficiency and reliability of evidence
- 4) 已有的知识 Own knowledge
- 5) 其他 Others _____ *

27. 您认为下方的这条信息是真实信息还是谣言? [单选题] * Do you think the following information is true or rumor?

治好了很多“癌症晚期病人”超级简单方法——空腹吃水果

新经络 2015-06-30

↑点击蓝字, 轻松关注

治好了很多“癌症晚期病人”超级简单方法——空腹吃水果

非我原创, 转载《腾讯健康博客》. 抛砖引玉, 仅供参考

空腹吃水果=抗癌

切記每天空腹吃鮮果, 非常有趣的文章。斯蒂文博士說: 他用這個非常規方法治好了許多癌症晚期病人, 請見下文-----

多虧有了這個關於水果和果汁的電子郵件, 它告訴了我們, 一個治癒癌症的戰略。我的成功率為80%。癌症病人死不了了, 不管你信還是不信, 治療方法終於找到了。對那些用常規療法, 治療癌症而死亡的患者, 我深表遺憾。

他們中沒幾個存活5年, 大多數用常規療法的病人, 僅活兩三年而已。常規療法沒有任何作用, 因為不用常規療法治, 病人也活兩三年。癌症病人一旦用了化療或放療, 他們的細胞就中毒了。就衰弱了。癌細胞就會因沒有強壯的抗體而得以迅速擴散。

吃新鮮水果: 一說吃水果, 我們就想到買水果, 切

成塊, 大快朵頤。其實, 沒那麼簡單。要講究吃水果的方法和時間。

什麼是正確方法呢?

千萬別再飯後吃水果, 一定要空腹吃鮮果。這樣水果會起到身體殺毒作用, 起到提供身體能量, 消肥減肥作用, 以及參與生化活動的作用。

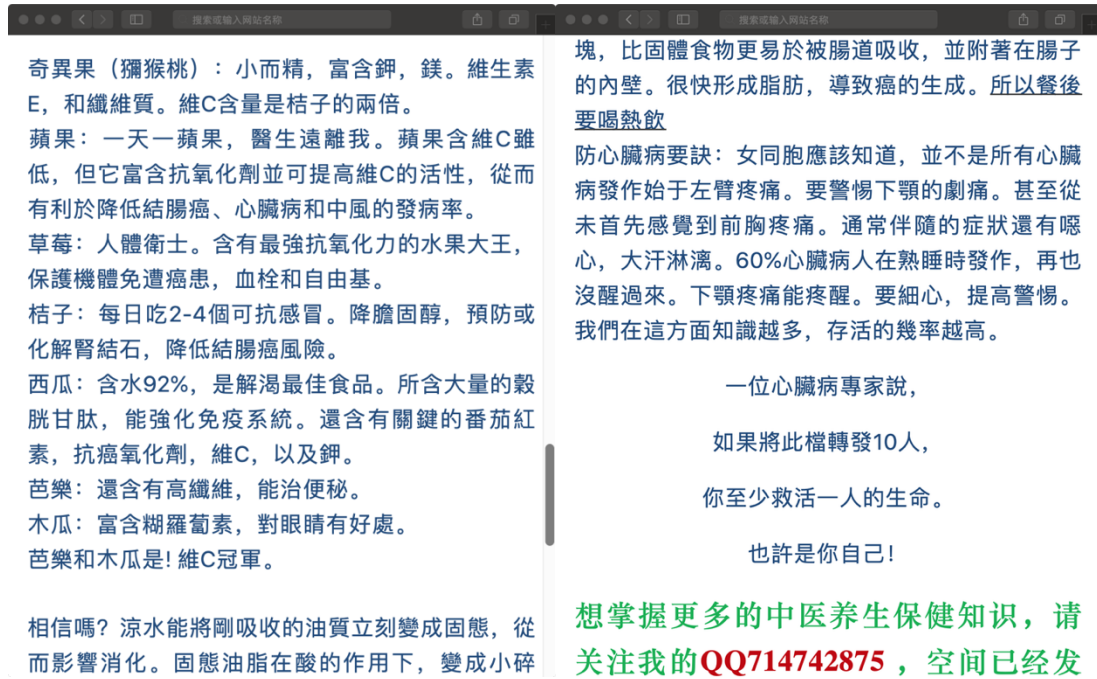
鮮果是重要食物。試想, 你在吃兩片麵包後, 又吃了一塊水果。本來水果是要透過胃壁進入腸子的, 但被食物擋住了。與此同時, 胃裏所有, 的食物都在發酵, 變酸, 水果一接觸到它們, 配著胃酸, 整個食物就壞了。

飯前吃水果。你會聽到有人抱怨: 我一吃西瓜就打嗝, 我一吃榴槤就脹肚, 我吃香蕉愛拉稀, 等等。那是因為水果與胃中腐敗的食物混合後產生的氣體

造成的。但是你空腹吃水果, 就不會現上述情況。白頭髮, 禿頭頂, 黑眼圈, 神經緊張, 在你空腹吃鮮果以後, 以上症狀一概消失。

赫伯博士研究。因為所有的水果到了身體裏都變成鹼性, 所以像桔子、檸檬這樣味道酸酸的水果, 還是都屬於鹼性食物。只要正確掌握吃水果的時間, 你就掌握了問題的關鍵, 讓水果助你美容, 健康, 長壽。富有活力, 幸福和苗條。當你想喝果汁, 就喝鮮果汁, 別喝罐裝果汁。也不要將水果或果汁加熱, 否則除了味道尚存外, 其他所有營養全部流失。吃完整的水果比喝果汁好。如果非要喝果汁, 那就慢慢地一口一口地喝。讓果汁與唾液充分混合後再咽下。

你還可以連續三天, 只吃水果不吃它物, 這樣你的身體得以清洗, 容光煥發, 令眾人驚喜。



您认为该条信息为： This piece of information is:

- 1) 真实信息 True
- 2) 谣言 Rumor
- 3) 不确定 Don't know, not sure.

28. 您的判断依据是？ [多选题] * How do you make this choice? (you can choice more than one answer)

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29. 您认为下方的这条信息是真实信息还是谣言? [单选题] * Do you think the following information is true or rumor?



中美经贸磋商进展如何? 商务部回应
央视新闻 1月10日

商务部今天(10日)举行例行新闻发布会, 新闻发言人高峰就中美经贸磋商回答了现场记者的提问。

高峰介绍, 贸易问题和结构性问题是此次中美经贸磋商的重要内容, 双方在这些领域的磋商是有进展的, 增加了相互理解, 也为解决相互关切奠定了基础。对于磋商时间延长的问题, 高峰表示, 时间长说明双方对于磋商的态度都是严肃、认真和坦诚的, 都在朝着落实两国元首重要共识的方向而努力。

对于下一步的磋商安排, 高峰表示, 中美双方正在保持密切联系。

商务部新闻发言人 高峰:

此次中美经贸磋商, 双方工作团队按照两国元首达成的共识, 广泛、深入、细致地交换了意见, 下一步双方团队将继续共同努力, 按原定计划推进磋商工作。

您认为该条信息为: This piece of information is:

- 1) 真实信息 True
- 2) 谣言 Rumor
- 3) 不确定 Don't know, not sure.

30. 您的判断依据是? [多选题] * How do you make this choice? (you can choice more than one answer)

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- 4) 已有的知识 Own knowledge
- 5) 其他 Others _____ *

*请您检查是否已回答所有问题。再次感谢您的热心帮助!

*Please check if you have answered all questions. Thanks again for your kind help!