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**Mobile Communication in Emergency:
Motivations, influencing factors and perceptions from college students**

MA Thesis

Global Journalism

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Abstract

This study, by giving empirical description of mobile communication from college students' point of view, aims to make sense of college students' different motivations on mobile usage in emergency, the factors influenced their adoption of mobile communication as well as their perceptions on the roles the mobile communication display.

This research is based on five groups of semi-structured focus group interview. While facing the time constraints and financial limit, these interviews were actually conducted online, with the help of instant messenger. The Wenchuan earthquake which happened in 2008 in China is taken as the case study of the whole research. Participants coming from universities located in Sichuan province (the one the earthquake happened) were supposed to help getting more in-depth experiences and perceptions on this usage.

The mobile communication in this research primarily refers to four forms of mobile usages, the calls & short messages, the mobile camera & video-recorder, the mobile newspaper and the mobile internet.

Four broad categories were found to answer motivations behind college students' use of mobile phone in earthquake emergency: to confirm safety of their family and friends, to record and share the live situation to relatives and friends, to find emergency information as well as to pass time. It was discovered that various factors influence college students' adoption of mobile communication: technical quality, available channels, information quality, personal habit, relevance to individual interests as well as recommendations from friends. At the same time, college students perceive that mobile communication basically serves as a connection to family and friend; while some other roles also can be summarized, like a supplementary channel to mainstream traditional reporting, alternativeness to other media as well as a promising media that would work well in the future. Generally speaking, the use of mobile phone in emergency is not regarded as influential as expected.

Besides suggestions to the government's emergency reaction with mobile communication, here are some interesting points when connect the results to relevant theories. Bolter and Grusin's (1999) remediation theory can not well explain why college students still choose to get emergency news from other media rather than the advanced mobile new media which enjoys great many advantages; Dutta-Bergman's (2005) channel complementarity theory is not supported by the fact that college students would like to get what they want only from a fixed channel rather than getting things from both traditional and new media.

KEY WORDS : mobile media, mobile communication, emergency, uses and gratifications

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Definitions and abbreviations

| | |
|--------------------------------|--|
| 3G | The third generation mobile technology |
| CCTV | China Central Television, the most influential official television in China |
| China Unicom | One of the two leading telecommunication companies in China before 2008. But now it was already merged into another telecommunication company. |
| CNNIC | China Internet Network Information Center. It takes orders from the Ministry of Information and Industry Technology, while it is operated by Chinese Academy of Sciences |
| CNR | China National Radio |
| Guangdong Mobile Telecom | The branch headquarter of the China Mobile (the most influential telecommunication company in China) in Guangdong Province |
| ICT | Information and communication technology |
| Mainstream (official) media | The mainstream media in China is almost equivalent to the official media, because most of the media in China are government-affiliated. |
| Mobile camera & video-recorder | The multimedia mobile phone with camera and video-recorder functions |
| Mobile communication | Mobile communication in this research is primarily defined to calls & short messages, mobile camera & video-recorder, mobile newspaper and mobile internet. |
| Mobile internet | The mobile phone with the internet access. |
| Mobile (phone) media | It refers to the mobile phone with multimedia function and internet access. |
| Mobile newspaper | The newspaper content in the form of multimedia (mobile phone) short messages |
| Multimedia mobile phone | The mobile phone which integrates photo/audio/video functions, internet access and so on. |

| | |
|------------------|--|
| Portal websites | Most influential websites with comprehensive information and function, like Sina.com, Sohu.com and 163.com. They are not official media, while enjoy guidelines from the government. |
| SARS | The Severe Acute Respiratory Syndrome. The SARS epidemic in 2003 caused great panic both in China and around the world. And there were thousands of people dead in China within few months. |
| SMS | The (text-based) mobile phone short message service |
| The Tibet Unrest | “The 2008 Tibetan unrest, also known in China as the 3/14 Riots, was a series of activities undertaken to protest government policies in Tibet. The unrest began with demonstrations on March 10, 2008 - the 49th anniversary of the failed uprising in 1959 in Tibet against Beijing's rule. The protests and subsequent riots began when 300 monks demanded the release of other monks detained since the previous autumn. Shortly thereafter, political demands surfaced more forcefully and the protest turned violent. Tibetans attacked non-Tibetan ethnic groups. Rioting, burning and looting began on March 14. The unrest happened during the week when major local government leaders were away for the annual National People's Congress in Beijing. According to Wen Jiabao, the Premier of the People's Republic of China, attacks on non-Tibetan interests in the Tibet Autonomous Region and several other ethnic Tibetan areas occurred at about the same time as attacks on dozens of Chinese embassies and consulates” ¹ . |
| Wenchuan | It is a county close to Chengdu, the capital city of Sichuan province located in southwest China. And on May 12, the devastating 8-magnitude earthquake happened there, bringing about tens of thousands people dead and heavy damage to properties. |
| Xinjiang unrest | “The 2008 Uyghur unrest was a series of ethnic tensions in the western region of Xinjiang, China, which began during March 2008. According to reports: |

¹ Emergency Managebook in China, <http://training.fema.gov/EMIWeb/edu/Comparative%20EM%20Book%20-%20Chapter%20-%20Emergency%20Management%20in%20China.doc> (4 June, 2010)

On March 18, 2008, a Uighur woman detonated a bomb on a city bus in Urumqi, escaping before the explosion. While officials denied the incident, the International Herald Tribune reported of residents confirming the bombing.

On March 23, 2008, Muslim Uighurs held anti-government protests in Xinjiang. Demonstrators took to the streets at the weekly bazaar in Hotan. The authorities maintain tight controls on information from the area and reports of deaths or their denial could not be independently verified.

On March 23 and March 24, 2008, as many as 1,000 people in Hotan and Karakax County took to the streets in protest.

On August 4, 2008, two men attacked a police post near the city of Kashgar. They threw two improvised explosive devices and attacked at the police with knives. According to the government news agency, 16 policemen died and another 16 were injured.

On August 10, 2008, in the oasis town of Kuqa, a series of explosions and shootings were reported. The explosions occurred at various police stations and office buildings. The events claimed 12 deaths, 10 of which were of the attackers themselves.

On August 12, 2008, unidentified men assaulted civilianguards with knives in Yamanya Town, leaving three dead and one critically injured. The Chinese central government has been attempting to curb the rise of independence movements consistently.”²

²Emergency Managebook in China, <http://training.fema.gov/EMIWeb/edu/Comparative%20EM%20Book%20-%20Chapter%20-%20Emergency%20Management%20in%20China.doc> (4 June, 2010)

1. Introduction

The mobile phone has come to be more and more regarded as “the fifth mass media” in China, especially with its popular usage during public emergencies. Emergencies, in Cohen and Lemish’s words, mostly take place anywhere, “in unexpected places and at unexpected times” (2004:5) without advanced warning, while at the same time, the mobile phone has the advantage that “it can operate almost anywhere, and of course anytime, even on the move”(Ibid). Therefore, the mobile phone with its mobility greatly fulfills the emergency demands in emergent situations. Nevertheless, not only its basic functions like calls and short messages, but also the other value-added services like the mobile newspaper, the mobile camera and video, the mobile internet and so on further motivate its prevalence when emergent events happened.

Its usages in the SARS epidemic in 2003 and the Wenchuan earthquake happened in 2008 have been mentioned in many scholars’ work. And mostly, the mobile phone with its various advantages in emergency usage receives positive comments from media scholars. This study sets out to investigate the media audience’s attitudes towards this usage. Case study is given to the Wenchuan earthquake in 2008.

Hopefully, it would help to fill in the gap on media audience’s perception on the usage of new media, especially of the mobile phone communication in emergency. Meanwhile, some of the suggestions are expected to inspire government’s crisis communication.

1.1 Purpose and research questions

The mobile phone with its multimedia function and internet access has received more and more attention. The SARS epidemic in 2003 and the Wenchuan earthquake in 2008 in China are two typical cases for the mobile communication in emergency. Some media scholars show the more and more important role of the mobile phone during the emergency in their works (Allan and Thorsen, 2009; Castells, 2006; Gordon, 2007; Zhang, Wang and Wu, 2009).

Meanwhile, there are lots of works on college students’ mobile usage, mainly on the

motivations behind (Aulter, 2007; Chen, 2007; Chung and Kim, 2009; Sanders, 2008; Urista, Dong & Kenneth, 2009). However, it is hard to find the research on media audiences' mobile usage in emergency, especially within Chinese circumstances. This study focuses on the college students' use of mobile communication in emergency, mainly investigating the motivations, the factors influencing their adoption as well as their perception on this usage.

The three research questions are as follows,

- 1) What are college students' motivations of the mobile communication during emergency?
- 2) What factors influence college students' adoption of the mobile communication in emergency?
- 3) What is college students' perception of the roles mobile communication play in emergency?

1.2 Thesis outline

The thesis is divided into six chapters. Following the introduction chapter, there is the background chapter to familiar readers with the general mobile phone development in China, the application of mobile phone in emergent events as well as the relationship between the official reporting and its audience.

What comes next is the previous research and theoretical chapter. In the first section of this chapter, researches on the power of the mobile phone in emergency and the ICT-based communication altogether show both the optimistic and pertinent findings on the new media usage in emergent events. Regarding to the theoretical framework, theories like uses and gratification theory, channel complementarity theory, diffusion of innovations theory and remediation theory are all elaborated, basically showing media audience's different media motivations and the relationship between the adoption of new media and traditional media.

In the method and materials chapter, there is a detailed discussion on whether the synchronous online focus group interview with the instant messenger is applied. Besides, it is also separated into parts on sampling and composition of the interviewees, analysis method, issues

on generalisability & validity & reliability as well as the research limitations.

The three sections in findings chapter respectively answer the three research questions. What follows is the final conclusion and discussion chapter which is based on the findings and its connection to the theories mentioned before. In the end of this chapter, there are also some suggestions on the application of mobile communication in emergency, especially for government's crisis communication.

2. Background

2.1 *The mobile phone in China*

“Modern wireless technologies began in the 1980s in China with the introduction of the pager in 1984 and cellular phones in 1987” (Castells 2006:19), while the booming mobile phone subscription marked its first appearance only in the mid-1990s, with the foundation of China Unicom (Mueller and Tan, 1997).

According to *China Statistic Yearbook 2003*, there were merely 20,000 Chinese mobile-phone subscribers in 1990 (Castells, 2006). However, statistics from the *Mobile Internet Behavior Report* (CNNIC, 2008) by China Internet Network Information Center (CNNIC) reveals that there were over 640 million mobile phone users by the end of 2008, of which 117.6 million were mobile internet users.

In addition, the latest statistic (from the website of China Ministry of Industry and Information Technology, 2009) shows that about 98 million more mobile phone users increased in the first eleven months in 2009, making the total mobile phone population reached 738 million. And another report reveals that the total number of mobile internet users reached 180 million (CNNIC, 2009a) by the end of August, 2009. Different from the expensive cost in countries like Sweden, the mobile internet has a low-cost advantage in China, which could be one of the possible reasons for its higher prevalence. The number of the mobile phone users and the mobile internet users keeps rapid growth in recent years. However, the large scale adoption of the mobile phone by Chinese people was only about ten years ago, firstly by younger generation (Li, 2009).

In regarding to mobile phone usages, the short message service (SMS) is too prominent to be ignored. Chinese people would like to send short messages to their relatives and friends, especially when they need to contact people in different cities. “The main reason is that it is more affordable to send a text message compared with direct voice dialog” (Li 2009:54). Calling to different cities is defined as the long-distance call which costs almost ten times higher than the expense of a local call (price may be different based on different price

package). However, there is no price distinction of sending messages among different destinations, and it only takes about 0.10 Yuan (¥) per message (\$100= ¥682, January 15, 2010).

The CNNIC report (2009b) on mobile media research defines the mobile phone media as the terminal of mobile communication in the forms of text, audio and video. It also shows detailed findings on five mobile phone usages in China, which are mobile newspaper, mobile audio broadcasting, mobile video, mobile TV and mobile novel.

The mobile newspaper is the one which displays the content of traditional newspaper in the form of mobile phone multimedia messages. The first mobile newspaper in China (the *China Women Daily*) came out on July 1st, 2004, which is followed by more and more media group's intention to publish mobile newspaper (CNNIC, 2009b). Nowadays, the penetration rate of mobile newspaper reaches 39.6%, which is much higher than the other four mobile media forms (mobile audio broadcasting 3.5%, mobile video 15.7%, mobile TV 3.8% and mobile novel 27.7%) (Ibid). In addition, when comparing occupations and education backgrounds of all the population on five mobile phone usages, students, especially the college students take a great percentage (Ibid).

Recently, the third generation mobile technology (3G) has been a hot topic among Chinese mobile phone users. "The standardization of third-generation mobile systems is accelerating at a fast pace due to the proliferation of high-speed wireless multimedia communications and mobile Internet services." (Zeng and Annamalai 2000:94). It (3G) developed slowly in China before. However, it has attracted more and more focus these two years, especially with the large-scale distribution of the 3G mobile numbers in 2009. According to *Report on the Internet and the 3G users* in 2009, it is expected that 23.1% of the mobile internet users will choose to use the 3G service within half years (CNNIC, 2009a).

2.2 The mobile phone in emergent events

Talking about mobile phone usage in emergent events, firstly, we need to make differences

between the similar terms, like emergency, crisis and disaster.

In Cohen and Lemish's words (2004:5), "Most emergencies happen suddenly, without advanced warning, without being able to be prepared. They can happen anywhere, in unexpected places and at unexpected times".

Although many scholars use them interchangeably quite often, Coombs and Holladay (2010) insist that there are distinctions between "crisis" and "disaster". They quote the US government's definition of "disaster" in their book,

A dangerous event that causes significant human and economic loss and demands a crisis response beyond the scope of local and State resources. Disasters are distinguished from emergencies by the greater level of response required (2010:59).

In Coombs' (2007) words, the definition of crisis relies on four criteria: unpredictability, threat to stakeholder expectations, impact on organizational performance, and potential for negative outcomes. By referring to many versions of definitions, Coombs and Holladay conclude that "since crises are by definition created due to organizational weakness they are inherently preventable, whereas disasters are inherently unpreventable since they are external to the organization and beyond control" (2010:98).

In my opinion, both crises and disasters reflect the characteristics of "emergency", which is, the sudden serious event involving immediate action. Thus they all can be defined as emergency. From this point of view, there are two patterns of emergency, one is preventable crisis like the Severe Acute Respiratory Syndrome (the SARS epidemic) in 2003 and the other is unpreventable natural disaster, like the Wenchuan earthquake in 2008.

The SARS epidemic crisis that burst out in early 2003 is taken as a significant case of mobile short message communication. When referring to citizen journalism landscape in China, Allan and Thorsen (2009:96) say, "this (short message) practice attracted much press attention during the SARS epidemic", but scholars like Castells (2006:207) believes that this event only

shows “limited nature of the sociopolitical uses of the mobile phone in general and SMS messages in particular”.

The first SARS case was found in the end of 2002 in Foshan, Guangdong province (Chen, 2008). However, with the convention of harmonizing negative voices, the local government automatically ignored its existence. Furthermore, no official news units reported this epidemic, which brought about large amount of infected people around the world later in a short time.

However, the news was not presented to the public until the victims and those who worked in local hospitals began to send short messages about the deadly disease through the mobile phone in early February (Castells, 2006, Gillmor, 2006). And according to the statistic from the Guangdong Mobile Telecom, the number of short messages sent on 8, 9 and 10 February 2003 are three times higher than it was in the same period in previous years (Gordon, 2007).

The Wenchuan earthquake that happened in May 2008 in Sichuan province is no doubt one of the most devastating natural disasters in human history. It took hundreds of thousands lives in few minutes. What is worse, countless aftershocks exacerbated all the losses in this disaster.

The 7.8-magnitude (later revised to be 8.0-magnitude) tremor devastated a region of small cities and towns set amid steep and forestry hills northwestern of Sichuan provincial capital of Chengdu. Striking in mid-afternoon on Monday, it emptied office buildings across the country in Beijing and Shanghai and could be felt as far away as Vietnam and Thailand (*China Daily*, May 13, 2008).

Before professional news teams arrived, the mobile phone with its multimedia function once again played critical role in this emergency. A remarkable example is that the mobile video clip which recorded the violently shaking dormitory by a student from Sichuan University was later broadcasted on China Central Television (CCTV) and on televisions in Hongkong. (Allan and Thorsen, 2009). Moreover, the first group of photographs of Wenchuan County came from a local citizen who escaped from the grave destructed Yingxiu Town in Wenchuan (Ibid), and the photos were just taken by his mobile phone.

The government also took use of group-sending short messages and the mobile newspaper to deliver the latest information in the earthquake area as well as its every effort of rescue work, which in turn, bolstered civilian morale efficiently (Zhang, Wang and Wu, 2009).

2.3 The official reporting and its media audience

In China, no matter the televisions, the radios or the newspapers, the great majority of the mainstream media are official media. At the same time, the portal websites (like *Sina.com* and *Sohu.com*), although they are not official, generally keep the same reporting direction with the official one. Namely, almost all the media in China are under the control of government.

In most cases, as it is written in China's Constitution (Article 40, 1982), contents which violate the state security, criminal investigation, public security or procuratorial organs are not permitted by the media. In practice, all negative voices that are not pro-government are easily 'ignored'. What brings about by this media policy is that most of the media audiences get used to believe all rightness of the news from the official media. The most outstanding official media, the China Central Television (CCTV), the People's Daily and the China National Radio (CNR) have enjoyed their great reputations among the public for many years.

However, with the coming of the new media, there are increasing numbers of people engaging in citizen journalism which are sometimes, challenging the government's bottom line in some issues.

3. Previous research and theoretical framework

3.1 Previous research

This section goes to elaborate previous research on the power of the mobile phone as well as the contribution of the ICTs-based communication in emergency. The advantages of multimedia mobile phone, citizen journalism, the spatial and temporal arrangements of persistent forms of communications in disasters, the application of social media and so on are all the issues mentioned here.

3.1.1 The power of the mobile phone in emergency

The characteristics of the multimedia device, according to Sundet (2007), are mainly its portable, constantly connected, personal, and small screen (Ibid). Pagani (2004) concludes the main advantages of multimedia mobile services perceived by Italians and Americans, which are mobility, availability, functions provided and accessibility. In the article *From Mobile Phone to Mobile Device: News Consumption on the Go*, Westlund states

The convergence of mobile phones and multimedia has meant that the technological architecture of the mobile phone has changed. The mobile phone is no longer only a telephone; it has become a personal mobile device that integrates both communication and multimedia functionality. (2008: 444)

Among many scholars' works, the usage of mobile phone is quite often noticed together with emergent events. Cohen and Lemish (2004:5), in their article *From flat tires to suicide bombings: Mobile phones and emergencies*, conclude that

The main advantage of the mobile phone is, as the term implies, is its mobility, that is, the fact that it can operate almost anywhere, and of course any time, even on the move. While most people live their daily lives in familiar and routine ways, an event that creates an emergency can lead to uncertainty, anxiety and stress. Under usual circumstances, the line telephone would be used to handle most situations and provide the needed interaction among people.

The SARS epidemic and the Wenchuan earthquake mentioned in background chapter are two typical cases for this application. At the same time, "citizen journalism" needs to be clarified

when discussing about the mobile phone usage in emergent events. Allan and Thorsen (2009:256) define citizen journalism as “when the people formerly known as the audience employ the press tools they have in their possession to inform one another”. While in my eyes, mobile phone with its multimedia functions perfectly fulfills the requirement of the “press tools”.

In Ling and Donner’s (2009) book *Mobile Communication: Digital Media and Society Series*, they believe that the ubiquitous mobile phone not only makes possible the spread of information and in-roads production of news, but also records breaking news. Mobile phone’s recent advances to facilitate citizen journalism lies in

many phones and applications allow for immediate uploading of photos to web sites, social networking platforms and photo-sharing sites. The same is now occurring with video shorts on mobiles; third-generation networks are fast enough to support real-time streaming from camera phones to the web, allowing almost anyone with a camera phone to be a participant in the creation of “news” (Ling and Donner 2009:119).

Based on Fink’s (1986) four stages crisis model (prodromal, acute, chronic and crisis resolution), Zhang (2007) mentions four corresponding points on the SMS’s effectiveness in emergent events. In first prodromal stage, it helps to alert the public rapidly; in acute stage, it aids to notify the public and to kill rumors in very first time; in the third stage, it assists the public to feed back and to involve in decision-making; in last resolution stage, it could greatly pacify the public and provide humanistic care.

All the findings above seem to be predominantly in favor of the influential power of mobile phone usage in emergency. Gordon (2007) investigates the extent the mobile communication challenged conventional and official sources of information in three critical cases, the Chinese SARS outbreak in 2003, the south-east Asian tsunami in 2004 and the London bombings in 2005. And his conclusion is different from all those optimistic findings illustrated above,

the use of mobile phone technology in critical situations would be beneficial to the public sphere and that mobile phone usage might influence the primary

definitions of news, news agendas and news gatekeepers. There was some indication of this but less than might be expected. (Gordon 2007:316).

The actual reasons for the “less than might be expected” are basically the repression from the government, the inadequate communications between countries being influenced and a lack of coordinated communications (Gordon, 2007).

Castells (2006:207) expresses similar opinion when referring to the Chinese SARS case, “The SARS outbreak of 2003 in China illustrates the limited nature of the social political uses of the mobile phone in general and SMS messages in particular” with the Chinese government’s successful manipulation of the information dissemination.

Generally speaking, there are enough studies illustrating the great power the mobile phone plays during an emergency, while only a small portion of works look at its application in emergency in a critical way, especially from the angle of government news control.

3.1.2 The ICT-based communication in emergency

The information and communications technologies (ICTs) are bringing about remarkable changes in response to disasters (Palen and Liu, 2007). In their article entitled *Citizen Communications in Crisis: Anticipating a Future of ICT-Supported Public Participation*, Palen and Liu pay attention to the spatial and temporal arrangements of persistent forms of communications, and “how the emerging information pathways that result serve different post-impact functions” (2007:727).

They claim that during crisis, citizen-to-citizen communications come from the need to help and be helped. “People not only seek response- and rescue-relevant data, but opportunistically and actively provide it as well” (Palen and Liu 2007:732). However, when it is in crisis, various kinds of communication depend on “what was available when and to whom, and what needed to be communicated” (Palen and Liu 2007:733). Therefore, beyond all the overwhelming supports to the great power of mobile communication, Palen and Liu’s research (2007) significantly mention different practical issues on the ICT-based communication application.

At the end, they conclude three information pathways, which are: “communications within the public affected by a crisis”, “between members of the public who are affected by the crisis and those outside it”, and “between the official public information officer function and members of the public” (Palen and Liu 2007:733-734). As for implications from the information pathways, there is one point that is quite related to mobile communication,

mobile applications that use geographical-, social-, and community-awareness and social recommender services might not be usable in the immediate aftermath of disaster strike, but can serve an important sociological function at a later phase once infrastructural repairs are made (Palen and Liu 2007:734-735).

It is almost the first time that the infrastructure weakness is considered as one of the possibilities in mobile emergency application. Moreover, they argue that both the new digital media and the traditional paper media all have their own functions in serving different temporal phases and spatial digital zones (Palen and Liu, 2007).

Sutton, *et al.* also emphasize the significance of the ICT in crisis,

the increasing presence of information and communications technology is making peer-to-peer communications and public participation more visible—and their influence more apparent—because ICT-based interactions often leave digital ‘traces’ that persist and diffuse (2008:1).

Through examining the ICT-based social media (like “social networking sites, text and instant messaging applications, blogs, wikis and other web forums”) (Sutton, *et al.* 2008: 2) as “backchannel” in emergent event like the Southern California Wildfires in 2007, Sutton, *et al.* find that the majority of their questionnaire respondents choose to acquire information by contacting friends or family with the mobile phone, which is ranked firmly in front of other means like the alternative news sources and individual blogs, web forums, photo-sharing sites and Twitter (2008).

However, they also confirm the importance of other traditional news outlets such as those national and local news networks for helping reducing information shortage during crisis. But the social media has already been adopted as useful and viable sources either by the at-risk populations, the traditional media and the emergency management personnel (Sutton, *et al.*, 2008). And what is of great weight is that

Traditional news media are increasingly relying on information generated by members of the public, as well as co-opting social media that are commonly used for backchannel communication, as additional methods of information dissemination (Sutton, *et al.* 2008: 6).

The latest researches, mostly from the connectivIT & the Natural Hazards Center, University of Colorado, give focus on the usage of the “new new media” (Levinson, 2009) like Twitter, facebook, Youtube and so on in emergency, once again showing the important role the ICT-based communication plays.

Referring to adoption of the new technology, there are the suggestions that “when faced with a need and having important and direct experience of usefulness with it, people are more likely adopt a new technology for the long term” and “technology adoption seems to be correlated to the occurrence of crisis and mass convergence events” (Lee Hughes and Palen 2009:9-10).

Overall, not like findings in last section on the power of mobile phone in emergency, most of the researches on the ICT-based communication give more pertinent and reasonable comments on the new media application in emergency. Here are not only the positive comments on those new media, but also more on the cooperation relationship between the old and the new. Moreover, some studies also present reasonable factors that would influence the adoption, which makes the findings more pervasive.

3.2 Theoretical framework

Uses and gratifications theory is one of the crucial frameworks in this study, and it basically explains the active audience and their media choice. The channel complementarity theory,

which is based on the uses and gratifications theory, further argues that the media audiences choose different media (both the new and the old) to satisfy their different needs. The following diffusion of innovations theory illustrates the general adoption tendency of new media, while the remediation theory serves as a ‘handbook’ for new media understanding.

3.2.1 Uses and gratifications

3.2.1.1 Uses and gratifications theory

The formulation of the uses and gratifications theory is as follows,

1) The audience is conceived of as active, that is, an important part of mass media use is assumed to be goal directed...(2) In the mass communication process much initiative in linking need gratification and media choice lies within the audience member ...(3) The media compete with other sources of need satisfaction. The needs served by mass communication constitute but a segment of the wider range of human needs ...(4) Methodologically speaking, many of the goals of mass media use can be derived from data supplied by individual audience members themselves —that is, people are sufficiently self-aware to be able to report their interests and motives in particular cases ...(5) Value judgements about the cultural significance of mass communication should be suspended while audience orientations are explored in their own terms ...(Katz *et. al.*, 1974: 21-22, from Renckstorf 2004:2).

In general, it means that the active media audiences choose different media to satisfy their diversified psychological needs. Both Katz *et al.* (1974) and Rubin (1983) believe that each media has its own function to satisfy the need of media audience. Based on some scholars’ research (Palmgreen & Rayburn, 1979; Rayburn, Palmgreen, & Acker, 1984), Chung and Kim assume that the audiences’ media selection is grounded on “their beliefs and feelings about how well the medium satisfies their needs” (2009:6). The general theoretical conclusion of many uses and gratifications studies is that “the gratifications sought motivate the use of a particular medium in an audience” (Leung 2007:117). Therefore, media audiences have their opinions on the unique function of certain media plays, and then they go for the best fit one when it is needed. It is also coherent with Okazaki’s (2006:130) conclusion on three basic tenets of the theory, “media adopters are goal-directed, active media-users, and aware of their needs”.

The uses and gratifications theory explains “why people choose a certain technology or service, how they use it, and what outcomes they feel they have gained from the experience” (Auer 2007:144). Shin (2009:46) regards the uses and gratifications theory as an influential approach to inspect “how users use various mass media”. And besides its usage on the traditional media, recently it has been popularly used among the Internet, the mobile phones and the wireless technologies (Ibid). Thus it is safe to use this theory to be one of the fundamental theoretical frameworks in this research.

Besides, Rubin (1994:419) ascribes the determinants of media use to “people’s needs and motives to communicate, the psychological and social environment, the mass media, functional alternatives to media use, communication behavior, and the consequences of such behavior”. However, in Shin’s (2009) point of view, the uses and gratifications theory pays too much attention to what users do with media, while ignores the media’s influence to users. Chung and Kim (2009) summarize some other possible determinants on media consumption. For example, besides the functional consumption, there are also some other barriers lying across the media consumption like working conditions, channel availability and the other family members’ media choice. Moreover, it is hard to empirically measure users’ various gratifications (Katz *et al.*, 1974, McGuire, 1974). In addition, Lin (1999) and Angleman (2000) argue that the theory needs to be revised when it is to fit new media like the mobile device, because there will be updated scales.

To conclude, the uses and gratifications theory better serves the theoretical demands in this study. However, when it is applied to the mobile media adoption, focuses should be given to issues on the mutual influences between the media and its audience and new items relevant to the mobile media gratification.

3.2.1.2 Motivations in uses and gratifications

Motivations and needs, although there are conceptual differences, still enjoy connection in psychology. Generally, needs are regarded as the starting points for motivations (Maslow, 1943). In my understanding, motivation go further than need, which is to say, when we refer to motivation, it already exists as psychological needs. In Ang’s (1995) opinion, information

seeking, entertainment, interaction with others, and gaining personal identity and so on are the audience's diversified motivations on media. Katz, Gurevitch and Hass (1973) mention five broad categories of motivations to the traditional mass media, which are "integrative (credibility, confidence), affective (aesthetic, emotional), cognitive (understanding), escape/tension release, and social contact" (Rice and Katz 2008:457).

There is no obvious difference on gratifications from the TV watching between different scholars' research. The gratifications of the British children's TV watching are mainly on passing time, learning, forgetting, arousal, relaxation, companionship as well as being a habit (Greenberg, 1974). Rubin (1983) classifies different TV gratifications as to relax, for companionship, as a habit, to pass time, for entertainment, for social interaction, for arousal and to escape.

Many researches explain gratifications on the internet usage. A study classifies six motives from college students, which are "entertainment, social interaction, passing time, escape, information, and Web site preference" (Kaye 1998:34). Another study on college students' motivation on the internet usage, finds "the Internet serves interpersonal utility functions (such as relationship building, social maintenance, and social recognition) as much as entertainment and information utility functions" (Leung 2006:5), which are the same with the three underlying motivational categories from the Wollfradt and Doll Internet Motivation Scale (Matsuba, 2006).

On the basis of many scholars' researches on gratifications for the telephone usage, Leung (2007) concludes items like sociability, instrumentality, reassurance, entertainment, acquisition as well as time management. Moreover, in Leung's (Ibid) research on college students' motives in the SMS mobile messaging, he defines six main categories of gratifications of the SMS use, which are entertainment, affection, fashion, escape, convenient and low cost as well as coordination.

In Chung and Kim's (2009) opinion, researchers try to investigate different gratifications on

different media, because the media audiences are predicted to have certain gratifications on a particular media and thus they would like to select different media to satisfy their different levels of gratifications. There are many researches on gratifications of the mobile phone usage, and mostly are done with college students or young adults (Aulter, 2007; Chen 2007; Chung and Kim's 2009; Sanders, 2008; Urista, Dong & Kenneth, 2009).

Leung and Wei's (2000) study is taken as one of the first on mobile phone gratifications, in which they find mobility, immediacy and instrumentality as the evident instrumental motivations, while affection and sociability as the intrinsic factors. In their study on gratifications on the mobile phone use among the Hong Kong citizens, they classify the following seven factors: fashion/status, affection/sociability, relaxation, mobility, immediate access, instrumentality, and reassurance, in which the 'reassurance' means the safety and security in emergency. Shin proposes three latent gratifications for the portable internet, which are "perceived synchronicity", "perceived connectedness" and "perceived iniquitousness" (2009:46).

Ling (2004) defines three main functions of the mobile phone: safety, microordination and hypercoordination, of which the first item is highly relevant with the emergency situation. He (Ibid) further elaborates that the mobile phone's portability greatly contributes to individual's constant need to get emergency service. However, the perception of the safety function is found to be connected with gender and age (Ling, 2004). The microordination, according to Ling and Yttri (2002), mainly refers to the daily activities. The hypercoordination is filled with "social and emotional content" (Sanders 2008:5) such as making calls and sending the short messages to relatives and friends.

There are different motivation categories for different media. However, if we see through the appearance to perceive the essence, they are all chiefly included in the three motivation items (information, interpersonal communication and entertainment) from the Wollfradt and Doll Internet Motivation Scale (Matsuba, 2006). Then the three items can be generally used to evaluate motives for different media.

3.2.2 Channel complementarity theory

The channel complementarity theory by Dutta-Bergman (2005) is mainly based on the selective exposure theory and the uses and gratifications theory. It argues that “the users of a medium who satisfy a particular functional need also use other media types to fulfill that need” (Dutta-Bergman 2004a: 659). Therefore, it is contrary to what the displacement model states that with the coming of new media, the audience would correspondently reduce their time spent on existing traditional media.

Duguid (1996) and Nunberg (1996) believe that the nature of the content, the features of the audience as well as the context all together determine the consumption of a media. The selective exposure theorists (Zillmann and Bryant, 1985; Finn, 1997) emphasize the media audience’s underlying motivation for particular media selection. Besides, Dutta-Bergman (2004b) further elaborates that it is a product of active choice to expose to different media content. Thus, his interpretation for the selective exposure theory is consistent with the key concept in the uses and gratifications theory.

Considering main ideas from both the selective exposure theory and the uses and gratifications theory, Dutta-Bergman develops the channel complementarity theory which maintains “individuals who are interested in one particular communicative function are likely to use both traditional and new media to gratify their functional needs with respect to that particular domain” (2004a:663).

However, it is not the first time the complementary relationship makes itself known to the public. As early as in 1982, Grotta and Newsom (1982) found that the cable television helps increasing the television use; in 1997, Robinson *et al.* (1997) detected the complementary relationship between the computer-mediated communication and the print media. At the same time, their (Ibid) research shows no evidence on the time spent on the computer-mediated communication and the radio or the television.

The complicated asymmetric relationships between the new media and the traditional media stimulate the concept of functional equivalence (Kayany and Yelsma, 2000). Simply, each

media has its particular functions in people's daily life. For example, the existence of the Internet can not displace the television usage because they substitute each other's functions.

Moreover, they (Ibid) claim the importance of the context of the media use with arguing that "the function of a medium or functional displacement of other media can be understood only within the context of their use" (Ibid: 218). Meanwhile, Kayany and Yelsma (2000) criticize the technology determinism brought by many computer-mediated communication researches. On the basis of many scholars' researches, they (Ibid: 219) mention series of the contextual variables that influenced technology consumption, like "social contexts", "socially defined symbolic meanings of technology", "relational variables", "group norms", "group identity", and "relational and physical proximity to other group members".

Dutta-Bergman's channel complementarity theory is partly derived from the uses and gratifications theory. They both mention the active audience for media selection and the underlying motivation, while Dutta-Bergman's theory pays more attention to the functional complementary relationship between the old media and the new one. However, it is indicated that both of the two theories are in defect of mentioning the diversified contextual variables.

3.2.3 Diffusion of Innovations

Rogers contributes a great many to the development of the diffusion of innovations theory. In his words (Rogers 1995:12), the innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption.", while the diffusion is "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers 1995:5). Four components for the diffusion of innovations are "innovation, communication channel, time and the social system" (Rogers 1995:11).

Rogers's view on the process of the diffusion of innovations is that it firstly occurs slowly, and then goes fast after it reached some point. The study on the twitter adoption in mass convergence and emergency events shows that "when faced with a need and having important and direct experience of usefulness with it, people are more likely adopt a new technology for the long term" (Lee Hughes and Palen 2009:9). In addition, the individuals' perception on

advantages of the innovation promotes a rapid adoption (Rogers, 1995).

Pagani's (2004) research on determinants of adoption of the third generation mobile multimedia services shows four fundamental factors (usefulness, ease of use, price and speed) that influenced the adoption of multimedia mobile services. Westlund (2008:448) argues that the transfer speeds, usability, user-friendliness are the elements of "how well the mobile device can be used for different types of multimedia, such as news services".

Therefore, the same with ideas from the theories mentioned in last two sections, it is never a single determinant deciding the media consumption or adoption.

3.2.4 Remediation theory

Remediation: Understanding New Media is a book written by new media theorists David Bolter and Richard Grusin. In this book, they elaborate three critical concepts regarding to new media which are "immediacy, hypermediacy, and remediation" (Bolter and Grusin, 1999).

3.2.4.1 Immediacy and hypermediacy

To elaborate the logic of immediacy, they mainly refer to the term "virtual reality". In their point of view, it means "a medium whose purpose is to disappear" (Bolter and Grusin 1999:21). The computer scientists' idea is,

the goal of virtual reality is to foster in the viewer a sense of presence: the viewer should forget that she is in fact wearing a computer interface and accept the graphic image that it offers as her own visual world (Bolter and Grusin 1999:22).

That is to say, the immediacy helps to eliminate natural existence of the medium between the information seeker and the provider, and "to diminish and ultimately to deny the mediating presence of the computer and its interface" (Bolter and Grusin 1999:23).

With the mouse and the pen-based interface, the two which replaced the wholly textual command-line interface and assimilated the computer to the physical desktop, bring the user

“the immediacy of touching, dragging and manipulating visually attractive ideograms” (Ibid). However, the greater immediacy the three-dimensional virtual spaces allow the user to move in and around in an “interfaceless” interface without recognizable “buttons, windows, scroll bars, or even icons as such” (Ibid).

In a word, immediacy provides a much easier way for the user to acquire information in the two or three-dimensional world as if he or she do in a real world. The immediacy on he mobile phone lies on its immediate dissemination of information anytime and anywhere. Levinson (2004) elaborates the immediacy of the mobile phone with comparing it to other traditional media like the telephone, the radio and the television as well as the desktop Internet. He argues that all those previous media make information delayed, because neither of them could provide the most updated information anytime and anywhere.

Today the cellphone is heating up and rapidly evaporating those last puddles of delay. When the cellphone has completely permeated our society, when immediacy in media is the de facto order of the day, there will no longer be any contradiction between immediate and media, no whiff of oxymoron. At that point, media and immediate will be one and the same (Levinson 2004:56-57).

Hypermediacy, literally, means the ability to integrate multiple media to one. Bolter and Grusin (1999) take the heterogeneous “window style” of World Wide Web (WWW) as the most significant example of hypermediacy (Ibid:31). “Its raw ingredients are images, sound, text, animation and video, which can be brought together in any combination” (Ibid). Thus in my view, hypermediacy can be taken as multiplicity with different media forms operated “in a single and apparently unified medium” (Bolter and Grusin 1999: 34).

While although in their book, the WWW is the most representative example that exemplifies the hypermediacy, in my point of view, the mobile phone with internet access shows the updated “moving” portable hypermediacy. Levinson (2004) concludes the multimedia characteristics of mobile phone in his book,

The cellphone is currently the epitome of mobility in media because it allows both reception (like the book and the transistor radio) and production (like the Kodak

camera), allows this immediately and long distance (like the transistor radio), and allows this interactively (like no prior mobile medium) (2004:52).

Talking about this portable mobility, he said

as soon as the cellphone began hooking into the Internet or offering some of its features—books, newspapers, magazines, live and delayed conversation in text, telephone, videophone, radio, music recordings, photographs, television—the cellphone became a home away from home for communications, a mobile home or pocket hearth, a traveling medium of media (Levinson 2004:53).

Considering the connection between the immediacy and the hypermediacy, I think the hypermediacy is the premise to achieve immediacy. Just like Bolter and Grusin's (1999) words, "In every manifestation, hypermediacy makes us aware of the medium or media and reminds us of our desire for immediacy" (Ibid: 34).

3.2.4.2 Remediation

Remediation is defined as the representation of one medium in another. Bolter and Grusin also claim that "remediation is a defining characteristic of the new digital media" (1999: 45).

What might seem at first to an esoteric practice is so widespread that we can identify a spectrum of different ways in which digital media remediate their predecessors, a spectrum depending on the degree of perceived competition or rivalry between the new media and the old (Ibid).

However, there are apparent different degrees for the representation of one medium in another. Firstly, like the CD-ROM picture galleries and collections of the literary texts, the new medium tries to absorb the older medium completely to minimize discontinuities, just like "the content of the older media could simply be poured into the new one" (Ibid).

The very act of remediation, however, ensures that the older medium cannot be entirely effaced; the new medium remains dependent on the older one in acknowledgement or unacknowledged ways (Bolter and Grusin 1999:47).

Secondly, the new media can aggressively refashion the older media with still keeping the presence of the old one, thus making the sense of multiplicity or hypermediacy (Bolter and

Grusin, 1999), like different forms of the mobile phone usage mentioned in background chapter. The mobile phone could also be regarded as the most representative new media that applies to remediation. With collecting almost all previous media forms like the newspaper, the radio, the television and the internet, it greatly achieves the latest remediation, and thus causing discussion on “the fifth mass media” among media scholars.

4. Method and materials

I decided to conduct the online semi-structured focus group interview with the help of the Instant Messenger with undergraduate college students in China. Non-random theoretical focus group sampling was chosen as the sampling method. All the interviews were conducted in Chinese. Each of the mixed gender group has 4-6 participants.

4.1 Focus group interview

The criteria for taking specific scientific method(s) to do research depend on the purpose of the study. Based on the research questions illustrated above, this study mainly aims to investigate college students' experience and attitude on the mobile phone media application in emergency.

The focus group interview made itself a popular method for media audience study in the early 1980s (Deacon *et al.*, 1999). Morgan (1997) claims the focus group method is to investigate participants' experience and perspectives. Deacon *et al.* explains what he called the rich qualitative material are those “transcripts of people discussing their views and actions in their own words and, to some degree, on their own terms” (1999: 55).

In Zeller's (1986: 1) words, “when the goals of the research are general, call for qualitative data, require data that is not in the respondent's top-of-mind, and when there is minimal prior knowledge about a particular problem and the range of responses likely to emerge, the focus group may be the appropriate research design” (from Byers *et al.* 1991:64). He (Zeller 1986:2) also believes the focus group “has the potential of providing a methodology of exploration which allows participants to express their concerns within a context that is useful to the scientific community” (Ibid).

Speaking of its advance to the individual interview, Krueger and Casey (2000:11) claim “the focus group presents a more natural environment than that of the individual interview because participants are influencing and influenced by others - just as they are in real life”.

In a word, the focus group has every reason to be chosen as the research method in this media reception study.

4.2 Synchronous online focus group interviewing using Instant Messenger

The difficulties to interview Chinese college students in groups lie primarily in the vast distance between Sweden and China. Considering China's broad territory, the financial limit as a student and the constrained time, I had to change my mind to this real-time online focus interview with the help of the free popular instant messenger.

4.2.1 Online focus group

One of the earliest recorded usages of the online focus groups in academic social research is Murray's (1997) health professionals study. Stewart *et al.*'s (1998, from Bloor *et al.*, 2001) pilot study on young women's health risk perceptions employs the synchronous online focus groups approach with the help of the chatting software to interview participants located in different cities in China and Australia.

Many scholars present their supports of this online method for doing academic research. Bloor *et al.* (2001) claim that what he called "the virtual focus group" method absorbs the principles of group data collection and the communication technology in traditional way. And the virtual focus groups can be regarded as "a useful stablemate in the focus group tradition" (Ibid: 75). Besides, Hodder (1994) argues that the synchronous online communication integrates the features of oral and written chat. Besides, this method is resembled to traditional focus groups with their real time interaction between the interviewer and the participants with the aid of relevant software (Oringderff, 2004). Moreover, Berg expresses very optimistic idea on the computer-mediated interview method,

As technology advances, methods used in qualitative research must strive to keep up - or at least seek ways to take advantage of these technological advancements because such environments provide the researcher and respondent an experience similar to face-to-face interaction insofar as they provide a mechanism for a back-and-forth exchange of questions and answers in what is almost real time.

Berg (2007:112, from Hinchcliffe and Galvin 2009:321)

All statements above support the argument that plentiful similarities greatly exist between the traditional face-to-face interview and the “new and innovative” (O’Connor and Madge, 2003: 135) online approach. No matter how much difference that cannot be ignored between these two methods, there are still great many reasons to fully apply the online approach in my research process.

Geography, budget and time factors are always looked as the main factors for utilizing this online method. As Hinchcliffe and Gavin (2009: 321) illustrate in their article, “Through the Internet, connections can be made with a broad range of people otherwise difficult to access. It cuts across time, space and barriers to interaction meaning that communication is no longer geographically bound...”. After elaborated a number of advantages of the online interview, Chen and Hinton (1999) conclude it as a low cost method for collecting primary research material when there is funding or time constraints. Moreover, O’Connor and Madge (2003) state that the utility of cyberspace as a research medium makes the geography restriction as well as the interaction ways between the researcher and the participant that are not available in the real world became true.

Based on all the explanations, the online focus group approach fully solved the obstacles that lie across my way to conduct the focus group interview for Chinese college students from Sweden.

4.2.2 Instant messenger and the conduct of the interview

Hinchcliffe and Gavin (2009: 321) define the IM as “an electronic online communication system that combines the facilities of a telephone-synchronous conversations, and ‘turbo charged’ email, producing a written record of the conversation; rapid ‘real-time chat...at lightning speed’ (Flynn 2004:8)”.

In Stieger and Anjas’s (2006: 552) article *Using IM for internet-based interview*, they directly evaluate the IM as “an Internet-based service that lends itself to be used to conduct online

interviews”. Text messages, spoken language, and files are three main types of exchange of the instant messenger (Stieger and Anjas, 2006).

With its faster and conversational way of communication (Hinchcliffe and Gavin, 2009), self-archiving capability (Flynn, 2004), free access to download, opinion expression promotion (Gunter, 2002), flexible temporal and spatial application, higher student popularization (Hinchcliffe and Gavin, 2009), group chatting function and other features as well, the IM could be taken as the most representative synchronous online platform for doing focus group interview with students.

It is known that MSN and Yahoo! Messenger are popular instant messenger softwares worldwide. Highly equivalent to these software products, QQ, the Chinese version of MSN, which is developed by Chinese company Tencent, occupied “about 80.1% of the IM market share in China” (Lu, Zhou and Wang 2009: 29). Remarkably, comparing occupations between the users of MSN and QQ, the younger generation, especially students, takes an overwhelming proportion.

My interview tasks all depended on the text-based group chatting function of the QQ platform. The synchronous group chatting function, which means anyone in the preset groups were able to read and reply all the others’ posts. I myself acted as both the researcher and the moderator of the interviews. The selection of available members was reliant to the researcher’s friend-network to seek all those “respondents who are most likely to aid theoretical development” (Deacon 1999: 52). In participants seeking process, voluntary students who had willingness to join were informed about the discussion topic and research questions. Thus with their consents, I added them respectively to five groups in my QQ account. After consulted with all group members for their common convenient time, different dates of the interview for different groups were respectively notified according to their convenience. Participants decided their favorite place to take part in the online discussion, mostly in their dormitory with the QQ installed in private computer and the Internet access. The group discussions started when all group members logged in.

4.2.3 Advantages VS disadvantages

Besides obvious fast, low cost, spatial flexible conveniences discussed above, there are series of other features that should be well elaborated here. And only if firstly talks over all these issues in detail, can the researcher do the practical interview research in a proper way.

The visual absence and the written-reliance are two distinct issues that brought a great many controversies when the online approach is applied in practice. The detailed discussion on the strengths and the weakness of synchronous online focus groups are basically around these two features. The visual absence easily causes anonymity. However unexpectedly, many researchers mention great openness resulting from the anonymity. Similar to Bloor *et al.*'s (2001) words in their discussion on virtual groups, Hinchcliffe and Gavin's study (2009) on evaluation of the real-time online interviews finds that their respondents felt more honest when there is no presence of another person. Clarke's (2000) study also mentions all the advances brought by the perceived anonymity, such as increasing confidence, active participation, reflection and so on. The virtual interactions help participants to feel free to express themselves candidly, and thus produce flourishing dialogues, especially among young people (Fox *et al.*, 2007). In addition, based on Murray and Sixsmith's (1998) opinion, Kazmer and Xie (2008:271) claim that the benefits of the decreased sense of social presence "introduces less bias and can help elicit more sensitive information from participants, improving data quality".

Apart from all the points elaborated above, one of the key differences between the online text-based approach and the traditional method is automatic transcription (Kazmer and Xie, 2008). Different from face-to-face interview which calls for the later audio or video-based manual transcription, the text-based method with the IM platform can generate conversation scripts by itself, and thus "moving part of the time cost of transcription from interviewer to participant" (Ibid:265). However, although there are seeming chaotic scripts created by active multiple conversations, it is not a problem for participants to manage and interpret, not mention to the moderator (Stewart and Williams, 2005).

To conclude, besides the convenient self-transcription, the visual absence brought by

computer-mediated discussions has “the potential to produce more ideas, a higher equality of participation, and more outspoken advocacy than face-to-face group exchanges” (Fox *et al.* 2007:544).

The written-reliance feature also receives many backings from the scholars. The dominating backing for the written-reliance is chiefly around the statement that non-verbal cues will not be misread (Clarke, 2000). The non-verbal cues here mainly refer to the data such as “setting, expression, movement, phatic noise” (Stewart and Williams 2005:409). In addition, the lack of verbal cues in synchronous online communication could also be made up by expressing emoticons (Murphy & Collins, 1997).

However, plentiful claims to support the online interview approach are by no means to ignore its weakness. The visual absence creates distance from the interviewer and the participants, which in turn, causing the impossibility of observation of participants and the missing interpretation of the context. “In the disembodied interview all the subtle visual, non-verbal cues which can help to contextualize the interviewee in a face-to-face scenario are lost”. (O’Connor and Madge 2003: 137) Oringderff (2004:409) also mentions the negative effects of the “all-inclusive text” such as offense and meaning misconstruction brought by lacking of nonverbal cues and the vocal absence.

Furthermore, it is apparent that the text-based synchronous online group interview easily produces “discontinuities and non-linear conversations” (Kazmer and Xie 2008:268) with different discussion threads simultaneously active. Apart from this, the distance between participants, vocal absence as well as the group feature, whether admit them or not, undoubtedly influence the moderator’s control of the discussion (Chen and Hinton, 1999)

I fully appreciate series of weakness from the synchronous online focus group approach. However, I still believe that any research method have its pros and cons. The critical issue here is that the researcher should be vigilantly aware of all the disadvantages of the approach being used, and then try to diminish the negative influences as much as possible.

4.3 Sampling and composition

There are four to six students in each group. And totally five such groups were conducted through the real-time online approach. In many scholars' statements, having 6 to 8 members in a group is encouraged (Bloor *et al.*, 2001), although the group size could be ranged from three to fourteen participants (Pugsley, 1996). Based on the most common choices, Morgan (1997) develops his version of "rules of thumb", in which the group size is 6 to 10 participants. The virtual focus group can be much larger size to create richer data (Bloor *et al.*, 2001).

However, considering simultaneous multiple threads, the researcher's identity to be both the interviewer and the moderator and the possibility that some one who promised to come actually being absent when the interview begins, I firstly decided to set the group size to 4-6 in each group. Murray's (1997) study as one of the earliest examples for using online focus group also only involved 6 to 8 participants. "the more participants in the group the more difficult it becomes for the transcriber to attribute sets of interaction to specific individuals" (Bloor *et al.* 2001:28). In addition, the larger group size does not make sense when there are low involvements from the participants.

Homogeneity and heterogeneity are two controversial issues concerning the group composition. In Morgan's (1997) book, "sex, race, age and social class" are the most common background variables. However, with students from the college as a whole to study, all these variables above are less important. Anyhow, the purpose of the research is not to make differences between sex, race, age and social class about the mobile media perception.

"Too heterogeneous may result in conflict and the repression of views of certain individuals"(Bloor *et al.* 2001:20). The most appropriate choice is to have "homogeneity in background and not homogeneity in attitudes" (Morgan 1997:36). The homogeneous mix-gendered familiar friends were chosen as participants in each group. The familiar relationship is able to stimulate the participants to speak more freely and openly. "The more familiar, comfortable and unthreatening the setting of the focus group, the more open the

discussion can be expected to be” (Bloor *et al.* 2001:78). Saying the homogeneity, I mean most of the participants in each group are from the same university to make sure their similar backgrounds.

As for the amount of groups, three to five groups are commonly recognized (Morgan, 1997). The five groups of mix-gendered college students came from universities located in Sichuan province (the one the earthquake happened). In practice, there are 28 participants involved in my interviews. They are all gathered through my friend-network in China, especially in that earthquake province. For example, all my possible friends were asked to find their friends who were college students in Sichuan province when the earthquake happened, and then to further ask whether they would like to engage in such kind of interview. Some other ways of engaging respondents were also applied, like to have notices in university websites’ bulletin board, but there was no valuable result. Therefore, when it was difficult to find participants, I asked more help to my friends’ friends to help me finding available respondents. With all participants from this particular province, I believed that the earthquake witness have more ideas on this topic than those who didn’t experience. The selection criteria are mainly based upon :1) those who experienced the earthquake when they were college students; 2) those who are interested in this topic and would like to share more about their experiences, attitudes and perceptions; 3)those who have proficient typing skills and are quite familiar with the usage of QQ (Instant messenger).

Another relevant aspect is the structure of the interview. The less-structured or semi-structured interview has the advantage to “promote an active, open-ended dialogue” (Deacon 1999:65) to make the conversation more naturally flowed to produce much more ideas. However, the less-structured interview needs the control from the interviewer with an interviewer guide. The less-structure easily causes diversified topics from different groups, making it difficult to analyze between groups (Morgan, 1997). In practice, an interviewer guide helps the interviewer to focus on questions in the guide to ensure all questions to be asked.

All participants are ordered as follows,

Group 1 Respondents 1-1 to 1-6

Group 2 Respondents 2-1 to 2-6

Group 3 Respondents 3-1 to 3-6

Group 4 Respondents 4-1 to 4-4

Group 5 Respondents 5-1 to 5-6

4.4 Analysis

All the data analysis work is based on the bricolage method (Kvale and Brinkmann, 2009). “Bricolage is something put together using whatever tools happen to be available, even if the tools were not designed for the task at hand” (Kvale and Brinkmann 2009:233). With the bricolage method, the researcher may firstly go through all the conversation texts to get a general impression, then go to those interesting parts which indicate diversified attitudes to a phenomenon, figure out metaphors to grasp key meanings, and finally try to visualize findings in various forms (Ibid).

What followed my multiple-reading of the empirical conversations was the first analytical step to classify the materials into three broad categories: 1) college students’ different motivations on the mobile communication in emergency, 2) influencing factors on college students’ adoption of the mobile communication in emergency, 3) college students’ perception on the role the mobile communication plays during the emergency. The categorization was basically grounded on the interview questions, the theoretical framework as well as participants’ reflections during the interviews. In the second step, respective themes were subcategorized into different items to show diversified motivations, factors and perceptions behind college students’ mobile communication. In the later stage for result presentation, the meaning condensation was used to compress long conversations into brief statements, then to get a general idea. The translation work started when all the categorization and meaning condensation were finished. The findings chapter is filled with rich interview quotations for vivid elaboration.

Krueger’s (1997) five factors to analyze the materials were also taken into account in

collaboration with what is illustrated above. Byers *et al.* (1991) summarize the five aspects as follows,

1. Consider the words. The researcher should consider both the actual words used by participants and the meanings of those words.
2. Consider the context. The researcher should examine the context by identifying the "triggering stimulus" for a comment and then interpreting the comment in light of the context or stimulus.
3. Consider the internal consistency. Participants often change or reverse their positions. The researcher should note when there is a shift in opinion which is relevant to the purpose of study.
4. Consider the specificity of responses. Researchers should give more weight to responses that are specific and concrete rather than those that are vague and ambiguous.
5. Find the big ideas. Big ideas emerge from "an accumulation of evidence—the words used, the body language, the intensity of comments— rather than from isolated comments" (Krueger, 1988, p. 116). In other words, the researcher should not get caught up in counting the number of times something is said; rather, look for patterns.

(Byers *et al.* 1991:75)

4.5 Generalisability, validity and reliability

The aim of the qualitative focus group method is not to generalize the population as it is in quantitative approach (Bloor *et al.*, 2001). It is hard to ensure randomness because it is impossible to conduct a focus group interview with large amount of the population (Wells, 1974). The exploratory approach is to seek "prescientific knowledge" (Calder, 1977) and to operate "constructs and hypotheses" (Byers *et al.* 1991:67). The goal of qualitative research is "to generate ideas for scientific constructs or compare scientific with everyday explanations"(Byers *et al.*1991:68). Therefore, to generalize the conclusion to a larger population as what the quantitative did is insignificant in this qualitative research.

In Kvale's view, to validate is to check (checking for researcher effects, for the meaning of outliers, looking for negative evidence, checking out rival explanations and so on), to question

(the relationship between the questions and the answers) and to theorize (what is investigated) (1996:242-244).

As is said in previous section, the interviewees in this research are college students from universities located in the earthquake province. As the witness, they were expected to have more ideas to share. The semi-structured interview with its openness and flexible feature helped to reduce the researcher effect as much as possible. Along with participants' answers, the researcher reconfirmed their meanings by asking "do you mean...". Only if there is a certain reply, can the researcher stop to next questions. During the analysis period, all major and minor findings were paid attention to and be given possible explanations. In the findings chapter, the rich empirical data were used to prove all the conclusions and interpretations being summarized, thus to make a good validation.

As for the reliability issue, Byers *et al.* (1991:69) proclaim that it is less important with the purpose of the focus group research to "ask 'why' rather than 'how many', to generate hypotheses rather than assert their representativeness". The reliability is connected to a proper sampling, data collection, and analysis as well as theory application. Besides, the interviewer reliability is in particular related to leading questions which "may inadvertently influence the answers" (Kvale1996:235).

All issues on reliability of sampling, data collection and analysis have already been talked in previous section in the method and materials chapter. In the conclusion and discussion chapter, all the findings were linked to theories mentioned before. At the same time, it is difficult to fully avoid leading questions during all the interviews. In Kvale's (1996:158) words, "leading questions do not always reduce the reliability of interviews, but may enhance it", and what are crucial to the interviewer is to "make the orienting questions explicit" (Kvale 1996:159), to fully aware "where the interview questions should lead, and whether they will lead in important directions, producing new, trust-worthy, and interesting knowledge" (Ibid).

4.6 Limitations

Some of the limitations have already been discussed in methodology chapter. The follows are limitations that deserve crucial emphasizing.

To only use the earthquake in 2008 as the emergency example is one of the biggest limitations in this research. Anyhow, there are different kinds of public emergencies recently happened in China, like the Tibet unrest, the Xinjiang unrest, the H1N1 swine flu case and so on; while the earthquake is only one typical natural disaster among different sorts of emergencies. Thus some of the findings from the research are merely applicable to the earthquake or other natural disasters. The future research on the mobile emergency communication should try to find differences and similarities on different kinds of public emergencies.

At the same time, it is too hard to get empirical materials on the mobile communication during emergencies from all age levels. Therefore, the research only concentrates itself on college students, which is an age group with higher level of mobile phone penetration. Another reason for choosing the college student as the target population is that it is more convenient to get available participants who are interested in the topic and would like to share some of their experiences. Besides, to make sure that the participants have plenty ideas on the topic, the research chooses to gather participants from universities located in the earthquake province.

Another limitation of the research is time limit. When I decided to conduct the focus group interview with college students, it was already in the end of January. However, what makes the situation worse is that all college students were on their long Spring Festival holiday during the whole February. Thus I had to wait until the new term began in the beginning of March. Even after the new term starts, it took ages to find available contact persons and students who would like to get involved from universities in that faraway province.

The time constraint and financial limit all together decide that it is not practical to do the interview physically. Then, just as what is mentioned above, I had to conduct the five focus group interviews online with the help of the instant messenger. Apparently, there is a lot of weakness brought by this online method in contrast to the real interview; while meanwhile,

there are also some strengths contributing to the research by this method. One of the remarkable weak points is the hard remote control of the involvement of those participants. For example, some of the participants who promised to come were absent or a little late to get logged in the conversation; some of them were distracted by other things around them.

As is shown in the findings chapter, the mobile communication being investigated in the research is mainly around the calls & the SMS, the photo & video recorder, the mobile newspaper and the mobile internet. The reasons to confine the mobile communication to these four usages are as follows: the calls & the SMS stand for the basic mobile functions; the photo & video recorder represent its multimedia functions; the mobile newspaper could be regarded as a better fitness of traditional media to new media; while the mobile internet is the most advanced feature which greatly promotes the development and penetration of mobile phone recently. All those four usages are also those ones initiatively posted by participants.

Last but by no means least, here is also the limitation that the researcher works as the coordinator, the interviewer and the final interpreter. Therefore, the integrated role, to some extent, influenced the data analyzing process. For example, the interviewer know clearly what he or she wants to get, thus the interview questions and the final conclusions are probably affected by the researcher's agenda setting .

5. Findings

This study mainly investigates four mobile phone usages (the call & SMS, the mobile phone camera & video recorder, the mobile Internet and the mobile news paper) that are relevant to emergency use. However, the general conclusion is that most of the mobile phone usages, especially the news gathering function by the mobile newspaper and the mobile internet are not that popular in the earthquake emergency because of the diversified factors such as technical quality, available channels, information quality, personal habit, relevance to individual interests as well as recommendations from friends.

The major motivations behind various mobile usages are to inform personal safety to parents and friends on the first time (by calls & the SMS), to record and share the live situation to relatives and friends (by the mobile phone camera & the video-recorder), to find emergency information (by the mobile internet) as well as to pass time (by the mobile newspaper). Among all those four motivations, the interpersonal communication by calls and the SMS is most significant.

As for perceptions on the roles the mobile phone played in the earthquake emergency, most of the participants believe that with its calls & the SMS functions, it substantially acts as a critical connection to parents and friends. In regard to the power of the individual earthquake photos and real-time videos, most of them view those materials as a beneficial supplementary channel to mainstream traditional reporting, while still a small portion of the participants believe that those materials easily bring about rumors and panics among the public. In cases of the effectiveness of the mobile newspaper and the government messages, a majority of the participants state that it is encouraging when received the government messages after the earthquake, at the same time they believe that the mobile newspaper is not able to be influential, especially with its limited information.

Furthermore, participants complain much more on series of the weakness of the mobile communication technology during the earthquake, and in turn they express a high expectation on the potential capacity of the mobile phone usage in emergency, especially with the coming

of the third generation (3G) mobile technology.

5.1 Motivations of mobile communication during the emergency

5.1.1 To inform personal safety to parents and friends as well as to make out their status on the first time

Like popular usages in daily life, all participants voice their highly urgent demand on the mobile phone in early stage of the earthquake. A majority of them mention that it is their first reaction to contact their family when they realize the destructive earthquake is happening. According to the group conversations, mobile phone is considered as the most potential communication tool when the emergency is at its initial period. One male participant mentions the critical importance of the mobile phone to him, “Even when I was on my way of escaping, I only take the mobile phone with myself. Yes, I know that means the mobile phone is pretty crucial in my subconscious (especially at that moment)” (respondent3-1).

It shows that when there is an incoming dangerous situation, people in emergency regard constant communication to the outside is crucial to them. And generally speaking, all the possible constant communication goes to the mobile phone which is full of convenience at an urgent moment. However, the unavailable or bad signal condition of mobile communication caused by the devastating earthquake becomes a vital obstacle. A female participant concludes her mobile phone use in a short time after the earthquake, “I am sure I use it at that time. However, both the call and the SMS are failed. There is a great demand for the mobile phone use, because that is the only possible (communication) device available on our hands to get each other’s safety status”(respondent 5-1).

When were asked what they would do if there is no signal limitation, all most all the answers are coherent with this, “It’s no doubt that I will report my safety to all those people I cared about , my family and my friends, with the help of phone call and the SMS...” (respondent 1-1). “I start calling my family even when it is shaking” (respondent 3-3), one male participant said. A female participant’s description is more vivid and detailed,

It was just two minutes after the earthquake happened, my uncle asked me (through the internet) if there is the earthquake in Chengdu (the capital city of Sichuan province), I had too scarce time to answer him until I realized the internet was already disconnected. It's about two hours later I received a short message from my uncle asking if I am still OK. I tried to reply him but the message can not be sent successfully. I was so worried about their worries (about me), so I kept sending the short messages all the time although I know it is almost impossible to send it out... (respondent 2-1)

Obviously, the demand of constant communication is directly related to safety status reporting among people in emergency, their parents and friends. Therefore, in the first stage immediately after the emergency, the news-related motivation is less than the motivation on interpersonal communication.

Calls and the SMS, the two original functions of the mobile phone are widely used by college students to fulfill their needs to confirm their beloved ones' safety status. Obviously, the motivation behind the safety information demand is to reduce uncertainty and to get great emotional support. When there was a question on "How was your mobile usage in the earthquake emergency" in the beginning of each group interview, most of the participants only give answers on calls and the SMS, leaving other usages aside. Probably, the reason for contacting by calling and short-messages at that moment is initially relevant to their daily mobile phone usage. When were asked the popular usage of mobile phone in daily life, most of them almost reply unanimously with "to give a call and to send message". College students who get used to the most original usages undoubtedly make the same choice in the emergency situation.

5.1.2 To record and to share the emergent situation to relatives and friends

Besides to give a call and to send short messages to family and friends, participants also mention their usage of the mobile camera and the video-recorder for recording what is happening, even when it is still in a situation full of uncertainty. However, for majority of

those students who did this, the purpose is just to share the live situation with relatives and friends. “Yes, I did video-taped the situation at that time, but it only works for the internal communication between classmates. A participant claims that, “all the materials (for me) are simply taken as an evidence of being a survivor from the disaster” (respondent 3-1).

Only quite few of them report that they uploaded those materials to the internet, while some others claim that some of their classmates shared those things on the internet, mainly through *Renren.com* and *Youku.com* which are respectively the most popular and influential student network website and the most famous video-sharing website in China. And in most cases, *Youku.com* always serves as the source website for those videos shared on *Renren.com*. Even if it seems that uploading to the internet is different from sharing with friends and relatives, the motivation of doing this is still to share the materials within their familiar ones, because *Renren.com* focuses itself on student network. Therefore, people who are able to see the individual materials are still within the publisher’s friend network.

Besides, there are few participants referring to the utility of those personal recordings for spirit-encouraging. For example, a participant says, “It is helpful to record (the live situation) down, especially for those who later wish to make sense of the urgent situation. It is also beneficial for later propaganda. For example, the live materials are required when we are informed to learn the spirit of relief work” (respondent 1-4).

5.1.3 To inquire emergency information

There is no dominant mobile internet usage both in the early stage and in latter period of the earthquake. All participants make complaints of the signal and speed problem of mobile communication at the beginning of the emergency. Most of the participants do not quite often choose to get news from this channel. Only some participants in one group say they will choose to inquire information from the mobile internet if there are no such many technical limitations. Some participants just elaborate their positive ideas on the efficiency of the mobile phone to get news at an urgent situation.

There are variable factors preventing the application of the mobile internet among college

students (see the later ‘factor’ section). However, it is interesting that the usage of mobile internet is more popular in college students’ daily life, and many of them mention their daily mobile internet usage for getting news and information. “Every time before I go outside I will check out the bus routes. But it is quite often that the routes will be changed temporarily. Therefore, I will reconfirm it by logging in the mobile internet...” (respondent 2-1).

To conclude, there is a potential usage of inquiring news from the seemingly convenient mobile internet, however, the special condition in emergency as well as other factors (see the following section) set series of barriers for this application, at least at the current moment.

5.1.4 To pass time

In college students’ point of view, the mobile newspaper is of little use during the earthquake. A majority of those who have ever received the mobile newspaper during the earthquake reflect that they read it simply because it is for free during that special time, and they think that mobile newspaper is dispensable.

When were asked whether they keep subscribing mobile newspaper when it is not for free, a participant who subscribed the mobile newspaper says, “Yes, it (mobile newspaper) is good, for passing time and entertaining, and by the way I read some of the insignificant news which are not important”.(respondent 1-3) Another participant in the same group, after mentioned the strengths and weakness of mobile newspaper, echoes this statement, “It is in time, by the way to pass time” (respondent 1-6).

There is no one mentioned their daily mobile newspaper use. Therefore, the lower adoption rate may be also relevant to their daily habit. Nevertheless, it is not the government or some institutes’ intention to send free mobile newspaper for the public to pass time, while it is a fact that some college students did take it as an entertainment channel.

What is more, although only few participants report they received the government short messages in a long time after the emergency, they all give a positive comment on this mobile communication. “Its main purpose is to encourage and to unify the public, and to help people

get over all the difficulties. Our government department takes use of this to give people a powerful tonic at the critical moment” (respondent 5-6), a participant who received those messages says.

5.2 Factors influencing adoption of the mobile communication in emergency

5.2.1 Technical quality

Undoubtedly, the mobile phone with its many unique features has long been praised for bringing immense communication conveniences to daily life. Surprisingly, many of its popular usages in daily life are not valid in the earthquake emergency. Among all the four forms (calls&the SMS, the mobile phone camera & video-recorder, the mobile Internet, the mobile news paper) of the mobile communication being investigated in this study, three of them (calls&the SMS, the mobile Internet, the mobile news paper) are complained by college students about technical problems, specifically, on the signal and the speed. It is comprehensible that natural disasters like such a devastating earthquake violently destroy the communication infrastructure, while it is still out of expectation that it influenced the mobile communication so much.

In the beginning of all the five interviews, participants all eagerly report the bad mobile signal problems. It might prove that the awful signal impressed them enormously. The following quotes show the discrepancy between the mobile communication demand and disappointments on the technical quality.

I tried to call (my family and friends) million times, but only succeed once (respondent 1-1).

I tried to make a call to my dormitory immediately after I ran away from the classroom building, but it was already dead. I got through a call to my sister who was in Mianyang (another city which is close to the epicenter). However, no one answered me. Then I can not get through again after I hang up...It was until 1.00 A.M. (the next day and almost 11 hours after the earthquake) that the signal was regained (respondent 2-3)

My mobile phone had no signal at all immediately (after the earthquake happened).

Later I only received a short message from my friend who was in Fujian (a faraway province in southeast China), but I was still not able to send out short messages. I didn't know the signal was recovered until I got a call from my mom at 12P.M. that day (almost 10 hours after the earthquake happened) (respondent 2-4).

Not only does the lower technical quality affect the callings and the SMS, but also the usage of the mobile internet and the mobile newspaper. When were asked whether they used mobile newspaper for acquiring news, a participant answers, "(The mobile phone) signal is bad in our campus, and sometimes I can not receive it (mobile newspaper)...I cancelled the subscription when I realized the signal is worse and worse" (respondent 4-2).

5.2.2 Information quality

Information quality generally refers to its objectivity, richness and credibility. The objectivity of information is chiefly connected to materials from the mobile camera and video-recorder usage. Participants in different groups all elaborate their ideas on those individual materials and later are shared on the internet. A small portion of them think that those photos and videos easily cause rumors and tensions, especially with individuals' comments. Like a participant says, "...it is OK to upload, but do not attach your personal idea. Because meanings are easily transformed once you add some of your words, for example comments like "homeless people spent whole night in the street" (respondent 1-2). Another participant believes, "It is quite possible that (those personal materials from) mobile phone usage would take a part for the whole. To put it in short, a glimpse of a small point which is just an extreme case would be infinitely enlarged (by this way)" (respondent 4-4).

Although college students are not that interested in sharing their individual earthquake materials, a majority of them do in favor of the behaviors of uploading to the internet. A participant comments on the phenomenon with saying "Yes, those individual photographer are great, at least (they are) objective (comparing to mainstream traditional media)" (respondent 2-4). "They (the personal photos and videos) are objective, without official censorship" (respondent 1-5), another participant expresses similar opinion.

For those photos and videos taken by individuals, most of the participants consider that they

enrich the earthquake reporting with angles different from the mainstream channels. Some participants agree that those materials concentrate on ‘low life’ people that are not that much emphasized by the mainstream media. Another participant concludes,

The strength (of the personal materials) is to highlight some details. Individual publishers publish those (photos and videos about) circumstances in front of their eyes. Comparing to the mainstream coverage, personal materials are more detailed. (For example,) the mainstream media did not report the areas that are not seriously affected. (respondent 5-4)

A medical student gives a more specific example,

At that time, the West China Hospital (one of the most influential hospitals located in Chengdu, the capital city of Sichuan province) received many patients from the harder-hit area, and then all the doctors and nurses work overtime. However, the mainstream reporting only focused on those highly affected area, and ignored some other areas (like the situation in hospital) that also deserved reporting. (respondent 5-1)

Therefore, they believe that materials from individuals are potential to add much more importance to the areas being ignored, thus to give a full scale picture of what is happening during the earthquake.

When discussing about the usage of mobile newspaper during the earthquake, participants complain that it is worthless to subscribe the mobile newspaper because of its limited content. A participant comments on the quality of mobile newspaper, “Most of the news from the mobile newspaper is only those news items or just brief words. And later I had to check the in-depth information from the internet” (respondent 1-6). Participants in other group express similar opinions on this issue.

The credibility is primarily given to the mainstream media. It shows college students have great confidence on the mainstream reporting. The logic behind the confidence is that it is reasonable to hide some facts during the earthquake. In addition, the confidence not only goes to the credibility of the news resources from the mainstream media, but also to the rightness of what to report and what not at the special occasion. A majority of the participants believe that the focus of the mainstream media reporting fully represent what the public need to know.

Although feeling no fear from individual materials, a participant still argues that there should be some facts to be concealed, “it is not always good to make everything known to all; moreover, the credibility of side-street news needs to be verified” (respondent 3-2). Another participant expresses his similar opinion,

(The mainstream traditional) Media is powerful than us (the individual resources). But it is sure that they must hide some facts to avoid greater panic. For example, those photos (from individual resources) showing the live disaster spots bring about much more heartbreak to survivors who lost parents or children. What if those people wish to be out of the earthquake shadow and can not afford the matter-of-fact reports? Media can only broadcast the promising news that is eligible to encourage people and make them strong. (respondent 3-3)

Participants firmly believe that the mainstream media are always right for their content selection, while individual sources uploaded to the internet, for one thing, are being doubted of their resources; for another, are unethical for general situation.

Therefore, it is found that the news objectivity and the credibility do not go hand in hand. Although believe in individual sources' higher objectivity, college students still express their great trust on the credibility brought by the mainstream traditional media. It is indicated that people in emergency demand more the news which in their eyes is full of credibility. Thus it can be safely concluded that individual sources are generally in an inferior stage comparing to the mainstream coverage.

5.2.3 Available channels and daily media habits

When emergency like the earthquake happened, not all the information channels are available in a short time. Like what have been discussed in the ‘technical quality’ section, some technical problems block the usage of certain communication channels. Thus what available on hands for people taking use of are of critical importance. Besides, daily media habits also influence media selection during emergency.

The radio, the television and the computer (with internet access) are college students' three main news channels after the earthquake. When were asked why it is those

traditional media not the popular mobile phone device for getting the earthquake news, their answers are as follows,

I would not log in the mobile internet (to get news) once my computer with internet access is available. (respondent 1-3)

I get the news from the television (because the internet is disconnected). It is the only possible channel in our campus (at that time). (respondent 3-2)

I only use the calling function and the SMS of mobile phone in my daily life, with little time spent on other functions (to get news). (respondent 5-2)

Individual media habits are diversified from one to another. Some participants may choose to video-record the event and then upload it to the internet, while some may not do this but are in favor of the uploading behavior. In regard to the news-related usage, most participants' media choices for getting the emergency news are relevant to their daily media habit. However, the special emergency situation may not provide available media in their habits; for example, some participants report that even if they prefer to read news from the computer with internet access, they have to rely on getting news from the television and the radio in their school cafeteria, because they are not allowed to go back to the dormitory in some dangerous moments (the aftershocks).

5.2.4 Individual interests and recommendations from friends

These two factors, although not that much emphasized by participants, still influence some users' criteria to choose mobile communication during the emergency. When were asked whether they have the same attitudes towards mobile communication in other emergencies, one participant mentions that it is a question related to individual interests. Only in those occasions that are crucial to him, his family and friends, can mobile communication play a vital role.

This point of view reveals the advantage of the mobile emergency communication from a very different angle. The importance of family and friends has been emphasized in previous section, and then its connection to the vital role of mobile communication

reminds us that the mobile phone is most adapted to emergency needs.

Besides, when talking about the application of mobile newspaper for receiving news, another participant says, "...I never use this and it is hard to tell its usefulness; but I feel it is inefficacious; anyhow I have no experience on that and also, no one recommends me to use that" (respondent 5-1). No matter admit it or not, peers' opinion can also exert its influence among college students. It is quite natural that someone would accept a certain object or behavior when a majority of his or her friends have a positive view on that.

5.3 College students' perception of the roles mobile communication play in emergency

5.3.1 As a connection to family and friends

From college students' point of view, the dominant role of mobile communication is being a connection to the outside, mainly to family and friends. It is apparently concluded from their highest motivation to contact beloved ones to know the safety status with the help of the calling & the SMS and their tremendous complaints on the bad signal condition which block the urgent call and the SMS usage when the earthquake happened. The critical connection role is vividly described by the following words,

I waited until very late that (the signal was recovered and) I was able to receive the call from my friend...I was so moved by this...and I realized the mobile phone has already been embedded in my life...I can't imagine what my life would be when one day there is no mobile phone. (respondent 2-1)

Another female participant summarizes her feeling on the mobile phone usage in a short time after the earthquake,

When the 5.12 earthquake happened, the first action after I calmed down is to contact my family with mobile phone. But both the SMS and the calls were failed, which made me nervous. The mobile phone worked as the last straw (that I can catch) at that moment, especially when all the people around you were strangers. You extremely wished that it can bring you a piece of tranquility by asking "what

happened?” “Are they (family members) safe and where are they now?” “Anybody takes care of them?”. The mobile itself could not be the emotional support, but the information got from it indeed helps supporting emotion. (It is) a kind of complicated feeling. (respondent 5-6)

It shows that during emergency, the mobile phone mainly serves as a critical communication tool to fulfill college students' demands of emotion supports to and from their beloved ones as well as to reduce uncertainty on what happened to people they concerned. Therefore, to be a connection to the outside could be safely concluded as the mobile phone's most crucial role during the earthquake emergency. Participants give general comments on the effectiveness of this role,

I think the most important role of mobile phone in the earthquake emergency is to contact others and to report safety; photo and video-recording is only for commemorating. There is only quite few times to get news through this channel. (respondent 2-4)

Mobile phone is basically used for contacting, not for getting news. (respondent 4-1)

It mainly acts as a communication tool to contact people, while little of importance on acquiring information. (respondent 5-5)

Some participants also mention the safety feeling brought by being able to contact others with the mobile phone, “being able to contact the outside makes me feeling secure; and it (mobile phone) mainly works as a link” (respondent 1-5) .

The significant connection role is already taking place in college students' daily mobile phone usage. Therefore, when such an emergency happened, the mobile phone's connection role with its various advanced features like mobility, immediacy, portability and so on, is easily regarded as the first choice.

5.3.2 As a supplementary channel to mainstream traditional reporting

The supplementary role has already been discussed in 'information quality' section. Although they are not influential, photos and videos taken by individuals with their mobile phone indeed make up the information gap that the mainstream traditional media

do not coverage.

For example, there is a question for how they think about some people's opinion that the individual materials only help revealing lightly-hit areas which are not meaningful to traditional media, participants reply that they concerned both the lightly-hit and heavy-hit areas (respondent 2-1). "The lightly-hit areas are already that heavily damaged, then (you can imagine) how serious it would be in those heavily-hit areas" (respondent 2-5). Participant in other groups hold similar opinions, like one participant said, "the mainstream reporting is timeliness; however, it only concentrates on those 'big' and 'typical', and (I think they) do not have enough materials" (respondent 5-3).

Therefore, although there are few participants arguing some of the controversial aspects brought by these materials uploaded by individuals, most of the participants appreciate its supplemental role. And with all these materials contributing to the mainstream reporting, the public can possibly get a full view of the emergency.

5.3.3 As an alternative media to other media

Many participants believe that the mobile phone mostly works as an alternative media during the earthquake emergency. Various factors (see 'factor section') influence the full application of different mobile phone usages.

"I will use the mobile phone only when my computer is unavailable; anyhow, the mobile phone is not that useful comparing to the computer. And people choose it only for its portable convenience" (respondent 2-2), a participant says so when were asked the attitude towards mobile communication in other emergency events. However, the usefulness here mainly refers to the news-related usage. Another participant confirms its alternativeness in a different way with saying "to get (emergency) information from the mobile phone is also important, because the computer is not always with us" (respondent 4-2). Even when talking about the effectiveness of government short messages, participants think that it is helpful when people who run away from danger and can not get access to other media.

Generally, the role of being an alternative media is basically connected to its news-related functions. Nevertheless, most participants state that they choose to get the emergency news mostly from the mainstream media which are in their point of view, more reliable. Only when the mainstream channels are unavailable, do they switch to the mobile phone for news collection.

5.3.4 As promising communication technology that would work well in the future

Most of the participants claim that the mobile phone plays less importance role for acquiring news than for contacting people. However, on the basis of discussions above, both of the two roles are greatly blocked by technology limitation during the earthquake. Either the bad mobile signal or the slower mobile communication speed influences mobile communication to a large extent.

Nevertheless, with the coming of the third generation (3G) mobile communication technology, a majority of participants would like to believe that there is a promising future for mobile communication in emergency, especially on news gathering. After concluded her general perception on mobile communication in the earthquake emergency, a participant says,

Instant communication is the most important (during emergency); and if there is no technology barrier, then the mobile phone could substitute for many things like the computer and the internet. It would be pretty much better. However so far, technical limitations still exist. (respondent 5-1)

Another participant gives a more positive outlook on mobile communication with following reasons,

Firstly, there is a large mobile phone population. And then there is no other communication tool possessing such a high penetration percentage, especially when the penetration is still amazingly rising.

Secondly, its portable convenience, especially under emergency circumstances,

absolutely fulfills the need to react something that you are not ready for. For example, dialing 119 (the Emergency call in China).

Thirdly, the mobile phone has more and more powerful functions. Today, the 3G technology makes many mobile phone usages as excellent as the computer. Moreover, the small figure and its unique strengths which computers do not have prompt mobile communication more and more promising in the future.

(respondent 5-6)

Participants in other groups also emphasize their concerns on advantages the 3G technology brings to mobile communication in emergency. Although admits the slower connection speed, one participant still expresses his positive opinion on the mobile communication with the coming of the 3G technology which would greatly make up all the weakness before. If things happen like what people expect, then all problems met before would be solved, which in turn creates better mobile communication application.

6. Conclusion and discussion

6.1 Different media to satisfy different motivations

The callings & the SMS, the photo & video-recording, the mobile newspaper and the mobile internet are four possible forms of mobile communication during earthquake emergency. Within different usages of mobile communication being studied in this research, there are respective motivations, like to confirm safety of family and friends, to record and share the live situation to relatives and friends, to find emergency information as well as to pass time.

All these motivations, when are connected to the uses and gratifications theory discussed in theoretical framework, echo three motives (information, interpersonal communication and entertainment) from the Wollfradt and Doll Internet Motivation Scale (Matsuba, 2006). In Chen's article on mobile phone usages between college students and their family members, the mobile phone is found as primary communication technology to "get news", "receive support" (from home) or "exchange information" with family members (2007:13), which are also coherent with some motivations concluded in this study on mobile communication in emergency.

As for motivations in previous research on mobile phone motivations especially by Leung and Wei (2000), items related to the mobile emergency communication are mainly reassurance, instrumentality as well as mobility and immediate access. Apparent difference is given to news gathering function which relies heavily on the mobile internet that is beyond Leung and Wei's range of research. Because the mobile internet was not of critical prevalence when Leung and Wei (2004) did their research, not mention to make use of it for news gathering.

Safety or security is one of the three mobile functions identified by Ling (2004). It is also the one closely linked to emergencies, particularly for getting emergency help in short time anywhere anytime. There is no difference of the safety function on gender and age in this research as it is in Ling's research. Ling (2004) found that women and the old people think the mobile phone more helpful in emergencies. Regarding to college students who are in the same age, it is no doubt that there is no big difference on this function. However, the gender effect

is also not found in this research with college students. The male and the female college students almost have the same negative answers on whether the mobile phone brings them safety, which is the same with findings from Sanders's (2008) research on mobile phone usages on young urban Chinese that the safety motivation is not that obvious as expected. Participants in this research do not think that the mobile communication brings them much safety, and some participants even report that they never think about the safety from mobile communication.

Basically, it is only college students' habit to use the mobile phone for communication, especially in emergency for contacting beloved ones to ensure their safety status, while not that much on the motivation of safety. However, taking mobile phone with oneself even on the way of escaping does reveal the fact that constant communication brought by the mobile phone is extremely important for people in emergency, which probably could be defined as a kind of safety that is not realized by people who just view the phenomenon as a habit. Moreover, the bad signals during the earthquake emergency also probably affect the safety to users. What is similar to Sanders's (Ibid) findings is that young people would like to "use higher bandwidth voice services that would allow them to communicate more efficiently" (2008:12).

However, given all the findings illustrated in last chapter, all those motivations on mobile communication are not at the same level, for instance, to confirm safety of family members and friends is always of predominant importance. As Grant (2007:226) said, "...the potential to contact others in an emergency offers a sense of security and reassurance to young people, not to mention their parents". The predominant mobile usage for contacting beloved ones also supports the US study that "college aged heavy mobile phone users frequently contact a small group of family members and friends" (from Chen 2007: 6), especially in such an emergency situation.

At the same time, the significant safety-confirming is only based on calls and the SMS, while other motivations are greatly fulfilled with other available media like the computer with internet access, the television, the radio and so on. Even if there is no technical obstacle for

mobile communication during the emergency, most of the participants report that they would more like to get the emergency news through other channels other than the mobile phone.

The essence of Bolter and Grusin's (1999) remediation theory is that the newer media come out of the older ones, while at the same time the newer one which integrates previous ones is more powerful, because of "the content of the older media could simply be poured into the new one" (Ibid:45) and its multiplicity.

However, the mobile phone media, although enjoys immediacy, hypermediacy and remediation, is still not able to replace other communication channels, particularly in emergency. To put it clearly, at emergency moment, the mobile phone predominantly has its influence only from the calling and the SMS. Other usages which come from media remediation are still not able to be regarded as important as its original usages. For example, media audiences choose to get emergency news more from the old media.

The uses and gratifications theory asserts that media users actively choose their satisfied media to fulfill their needs. Some of the findings in this research support the uses and gratifications theory in that no matter within or beyond the mobile communication, the media audience in emergency actively choose different media to satisfy their different needs. They always prefer to get contact with others by calls and the SMS; while getting news or other emergency information from the internet, the TV and the radio. The result also supports that "an individual medium had its own functional concept" (Chung and Kim 2009: 7), which is similar to Kayany and Yelsma's (2000) "concept of functional equivalence".

What is more, although media audiences probably fulfill their needs from more than one channel like what is argued in Dutta-Bergman's (2005) channel complementarity theory, the fact is that media audiences always choose to get what they want from their favorable channel, for example, in regard to news gathering, college students prefer to get from the relative 'old' media like the computer with internet access, the television and the radio, from which they used to get news rather than the advanced mobile media which integrates almost all the other media forms in one.

...old technologies are not simply replaced by the new and indeed the latest mobile communications technology 3G makes a virtue out of its ability to interoperate with 2 and 2.5G technology as well as complementary developments in digital camera technology and digital broadcast media.

(Vincent and Harries 2008: 410)

And for this reason, although there is the possibility that media audiences satisfy their needs from diversified sources (Sutton, Jeannette, *et al.*, 2008), it is still not easy to simply conclude that they would like to use both the 'new' and the 'old' media to satisfy their particular need; at least they would like to get what they want from their preferred 'old' channel if available. Therefore, Dutta-Bergman's (2005) channel complementarity theory is not applicable in this circumstance.

6.2 Diversified determinants of the mobile media adoption

Technical quality, available channels, information quality, personal habit, relevance to individual interests as well as recommendations (from friends) are all factors found in this study influencing mobile media adoption.

Besides Palen and Liu (2007) who claim the probably failed mobile application because of the infrastructure being damaged immediately after the disaster, technical quality is seldom mentioned in other researches. In my opinion, temporary technology limitation like the bad signal condition in the earthquake possibly exists in all natural disaster emergencies.

Information quality is another aspect that participants talk much about, basically on materials taken by individuals' mobile camera and video-recorder. The three components of information quality being studied in this research are objectivity, richness and credibility. It seems that participants appreciate the objectivity brought by those individual sources; at the same time, some of them assume that materials from individuals easily cause public panic. Undoubtedly, participants agree that these materials enrich the whole emergency reporting with much more different angles from the mainstream media. The credibility, in most participants' minds, has nothing to do with individual news materials, while what makes this perception is that for a

long term, they firmly believe in the credibility of all news from the mainstream media. Therefore, all the other sources are thought to be incredible, not mention to those individual materials. All the three variables on information quality influence college students' mobile media usage.

All the other determinants, as already discussed in theoretical section, are more or less mentioned in previous researches (Chung and Kim, 2009; Dutta-Bergman, 2004; Kayany and Yelsma, 2000; Rubin, 1994).

Vincent and Harries's (2008) research on mobile communication in e-government also shows some of the points on this adoption. One of its basic viewpoints is that a new technology is being accepted in a long-time framework. "... it took several decades for people to learn how to make the most of the new technology and overcome their preference for traditional and familiar alternatives" (Ibid:400). Besides, the perceived usefulness, social influence and peer pressure are all taken as influencing factors.

With all the factors in last chapter, the mobile media which enjoys series of advantages brought by new media technology, does not help itself to be ranked as the first media used in emergency. Although admitted the strengths of mobile media, participants in this research generally do not recognize the magnitude of diversified forms of mobile communication.

Only if when innovations are regarded by individuals as having great potential strong points, can they be adopted rapidly (Rogers, 1995). In his later research, Rogers (1995) also emphasizes the unlinear adoption pattern and complex factors that influence adoption decision. Vincent and Harries also support Rogers's idea as follows,

New technology moves us forward but it is not necessary replacing old ways of doing things. There is rhetoric that makes claims to usage of new technologies when in reality their take-up is slow or non-existent...

(2008: 410)

Therefore according to the diffusion of innovations theory, the mobile phone, as one of the most new media is still in its initial stage for development. And it needs a long long way to be

fully accepted by media audiences.

6.3 Increasing confidence on mobile communication in the future

In college students' perception on the mobile usage, the mobile communication mainly plays the roles of being a connection to family and friends, a supplementary channel to mainstream traditional reporting, an alternative media to other media as well as a promising media that would work well in the future.

Within all the four roles, the first significant one is to be a connection to family and friends. Because in most participants' point of view, contacting family and friends with the mobile phone has already been the most fundamental function for a long time. When it is in emergency which produces much uncertainty, the role is much more influential especially with its advanced features like portability, immediacy and so on. Besides, the mobile phone with its portability and hypermediacy encourages individuals to take photos and videos of the scenes in front of their eyes, which in turn helps illustrating a more vivid emergency picture. However, there are many barriers blocking the fulfillment of every function of the mobile media, thus it is no doubt that in participants' minds, the mobile phone only serves as alternativeness to other media.

Technical problem is one of the most critical aspects affecting the mobile communication in emergency usage. No matter how many other factors lying across the adoption of mobile communication, most of the participants hold the belief that the mobile communication would have a promising future with the future popularity of the third generation mobile communication technology which would possibly solve technical problems that existed in the earthquake emergency. It shows that college students have more confidence on future development of the mobile media. Technology improvement would greatly promote the adoption of mobile communication in emergency, at least in college students' view.

It seems that there is a paradox between participants' willingness to fulfill different needs with their familiar media and the increasing confidence on mobile communication. For example,

on the one hand, participants do not take the mobile internet as a good channel for acquiring emergency news, and they would like to get news from those old and traditional media. On the other hand, most of them have positive idea on the promising application of mobile communication in future emergency usage. It is like the indication from Cohen and Lemish's study, "...part of the perception of the mobile phone is not only what is in our lives, but also what it had the potential of becoming, even when it never does" (2004:15).

Besides, the less involvement of the mobile communication in emergency and participants' positive point of view on its future development are coherent with Rogers' claim that the diffusion of an innovation develops slowly in its initial stage; and then begins accelerating at some point. In a word, it takes time for the media audience to fully adopt the mobile communication. Probably, the development of the third generation mobile technology would serve as a tipping point in the diffusion of mobile communication.

Future research should continuously focus on the mobile communication in a long term to see whether there is the fully adoption in the future, especially when the 3G mobile technology is widely applied. At the same time, do people in other age groups hold the same perception on the mobile communication as college students do? How about the adoption of mobile communication in other public emergencies? These questions deserve further investigations.

Furthermore, the research is only based on qualitative interview with college students. All the findings here are mainly concluded from their in-depth elaborations on the experiences during that emergency. Thus, large-scale quantitative research should be given to validate all the findings in the research.

6.4 Suggestions

Overall, the power of the mobile communication is less than it is expected in previous study, and most of its potential citizen-journalism-related abilities (Allan and Thorsen, 2009; Ling and Donner, 2009) to get involve in emergency communication and the other news-related activities are still limited at this stage. Meanwhile, it is apparent that interpersonal

communication in emergency by the mobile phone greatly helps reducing “uncertainty, anxiety and stress” (Cohen and Lemish 2004:5) on family and friends which are the first concern of those people in emergency.

Undoubtedly, the mobile phone with its advances would continually serve as a critical communication tool between people in emergency and their beloved ones, especially in the immediate aftermath of the emergency, while at the same time the news-related activities through the mobile phone should be encouraged. Nevertheless, according to findings from this study, most of the media audiences appreciate the latent power of the mobile phone for news collection and delivery.

Besides technical quality, information quality ranks highly among all the factors that possibly affect the adoption of mobile communication in emergency. Within the three aspects of information quality, the news-related functions, especially those individual materials taken by the mobile phone enjoy the reputation of objectivity and richness, while the credibility is given to the mainstream traditional media, like the official television, the radio and those portal websites which keep the same direction with all the other official media.

The media audience’s appreciation on the credibility of the news from mainstream media in an emergent event can not be simply boiled down to the existence of the repression from government (Gordon, 2007) and government’s manipulation of the information delivery (Castells, 2006). When it is in emergency, people would like to trust the news from mainstream official media, because they believe the mainstream coverage provides them the right news they need to know at the special emergent occasion. Therefore, beyond the manipulation of news from government, people’s willingness to hear from official source can not be ignored. Probably, it reveals that people in emergency require much more confidence and safety given by the more powerful mainstream official reporting, mostly to reduce all uncertainties, anxieties and stresses.

The media policy in China can be regarded as one of the reasons of the great confidence on mainstream reporting. With the official media taking almost one hundred percent of the

mainstream media, media audiences in China who always get news from those official resources are used to thinking in ‘official’ perspective. And in their eyes, the official reporting stands for the authority which is powerful enough to provide credibility and safety. Therefore, it is no wonder that they have much confidence on the official reporting.

However, higher credibility given to the mainstream news reporting could also be put to use in mobile communication. Now that people see the government message could at least be able to console and to inspire the public in emergency, then there should be more such messages with the most updated news being sent, especially on their prime concern of the latest situation of emergency and the forecast of the coming side effect (like the aftershocks in earthquake).

Moreover, to make use of people’s trust of the objectivity and the richness on those individual resources and their confidence on mainstream reporting, it is better to integrate the first one into the latter. Previous studies have already showed some examples of absorbing the individual materials into mainstream reporting which seem popular to the public. Only if to fully take advantages of both the traditional and the new media, can the best communication effect become true.

The content of the mobile newspaper also needs to be enriched to meet user’s demand. It should not be only those simple news items but also more detailed ones on the latest disaster report and disaster forecast which most interest people in emergency. The government short messages and the mobile newspaper, with their point-to-point effectiveness and people’s great confidence on official news, would potentially work to kill rumors in an easy way.

In addition, facing the possible infrastructure unavailability, the importance of traditional reporting and the complementary roles of the old and the new media as well as “what was available when and to whom, and what needed to be communicated” (Palen and Liu 2007:733), there is the argument that the supplementary relationship of different media during an emergency would help people smoothly get out of the emergency to a large extent.

In the immediate aftermath of the emergency, more emphasis on infrastructure repairs should be ranked in the first place, to make the most urgent interpersonal communication by the mobile phone possible. Then, the government short messages and the mobile newspaper should coordinate together with the mainstream reporting to better notify the public, to kill rumors and to motivate people to help each other. In last stage, when the emergency goes to the end, the cooperation of the old and new media still could play a role on relieving the people in stricken areas.

Last but by no mean least, it is remarkable that the mobile communication, no matter for interpersonal communication or for news gathering would perform better if there is no signal problem and speed limitation as it is in the earthquake emergency. For this reason, it is government's initial effort to speed up the development of the 3G mobile technology which enjoys immense optimistic expectation from the mobile phone users. Only if there is no technical limitation, can the mobile communication greatly help communication in emergency.

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Appendix

Interview guide

1. What's your daily mobile phone use? Do you think the mobile phone bring you safety?
2. Did you use the mobile phone in the earthquake in 2008? How was it?
3. What did you want from the mobile phone use?
4. Did you use the mobile camera or the mobile video to capture the earthquake scenes? How was it? And why you use this or why not using this? How did you deal with these individual materials?
5. How did you think about the earthquake photos or videos on the Internet posted by individuals?
6. What's the role of those individual materials in the earthquake communication?
7. What media did you get the earthquake information (news) most often? Why these (this) channels?
8. If not the mobile Internet, then why?
9. What information did you need most during the earthquake?
10. How about the mobile newspaper for getting news?
11. How about the government short messages?
12. How about (or how do you think about) the mobile communication usage in other emergency events, like the H1N1 Swine flu, the Xinjiang or Tibet unrest?
13. Do you think the mobile phone use during the emergency bringing you safety?
14. Generally speaking, how do you think about the role the mobile phone played in the earthquake emergency?