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Running head: MOBILE PHONES AS A SOCIAL MEDIUM

The Rochester Institute of Technology

Department of Communication

College of Liberal Arts

Mobile Phones as a Social Medium for the Deaf: A Uses and Gratifications Study

by

Katelyn D. Ecker

*A Paper submitted*

in partial fulfillment of the Master of Science degree

in Communication & Media Technologies

Degree Awarded:

August 20, 2008

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## DEDICATION

To my family—thank you for your enduring support and faith in me, whether it comes from 30 miles away or 3,000 miles away.

To all deaf and hard-of-hearing individuals who face communication barriers daily in their personal and professional lives—their road to hear and be heard is lined with both struggles and successes.

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MOBILE PHONES AS A SOCIAL MEDIUM FOR THE DEAF:  
A USES AND GRATIFICATIONS STUDY

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Degree: Master of Science in Communication & Media Technologies

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Abstract

New communications technologies include mobile phones that now provide access to the Internet and text messaging. The present study used the conceptual framework set forth by past uses and gratifications research and shifted focus to the media needs of one specific population: the deaf and hard-of-hearing. Past literature focused on the uses and gratifications of traditional media, but less is known about the consumption of new media by deaf people. Using a convenience sample of hearing and deaf students at RIT, findings from an e-mailed survey instrument showed deaf and hard-of-hearing students were more likely to use instant messaging and e-mail, whereas the voice function was used more by hearing students. Text messaging use was comparable between the two groups.

Keywords: deaf, new media, social, uses, mobile phone

Without a doubt, communication and media technology has permeated the lives of all. The past 20 years have ushered in such new media as the Internet, mobile phones<sup>1</sup>, and what Bryant, Sanders-Jackson and Smallwood (2006) referred to as “socially interactive technologies” (SITs) such as short messaging service (SMS)<sup>2</sup> and instant message (IM). As a culture that traditionally could not access highly auditory media, many deaf individuals are discovering and greatly benefiting from these new channels of communication. Results of a 2000 survey revealed deaf people made an average of 10 times more SMS calls a month than hearing people (Harper, 2002). While deaf people may have previously experienced feelings of isolation or exclusion from certain media, SMS and the Internet provide more opportunities to create and maintain channels that link them to others, whether hearing or deaf (Bakken, 2005).

From the telephone’s audible ring to the incomprehensible tunes of the radio, some traditional media—by their design alone—have historically prevented the deaf from a full participatory experience. While hearing people were long enjoying the benefits of telephone technology denied to deaf people until the teletypewriter (TTY) was launched during the 1960s, face-to-face social calls were a strong practice in the history of deaf communities (Keating & Mirus, 2003; Andersson, 2000). In light of the previously limited access to traditional media, the recent wave of new media technologies has perhaps facilitated more opportunities for deaf people to communicate without being face-to-face. The clear need to communicate effectively in both social and professional contexts can ultimately surface as driving motivations to purchase,

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<sup>1</sup> The term “mobile phone” is used interchangeably with “mobile device.” Both terms are intended to be inclusive of a wide range of communication devices owned by consumers including cell phones, Blackberries, and Sidekicks to name a few.

<sup>2</sup> SMS includes the use of value-added services including access to ring tones, weather, and mobile billing (Kasesniemi, 2003), but for the purposes of this study, focus will be given to text-based, person-to-person SMS only.

subscribe to, and otherwise take advantage of communicative devices. Just as the TTY transformed the social lives and communication habits of deaf people, the same can be said of mobile communication devices, and there is an opportunity to study the role these technologies play as “social objects.”

In an article titled “Disability and the Promises of Technology,” Moser (2006) stated that “Technologies, and especially new information and communication technologies, are thought by many to hold the power to bridge and even undo disability” (p. 374). Along with blurring the line between abled and disabled users, other authors’ pronounce that “...the growing sense of community among those with disabilities has been linked to the media” (Nelson, 2000, para. 1). As a result of the diffusion of new media, more social networks have opened up to cultural minorities such as the deaf (Bakken, 2005) and the concepts of “community” and “social connectedness” have also evolved. There is a dichotomy of views surrounding the adoption of new media into various social communities; Wei and Lo (2006) assert that cell phones represent “an important facilitator of many users’ social relationships...[and] confers instant membership in a community” (p. 53) and Srivastava (2005) likewise said that the mobile “encourages individual thought and external support networks for family members” (p. 112). Other authors such as Andersson (2000) question the advantage of technology as indicated by the article title, “Technology—A Threat for the Social Life of Deaf People?” and the supposed decline in deaf people’s social lives. A fragmentation of the household has also been attributed to the mobile’s spread (Srivastava, 2005).

The introduction of new media has not only benefited deaf people (despite some controversy), it has concurrently presented an opportunity for researchers to study audience



motivations and how motives influence usage patterns. At the peak of the incoming tide of new media are mobile communication devices, which represent an especially rich area of study because they now embody a convergence of such socialization utilities as voice calls, IM, SMS, and e-mail. The uses and gratifications approach is an appropriate lens through which to view the deaf and their media use as it relates to social contact and connectedness. Rather than focus on the effects of media, audience motivation and gratifications have been at the center of uses and gratifications research (Rubin, 1994). Included in this type of research are specifically people's needs and motives to communicate and their communication behavior (Rubin, 1994). Employing the uses and gratifications approach will be useful in revealing why certain media are chosen (or rejected), used more frequently, or otherwise utilized by members of the deaf population to facilitate and enhance social contact.

Previous research has utilized the uses and gratifications approach when studying traditional media, but as Kaye (1998) explained, limited attention has been afforded to the application of this approach to new technologies, including the Internet. Despite being unable to fully anticipate the arrival of such technologies as cell phones and the Internet, researchers in 1985 not only predicted that new media uses may complement uses previously investigated, but they also wrote that, "Previously identified uses may shift to new media from old ones, providing fresh insights into the relationship between media use and gratifications" (Williams, Phillips & Lum, 1985, p. 241). By drawing on the conceptual framework established by past researchers of uses and gratifications, the present study sought to remedy the limited consideration given to not only new media, but the media uses and gratifications unique to deaf people.

Contarello, Fortunati and Sarrica (2007) conducted a free association exercise as part of a larger study to better comprehend how participants—over 300 students in all—perceived mobile phones. Their technique revealed that the top three associations given to the mobile by respondents were as follows: SMS, social relations, and communication (Contarello, Fortunati & Sarrica, 2007). Despite the irrefutable fact that mobile devices are used to satisfy a variety of needs beyond those of a social nature, this information leaves no doubt about mobile devices' prevalent use for mediating social contact. Other authors lend support for SMS's use to make connections and initiate and affirm social relationships (Horstmanshof & Power, 2005; Kasesniemi, 2003).

The present research investigated the reasons deaf people say they use media and their media preferences for maintaining social contact within a private community. As Quan-Haase, Wellman, Witte and Hampton (2002) describe, this “private community” includes social contact with kin, friends, co-workers, and neighbors. In the efforts to better understand these usage patterns and preferences, the following research questions were raised: 1) What differences are there between deaf and hearing people's self reported media preferences for social contact? 2) What differences are there between deaf and hearing people and their self reported use of various mobile phone functions (i.e. text messaging, Internet, voice)? and 3) What situational differences are there in the way both deaf and hearing users say they utilize their mobile communication devices and the device's functions?

## Rationale

### *Personal*

As a person who identifies as hard-of-hearing, I am an avid consumer of cell phone and Internet services. The execution of this study will not only serve to augment my own knowledge on this subject, but provide education to others less familiar with the communication efforts of the deaf. One should not, and cannot, limit effective communication to socializing—it is necessary for life in general—and for anyone involved, hearing or deaf.

### *Scholarly*

Progress made in the field of communications technology has afforded promising forecasts of innovative devices for distinct groups of users, including the deaf. It can be well predicted that the future will continue to usher in more of these specialized products. For researchers, the uses and gratifications approach has often been used to look at the media usage patterns of different consumers. An especially sizeable amount of knowledge is already present in which the consumption of traditional media is looked at. The present study will not only shift the focus from studies of traditional media to new media, but provide valuable insight into the uses and gratifications of new media by deaf people. Ultimately, the data collected from the self-reported media preferences of deaf people will contribute to a growing body of literature that exists today.

### *Social*

Every person, regardless of hearing status, desires if not requires a certain amount of socialization or contact with others. Zazove, Meador, Derry, Gorenflo, Burdick and Saunders (2004) state that, “people with severe or profound hearing loss...suffer the greatest socioeconomic and health care impact from communication barriers” (p. 376). The timing for the researcher’s investigation is especially auspicious because where participation in some media

was once limited for members of the deaf community, technology has eased the doors of access open again.

Through the advent and increasing dispersion of new communications media, including SMS and the Internet, deaf people now have at their disposal new mediated socialization options that were not available before. In an age where there is increased pressure from policies to address the growing concerns of accessibility, obtaining user information on specific consumer groups will become necessary. The results yielded from this study will have implications for manufacturers and service providers as they seek for ways to better meet the needs of a diversifying customer base. The study's social merit is grounded in providing an improved understanding of how best to meet the communication needs of not just the deaf, but all those who desire the tools to communicate effectively.

### Literature Review

Much past research concentrated on traditional media when applying the uses and gratifications approach; television, radio and newspaper were at the heart of these earlier investigations (Kaye, 2005). More recent studies however, have shifted their attention to new media. Building on and drawing a parallel to these preexisting studies of traditional media, Tewksbury and Althaus (2000) concentrated their investigation on uncovering motivations for using the Web among a selected student sample population.

Written questionnaires incorporated a 7-point scale measuring system, in which respondents were asked to indicate the likelihood of using the Web for specific reasons (Tewksbury & Althaus, 2000). The five reasons were extracted from a previous 7-point scale asking the extent to which respondents thought the Web possessed different characteristics. Web

site use was further described by utilizing site categories, which included arts, personal utility, news, sports, and specialty (government/political). The researchers used a path analysis to better understand and predict what gratifications will be sought and how they affect the end gratifications one obtains. While college students are not a representative population to study, their research nevertheless revealed some distinct motivations for using the Web including entertainment, surveillance, and passing time.

Leung and Wei (2000) state that wireless technology, including cellular phones, are “assuming an increasingly important role in interpersonal and social communications” (para. 1). In this assertion lies the basis of their study which examined mobility and immediate access gratifications. These researchers posed research questions that looked at how cellular behavior can be predicted by the gratifications sought as well as how the gratifications for cellular phones compare to those of the conventional wired telephone. An additional question addressed whether differences in gratifications sought and subscriptions of “functionally enhanced phone services” can predict the level of cellular telephone use.

A random sample was drawn from the most updated telephone directories and a telephone survey of 834 respondents in Hong Kong was conducted (Leung & Wei, 2000). Similar to Kaye (2005), measures for gratifications were established in addition to cellular telephoning behavior measures, which were then incorporated into the survey questionnaire. Key findings suggested that cellular phone users that had subscriptions including enhanced functions such as caller ID display and paging were more likely to use their phone at a higher frequency. Other conclusions from this study revealed that the gratification dimensions of mobility,

immediacy, and instrumentality strongly predicted cellular phone use; levels of usage also appeared to be influenced by occupation.

In one of the first academic studies to focus specifically on blog users, Kaye (2005) also employed the uses and gratifications approach to uncover the needs that are satisfied by Weblogs. Despite the three motivations for using Weblogs that casual observation has identified (community, convenience, and information seeking), Kaye's study commences to build on this rudimentary data by asking subjects what their primary motivations for using Weblogs are. Additional research questions which were posed are not only lengthy, but restrictive in nature, insofar as they do not allow for a wide range of responses beyond a yes/no answer. A convenience sample using a "snowball" technique was utilized in the survey data collection process, in which a profile of respondents was then generated. Six primary reasons for accessing Weblogs were discovered: information seeking and media check, convenience, personal fulfillment, political surveillance, social surveillance, and expression and affiliation. These motives are helpful in providing some groundwork for the researcher in the present investigation.

Earlier studies have looked at the consumption of traditional media, including the television by the deaf (Austin, 1980; Austin & Myers, 1984) as well as the motivations of this group of people for using this particular medium (Austin, 1984). In recent years, more researchers are turning their attention to the use of newer communication technologies by deaf people as evidenced by a number of studies.

One such study surveyed 884 deaf and hard-of-hearing adults via an online questionnaire about their current and past use of communication technologies (including e-mail and instant messaging) in both the home and at work (Bowe, 2002). No information was provided regarding

how the sample population was selected or found, but the responses revealed that there was a greater use of instant messaging (IM) and e-mail at home than at work. Both the benefits and drawbacks from utilizing these technologies were discussed, which painted a general description of usage patterns. Despite receiving responses from eight hearing individuals, the author did not address any comparative differences for the use of these communications technologies by hearing and deaf people. While descriptive in quality, these reports lacked precise gratifications findings.

Zazove et al. (2004) conducted an analogous study to Bowe (2002) in which deaf people and their computer usage patterns were looked at. The researchers' initial objective was to determine the effectiveness of using American Sign Language (ASL) videos to teach deaf people about health care. However, in their efforts to avoid a biased sample of the deaf and hard-of-hearing population, they also used a paper survey to acquire basic demographic and computer use information from nonrespondents. To set up this study, content in the Michigan Interactive Health Kiosk needed to be adapted to include captions and a video-taped certified ASL interpreter.

Data was collected through the use of self-administered surveys which were provided in the preferred language of participants (Zazove et al., 2004). A detailed questionnaire included demographic information, hearing loss variables, language history, and health care utilization history among other things. The purpose of this research appeared to be limited to computer use as it relates to outside factors, including the use of English in childhood and the circumstances that led to hearing loss. Zazove et al.'s (2004) study did not supply a broad enough investigation of computer use and gratifications among deaf people. Nevertheless, findings disclosed that there

was a significant difference between the study participants' use of computers and those that declined participation, but still provided demographic and computer use information. The 227 individuals who participated in the study were found to be more apt to use computers than the 31 individuals who only filled out the paper survey (nonrespondents).

A third study by Akamatsu, Mayer, and Farrelly (2006) investigated the use of two-way text messaging technology as a means of increasing the independence of deaf adolescents and alleviating their parents' anxiety about their safety and responsibility. This study enlisted participants that included deaf and hard-of-hearing students in the deaf and hard-of-hearing programs at two urban high schools, the staff of the deaf departments at these schools, and the parents/guardians of the students. Instruments of measurement included pre-use surveys, post-use surveys, and monthly statistics on the number of times each pager was used. Three research questions and their respective hypotheses were provided, but they are written in a way that only encourages closed-ended responses. The set-up of this study does not take a scholarly approach and while there were some suggestive findings, they were anecdotal at best. Overall, the study's results indicated a high level of satisfaction for the overwhelming majority of the student participants. Furthermore, the use of two-way text messagers was found to eliminate some safety concerns regarding fire alarms and emergency procedures.

Broadly speaking, there is a growing trend to discover the uses and motivations of general users of new media; progress has also been realized to uncover the basic usage and consumption patterns of deaf individuals, but there is less knowledge grounded in scholarly merit beyond mere anecdote. The researcher's study sought to build on this existing knowledge base and fill in the gap by focusing on the motivations of this specific consumer group. It is evident



that the uses and gratifications approach has thus far been successful in revealing motivational reasons for using these communications technologies; applying this same framework therefore, provided an appropriate springboard for the present study.

## Methods

### *Sampling*

A convenience sample of 34 deaf<sup>3</sup> students and 57 hearing students was gathered from a pool of currently enrolled students at Rochester Institute of Technology (RIT), including students registered in the College of Liberal Arts (COLA) and members of 11 deaf clubs and deaf Greek organizations at RIT. The hearing student population is disproportionate to the number of current deaf students at RIT, so concentrated effort was given to reach deaf students participating in one or more of the deaf clubs and organizations within NTID. College students tend to be Web-savvy users (Kaye, 1998), so using this demographic group offered valuable insight into this study.

### *Measurement Instrument*

A survey instrument was distributed via a special list serve containing the e-mails of all currently enrolled COLA students. Student club members within NTID received an identical instrument in an e-mail from representatives of the Student Life Team (SLT). Succeeding an explanation of the study's purpose<sup>4</sup>, the e-mail contained a link to access the survey hosted by RIT Clipboard. To ensure that a reliable and effective survey was used, this instrument was pretested on eight deaf and hearing students at RIT. After this pretest was conducted, the researcher reviewed the survey in person with all of the respondents and addressed issues

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<sup>3</sup> For the purposes of this study, the term "deaf" is henceforth inclusive of all individuals who identify as "hard-of-hearing" and meet the minimum hearing loss of 70 dB required for admission into the National Technical Institute for the Deaf (NTID).

<sup>4</sup> See Appendix B

including question clarity and adequacy of response scales. Using this outside input, survey items were modified as needed.

### *Operational Definitions*

*Media use.* In Part I, two questions ask if: 1) respondents own a mobile phone/device and 3) how often they use different features of their phone. A 5-point Likert response scale was provided in question #3, in which respondents rated their usage from never “1” to always “5.” Additional questions to measure mobile phone use were extracted from past research (Leung & Wei, 2000; Amiel & Sargent, 2004) which looked at: 2) the duration of mobile phone/device ownership and 4-11) how many messages and/or calls were sent *and* received the prior day by the respondent. Questions #2 and #4-11 were all open-ended, which afforded the chance for respondents to fill in their appropriate response.

In Part IV, questions #12-14 asked respondents to think about their mobile phone activities on the previous day. These questions addressed what their last-known use of their mobile phone/device was (i.e. text message, instant message, e-mail, or voice call) and how many minutes was spent performing this activity.

*Social Contact.* Statements drawn from past uses and gratifications studies (Leung & Wei, 2000) provided descriptions of social contact and were categorized under the motivation of affection/sociability. Three of these statements were used in the present study and include using cell phones to feel closer to family members, improving relationships with friends/family, and letting others know you care for them (Leung & Wei, 2000). Additionally, two predetermined motives relating to interpersonal communication were extracted from Hoflich and Gebhardt’s (2005) study, in which the appropriateness of using different media (i.e. letter, e-mail, SMS, and

telephone) for different functions was rated by 367 adults. The purposes of giving or receiving advice/support and keeping up-to-date on people (Hoflich & Gebhardt, 2005) were joined by two of the researcher's own social contact statements: sending birthday wishes and asking out or breaking up with someone. Responses collected from the open-ended question #14 (Part IV) in the survey instrument revealed additional uses of mobile phones and were categorized by the researcher using content analysis. By posing this question in an open-ended format, a wider range of uses were disclosed and were not limited to social contact.

To ensure validity in the process to collect respondent data on the reasons for mobile phone use as it relates to social contact *only*, the researcher undertook the following actions. Motivations aside from those of a social nature were extracted from Leung and Wei's (2000) questionnaire; these statements fall in the motivations categories of: mobility, reassurance, and fashion/status to name a few. In Part V, question #15, respondents were asked to rate their level of agreement with statements regarding their mobile phone behavior. Motivations that specifically disclose social contact behavior were seen in statements (#1, #3, #11, #14, #18-20, #24-25) which were mixed in to conceal the true intent of the study.

*Perceived Gratifications.* In order to measure the gratifications of using mobile phones/devices, the researcher extracted items from a survey questionnaire developed by Leung and Wei (2000). Within Leung and Wei's survey, different reasons for using cellular phones were provided, including affection/ sociability, relaxation, mobility, immediate access, instrumentality, reassurance, and fashion/status. For the present study, a few statements were drawn from each motivation category and adapted to generate a 25-item gratifications list.

Two statements on this list (#18, #19) were extracted from a second study that revealed six Weblog use motivation factors (Kaye, 2005). The included statements found to be relevant to the present study were drawn from the “Social Surveillance” and “Expression/Affiliation” factors. Kaye (2005) respectively defines these two factors as “learning about others’ points of view and opinions on various issues and current events,” and “expressing personal viewpoints and interacting with like-minded individuals.” To rate these items, a close-ended 6-point response scale was used to produce answers that ranged from a “1” for disagree strongly to a “6” for agree strongly. By using an even-numbered scale, neutral positions were effectively evaded and respondents were required to either disagree or agree with each statement to some extent.

*Personal Attributes.* Questions in Part VI (#16-19) sought to collect the demographic characteristics of the survey respondents, including gender, age, and year in school. Question #19 alone was sufficient for determining respondents’ self-reported hearing status. After reviewing the total number of responses, the researcher concluded that the altogether low response rate of 34 deaf and hard-of-hearing students was not a high enough number to maintain separate categories. Despite carrying any political or social significance, the data from both hearing statuses remained merged.

## Results

A total of 94 RIT students responded to the survey instrument, of which 91 responses were considered usable. Out of these 91 valid responses, 34 students (or 37.4% of respondents) identified as either deaf or hard-of-hearing and 57 students (or 62.6% of respondents) recorded a hearing identification. Further demographic information revealed that males consisted of 27.2% of respondents and respondents’ age ranged from 18 to 37 with the average age being 22.

There can be no dispute about the ubiquity of communications technologies, especially when they come in the form of mobile phones/devices; 100% of respondents reported ownership of some type of mobile communication device and length of ownership ranged from one month to 15 years, with the average length of time being just over 5 years. A t-test<sup>5</sup> compared differences between deaf and hearing students' frequency of using four common mobile phone/device functions. Deaf students reported significantly greater frequency using both IM ( $t=3.754$ ,  $df=88$ ,  $p<.001$ ) and e-mail ( $t=4.405$ ,  $df=88$ ,  $p<.001$ ) than their hearing counterparts. Hearing students reported significantly ( $t=-7.778$ ,  $df=88$ ,  $p<.001$ ) greater frequency using their mobile phone/device to place voice-based calls. On average, hearing students reported that they used the voice feature between "very often" and "always," while deaf students reported using voice-based calls "rarely" to "sometimes." There was no significant difference between deaf and hearing students' use of text messaging on a 5-point Likert scale labeled "never" to "always."

A t-test<sup>6</sup> was also used to determine if there were any differences in the number of both received and sent messages using the four common features of mobile phones/devices (SMS, IM, e-mail, voice). Respondents were asked in an open-ended response to record the appropriate number of both *received* and *sent* messages across all media on the previous day. The open-ended responses were then sorted into one of seven categories<sup>7</sup>, including an "other" category for vague and unusable responses. Deaf students reported *receiving* a significantly higher number of text messages ( $t=4.155$ ,  $df=89$ ,  $p<.001$ ), IMs ( $t=3.620$ ,  $df=88$ ,  $p<.001$ ), and e-mails ( $t=4.500$ ,  $df=88$ ,  $p<.001$ ) than hearing students. Students identifying as deaf also reported *sending* a significantly higher number of text messages ( $t=4.016$ ,  $df=89$ ,  $p<.001$ ), IMs ( $t=3.558$ ,  $df=87$ ,

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<sup>5</sup> Results were also confirmed by running the Mann-Whitney U-Test

<sup>6</sup> Results were also confirmed by running the Mann-Whitney U-Test

<sup>7</sup> See Appendix A: a

$p = .001$ ), and e-mails ( $t = 4.274$ ,  $df = 87$ ,  $p < .001$ ) than hearing students did. For voice-based calls, no significant difference was found between the two groups for either received or sent messages.

To further gauge differences in mobile phone/device use between deaf and hearing students, respondents were asked to record the last-used feature on the previous day. A chi-square test showed that there was a significant ( $\chi^2 = 25.033^a$ ,  $df = 4$ ,  $p < .001$ ) difference between the two groups of students and the mobile phone/device feature last used. Deaf students were significantly more likely (69.7%) to report using text message as their last method of communication on their mobile phone/device compared to 47.4% of hearing students. When it came to utilizing the voice function of their mobile phone/device, close to half (49.1%) of hearing students reported using this feature last on the previous day, whereas only 6.1% of deaf students reported this particular use. This supports the earlier finding insofar as hearing students reported greater frequency using voice-based calls in general on their mobile phone/device.

To gain a better understanding of the various contexts in which mobile phones/devices are used, a content analysis categorized the open-ended responses from a question asking about the purpose of students' last use of their mobile phone/device. Five content categories were created: 1) Social, 2) Instrumental, 3) Mobility/Immediate Access, 4) Relationship without purpose, and 5) Other. Responses in which students desired to sustain relationships with family members and friends, give and receive advice or support, and otherwise show others that they care were accordingly categorized as "social." Instrumental purposes of mobile phones/devices generally involved making plans, replying to others, and conducting business or work-type functions. Students who reported communicating with others over a longer distance or locating

people out of their immediate radius were using their mobile phone/device for mobility and immediate access purposes.

A fourth category entitled, “Relationship without purpose” was created in part because of the large pool of responses indicating a type of relationship, but lacking a clear communication purpose (e.g. “Communicate with boyfriend” and “Discussing several topics with friends”). Secondly, this category distinction was retained because of its potential value as a springboard for future research (see Conclusion, page 29). Finally, the “Other” category includes such purposes as relaxation and reassurance, as well as statements that provided justification for choosing a particular mobile phone/device feature, made reference to a specific function used, or altogether lacked information.

A chi-square test showed a significant ( $\chi^2 = 17.142^a$ ,  $df = 4$ ,  $p = .002$ ) difference between deaf and hearing students and the “last purpose” they reported for their mobile phone/device. The highest percentage (36.4%) of hearing students reported using their mobile phone/device to satisfy a social communication need, followed by an instrumental purpose (30.9%). Of special significance to this study, the group of hearing students who reported a social use for their phone can be split equally in half between those who selected text message (50%) and students that used the voice function (50%). Deaf students were more likely to report an instrumental use (34.4%) with their mobile phone/device, followed closely by purposes falling under the “Other” category (31.3%). There was no significant difference found between deaf and hearing students and the number of minutes they spent on the last use of their mobile phone on the previous day.

Out of 25 statements measuring the extent to which students agreed on people’s use of mobile phones for various purposes, a t-test found a significant difference between deaf and

hearing students on ten of the statements. These ten statements can be broken down into four *social* contact needs, three *mobility* and *immediate access* needs, and three communication needs classified as “*Other*” according to the content codebook. Deaf students were significantly more likely than hearing students to use their mobile phone/device to fulfill the following social contact needs: feel closer to their family ( $t = 2.928$ ,  $df = 89$ ,  $p = .004$ ), improve their relationships with family members ( $t = 2.430$ ,  $df = 89$ ,  $p = .017$ ), learn about others’ opinions ( $t = 2.684$ ,  $df = 87$ ,  $p = .009$ ), and give or receive advice/support ( $t = 2.026$ ,  $df = 89$ ,  $p = .046$ ). Deaf students were also significantly more likely to use their mobile phone/device for the following purposes of mobility and immediate access: provide immediate access to others anywhere anytime ( $t = 2.330$ ,  $df = 89$ ,  $p = .022$ ), tell others they are running late ( $t = 2.062$ ,  $df = 89$ ,  $p = .042$ ), and be accessible to anyone no matter where they are ( $t = 2.502$ ,  $df = 89$ ,  $p = .014$ ). Finally, deaf students were significantly more likely to use their mobile phone/device to satisfy the following “*Other*” communication needs: relax or pass the time ( $t = 3.597$ ,  $df = 89$ ,  $p = .001$ ), feel safe and secure in case of an emergency ( $t = 2.452$ ,  $df = 88$ ,  $p = .016$ ), and relieve boredom ( $t = 2.549$ ,  $df = 89$ ,  $p = .013$ ).

### Discussion

Text messaging provides some degree of gratification to students regardless of their hearing status. The present study found no significant difference between hearing and deaf students and their reported frequency of text message use. Manufacturers’ early expectations of SMS were skeptical that this service would ever surpass voice calls and they predicted its popularity being restricted to a small user group (Kasesniemi, 2003). Kasesniemi (2003) was quick to refute these beliefs, and though a second study is needed to confirm whether or not the use of SMS has supplanted voice calls, findings from the present research insinuate that there is



perhaps no one homogeneous user group when it comes to using text messaging. There appeared a slight discrepancy in findings insofar as there was no significant difference between hearing and deaf students and their frequency of text message use, but deaf students reportedly received *and* sent more text messages than their hearing counterparts. The latter finding is in accordance with Harper's (2002) survey administered in 2000, which reported that deaf people made an average of 10 times more SMS calls a month than hearing people. If this is any indicator of deaf people's *daily* use of SMS, the visible dominance in text message use among deaf people continues even eight years later.

Hearing students reported using the voice function of their mobile device more than deaf students, but puzzlingly there was no significant difference found between the number of voice calls sent and received between the two groups. There are a few explanations for these divergent findings, including difficulty of recalling an approximate number of received and sent messages on the previous day across all media (i.e. SMS, IM, e-mail, and voice), let alone distinguishing between each medium and a misinterpretation of the question.

In the open-ended responses, the highest percentage of hearing students reported using their mobile phone for a social contact purpose, making this a prominent use of mobile devices among hearing students. Despite deaf students' lack of social contact motives given for using their mobile phone in this particular question, it would be mistaken to presume that social contact is not at all a use of mobile phones among the deaf. The percentage of open-ended responses describing instrumental use was found to be relatively comparable between hearing (30.9%) and deaf (34.4%) students. Likewise, there were no significant differences found between the two student groups on any of the four instrumentality statements included in the survey's 25-item

gratifications list. Following instrumentality, the second most likely open-ended response reported by deaf students was categorized as “Other.”

Referring to the 25-item gratifications list from the survey instrument, three significant findings were found under the “Other” category which revealed that mobile phones were more likely to be used by deaf students for relaxation, relieving boredom, and reassurance. In today’s technological world, the latter is especially pertinent to recognize as it impacts the wellbeing of deaf individuals. Beyond the fact that deaf students reported a significantly higher use for their mobile phone/device to pass the time or stay occupied, they were more likely than hearing students to say that their device helped to alleviate safety concerns in the event of an emergency. This information supports the earlier findings of Akamatsu, Mayer, and Farrelly (2006) insofar as adolescents’ use of text messaging increased their independence and sense of security, not to mention it served to assuage parents’ anxieties over their children’s safety. Further steps have already been taken to implement precautions for people with a hearing loss; an alerting system was tested in the Netherlands that warns registered deaf users via a message sent to their mobile phones after an audible emergency siren is activated (“SMS Emergency Warning,” 2001).

Owning a mobile phone/device grants users the peace of mind of knowing that others can be reached within a matter of seconds. Deaf students in the present study were more likely than hearing respondents to desire both instantaneous access to others and know that they are reachable to others regardless of location, which can heighten feelings of security as well. Along with a diminished sense of distance, text-based communication (i.e. SMS) is equally accessible to hearing and deaf consumers, so deaf individuals can contact and be contacted by anyone—whether hearing or deaf. This, in effect, can expand a deaf person’s social network.

Keating and Mirus (2003) suggested that, “often the introduction of new technologies does not mean the total abandonment of other tools but entails a process of incorporation, involving and influencing collaborative and complex forms of human achievement embedded within dynamic and changing cultural systems” (p. 712). Building on this idea, Andersson (2000) wrote that, “Since social life is absolutely necessary for the development and preservation of language, Deaf people will most likely restructure their social activities to accommodate their changed lifestyle” (p. 16). Future trends will likely reveal that the continual influx of new communications technologies will produce an increased number of media options available to fulfill the social needs of both hearing and deaf people. This “pick and choose” behavior is a key ability of the “active consumer” which is at the core of the uses and gratifications theory; with more channels of communication opening up to deaf consumers, they can truly become active in their choices.

The mobile communication device represents a “powerful social function” as Contarello, Fortunati and Sarrica (2007) explained, but its role as a medium capable of positive outcomes can be contested because it both “changes and enhances communication, reachability and therefore social relations, but it also prevents them...” (p. 156, 159). Without further investigation, it is difficult to comprehensively evaluate the complex role that mobile phones play in the intricate web of personal relationships and their level of interplay among people of different age, background, and hearing status and with other forms of social contact. Results of the present study suggest that mobile phones and the dynamic culture surrounding their widespread adoption and use have joined the ranks of a mass communication medium used to satisfy a range of everyday purposes. In the past, authors have laid similar claims when referring

to blogging sites as a “mass communication center,” (Read and Farrell, 2006) and writing about the “community mass media system” once known as Radio-TTY (Bellefleur & Bellefleur, 1979).

### Conclusion

Much of prior research has depicted the uses and gratifications approach as a useful tool when looking at traditional media; less consideration however, has been given to many of the new media that have emerged today. The present study utilized the uses and gratifications approach as a lens through which various mobile phone uses by the deaf were looked at and compared with hearing students. Consumption of new media, including the Internet and SMS were regarded in the context of preferred means of social contact. Respondents included both hearing and deaf students selected at convenience from RIT, and to collect the necessary data, e-mailed surveys were administered.

The present study’s results are not conclusive until replicated on a larger, more representative sample group. It is worth noting that there was a lack of any significant findings between hearing and deaf students’ reported frequency of use of text messaging even though a significantly higher number of deaf students said they last used text messaging on the previous day. Hearing students were overwhelmingly more likely than deaf students to report a “social contact” use for their mobile phone on the previous day, but again, further investigation will lead to development of these findings. A relatively equal percentage of hearing and deaf students reported using their mobile device for instrumental purposes.

### *Limitations*

The college students surveyed at RIT/NTID are not representative of other social cohorts, limiting the generalizability of findings. Additionally, the findings cannot be generalized to the

communication preferences and needs of all deaf people, because the sample used in this study clearly had access to mobile communication devices and had sufficient skills to use this technology as a communication medium. A third limitation is that all data are self-reported. Because the uses and gratifications studied were those of students attending one school in the United States, these findings are likely to differ depending on geographical location and cultural differences.

### *Future Research*

The premise of this study relies on the collection of self-reported data from RIT college students; two adaptations however, can be made for future research studies. Involving subjects who are not currently enrolled in college or who never graduated from college may reveal distinctive usage patterns and motivations that could not be detected before. Additionally, the researcher utilized only one method to collect data: a survey instrument; personal observation of how people use communications technologies may provide a better account of true behavior.

Eight years ago Leung and Wei (2000) suggested there is a perception that cell phones are a service only available for the wealthy. Pricing plans have become more affordable over time, but issues surrounding cost still persist, especially for the deaf who often face underemployment and earn substantially lower incomes than hearing employees (Akamatsu, Mayer & Farrelly, 2006). With the implications that such accessibility concerns will have on policies both at the regional and national levels as well as for users themselves, there is an opportunity to look at the consequential effects of changing policies on media consumption by the deaf in future studies. This study looked at the use of mobile communication devices in the context of sustaining social contacts and private community ties, but it would be equally

desirable to study the use of such devices in professional and educational settings—even emergency situations where these technologies have already proved valuable. The mobile’s impact on people’s lives can also be gauged beyond the private social sphere and into what Quan-Haase, Wellman, Witte and Hampton (2002) referred to as the “public community.” Broadening this study’s scope to include respondents’ mobile use as it relates to their level of involvement in voluntary organizations, civic concerns, and commitment to community would provide a better understanding of social contact within the wider community.

Before the introduction of such technologies as the TTY and mobile communication devices, face-to-face social calls were a key hallmark for social contact within the deaf community. In a future study that utilizes a mixed sample of subjects from both a younger and older age cohort, there is a prospect to explore whether the use of mobile communication devices has displaced nonmediated contact or the use of “rich media” like face-to-face communication. The growth of deaf virtual communities is visible on blogging sites, including deafspot.net and deafread.com, as well as social network groups on Facebook including “Global Deaf Women” and “Deaf and Hard of Hearing.” Other media have emerged and already “ooVoo”—a free service that provides video chat to users all over the world and allows people to send video messages—is becoming a popular means of communication. Studying the use of such sites and communication forums will provide further insight.

Future studies could also consider the type of relationships (e.g. family member, friend, significant other, co-worker) people are sustaining more through their mobile device and its functions. Distance is another factor that may also play a role in what specific media are chosen to maintain local versus long-distance ties. Hearing status potentially may play no role

whatsoever in a preference (or even restricted choice) for maintaining long-distance or overseas relationships via e-mail for example. Convenience, cost, and accessibility can ultimately play into media consumption as well. Finally, since it was not practical in the present study to maintain two separate categories for deaf and hard-of-hearing due to the low response rate, a similar if not identical study could take place on a larger scale involving a higher number of deaf and hard-of-hearing individuals beyond NTID/RIT where the average hearing loss is 94 dB<sup>8</sup>. Media differences between the two self-reported groups may surface and would be interesting to explore.

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<sup>8</sup> National Technical Institute for the Deaf Annual Report : October 1, 2005-September 30, 2006

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## Appendix A: Content Codebook

## a. Questions #4-11

1	Less than 6 messages
2	6-15 messages
3	16-30 messages
4	31-100 messages
5	101-500 messages
6	More than 501 messages
7	Other

## b. Question #13

1	Less than 1 minute
2	1-4 minutes
3	5-10 minutes
4	11-30 minutes
5	31-60 minutes
6	More than 60 minutes
7	Other

## Appendix B: Survey Instrument E-mail Body

Hello,

Many students at RIT/NTID own mobile communication devices such as cell phones, Blackberries, and Sidekicks, and may also subscribe to additional features including instant messaging, text messaging, and e-mail. We're interested in learning why students like you use such communication devices in the present research study. You are receiving this e-mail because your input on this subject is valued and will contribute to a growing body of knowledge about the everyday use of these devices.

Your participation in completing the survey is completely voluntary and there is no penalty if you choose not to participate or decide to stop at any time. By filling out this survey, you are helping to add to the growing information about consumers' use of mobile communication devices. There are no identified risks beyond your normal computer activity for responding to this survey and pretests show that it should only take about 6 minutes to complete.

If you would like a summary of the study's results, please respond to the email provided below with "Copy of Results Requested" in the subject heading. You can be assured that your responses will be kept confidential and your name will never be linked to the survey that you complete. Feel free to direct any questions to the email address listed below.

Please click on the following link to access the survey.

<http://clipboard.rit.edu/takeSurvey.cfm?id=5fm6cy>

Sincerely,

Katelyn Ecker  
COLA Graduate Student  
kde9297@rit.edu

## Appendix C: Survey Instrument

**Part I: In this first section, we inquire about your mobile phone/device ownership and use.**

1. Do you currently own a mobile phone/device? (e.g. cell phone, Blackberry, Sidekick)

Yes [ ]      No [ ]

2. How long have you owned a mobile phone/device? \_\_\_\_\_

We are interested in learning how often you use certain features of your mobile phone/device. For each of the following four features, please indicate how often you use it.

3. In general, I use the following features of my mobile phone/device: (Check one response for each item):

		Never 1	Rarely 2	Sometimes 3	Very Often 4	Always 5
1	Text messaging					
2	Instant Message (IM)					
3	E-mail					
4	Voice-based calls					

**Part II: Next, please think back to yesterday and how you used your mobile phone/device. Below are four common features of mobile phones/devices. For each one, record about how many messages you RECEIVED yesterday on your mobile phone/device.**

Please type in the appropriate number for RECEIVED messages in the following spaces:

4-7.

	Received
Text message (SMS)	
Instant Message (IM)	
E-mail	
Voice-based calls	

**Part III: Still thinking back to yesterday, record about how many messages you SENT on your mobile phone/device.**

Please type in the appropriate number for SENT messages in the following spaces:

8-11.

	Sent
Text message (SMS)	
Instant Message (IM)	
E-mail	
Voice-based calls	

**Part IV: Now, please recall the VERY last feature used on your mobile phone/device YESTERDAY.**

12. Which one mobile phone/device feature did you LAST use yesterday? (Check one response)

Text message [   ]

Instant Message (IM) [   ]

E-mail [   ]

Voice-based call [   ]

13. About how many minutes on the LAST use did you spend using this feature? \_\_\_\_\_

14. Please describe the purpose of this last use of your mobile phone/device.

\_\_\_\_\_

**Part V: Students use their mobile phones/devices for a variety of reasons. In this section, there are 25 statements people have made about why they use their mobile phone/device. For each statement, please indicate how much you agree with it. There are no right or wrong answers; it's your judgment of each statement that's important.**

15. I use my mobile phone to/for (Check one response for each item):

		Strongly Disagree 1	2	3	4	5	Strongly Agree 6
1	Let other people know I care for them						
2	Tell others that I'm running late						
3	Feel closer to my family						
4	Provide immediate access to others anywhere anytime						
5	Gossip or chat with friends						
6	Get driving directions						
7	Avoid looking old-fashioned						
8	Stay up with the latest trends and look stylish						
9	Relax or pass the time						
10	Avoid the need to use a landline telephone						
11	Improve my relationships with family members						
12	Be accessible to anyone no matter where I am						
13	To feel safe and secure in case of an emergency						
14	Send birthday wishes						
15	Relieve boredom						
16	Change appointments in short notice						
17	Look fashionable						
18	Be in contact with people who think like me						
19	Learn about other's opinions						
20	Give or receive advice/support						
21	Arrange a meeting						
22	Ask a favor						
23	Solve problems						
24	Keep up-to-date on people						
25	Ask out or break up with someone						



**Part IV: You're almost finished! Finally, just a few questions about yourself purely for statistical purposes. Your responses will remain confidential.**

16. Are you:

Male ☐ Female ☐

17. What age were you on your most recent birthday?

\_\_\_\_\_ years old

18. What year in school are you? (Check one response)

First ☐ Second ☐ Third ☐ Fourth ☐ Fifth ☐ Graduate ☐

Not currently in school ☐

19. I identify as (Check one response):

Deaf ☐ Hard-of-hearing ☐ Hearing ☐

**Thank you for your time in filling out this survey!**