TECHNOLOGY AND COMMUNICATION:
An Impact study Involving the New Media, College Students, and Communication Patterns

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INTRODUCTION

The influence of technology can be clearly seen with the use of mobile phones. The dominant use of mobile phones was found to be for social communication (Dimmick, Sikand, & Patterson, 1994). Among residential subscribers, the modal hand-phone call is a pair-wise conversation between friends or family who are located geographically close to each other and who call each other to stay in touch. (Kraut & Mukhopadhyay, 1999) Dordickand LaRose (1992) had a national sample of household records showing whom they talked with, and why. About two-thirds of residential calls were made to family and friends. Mobile phones, on the other hand, are relatively cheap, and a survey indicated that they are owned and used by virtually every student at the University.

Purpose of the study

The purpose of this study is to understand the emerging family communication patterns among young adults and the influence of technology. A discussion of the relevant literature focuses on family communication patterns, technology, and its impact.

This study on the role of short message service (SMS) communication in the development of relationships among family and friends will help us understand if there is any difference in adapting to new technology with regard to the family communication patterns from those that existed prior to the adolescent's transition to college. It is also essential to understand if there were any perceived changes in relationships due to the new technology being used. Thus, this topic of using SMS to communicate with family and friends is an important topic and will help determine the nature and uses of communicating to family and friends and the role that the SMS plays in developing existing relationships.

LITERATURE REVIEW

There are two main sections: Family communication patterns (FCP) and technology in family communication.

Family Communication Patterns

Historically, the underlying assumption has been that our attitudes, values, and beliefs influence how we interpret phenomena in the social world, and that many of these ideas originate within the family system. McLeod et al. (1966) connected family interpersonal communication patterns and media research. They assumed that the family's interaction patterns would form the child's "communication style." The researchers identified two general dimensions of family interactions: socio-oriented and concept-oriented. In socio-oriented dimensions children are taught to avoid disturbances in parent-child relations (at the expense of the child's own viewpoint). The concept-oriented dimension pertains to child-idea relations and is characterized by families in which the child may express his or her ideas freely and is exposed to contrasting ideas. Conversation-orientation, originally labeled concept-orientation, (McLeod & Chaffee, 1972) describes the degree to which family members are encouraged to openly discuss a wide array of topics. The absence of strict limitations regarding topics or time spent talking about them allows families high in this dimension to interact spontaneously on frequent occasions. Families low in conversation-orientation (originally labeled socio-orientation) interact less frequently and discuss only a few topics openly (Koerner & Fitzpatrick, 1997).

Looking at the family control patterns, many scholars have presumed that family communication patterns are stable; others argue that such patterns are subject to change. For example, McLeod and Chaffee (1972) mentioned that they would expect to find changes during pivotal junctures in a child's life, including beginning college, taking a permanent job, and getting married. A first-year student in college may be presented with alternative values for the first time, which the authors suggest may influence the student's interaction patterns and the structure of those communication patterns. Conversation-oriented families tend to produce children who possess better social skills, problem-solving skills, and leadership abilities than families low on this dimension (Baumrind, 1968).

Application of the family communication pattern literature to how college students use emerging communication technology to communicate with family members suggests the following two hypotheses:

H1: The more conformity-oriented the student's family, the more likely it is that the number of SMS sent by the student to parents will match the number sent by parents to the student.

H2: The more conversation-oriented the student's family, the greater will be the number of total SMS exchanged between the student and parents.

Technology in Family Communication

Smith (2003) suggests that in the next three years, mobile-phone use by younger students will migrate to smart phones; whereas PDAs or phone-enabled PDAs, will not be popular except where they support specialists' courses. There have been applications in the literature for the use of SMS text messaging in education. Ananova (2001) reports a study where SMS messaging is used for revision support in secondary schools in Merseyside, UK. Soloway et al (1996) describes a trial using SMS text-messaging at the Kingston University (UK) to support 1st-year degree students in terms of time management and ensuring that essential core learning is not missed at an early stage. SMS is also used to complete exercises which facilitate learning and to complete assessed work (Stone, Briggs & Smith, 2002).

People find communication through SMS to be relatively spontaneous and interactive, a form of written conversation (Sproull & Kiesler 1991). Senders can tailor their messages to their recipients, taking into account their prior interactions and the nature of the relationship. Their access to the previous written messages helps support their memory of the ongoing interaction. The conversational and relationship-oriented attributes of SMS have by now engaged millions of people. As the online services have discovered, people love to talk with others, and e-mail provides a new way for millions of them to do so. SMS links people and reinforces relationships (Kraut et all. 1999).

The SMS often provides users with more content and more navigational tools than do traditional media. And hence it is important to understand Measures of Perceived Interactivity (MPI) (Hwang & McMillan, 2002). In particular, two of the measures of perceived interactivity are important to this study: real-time communication, which focuses primarily on two-way communication, and engaging, which focuses primarily on control.

H3: The more conformity-oriented the student's family, the higher the student is likely to score on the control dimension of perceived interactivity when con

sidering SMS exchanges with parents.

H4: The more conversation-oriented the student's family, the higher the student is likely to score on the two-way communication dimension of perceived inter activity when considering the SMS exchanges with parents.

Teenagers are among the most frequent hand-phone users, with half saying the hand phone helps relationships with friends and three-quarters using instant messaging to keep up with friends (Lenhart 2001). At the other end of the age spectrum, senior citizens—a group with a lower hand-phone penetration rate than other age groups and a group with smaller social networks—are as likely as other hand-phone users to say the hand phone improves family connections. Most hand phone users maintain a positive perspective on hand phone utility for keeping up with family and friends. A majority of those who SMS family and friends say it helps improve connections and found significant growth in family SMS. Many study participants reported that much of the growth was because of an increase in SMS to extended family members (such as cousins) (Horrigan, 2002).

H5: The greater the total number of SMS messages that a student sends in an average week, the higher is likely to be the percentage of SMS sent to parents. Hence this study will test the relationship between family patterns and the influence of technology.

METHODS

A survey design was be used to address the hypotheses. The primary variables family conformity patterns, family conversation orientation, and SMS (family, personal, past, and present) were examined among a sample of college students. The following is a summary of participants and procedures.

Participants

A sample of 202 first- to sixth-semester students enrolled at the INTI-UC was surveyed at their convenience. To get students from the various departments the data were collected from moral education classes that have large numbers of students from a mix of departments. The goal was to obtain 200 total participants in the age range of 18 to 22. Inclusion was based on age and number of semesters in school.

Procedures

The survey was collected before or after class. The researcher administered the survey and students did not receive any credit for the survey. Students were not

forced to complete the survey; they were asked to volunteer.

Measures

The questionnaire had two sections: one with the Revised Family Communication Patterns instrument (RFCP; Ritchie & Fitzpatrick, 1990) and the other that determined the communication patterns and mode of communication between students and their family members. This questionnaire was collected in class with the permission of the instructor. RFCP is utilized to form a 26-item questionnaire. On a Likert scale of 1 (Strongly disagree) to 7 (Strongly Agree), participants were asked to rate their communication with parents or primary caregivers with whom they grew up. The RFCP measures two dimensions of family communication: conversation and conformity orientation. Conversation orientation is defined as a family climate where all family members are encouraged to participate freely in interaction about a wide array of topics. Conformity orientation is defined as a family climate that stresses homogeneity of attitudes, values, and beliefs. The RFCP is based on McLeod and Chaffee's (1972) Family Communication Pattern instrument, but represents advancement over it in that it better labels and operationalizes the underlying dimensions of conformity and conversation orientation (Fitzpatrick & Ritchie, 1994). Fifteen of the survey items measure a family's perceived conversation-orientation, and eleven assess conformity-orientation. Family Communication Patterns (FCP) has been used in the field of communication for over more than twenty-five years. Originally conceived by McLeod and Chaffee (1972), family communication paradigms were posited to vary along two dimensions, labeled socio-orientation and concept-orientation. Ritchie (Ritchie & Fitzpatrick, 1990; Ritchie, 1991) has recently relabeled and re-conceptualized FCP's two underlying dimensions to enhance their conceptual clarity, and this revision is known as revised family communication patterns (RFCP). His empirical work has revised the paper-and-pencil instrument designed to measure FCP and has demonstrated the instrument's internal and test-retest reliability and its validity (Ritchie, 1991).

Descriptive Statistics
Demographic Overview

Data were collected from a total of 202 undergraduates at INTI UC, in various classes. Of the 202 students who participated, 43 percent (n=87) were males and 57 percent (n=115) were females. The youngest student was 18 years old and the oldest was 27. The mean age was 19.83 (SD=2.4) and the median was 19.00. There were 202 students (91.4 percent) in the age range of 18 to 22 and 19 students in the range of 23 to 27. Six students did not indicate race, whereas 176 (87 percent) were

Chinese, and relatively few identified themselves with a minority race. The average number of semesters of college attended by the students was 3.13 (SD=2.11) and the median was 2.00. Fifty-seven percent (n=115) of the students lived on campus, 26 percent (n=53) lived off campus without parents, 14 percent (n=28) lived with their parents, while 7 students did not indicate.

Selected Sample

Because the classes from which the sample was drawn were often a mix of upper- and lower-division students, it was appropriate to select the students who best fit the profile of this study (younger with less college experience). Age and semesters in school were the most relevant selection criteria; therefore students above the age of 23 were not used in this study (mean age of selected sample = 19.24, median = 19, sd = 1.06). Also, the students who had more than six semesters of college education were omitted from the studied group (mean number of college semesters in selected sample = 2.95, median = 2, sd = 1.85). The total sample size for this more focused group was 202 students. Table 1 summarizes the demographic profile of the selected sample.

Table 1. Demographic Summary of Selected Sample (N=202)

Variables	Categories	Frequency	Percent
Sex	Female	115	56.9
	Male	87	43.1
Residential Status	On campus	124	61.4
	Off campus without parents	46	22.8
	Off campus with parents	30	14.9
	Others	2	1.0
Race	Chinese	165	81.6
	Indian	16	7.9
	Malay	12	5.9
	Others	9	4.6
Work Status	Not Employed	195	96.5
	Part-Time	7	3.5

Key Variables

This section provides detail on the variables used to test the hypotheses. They are family types, MPI scales, calculations of SMS sent and received, and communication modes.

Family Types

This study revolves around the family communication patterns and hence the first step was to group the sample into conformity-oriented and conversation-oriented family types. The revised family communication pattern scale has twenty-six questions, of which the first fifteendeal with the conversation-oriented family type and the last eleven with the conformity-orientation. Reliability analysis was done for scales. Coefficient alpha was .94 for the conversation-orientation scale and .81 for the conformity-orientation scale, and neither scale could be significantly improved by removing any items. Thus, two separate scales were created. To determine the orientation for a given student, the difference between the two scales was calculated. Those students who had a difference of less than .50 in their scores (N here) were eliminated from this particular analysis because those students' families could not be clearly identified as either conversation- or conformity-oriented. All other students were coded as either coming from conversation-oriented or conformity-oriented families based on the scale on which they scored highest. There were 131 conversation-oriented family and seventy-one conformity-oriented family types in the selected sample. For thirty-six students the mean difference between the conversation and conformity scale was less than .50. Because of the unequal numbers, a t-test was done to test the validity and normality of the two types of families based on communication patterns. As shown in Table 2, significant differences were found between the two family types based on their scores on conversation and conformity scales. The two scales were negatively and significantly correlated ($r = -.168$, $p < .05$).

Figure 1 shows the mean conversation and conformity scores for the two family types.
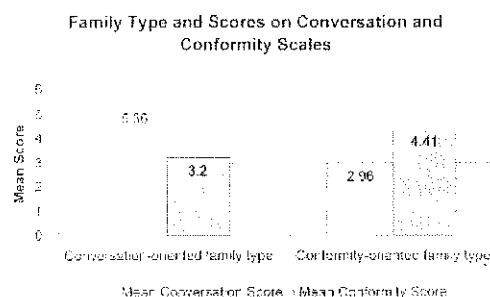

Figure 1. Family type and scores on conversation and conformity scales

Table2. Family Type and Scores on Conversation and Conformity Scales

Family Type	Frequency	Mean Conversation Scores	Mean Conformity Scores	t
Conversation-oriented Families	131	5.36	3.20	14.05***
Conformity-oriented Families	71	2.96	4.41	-7.12***

*** $p<0.001$
Means computed on a scale of 1-7 where 1 = strongly disagree with an item related to the scale and 7 = strongly agree with a scale item.

Measures of Perceived Interactivity Scale (MPI)

The MPI scale has two sections, one on the two-way communication dimension and the other on the control dimension. The first seven items of the scale determined the two-way communication dimension. Reliability analysis for these seven items resulted in an alpha of .89 and the scale could not be significantly improved by removing any of the items, therefore the two-way communication scale was computed by taking a mean of these seven items. The last nine items determined the control dimension. Reliability analysis for these items resulted in an alpha of .90 and the scale could not be significantly improved by removing any of the items, therefore the scale for the control dimension of interactivity was computed by taking a mean of these nine items. The mean for the two-way communication dimension was 3.67 (sd = 1.16). The mean score on the control dimension of perceived interactivity was 4.26 (sd = .89). All items on both scales were coded with 1 (item is not at all descriptive of SMS communication with parents) and 7 (item is very descriptive).

SMS Messages Sent and Received

Participants were asked to indicate total number of SMS messages sent and received in an average seven-day period. For the hypotheses examined in this study it was

necessary to divide SMS communication into two primary groups: communication with parents and communication with other people. Parents were mother, father, step parents (if applicable), and adopted parents (if applicable). Other partners were all other family members, legal guardians, people at work, friends, classmates, etc. Table 3 shows the mean of SMS sent and received with parents and others.

Communication Modes

Students were asked to indicate the average number of times in a week that they used phones, letters, SMS and face-to-face meetings to communicate with parents. The students were also asked to indicate their favorite mode of communicating with their parents. Table 4 shows the summary of the preferences of the students.

Table 3. Summary of SMS Sent/Received

	Mean Sent	Mean Received
SMS with Parents	1.54	8.97
SMS with All Others	2.53	13.09

Table 4. Summary of Weekly Number of Communications with Parents

Mode	All Students Mean	Conversation-oriented Families Mean	Conformity-oriented Families Mean
Hand phone	9.91	11.19	6.46
Talk face-to-face	9.44	12.16	2.89
E-mail	3.28	3.34	2.40
SMS	1.86	1.85	0.69
Letter	0.22	0.21	0.29

$*p < .05$

While rank orders are consistent across family types, students in conversation-oriented families generally seem to communicate more frequently with their parents

than do students from conformity-oriented families. Three of the modes of commu-
nication were identified as "favorite" ways of communicating with parents. Table
5 summarizes the number of students who indicated that one of these was their
favorite way to communicate with parents.

Data Analysis

To test the first hypothesis, which examines the relationship between conformity
orientation and the number of SMS that are exchanged between students and their
parents, a correlation was run between the e-mail sent and received from parents
of conformity-oriented family type students. For the second hypothesis, the con-
versation orientation scale was correlated with the total number of messages sent
and the total number of messages received. The third and fourth hypotheses test
the level of perceived interactivity and control of SMS and the likeliness of using
SMS for family communication. To test these hypotheses, students were asked to
report their perceptions of the interactivity and control of SMS and the likelihood
of their using SMS for family communication. A correlation was run between the
two dimensions and the family type.

Table 5. Summary of Most Popular Modes for Communication with Parents

Mode	All students		Conversation-oriented Families		Conformity-oriented Families	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Hand phone	89	44.0	48	36.4	24	33.8
Talk face-to-face	64	31.6	44	33.9	18	25.4
SMS	27	13.4	30	22.9	17	23.9
E-mail	22	11.0	9	6.8	12	16.9

T test analysis was conducted to compare the perceived interactivity of SMS with
usage by students and also to the family orientation type. McMillan and Hwang
(2002) proposed three different scales that can be used as measures of Perceived In-
teractivity (MPI). The first scale for Real-Time Conversation includes seven items
that focus on communication and is most closely associated with the concept of
two-way communication. These seven items will be used in the current study. Also
there will be nine other items that will test the control dimension of interactivity.

The fifth hypothesis seeks to find out if there is a relationship between SMS to parents and overall usage of SMS. A correlation was run between number of SMS to parents and total SMS sent to others (non-family).

The last few questions are for descriptive information: age, sex, semesters attended, residence, race and work status. Included in the analysis was current residential status, either living at home with parents or living alone (without family).

Hypothesis Tests

Hypothesis 1
The first hypothesis predicted that the more conformity-oriented the student's family, the more likely that the number of SMS messages sent by the student to parents will match the number sent by parents to the student. To test this hypothesis, the first step was to calculate the difference between number of messages sent to all parents and those received from all parents. No significant correlation was found between family type and mean difference in number of messages sent and received ($r = .02$, $p > .05$). Therefore hypothesis 1 was not supported.

However, an interesting pattern was found in the broader analysis of "matching" among parents and students. Looking at the sample as a whole, there was a significant difference between the mean number of messages sent to parents (mean = 1.54) and messages received from parents (mean = 2.53); thus students sent significantly fewer SMS messages than they received from parents ($t = -5.77$, $p < .001$). As the correlation (which was used for testing hypothesis 1) indicates, this difference in sending/receiving patterns is not affected by the conformity-orientation of the family.

Hypothesis 2
The second hypothesis predicted that the more conversation-oriented the student's family, the greater would be the number of SMS messages exchanged between the student and the parents. This hypothesis was tested in two ways. First, the conversation scale was correlated with students' estimated total number SMS communications with parents (from questionnaire item 3). The second test was to correlate the conversation-orientation scale with the total number of message sent and the total number of messages received (from questionnaire item 1). As shown in Table 6, the only significant correlation between the conversation scale and estimates of SMS volume was with messages sent. Thus, hypothesis 2 was partly supported. Table 6 also shows that, in general, there was a strong correlation between mes-

sages sent and received. Table 7 compares means of messages sent and received for students from both conversation-oriented and conformity-oriented families. Figure 2 shows the SMS exchanged by both family types.

Table 7 reveals three notable trends. First, the average numbers of sent and received messages tend to be higher for conversation-oriented families than for conformity-oriented families, even though the differences are not statistically significant. Second, in both conversation-oriented and conformity-oriented families students report that they receive significantly more messages from their parents than they send.

Table 6. Summary of Total SMS Messages between Students and Parents

	Conversation scale	Estimate of total exchanges with parents	Message sent to all parents	Messages received from all parents
Conversation scale	1.00			
Estimate of total exchanges with parents	.11	1.00		
Messages sent to all parents	14*	..80**	1.00	
Messages received from all parents	.05	.81**	.75**	1.00

Table 7. SMS Messages between Students and Parents and Family Orientation

	Conversation-oriented Families Mean	Conformity-oriented Families Mean	t (for conversation/ conformity comparison)
Messages sent to all parents	1.69	1.29	.93
Messages received from all parents	2.69	2.20	.73
t (for sent/received comparison)	-4.73***	-2.40***	

*** p < .001

SMS between Students and Parents and Family Orientation

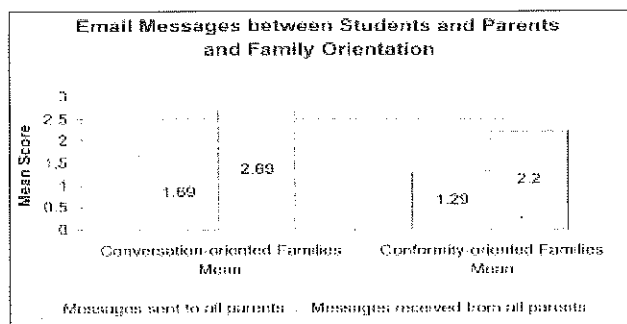**Email Messages between Students and Parents and Family Orientation**

Figure 2. Family Type and Scores on conversation and conformity scales.

Finally, Table 7 also shows that the difference between sent and received messages tends to be a little higher for conversation-oriented families (average of 1.0 more messages sent by parents) than for conformity-oriented families (average of .91 more messages sent by parents). It might be interesting to study this further and look for deeper and significant relationships.

Hypotheses 3 and 4

The next two hypotheses dealt with family type and perceived interactivity when considering SMS exchanges with parents. Hypothesis 3 predicted that the more conformity-oriented the student's family, the higher the student is likely to score on the control dimension of perceived interactivity. Hypothesis 4 predicted that the more conversation-oriented the student's family, the higher the student is likely to score on the two-way communication dimension of perceived interactivity. Table 8 reports correlations between the scales for family orientation and dimensions of interactivity. No significant correlations were found between the conformity-orientation scale and the control dimension of perceived interactivity. Thus, hypothesis 3 is not supported. No significant correlation was found between the conversation-orientation scale and the two-way communication dimension. Thus, hypothesis 4 is not supported.

Table 9 provides more insight into the relationships between the interactivity scales and the family orientations. In both family types, students scored higher on the control dimension than on the two-way communication dimension. Conversation-oriented families scored slightly higher on both of the interactivity dimensions than did conformity-oriented families, but those differences were not significant.

Hypothesis 5

The fifth hypothesis predicted that the greater the total number of messages that a student sends in an average week, the higher would be the percentage of messages sent to parents. For testing the fifth hypothesis, a correlation was run between the total SMS sent by the students and the total messages sent to parents. As illustrated in Table 10, the predicted correlation was found only among conformity-oriented families. Thus hypothesis 5 was partially supported.

Table 8. Correlations of Family Orientation and Interactivity Dimension Scales

	Conformity-orientation Scale	Conversation-orientation Scale
Control Dimension	.122	.118
Two-way Communication Dimension	-.026	.087

Table 9. Summary of Total SMS Messages between Students and Parents

	Conformity-oriented Families Mean	Conversation-oriented Families Mean	t (for conversation/ conformity comparison)
Control Dimension	4.22	4.33	.60
Two-way Communication Dimension	3.45	3.75	1.23
t (for control/ two-way comparison)	5.69***	5.74***	

*** p < .001

Table 10. Correlation between Total SMS Sent and SMS Sent to Parents

	SMS Sent to Parents
All students total sent.	033
Conversation-oriented families total sent	-.014
Conformity-oriented families total sent	.459**

Favorite Mode of Communication

In addition to the questions designed to test the hypotheses of this study, students were asked to indicate their favorite tools for communicating with parents and provide qualitative information about why they preferred those tools. As shown earlier (Table 5), SMS ranked third in popularity as a tool for communicating with

parents. As shown in Table 11, students who selected SMS as their favorite way of communicating with parents sent more SMS messages in an average week to parents than did those who preferred telephone or face-to-face conversations. This was true for the group as a whole as well as for both conversation-oriented and conformity-oriented families. Additional insight into family communication can be gained by examining qualitative responses to the question about why a particular mode of communication is the favorite tool for communicating with parents. The following themes were identified in students' responses: importance of emotions and body language, easy and convenient, personal, cheap, and multitasking.

Importance of Emotions and Body Language

When looking at people who preferred face-to-face communication we find that they do so because they feel that they can see the emotions of their parents and hence it is easy for them to have a conversation and to interpret meanings of the things that are not being said. There are some people who like phone and face-to-face but when they compare phone and face-to-face, they prefer a mode where they can see and feel the emotions of their parents. Face-to-face communication provides instant feedback.

Face-to-face communication allows more effective communication for some students because they feel that it gives the opportunity to show facial expression to back up their words. Some students feared this emotion and body language is difficult to handle and that they would prefer to hear it on the phone or read it via e-mail or instant messaging. But in general the students who liked face-to-face communication gave importance to emotions and body language in the communication mode.

Easy and Convenient

Some students preferred SMS because it was quick, easy to send and not as expensive as, say, the monthly phone bill, or travel expenses to meet parents. On the other hand, other students preferred phone calls because their parents were paying for the bill and they could carry their cell phones to classes and others places. They didn't have to go looking for a computer or travel far to meet their parents. Also, with features like text messaging and voice mail boxes students feel that they can leave messages or receive messages when they or their parents are busy. Free mobile-to-mobile minutes are one of the features that students felt helps them con-

stantly keep in touch with their parents. When students compare phones to SMS they feel that phone calls are not intimidating and that students do not have to think too much when talking on the phone, but when writing an SMS they have to think more. For some students it is hard to talk face-to-face and so they prefer phone or SMS (even when they are living with their parents).

Personal

Some of the students feel that because they don't live with their parents any more, whenever they get a chance to meet face-to-face, it becomes more personal and emotional. Students consider phone calls equally personal when compared to e-mail because they can hear their parents' voices, and this is almost like being with their parents at home. Time spent with parents is special and natural. Face-to-face is much easier and not complicated, but many students are not able to meet their parents regularly. With the trends like spring break (going to a vacation spot) and summer study-abroad programs, students feel that with time the visits home decrease, and so when they do get a chance to go home they prefer having face-to-face communication It is one of the most reliable forms of communication and the easiest way to communicate ideas and feelings.

Inexpensive

Some students consider cell phones to be inexpensive, and for some students parents pay the bills. Hence, when they compare phone calls to face-to-face or e-mail they feel that their investment and expenses are less. Some of the students said they do not e-mail their parents because their parents do not have computers, and so access to technology is limited. A few students mentioned that their parents can access computers only at work or only at home and so only at those times do they e-mail. If it is an important issue, some students feel that they cannot trust just sending e-mail. Some students said their parents do not know how to use computers.

Multitasking

Students who preferred SMS felt they could engage in "multitasking" (doing several things at once). Students could do homework, personal work, etc. when sending mails or SMS. And some students reported that when they had to sit on the computer longer because of homework or other projects they tended to send more

e-mails than they did on other days. Instant messenger's use also depended on for how long they had used the computer.

Discussion

Students interact with students, parents, peers, administrators and many others and thus must manage a large amount of communication daily. They also communicate in a variety of ways, from written notices in school to interchanges across the lunch table to the non-verbal message given out during a difficult meeting. There are a number of modes of communication, such as cell phones, home phones, face-to-face, e-mail, instant messaging, text messaging and many others. Each communication mode is rated for its importance depending on the situation, relationship, time, effort and related factors.

This study on undergraduate students was an attempt to study the communication behavior that students develop after moving away from the family. Hypotheses 1, 3 and 4 were not supported at all, while 2 and 5 were partially supported. The hypotheses tried to predict some general trends based on the literature review. But the first thing that has to be understood is the fact that all the relationships mentioned in the literature were before the Internet and cell phones came into play. Most of the studies highlighted and predicted the effect of mass media like television, radio, etc. But what the literature did not directly address was how family communication patterns directly affected communication using the Internet, e-mail and SMS, which are unlike other media. Cell phones are a recent boom and have changed a lot of predicted reactions. Looking at the family types, we see that they are at least thirty years old and hence it is difficult to say that all families still fit into those two categories.

This research had a few people who could not be placed into one of the abovementioned categories, thus one must question whether the revised family communication pattern is still applicable in today's families. Further study is needed into evolving family communication patterns. Have new categories emerged? Has the distinction between the two groups decreased or changed? In this study we find that the relationship with family type and communication patterns using SMS is not as expected. This may be because the SMS is as much a mass medium as a personal one. Students and families are still adjusting to this new medium and have not categorized it into any of the traditional media.

The other reason for data not supporting the hypotheses could be because of the sample itself. The sample was very small and included students who had been away from home for different periods of time. It is possible that we might see a stronger correlation between communication patterns and family types in a sample of younger students who have more recently arrived at college. With time, students are influenced by other students, friends, work environment and campus life. But the data do reveal a lot about the students and their pattern of communication. Students receive more SMS than they send from all their SMS partners.

Conversation-oriented families in general exchanged more SMS messages. This could mean that there is more exchange occurring in conversation-oriented families than conformity-oriented families. Even though the difference in SMS sent to and received from parents was statistically significant, the difference in e-mail for conformity-oriented families was not high, particularly in contrast to the larger differences of conversation-oriented families This could mean that there is some kind of conformity pattern being followed, but this question should be examined in depth with a larger sample of conformity-oriented families.

The data show that the all students communicate with their parents on a regular basis and that it plays an important role in school life. Students communicate with their parents, siblings, friends, people at work and other family members. SMS, e-mail, telephones, cell phones, and writing letters are some of the modes that are commonly used for communication.

It is notable that the sample size for the two family types (conversation- oriented and conformity-oriented) was not large, but differences were found between the two groups. Conversation-oriented families in general communicated more with their parents. The average number of calls, meetings face-to-face, SMS, e-mail, etc. was more than with the conformity-oriented families. Also the number of SMS messages exchanged in conversation-oriented families was greater. This could be an added or a supplemental mode of communication. Like daily phone calls, SMS messages could be routine or result from a habit, where the student sends an SMS whenever he or she gets a chance to use the cell phone. The mean difference of SMS messages sent to and received from parents was not very high for conformity-oriented families. This could mean that the SMS messages exchanged between parents and students in conformity-oriented families were almost equal. It also could mean that they preferred to communicate with their parents only when they were written to or when they needed something.

Conclusion

Students maybe are conforming to the patterns at home, like both parents and students writing to each other once a week or once a month. A long-term analysis might reveal that there is a trend in sending or receiving SMS messages. It would be interesting to learn whether students like to use different modes of communication depending on the situation, topic and parent (mother or father). And hence it will be interesting to further explore different situations and topics to know more about where students feel that SMS is applicable and important.

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