MORE THAN JUST TALK ON THE MOVE: USES AND GRATIFICATIONS OF THE CELLULAR PHONE

By Louis Leung and Ran Wei

Mobility, immediacy, and instrumentality are found the strongest instrumental motives in predicting the use of cellular phones, followed by intrinsic factors such as affection/sociability. Subscription to functionally enhanced services such as call transfers and caller ID appears to be important predictors for overall cellular phone use, especially for those who are on the go. As expected, the use of cellular phones on buses, cars, and trains or in malls and restaurants is strongly linked to mobility and immediate access gratifications. Further, young and less educated women tend to talk longer on each call. Finally, talking to co-workers and business partners via cellular phones appears to be for instrumental reasons, while talking to immediate family members is for mobility and showing affection.

The on-going technological revolution in telephone gains momentum with the rapid diffusion of cellular phones[1] worldwide.[2] Wireless technology expands telephone applications by empowering people on the go to use it anywhere and anytime. It thus assumes an increasingly important role in interpersonal and social communications. Nevertheless, as several scholars[3] argue, empirical research on the telephone in contemporary society has been conspicuously rare, falling far behind advances in telephone technology. New generations of the cellular phone (such as PCS—Personal Communications Systems) have evolved from a mobile talking device into a multi-purpose communication medium that is capable of transmitting and disseminating voice, text, graphics, data, and even video. Thus, new empirical studies are called for to examine this converged technology that mixes interpersonal and mass communications. Some intriguing questions surface: How do people use the cellular phone? Do they use it differently from the old wired and land-based telephone? If so, how does it affect their telephone behavior? These questions raise broad theoretical inquiries about the motivations, uses, and psychological needs and satisfaction concerning the use of new communication technologies.

Theoretically motivated, this study attempts to address these broad questions with empirical data collected through a cross-sectional survey using a probability sample. The goal is to develop a uses and gratifications perspective that will foster a better understanding of how people use the uniquely converged mobile telephony technology. Findings of the study

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should help establish a research agenda for examining the far-reaching social implications of the new cellular phone as an emerging mixed or hybrid medium, which maximizes freedom of movement and provides speedy access around the clock.

Review of Previous Research

Telephony was initially categorized as interpersonal mediated communication,[4] that is, interactive person-to-person communication that transcends the limitations of time and space. Others viewed it as a mass medium[5] that provides informational and entertainment services comparable to established electronic media. Dimmick, Sikand, and Patterson[6] further argued that this long familiar medium integrated interpersonal and mass communication. As a new medium, the cellular phone unmistakably possesses elements characteristic of both unmediated interpersonal communication and mediated mass communications. On the one hand, it fulfills the basic function similar to the land-based phone in providing point-to-point interactive communication between two parties; on the other hand, it overcomes mobility barriers of the conventional land-based phone. At the same time, it expands telephone services from an unmediated common carrier to multi-purpose content services including paging, voice mail, fax, data transmission, news and weather updates, stock information, and Internet access, among others. Accordingly, previous research on the conventional land-based telephone serves as a departure point for grounding the present study in existing theory. In addition to establish a theoretical framework of analysis, this study also integrates recent studies on uses of new telephony technologies such as the pager.

Research on the Conventional Telephone. The uses and gratifications theory, which seeks to examine audience media uses in light of social and psychological needs[7] has stimulated numerous studies of media use in general and on telephone use in particular. Among the relatively few uses-gratifications studies on the conventional telephone, those done by Keller and Noble[8] were seminal. They differentiated telephone uses into two broad motives or gratifications: intrinsic or social and instrumental or task-oriented. Intrinsic motivations of phone use refer to making calls to socialize (such as chatting, gossip, keeping family contacts, and having a sense of security); while instrumental motivations of telephone use concern the utility of calls (such as making appointments, ordering products, information seeking and the like). Their findings show that social uses were more frequent than utilitarian uses.

A subsequent study of Claisse and Rowe[9] conceptualized "functional" and "relational" motives or gratifications sought from the telephone use. Williams, Dordick, and Jesuale[10] expanded the gratifications categories by adding a "fun" or "entertainment" motivation. That is, making phone calls is fun-seeking, particularly among teenagers. Dimmick, Sikand, and Patterson[11] identified yet another gratification factor labeled "reassurance," namely using the telephone to fulfill one's psychological needs for feeling secure. In their study of uses and gratifications of the telephone, O'Keefe and Sulanowski[12] elaborated gratifications sought through telephone use and examined how differences in gratifications sought affected individual telephone behavior. Their findings identified a mix of interpersonal and mass media gratification factors as motivations of telephone use, including sociability, entertainment, acquisition, and time management. Further, they found that the greater the motives for entertainment, time management, and social interaction, the more time telephone users spent making or receiving calls.

Research on Newer Telephony Technologies. In their study, Leung and Wei[13] applied the gratification dimensions to examine the use of pagers among college students through a series of confirmatory factor analysis. Their findings verified previously tested gratification structure based on exploratory factor analysis. More important, they identified a new factor emerging from pager use: "fashion and status." That is, among late adopters having a pager was viewed as a mark of social identify and status symbol. The unique gratification sought was integration into peer networks.

Research Questions. O'Keefe and Sulanowski[14] projected that as the telephone became a content-oriented medium, "the likelihood of telephones also retaining their interactive, interpersonal attributes allows a duality of purposes quite unlike that of any other technology." Their predication has become a reality. The boundaries of the cellular phone between people-to-people and one-to-many mass communication have dissolved. Moreover, the functionally enhanced telephone services such as call redirections to avoid missing calls, caller ID displays to screen unwanted calls, and paging services, also available in mobile phone services, have further removed mobility restrictions and spatial limitations to an unprecedented extent. Past diffusion research affirmed that the adoption of new communication technologies was best predicted by the adoption of functionally similar technologies and user perceptions toward them.[15] As Rogers argued that "the adoption of one new idea may trigger the adoption of several others in a cluster which consists of one or more distinguishable elements of technology that are perceived as being interrelated."[16] Past studies demonstrated the validity of the concept in the studies of videotext[17] and cable television.[18] As a result, this study will also examine the relationship between the subscription of functionally enhanced services in the use of the cellular phone (call redirections, caller ID displays, and paging services) and the level of cellular phone use. What will the total yield effects, as suggested by Rogers, of all the functionally enhanced services be, plus the interaction effects of each service on the others?

How to make sense of this new and uniquely converged telephony technology hybrid from a user's perspective? This study treated the cellular phone as a new domain to test the uses and gratifications theory.[19] Specifically, it raised these research questions:

> (1) What are the gratifications that are most sought in cellular phone use as compared to that of the conventional wired telephone?

> (2) Can differences in gratifications sought and subscriptions of functionally enhanced phone services predict the level of cellular telephone use? If so, how?

> (3) To what extent can gratifications sought and functionally enhanced phone services predict specific cellular telephoning behavior in terms of (a) persons talking to and (b) locations?

Methods

Data for this study were collected from a telephone survey using a probability random sample of 834 respondents of 18 years of age or older in May 1998 in Hong Kong. The most updated telephone directories were used

in drawing the sample. Each interview lasted for twelve minutes. The completion rate was 52% when non-eligible respondents, non-working numbers, and numbers that were never answered after five attempts were excluded. Among the 834 respondents, 446 (53.5%) were cellular phone users, while 388 were non-users (46.5%). The length of using the cellular phone among the respondents ranged from 1 to 12 years (M = 2.36 years, SD = 2.45).

Gratifications Measures. According to findings reported in studies of the conventional telephone,[20] sociability, instrumentality, reassurance, entertainment, acquisition, and time management were identified motives or gratifications. These motives and gratifications sought were incorporated in the survey questionnaire. Moreover, gratifications of pager uses as suggested by Leung and Wei[21] were included as well. To refine the questionnaire, a pilot study based on a convenient sample of 107 respondents was conducted to test 45 items that might reveal different reasons for using cellular phones. These items ranged from affection or sociability, relaxation, mobility, immediate access, instrumentality, reassurance, to fashion and status. The pre-test eliminated 18 items. A 5-point Likert scale was used in rating the 27 gratifications items, namely "1" means strongly disagree and "5" strongly agree with the reasons for using cellular phones.

Cellular Telephoning Behavior Measures. Respondents were also asked to report their cellular phone uses. These questions included (1) how long they had been using a cellular phone; (2) how often they communicated with immediate family members, co-workers, or business partners via their cellular phones; and (3) how often they made a call with their cellular phone in buses, cars, trains, restaurants, and shopping malls or stores in a 5-point Likert scale with "1" meaning "never" and "5" meaning "often." Further, respondents were also asked about the number of messages they *make* and *receive* on a typical day and the average number of minutes they spent on each call. To assess the level of overall cellular phone use, the number of calls made and received on a typical day were combined, yielding a composite score for subsequent analyses.

Subscription to Functionally Enhanced Telephone Services. Diffusion scholars and market researchers affirmed that the adoption of new communication technologies was best predicted by the adoption of functionally similar technologies."[22] As a result, the survey also asked whether respondents subscribed to four functionally similar and enhanced telephone services with their cellular phones, namely call transfers, news headlines and weather updates, caller ID display, and paging services. These four services were coded as dummy with "1" being "yes" and "0" being "no."

Control Measures. Demographic characteristics of respondents were measured by age, gender, monthly household income, education attainment, marital status, size of family, number of children at home, and occupations. Gender and occupations (both in business and in sales) were coded as dummy in subsequent regression analyses.

Results

Gratifications Sought in Cellular Phone Use. Principal component factor analysis was run to determine the potential groupings of the 27 gratifications items of cellular phone use. Varimax rotation was used to better account for expected correlations among potential factors. Accordingly, seven factors emerged with eigenvalues greater than 1.0, explaining 60.8% of the total variance (see Table 1).

TABLE 1
Factor Loadings (Principal Components, Varimax Rotation) of 27 Gratification Items
(N = 417)

Having a cellular telephone is helpful for me...	Mean	SD	Factors						
			1	2	3	4	5	6	7
Fashion/Status									
to look stylish	1.99	.88	.75	.02	.19	.02	-.04	-.02	.05
to look fashionable	2.16	.96	.74	.09	.17	.09	-.05	.02	-.01
to have it as a status symbol	2.07	.91	.71	.11	.16	.01	.02	.05	.03
to avoid looking old-fashioned without a cellular phone	2.31	1.05	.70	.10	.07	.00	.17	.07	-.17
because using the cellular phone is fun	2.09	.92	.65	.10	.25	.05	-.02	.00	.08
Affection/Sociability									
to feel closer to your family members	3.32	1.08	.07	.78	.14	.13	.00	.04	.02
to improve the relationship with your family	3.09	1.12	.14	.68	.28	.05	.02	.07	.07
to allow parents to carry out family responsibilities while at work	3.62	1.02	.04	.63	.03	.06	.32	.13	.26
to let others know you care for them	3.05	1.10	.17	.56	.37	.08	.20	.13	-.10
to being always available to the children	3.75	1.04	.13	.49	.10	.15	.39	.11	.24
Relaxation									
to enjoy the pleasure of talking to people	2.75	1.12	.19	.28	.72	.08	.04	-.01	-.09
to gossip or to chat	2.47	1.13	.36	.07	.65	.01	.03	-.05	.16
to relieve boredom by calling people	2.35	1.06	.40	.03	.64	.04	-.06	.01	.23
Because using the cellular phone relaxes me	3.07	1.10	.18	.23	.62	.07	.20	.11	-.17
to help pass the time	2.09	.93	.50	.06	.54	-.05	-.13	-.03	.22
Mobility									
to eliminate the need to queue up for public phone	4.09	.81	.12	.11	.01	.82	.15	.01	-.02
to eliminate the need for change (coins) required to use a public telephone	3.97	.85	.15	.11	.03	.80	.11	.02	-.06
to avoid the need of looking for a fixed public telephone any more	3.95	.87	-.08	.05	.13	.64	.08	.07	.29
to tell others you will be late during a traffic jam	4.13	.75	-.06	.13	-.04	.58	.25	.12	.31
Immediate Access									
to be always accessible to anyone no matter where you are	3.95	.80	.02	.18	.03	.33	.73	.00	-.00
to provide immediate access to others anywhere anytime	4.03	.81	-.14	-.03	.13	.20	.73	.15	.03
to be available to the ill or aged members of the family	3.90	.93	.11	.23	-.02	.03	.61	.06	.26

Table 1 cont.

Having a cellular telephone is helpful for me...	Mean	SD	Factors						
			1	2	3	4	5	6	7
Instrumentality									
to do business transactions	3.47	1.29	.03	.14	-.01	.06	.10	.92	.05
to talk business	3.46	1.30	.04	.13	.03	.10	.10	.91	.06
Reassurance									
to feel safe and secure in case of emergency	3.93	.90	-.04	.25	.02	.25	.26	.01	.62
to have a sense of security	3.16	1.12	.37	.40	.06	.04	-.02	.04	.49
to change your appointment in short notice	3.97	.84	-.04	-.13	.22	.37	.25	.23	.46
Eigenvalue			6.3	3.7	1.7	1.5	1.2	1.0	1.0
Variance explained (%)			23.4	13.6	6.4	5.5	4.3	3.9	3.7
Cronbach's alpha			.80	.76	.79	.74	.64	.89	.49

The first factor marked the use of the cellular phone for looking stylish, fashionable, and as a status symbol. It was named "fashion and status" following Leung and Wei's term.[23] Although the internal consistency among the items underlying this factor was high as indicated by Cronbach's alpha (.80), the items had the lowest mean scores (see Table 1). This result may be due to the widespread use of cellular phones that made fashion and status no longer a strong motive. The second factor, "affection and sociability" reflected the motivations of using cellular phones as a means to show affection. Items such as "feeling closer to family members," "improving family relationships," and "carrying out family responsibility while at work" loaded the highest on this factor followed by "caring for others" and "making themselves always available to their children" through the use of cellular phones. "Relaxation" was the third factor. It reflected the pleasure of using the cellular phone to talk, gossip, relieve boredom, relax, and help pass the time. It seems that the cellular phone is perceived as a new pleasure phone. However, the mean scores of these five items were low, indicating that high cost of calling prevented respondents actually from using it to simply pass time.

The fourth factor, "mobility," marked the elimination of the need for change (coins) and queuing up for public phones because of cellular phone use. The means scores of the items in this factor were high, suggesting the mobility as a strong gratification sought in cellular phone use. "Immediate access" was the fifth factor generated. It demonstrated that cellular phones allow immediate access by users regardless of time and location, especially being available to the ill or aged members of the family. The sixth factor, "instrumentality," reflected that the cellular phone was used as an instrument for business transactions or facilitator of business talks. The last factor was called "reassurance," which reflected the sense of security and safety in having a cellular phone in case of emergency. But its Cronbach's alpha was relatively low at .49.

In summary, findings in this study verified gratifications factors such as sociability, relaxation or entertainment, instrumentality or acquisition,

reassurance, and fashion and status in previous studies on the use of the conventional telephone and the pager. Moreover, this study found that instrumental uses of the cellular phone are more frequent and the instrumental motives are much stronger than social or intrinsic uses when compared to the use of the in-place telephones. However, to answer the remaining two research questions, only four out of seven identified gratification factors, namely affection/sociability, mobility, immediate access, and instrumentality were included for further analysis. Other factors such as fashion/status, relaxation, and reassurance were omitted due to inadequate reliability (alpha=.49) or lack of variance. Here, gratification factors were operationally defined based on the items used in each dimension. For example, affection/sociability reflected the gratification of using cellular phones as a means to show affection, to feel closer to the family, to improve family relationships, to carry out family responsibility while at work, to care for others, and to make themselves always available to their children. Similarly, mobility, immediate access, and instrumentality were operationally defined according to the items resulting from the factor resolutions in subsequent regression analyses.

Gratification Motives as Predictors of Level of Cellular Phone Use. Before answering the second research question, this study found that the cellular phone use among respondents was active. The means of calls made and received in a day were 9.33 and 9.57 respectively. In terms of the length of each call, the mean was 3.35 minutes. Results of hierarchical regression show that these cellular telephoning behaviors had significant links with the identified gratification factors. As shown in Table 2, wealthy men who are in business tended to use the cellular phone more than their female counterparts for instrumental purpose. The beta weight for instrumentality gratification was the highest at .24, significant at $p < .001$ level, indicating that cellular phones were used overwhelmingly for doing business. The demographic and gratifications blocks combined explained 15% of the total variance for the level of cellular phone use. When functionally enhanced services were entered into the equation, both call transfers (beta=.15, $p < .01$) and caller ID display (beta=.17, $p < .001$) were found significant predictors for the overall level of cellular phone use in a typical day. This finding indicates that subscription to functionally enhanced services does increase the overall cellular phone use, especially the services of being able to identify the incoming calls and redirecting calls from in-place phones to mobile cellular phones. These two variables explained the additional 6% of the variance. Altogether, the regression equation was able to account for 21% of the total variance. Contrary to earlier research on in-place phone that social uses were more frequent than utilitarian uses, this study found instrumentality the strongest predictor of general cellular telephoning behavior, followed by caller ID display and call redirections.

Gratification Motives as Predictors of Specific Cellular Telephoning Behavior in Terms of Persons Called. Results of more hierarchical regression analyses in Table 2 show that household size and occupations in business and in sales had significant predictive power over the use of cellular phones to talk to their immediate families. Results further show that affection/sociability (beta=.09, $p < .05$) and mobility (beta=.11, $p < .05$) significantly predict the level of cellular phone use. This particular finding means that business and sales people with a small household size tended to use the cellular phone to show affection to their immediate family members. This made a great deal of sense, for their work required them to be on the road from time to time. As

TABLE 2

Hierarchical Regression Analysis of Cellular Telephoning Behavior Using Demographics, Gratifications, and Functionally Enhanced Services as Predictors

Predictors	Level of Use	Persons talked to		Locations where cellular phones were used	
		Immediate family	Co-workers & business partners	Buses, cars & trains	Malls & restaurants
	Beta	Beta	Beta	Beta	Beta
Block 1: Demographics					
Gender (Male)	.11*	-.04	.20***	-.05	.03
Age	.00	.06	.04	-.02	-.12*
Household income	.09*	.01	.02	-.03	-.02
Education	-.05	.01	.03	.07	.03
Household size	-.03	-.11*	-.07	-.09	-.07
Profession in business	.09*	.13**	.12*	.20***	.27***
Profession in sales	.09	.11*	.10	.24***	.19***
Adjusted R² (%)	.08	.03	.13	.07	.11
Block 2: Gratifications					
Affection/sociability	.06	.09*	-.01	.03	.06
Mobility	.03	.11*	.07	.16**	.11*
Immediate access	.07	.03	.05	.15**	.15**
Instrumentality	.24***	-.08	.27***	.06	.05
Change in adjusted R² (%)	.07	.02	.07	.04	.02
Adjusted R² (%)	.15	.05	.20	.11	.13
Block 3: Functionally enhanced services subscribed					
Call transfers (yes=1)	.15**	.01	.12*	.07	.04
Display of news headlines, weather, traffic, stock, & horse race results (yes=1)	.05	.04	.04	.07	.07
Caller ID (yes=1)	.17***	-.03	.16**	.20***	.13**
Paging services (yes=1)	.05	.02	.02	.09	.13**
Change in adjusted R² (%)	.06	.00	.05	.04	.04
Final adjusted R² (%)	.21	.05	.25	.15	.17

Note: Figures are standardized beta weights from final regression equation with all blocks of variables included for the entire sample.

#p < .1; *p < .05; **p < .01; ***p < .001; N = 373

expected, those who called co-workers and business partners appeared to be mostly males who were businessmen themselves. The cellular phone facilitated their business transactions. As anticipated, instrumentality (beta=.27, p < .001) was the strongest predictor for talking to co-workers and business partners. The demographic and gratification blocks explained a total of 5% and 20% of the variance for talking to immediate families and co-workers and business partners respectively. Subscriptions to call transfers (beta=.12,

$p < .05$) and caller ID services (beta=.16, $p < .05$) were also found important predictors for talking to co-workers and business partners as incoming calls can be transferred to their mobile cellular phones while they were away from the fixed telephones in their office. The functionally enhanced services explained five additional percents of the total variance. Accordingly, the variance explained in terms of persons talked to in the two regression equations varied from 5% to 25%.

Gratification Motives as Predictors of Specific Cellular Telephoning Behavior in Terms of Locations. As results of similar regression analyses shown in Table 2 indicate, such gratification variables as mobility and immediate access were significant in predicting on-the-go locations from which respondents used the cellular phones (namely, on the street, in cars, buses, trains, subways, railway stations, restaurants or shopping malls). Those who talked through cellular phones in those places were most likely to work as business or sales people.

Furthermore, young business and sales people were found more likely to use cellular phones in shopping malls or stores. This finding suggests that the cellular phone fits in their busy lifestyles. Subscription to caller ID and paging services also significantly predicted the use of cellular phones while on the go. These enhanced services facilitated people who are often on the go to be in constant touch with their customers and business partners. Across the two regression equations, the amount of variance accounted for by both demographic and gratification blocks ranged from 11% to 13% and the variables from the functionally enhanced service block gained additional 4% each. Total variance explained for cellular phone use in two separate locations ranged from 15% to 17%.

Conclusions and Discussion

With a view to extend previous research on the conventional telephone, results of this study indicate that the gratifications sought in using the cellular phone were largely consistent with previous findings reported in the scarce literature on telephone communication. The previously tested intrinsic or social, instrumental, and psychological reassuring motives were applicable to this new wireless communications technology. Most important, findings of our study suggest that mobility and immediate access were unique dimensions of cellular phone use motivations unidentified in the existing literature. The new wireless telephone technology maximizes freedom through mobility; it also pushes immediate accessibility to the fullest extent. Both factors are instrumental in respondents' daily life and work as well as a facilitating conduit for keeping in touch with family, the aged, and the sick while on the go. Thus, the cellular phone seems to offer an optimal balance in the long-standing tradeoffs between freedom of movement and immediate access.

Furthermore, differences in gratification dimensions are linked with different demographic characteristics of users and their cellular telephoning behavior. The gratifications dimensions of mobility, immediacy, and instrumentality were the strong predictors of the use of cellular phones. Occupations seemed to make a big difference in using cellular phones. Those in business and sales tended to use their cellular phones more to meet their needs for mobility, immediacy, and instrumentality. They used the wireless talking device more often on the move than any other circumstances: in public transits, restaurants, and shopping malls. Gender differences in

cellular phone uses are also found. Male users tended to use cellular phone as an instrument to do business and younger females tended to make longer calls while on the go. The gender difference in conventional telephone use seems to have extended to cellular phone use.

In addition, cellular phone uses by older and less educated respondents seemed to be strongly motivated by social reasons. Talking to co-workers and business partners via cellular phones appeared to be for instrumental reasons, while talking to immediate family members was for overcoming mobility barriers and to show affection. In sum, the emerging patterns seemed that respondents sought gratifications higher in some dimensions while lower in other dimensions due to their differences in age, gender, and occupations.

Finally, consistent with the expectations of the diffusion theory that technology cluster is a significant predictor for the adoption of an innovation,[24] this study also found that subscription to functionally similar or enhanced telephone services in the use of the cellular phone significantly predicts the level of cellular phone use. This finding suggests that when people subscribed to the enhanced functions such as call transfers, caller ID display, and paging in their cellular phone service, the higher the level that they would use the cellular phone. These functionally enhanced features together with mobility, immediacy, and instrumentality undoubtedly explain much of the reasons why cellular phone is becoming popular across a wide socio-demographic spectrum.

Since this study was built on previous research on uses and gratifications of the telephone in the United States and the present study was conducted in Hong Kong, cultural differences between the two locales might lead to differences in gratifications of cellular phones. However, as this study was not conducted in a comparative context to examine the similarities and differences in the motives of cellular phone use between these locales, results from this study should be interpreted with caution. First, user groups are diverse when more than 50 percent of the 6.3 million populations in Hong Kong are now using cellular phones regularly; however, the adoption rate in the United States was reported at 29 percent in 1999.[25] Cellular phones are no longer communication tools for businessmen, but are also for students and housewives alike. Owning a cellular phone cuts across a wide demographic spectrum. As a result, gratifications for cellular phone use in Hong Kong would most likely differ from that of the United States. Secondly, Chinese users tend to show a higher level of conspicuous consumption. Owning and using a mobile phone fit in this lifestyle. For instance, fancy phone kits and accessories with tailor-made leather-cover and antenna, and custom-designed ringing-signals in user's favorite pop song, etc. are part of the experience of using a cell phone. They seem to lead to the creation of a cellular phone sub-culture. Also, massive advertising campaigns constitute an image of cellular phone users as fashionable, popular, upbeat, and celebrity-status. Young people are more likely to be influenced by this image as they try to identify with this mediated image in the use of the cell phone. In the United States, the perception of the cellular phone being a service for the wealthy and priced beyond the reach of the average citizen is still a major barrier for widespread use. This is true when spectrum is scarce, especially when analog systems are being used in some markets; competition is limited, and handsets expensive. However, this has changed quickly in Hong Kong when cellular phone is entering a new, mass-market phase. Cellular phone has become relatively abundant on second-generation digital systems. These differences

between Hong Kong and the United States suggest that aspects of culture may indeed influence the uses of cellular phone and motivations in using it. Therefore, future studies can illuminate how these differences affect the gratification factors in the use of the cell phone within a comparative cultural context.

To date, the main requirement for cellular telephony has been for speech communications—plain old telephone service on the move. However, capabilities of digital technology will create a new and growing market for data communications especially when the third-generation cellular phone systems with high bit-rate and capable of delivering high-bandwidth multimedia contents become available. These will be some new kind of "converged" communications devices, which resemble a combined mobile phone/laptop computer. The momentum in revolutionizing wireless cellular communication technology grows apace. The capacities of the cellular phone in accessing and delivering multimedia data are empowering. They will allow one to connect to the Internet and use the cellular phone as a personal search vehicle for news headlines, weather and traffic updates, and information on products and services, akin to the accessibility afforded by a personal computer. At that time, the notion that telephones are developing into a cross between interpersonal and mass media by virtue of the kinds of content they offer will become more evident. When that happens, it would further inform uses and gratifications theory about novel types of mass media gratifications through this ever-expanding wireless technology in cellular telephony.

To conclude, the new cellular phone represents a converged new technology hybrid as it dissolves boundaries between telecommunications and broadcast industries. An audience perspective on new communication technology research in empirical settings[26] should be crucial in understanding the future trends of the rapidly changing media landscape towards choice, diversity, and increased competition. As O'Keefe and Sulanowski[27] put it, how a technology serves the public effectively depends on how well it satisfies people's needs. The process of acquiring gratifications through using a particular technology may influence profoundly one's future media use behavior in the new media environment of abundance. Therefore, more work is needed to explore the consequences of gratifications sought from technologies for their diffusion by integrating the uses and gratifications theory and the diffusion theory, two of the dominant theoretical paradigms in new media research.

At any rate, as a new technology that offers unprecedented freedom in mobility and immediacy for access, the cellular phone would speed up societal changes. But what does it give? What does it retain? And what does it take away? Only more empirical studies can shed light on these questions. The one-shot nature of this study is admittedly a weakness. To overcome this limitation, panel design is the desired method for follow-up studies. In addition, the findings of this study based on exploratory factor analysis should undergo more rigorous testing in future research. In this way, sample bias can be controlled for.

NOTES

1. The term cellular phone used in this paper is interchangeably used with cell phone or mobile phone.
2. The growth of the mobile phone around the world is phenomenal. The

United States has the largest number of cellular mobile phone users, followed by China with a total of 23 million in 1998. In terms of market penetration rate, Finland leads at 55 percent. Sweden is next with a rate of 50 percent; Hong Kong ranks third with a rate of 39 percent followed by 35 percent in Australia, 30 percent in Singapore, 37 percent in Japan, 21 percent in Taiwan, and 5 percent in China.

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25. Subscribers are up 25.5 percent since June 1998 in the United States and are now at 84,920,108 (Source: Cellular Telecommunications Industry Association at http://www.wow-com.com/statsurv/survey/199906c.cfm). Finland currently has a cellular phone penetration of about 60 percent, while the rate is about one in two in Sweden and Norway.

26. Sonia Livingstone, "New Media, New Audiences?" *New Media & Society* 1 (April 1999): 59-66.

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