

## **Public Mobile Communication Technology Use: A Comparison between America and Taiwan**

Yi-Fan Chen, Rutgers, The State University of New Jersey

### **Abstract**

Meyrowitz (1985) stated that physical and symbolic interactions frame spatial boundaries. Public spaces are referred to as those areas in towns and in cities and outside the private spaces of the homes and workplaces, where people could socialize with others in face-to-face situations. Cooper (2001) argued that people create their own personal private spaces in public through the use of their mobile communication technologies. The purpose of this descriptive research is to understand similarities and differences in the use of mobile communication technologies in public space among American and Taiwanese students. The study observed mobile communication technology usage in public spaces. Through convenience sampling technique, a sample of 6,006 was collected from the U.S.A. and Taiwan in one university for each country. The results showed that mobile “teledensity” (as measured by the percentage of mobile communication technology users in a public setting at a given time span) was about 13.3% in the U.S. campus and only 2.2% in the Taiwanese campus. Males had higher mobile teledensity than females in both countries (14.3% vs. 12.4% in the U.S.A.; 2.8% vs. 1.6% in Taiwan). This research suggested taking cultures into consideration for future cross-national mobile communication technology studies.

### **Background of the Study**

Mobile communication technologies (MCT) (e.g., Apple iPod, mobile phone, MP3 player, personal digital assistant or PDA, Wi-Fi Internet, Wi-Fi VoIP phone) are being used by broader and broader areas of the world. MCTs affect people’s personal and professional lives in either direct or indirect way (Katz & Aakhus, 2002). MCTs challenge people’s social dynamics in public life as well as their private life (Ling, 2004). In particular, MCTs change the concept of the traditional time and space (Katz, 2006; Ito, 2005; Geser, 2005).

Because of the development of MCTs, MCT users have more control over their experience of space (Geser, 2005; Katz, 2006). MCT users make public spaces as their private own territories. Scholars (e.g., Bull, 2004, 2005; Cooper, 2001) demonstrate that MCT users create their personal own private spaces in public settings through uses of MCTs. MCT users enjoy making private mobile phone calls, sending private text message, and listening to private music at bus stations, in restaurants, or on the streets.

On the other hand, MCT users also bring their outside world to their private spaces by using those technologies (Ito, 2005; Ling, 2004). They are receiving business mobile phone calls at their private living rooms, getting non-family members text messages at their private dinning rooms, and listening to public music at their private bedrooms. With MCTs, users create personal auditory bubbles regardless where they are. MCT users often negate

traditional public spaces and recreate their private own spaces within traditional public spaces (Bull, 2004, 2005). As a result, a line between the public and the private spaces becomes “blurring of boundaries” (Ling, 2004; Sheller & Urry, 2003; Wei & Leung, 1999).

Researchers (e.g., Bull, 2004; Cooper, 2001; de Gournay, 2002; Green, 2002) pay attention in terms of the public and private delineations of space and the MCT role in changing this two-part division. Samarajiva and Shields (1997) argue that telecommunication networks should be viewed as “social space”. For examples, MCT users exchange private face-to-face business meetings to be mobile phone conversations in public places. MCT users also turn private family discussions into mobile phone talk in public places (Ling & Yttri, 2002). On the other hand, studies (e.g., Palen, Salzman, & Youngs, 2001; Wei & Leung, 1999) report that some people are disturbed by the public use of MCTs in both verbal and non-verbal human interactions. A few scholars (e.g., Cooper, 2001; Matsuda, 2005) focus on the use of MCTs in public settings as inappropriate, that might block the face-to-face interactions (Cooper, 2001; Gergen, 2002; Persson, 2001) or might irritate people in the same physical locations (Wei & Leung, 1999). Wei and Leung (1999) find that mobile phone users’ loud talk and intrusive ringing tones tend to be annoying to some people when using the mobile phones in public settings.

Historically, the differences between public and private spaces are contextually dependent and continually redefined (Meyrowitz, 1985; Williams, 1975). Research in the social uses and effects of MCTs find that MCT users also redefine public and private spaces (Bull, 2004, 2005; Ito, 2005). As many other communication technologies (e.g., television, radio, Internet), MCTs provide researchers chances to examine how people redefine public and private spaces in everyday life.

## **Literature Review**

### **Public Spaces**

Scholars and theorists define public and private in many ways. Often times, they contradict each other because the word “public” connotes varied bases, such as public/private interest (e.g., Klein, 2000), public/private sphere (e.g., Cohen & Arato, 1992), public/private life (e.g., Putman, 2000), public/private space (e.g., Meyrowitz, 1985), and publicity/privacy (e.g., Berlant, 1997), and have been insufficiently recognized by different scholars and theorists (Sheller & Urry, 2003). This study’s theoretical framework was based on Meyrowitz’s (1985) concept of public spaces. Meyrowitz (1985) states that physical and symbolic interactions frame spatial boundaries. Public spaces are referred to as those areas in towns and in cities and outside the private spaces of the homes and workplaces, where people could socialize with others in face-to-face situations.

### **Technologies Blur Public/Private Spaces**

Researchers and theorists find a hybrid of private and public spaces due to developing technologies. For example, cars (e.g., Sheller & Urry, 2003; Williams, 1975), print (e.g., Anderson, 1991), television (Meyrowitz, 1985; Williams, 1975), phone (e.g., Fischer, 1992), Internet (e.g., Putman, 2000; Turkle, 1995), mobile phone (e.g., Ito, 2005; Ling, 2004), and MP3 player (e.g., Bull, 2004, 2005) are discussed to change public-in-private and private-in-public spaces. Cars and MP3 players are discussed to create a private space in public (Bull, 2005; Sheller & Urry, 2003; Williams, 1975). Other technologies, such as print, television, phone, and Internet, are considered to bring outside information into private homes (Anderson,

1991; Fischer, 1992; Meyrowitz, 1985; Putman, 2000; Turkle, 1995; Williams, 1975). Meyrowitz (1985) comments “when we communicate through telephone, radio, television, or computer, where we are physically no longer determines where and who we are socially” (p. 115). MCTs have the flexibility to change both public-in-private and private-in-public spaces (Bull, 2004, 2005; Ito, 2005; Ling, 2004). MCT users make decisions about who and where to socialize and who and where not to socialize.

This study focused on investigating how MCTs challenge the concept of public spaces in a quantitative research perspective. Meyrowitz (1985) argues that symbolic and physical interactions frame spatial boundaries. He defines that public spaces are areas in towns and in cities and outside of private spaces. When people use their MCTs in public places, they make the public spaces into their own personal private spaces. For example, Persson (2001) argues that the mobile phone signals a type of inaccessibility and builds a communicative barrier between the caller and others who are physically near. Mobile phone users create their own private spaces in public by avoiding the gaze of others and avoiding interaction (Cooper, 2001). Norman (2004) commented that people often use Short Message Service (SMS) messages to have private conversations in public places. Users even receive and send their private SMS in quiet locations, such as in business meeting rooms (Norman, 2004) as well as classrooms at schools (Ling, 2005). Similar findings were reported by Mizuko Ito and Daisuke Okabe (2005). They reported that Japanese students use their SMS during classes in schools.

In addition, Kenneth Gergen (2002) advocates a concept of “absent presence,” which is the situation where people are psychologically present in a place but also rendered absent at the same time. Ling (2005) comments that mobile phone bring the “third person,” the person who is not at the same physical location, into face-to-face interaction. They comment that mobile phones allow people to isolate themselves with the face-to-face groups and interact with “virtual persons.” Mobile phone users could stop to socialize with others in face-to-face situations in towns and in cities while they are using their mobile phones. Bull (2005) also reports that Apple iPod users strategically create their private own music spaces when they are in the cities.

### **Significance of Study**

Taiwan had the world’s highest density (i.e., 106.5%) of mobile phone penetration in 2002 (“ITU digital access index”, 2004). In 2003, Taiwanese mobile phone penetration reached 111% (“Find”, 2005). Each individual Taiwanese owns more than one handset. Moreover, the International Telecommunication Union (ITU) also ranked Taiwan as a “high digital index” country together with Sweden, Norway, and others (“ITU digital access index”, 2004). Many MCT researchers have investigated other countries, such as Finland (e.g., Puro, 2002; Kasesniemi & Rautiainen, 2002), Japan (Ito, 2005; Ito & Okabe, 2005), Norway (e.g., Ling & Yttri, 2002), UK (e.g., Bull, 2005; Faulkner & Culwin, 2005), the U.S. (e.g., Katz & Sugiyama, 2006). However, there is a lack of MCT study in Taiwan.

Although some empirical researchers (e.g., Bull, 2005; Ling, 2004) investigate how MCTs change space from public-in-private and private-in-public, these studies often use interviews, ethnographies, survey or diaries to understand the issue. Those studies also focus more on verbal communication. This study took a different focus on what percentage of people actually change public spaces into their private use by their MCTs. Its research focus was based on MCT users’ non-verbal interactions in public settings.

Moreover, MCT density on university campuses has been studied very little. The current study that observed a Taiwanese university campus' use of MCTs might be the first. Two issues are the focus of this study. The first issue was that using mobile phones in public settings brought others (i.e., third person) who were not at the same physical locations into the interaction (Gergen, 2002; Ling, 2002). The second point was that the uses of MCTs in public settings stopped MCT users' interaction with others at the same physical locations (Bull, 2004; Cooper, 2001). Both of them showed MCT users change public-in-private use. For comparative purposes, an American university campus was also selected to examine if there were cultural similarities and differences in the uses of MCTs in public spaces between an east and a west university campuses.

### **Methodology**

This study used observation as a research method. This was also an observational study of activities in MCT users' natural settings. Through convenient sampling technique, a sample of 6,006 was collected from Taiwan and the U.S. on one university campus for each country. Several observations were conducted between November 2005 and December 2005 at a large national university in Taiwan, whereas the observations were conducted between March 2005 and April 2005 at a large northeastern state university in the United States. Each observation took 15 minutes. Everyone who passed by the selected public settings on the campus was documented. Observation coding sheets included time, location, gender, use of the mobile phone alone, use of the mobile phone with a group, use of the mobile music technology alone, use of the mobile music technology with a group, use of both the mobile phone and the mobile music technology alone, and use both the mobile phone and the mobile music technology with a group.

In this study, the "mobile phone" category included the mobile phone, and other MCTs with phone like functions (e.g., PDA, Walkie Talkie, Blackberry). And, the "mobile music communication technology" included MP3 player, walkman, and Apple iPod. A check mark had been made on a coding sheet each time people at the university campuses used their MCTs. In addition, when people's MCTs were ready to be used (e.g., on hands, on ears, on belts, or on tables), check marks had also been made.

### **Findings**

#### **Teledensity**

The results showed that mobile "teledensity" was about 13.3% in the U.S. campus and only 2.2% in the Taiwanese campus. In this study, teledensity is defined as the percentage of MCT users in a public setting at a given time span. Males had higher mobile teledensity than females in both countries: In the U.S., there were 14.3% of males on the university campus who used or who were ready-to-use their MCTs compared with 12.4% of females on the same campus who used or who were ready-to-use their MCTs. In Taiwan, the mobile teledensity in public settings is much lower in both male (i.e., 2.8%) and female (i.e., 1.6%). In detail, the Taiwanese female mobile teledensity was only 1.6%, whereas the American female mobile teledensity was 12.4%. On the other hand, the Taiwanese male mobile teledensity (i.e., 2.8%) was also much lower than the American male mobile teledensity (i.e., 14.3%) in public.

### **Teledensity Difference in Time**

In both countries, mobile teledensities were all higher in the late afternoon. In the late afternoon, MCT use on the Taiwanese university campus was at 3%, while at the American university campus was at 14%. In addition to the late afternoon, the Taiwanese campus's mobile teledensity was higher in the morning (i.e., 2%) than in the mid-day (i.e., 1.4%), whereas the American campus's teledensity was lower in the morning (i.e., 11%) than in the mid-day (i.e., 13%). Because the Taiwanese university campus had a very low teledensity (i.e., 2.2%) in the public settings, there were not many differences between morning and mid-day in the use of MCTs.

### **MCT Different Use in Gender**

This study found that there were only 10% of the Taiwanese female MCT users were using mobile music technologies and 90% of the Taiwanese female MCT users were found using mobile phones in public. In the US sample, 75% of the female MCT users used the mobile phone on the campus; 22.9% of those MCT users used the mobile music technology, and 2.1% were found using both technologies simultaneously.

For male MCT users, 27.3% of Taiwanese MCT users used the mobile music communication technology in public spaces, in comparison to more than a half (i.e., 52%) of the American male users in public. In addition, the other 1.9% of the American male MCT users were observed using both technologies on campus, whereas 4.6% of the Taiwanese male MCT users were found to use both technologies in public. Taiwanese male MCT users (i.e., 68.2%) had a higher mobile phone usage in public settings than the American male MCT users (i.e., 45.6%).

An interesting finding was that no Taiwanese female MCT user was found using both the mobile phone and the mobile music technology in public settings when compared with 2.1% of the American female MCT users who were found using both the mobile phone and the mobile music technology. Four point six percent of the Taiwanese male MCT users used both mobile technologies together while 1.9% of the American male MCT users were found using both mobile technologies together.

Finally, most of the MCT users were using their mobile technologies alone in public (90% in the U.S.A. and 81% in Taiwan). On the Taiwanese campus, no MCT users who were using mobile music technologies were found in the presence of others. A half of the Taiwanese female MCT users were found within a group, whereas 12.5% of the American female MCT users used MCTs within a group. In both countries, male MCT users often used their mobile technologies alone (i.e., 95.5% in Taiwan and 90.1% in the U.S.A.).

### **Assumptions, Limitations, and Suggestions for Future Study**

This study found that a substantial minority of people on the university campuses uses their MCTs. On the U.S. university campus, mobile teledensity in public spaces is much higher than in the Taiwanese campus. In 2006, the same research method was conducted in the same time frame at the same American university campus. The mobile teledensity on the U.S. university campus went up from 12.6% to 20.8% (Chen, 2006). Although this study used a convenience sampling technique with only one university from each country, these findings showed an increasing difference between the two countries in MCT use in public settings. According to ITU, both the U.S. and Taiwan were ranked "high digital index"

countries (“ITU digital access index”, 2004). Although both countries have high digital indexes, this study found many differences in terms of their uses of MCTs in public settings.

Communication technology scholars (e.g., Haddon, 2004; Ling, 2004) intend to understand how communication technologies affect societies differently. Hunter and Beck (2000) suggested that cross-national studies are important for the emerging and quickly changing information technology area. Many studies find out that it is difficult to understand the reasons for distinguishing how to make sense of national differences in using and adopting communication technologies (Thomas, Haddon, Gilligan, Heinzmann, & de Gournay, 2004). This current study showed different patterns of MCT usages between the American and the Taiwanese mobile teledensity. It also showed that there were different patterns of the MCT use in public settings. Prior studies found several possible reasons (e.g., MCT policy, MCT availability, national culture differences) may cause different use of MCTs among countries (Ling, 2004).

In this particular study, one notable possible reason for these differences might be cultural influence because both American and Taiwan share very similar MCT availabilities and policies. American and Taiwanese campuses were found to have different cultural norms for using MCT in public settings. Culture has been viewed as a system of shared meanings (Geertz, 1973; Keesing, 1974). Hall (1976) wrote “there is not one aspect of human life that is not affected by culture” (p. 14). Hofstede (1991) defines culture as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (p. 260). Cross-cultural researchers often try to find the reasons why people within a group share meanings of using and accepting some communication technologies but not with others. Their findings vary.

Some scholars and theorists (e.g., Castells, 2000) in the communication technology area argue that communication technology has the power to create a new culture. Castells (2000) comments that “... through the powerful influence of the new communication system, mediated by social interests, government policies, and business strategies, a new culture is emerging” (p. 358). For example, Finnish sociologists comment that mobile phones are owned and used by the normally silent and taciturn Finns whose culture hitherto excluded small talk (Puro, 2002). Research from Finland (e.g., Puro, 2002), UK (e.g., Fox, 2006), and Japan (e.g., Ito, 2005) reports that MCT users around the world communicate more because of the development of MCTs. With MCTs, people around the world share some similar communicate patterns. For examples, MCT users communicate more with family members and friends than businesses colleagues or strangers (de Gournay, 2002; Ling, 2004). MCT users often ignore face-to-face interaction and either interact with the “third person” by using mobile phones (Genger, 2002; Ling, 2004) or isolate themselves from the present locations by using MP3 players (Bull, 2004, 2005).

On the other hand, several studies have found that traditional culture affects the technology adoption and use. For example, researchers note that although the U.S. has had SMS for years, SMS is not as popular as in other countries, such as Nordic countries or in the Asia Pacific countries (Urbaczewski, Wells, Sarker, & Koivisto, 2002). Finnish youth pay more money for their SMS than for their voice phone calls (Kasesniemi & Rautiainen, 2002). Because SMS is an asynchronous communication service, scholars (e.g., Puro, 2002) comment that it could help a group of normally silent and taciturn Finns to communicate more. SMS users in Nordic countries reported that they felt more comfortable to send a SMS message than just to make a mobile phone call (Ling, 2004). In contrast, Ling (2004)

comments that the United States has different billing and technology issue than other countries. Unlike Nordic countries or East Asian countries, a lower percentage of Americans used SMS.

Communication technology consumer researchers (e.g., de Mooij & Hofstede, 2002) and communication technology design scholars (e.g., Shore & Venkatachalam, 1996) have applied cross-cultural theories or concepts, such as Hall's high- and low-context culture (1976) and Hofstede's national culture theory (1980), to seek more effective strategies to design communication technologies across the nations. Some of them (e.g., Frank, Sundqvist, Puumalainen, & Taalikka, 2001) evince that different national cultures affect the adoption patterns of some communication technologies while others scholars (e.g., Puro, 2002) found that communication technologies could affect cultures.

Hofstede (2001) notes that low uncertainty avoidance cultures make better use of a new media technological innovation than do high uncertainty avoidance cultures. Frank and colleagues' study (2001) found that the Hofstede's (1980) uncertainty avoidance value score could explain the mobile service adoption among Finland, Germany, and Greece. In Hofstede's (1980) ranking, Finland's uncertainty avoidance value was 59, whereas Germany scored 65 and Greece 112 (Frank et al., 2001). In terms of mobile service adoption, Frank et al. (2001) demonstrated that Finland is a fast-mover and Greece is a laggard. Germany is in between the two.

This research also suggests a need for more cross-cultural research to understand how MCTs impact on different cultural societies. In the current study, many different public uses of MCTs were also found between the U.S. and Taiwan. In Hofstede's ranking, Taiwan has higher uncertainty avoidance value than the US (Geert Hofstede cultural dimensions, 2006a, 2006b). Geert Hofstede (Geert Hofstede cultural dimensions, 2006a, 2006b) explains that cultures with a low uncertainty avoidance value are less rule-oriented and more readily accept change. It might be one of the explanations why this study found that the US college students are changing more rules (e.g., public places are designed for face-to-face interactions) in public spaces by using their MCTs in public settings than the Taiwanese students. Future investigation is needed to clarify this issue.

Although this study only selected one university from each country, there were gender patterns of "absent presence" revealed. This study provided quantitative findings that MCTs did allow a transformation in the use of public spaces as many of the other researchers and theorists mentioned. Another major purpose in this study was to document the phenomena in given public settings. Both the Taiwanese males and females on campus had much less mobile teledensity than the American subjects. The Taiwanese female mobile phone teledensity was 1.4% and mobile music teledensity was even less (i.e., 0.2%). The U.S. female mobile phone teledensity was 9.3 % and mobile music teledensity was 2.9 %. The other 0.2% used both mobile phones and mobile music technologies together.

A similar pattern also occurred in the U.S. male mobile teledensity (i.e., Mobile phone teledensity: 1.9% in Taiwan and 6.5 % in the U.S.A.; Mobile music teledensity: 0.8 % in Taiwan and 7.4 % in the U.S.A.; use both mobile communication technologies together: 0.1 % in Taiwan and 0.3 % in the U.S.A.). These findings further confirm that the Taiwanese MCT users used their MCTs far less in the public settings than their American counterparts. According to Bull (2005), Apple iPod users create their own private spaces in public settings. In the American campus, the pattern showed a higher private use in MCTs in public settings.

The reason for this result might be due to American culture's individualist orientation as opposed to Taiwan's collectivism, where group interests are more valued.

In Hofstede's definition, high individualistic cultures respect individuality and individual rights within the society, whereas low individualistic cultures take more responsibility for their group members. America is a country that has higher individualist cultural values than Taiwan (Geert Hofstede cultural dimensions, 2006a, 2006b). Hofstede (1980) has argued that most Asian cultures (e.g., Japan, Taiwan) have collectivist orientations. Collectivist cultures tend to (1) focus on group interests and goals; (2) try to fit into the ingroup; (3) be interdependent with others; and (4) make large differences between in group and outgroup communication. Both of the American MCT male and female users had higher mobile teledensity than Taiwanese MCT users. It might imply that American MCT users care more individual interests than Taiwanese MCT users. The U.S MCT users enjoy creating their private bubbles within traditional public places.

Finally, a remarkable comparison pattern was found in this study. MCTs might change the experience of being "with others." In both countries, MCT users were found to use their MCTs when they were with others. In Taiwan, there were only 0.8% of the total female population and 0.1% of the total male population who used their mobile phones within groups in public. Neither a Taiwanese MCT female nor a Taiwanese MCT male user utilized the mobile music technology "with others" in the university campus. On the other hand, 1.4% of the total American female total population and 1.4% of the total American male population used their MCTs "with others".

With these findings in this study, a pattern of using MCT within groups in Taiwan was less than in the U.S. The individualistic culture and collectivistic culture differences might fit here again. It may imply that collectivist cultures (e.g., Taiwan) are concerned with relationships and group solidarity, such as ingroup interests and goals, whereas the individualistic cultures (e.g., the U.S.) are more concerned about individual interests and goals. The American MCT users were found to have a higher teledensity and used MCTs more within the group than the Taiwanese MCT users. It may indicate that the U.S. MCT users valued more their personal own private spaces with groups in public settings. These U.S. MCT users respect more individuality and individual rights. Taiwanese MCT users might care more about "others" in public settings. Therefore, they use less MCT within groups than the American MCT users. In addition, these findings may also imply possible effects of isolation and irritation for non-MCT users. Future researchers may further investigate group interactions in public settings, such as what happens when individuals get cell phone calls or use mobile music technologies within a group in different cultures. Hall's (1966) concept of proxemics, a study of spatial distances between individuals in different cultures, would be a suitable concept to examine MCT users and their non-verbal communication with others in public settings.

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