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Abstract

The object of this paper is to investigate the proposition that communication channel usage differs by gender. First the results of a communication channel study are reported which examined perceptions of communication channel usage in a group of office workers. These results are then explained in the light of existing information processing theory. While these findings are limited in generalizability, this study shows the lack of gender specific information processing research. Researchers may find it useful when examining information processing and communication channel usage, in particular, to control for gender differences.

Gender and Communication Channel Usage

From a broad communication perspective, it has been shown that there are systematic differences in communication by gender. Women have a tendency to work harder at maintaining conversation in face to face situations (Fishman, 1983; Meyers et al, 1997). It has been shown that women value connection and cooperation more than men (Meyers et al, 1997). Lakeoff (1975) has suggested that this tendency to maintain the conversation is evidence of insecurity.

Both Allen and Griffeth (1997) and Gefen and Straub (1997) have examined the relationship between gender and information processing. Allen and Griffeth counter to their hypothesis found that women did not experience information underload as compared to their male coworkers in a study of 666 workers at a Midwestern telephone company; in the study roughly 40% were female and about half the workers were hourly employees. Gefen and Straub (1997) found that women perceived electronic mail differently but in practice did not use it differently in a study of 392 respondents with three different airlines in three countries. The Gefen and Straub (1997) study showed that the women respondents perceived e-mail to be of higher social presence and more useful than men; however, these same women did not find e-mail easier to use than men and did not in fact make greater use of email when measured through self report. Thus the Gefen and Straub (1997) research showed that differences in perceptions of e-mail did not translate into differences in actual usage suggesting the following questions: are the lack of results on e-mail usage due to the difference in organizational/ implementation differences across the three airlines and/or could there be differences in perceptions/ usage of all computer mediated communications channels across gender?

In a study that specifically addressed virtual work groups where the group interaction was faceless and email enabled, Lind (1999) found that the women were more satisfied with the group experience than men. The suggestion from this research was that the anonymity of the group experience allowed the women to overcome the unspoken social cues of face to face communication allowing them to be more involved in the group. Thus it was suggested that the technology of virtual groups had an equalizing effect for the women.

This research will address the research proposition:

Is there a gender difference in the use of computer mediated (face less) communication channels?

This proposition is examined in the next section of this paper. In the last section of this paper, the author embeds these findings in the context of the communication channel theory and makes suggestions for gender extensions to the theory.

Research Context

The corporate headquarters of a large manufacturing company served as the research context for this study. Participants in the study were 180 white-collar professionals consisting of 142 men and 38 women. Of these 180 professionals, 69 were less than 40 years old. They completed a survey in which they responded to questions about their work activities, usage of fourteen communication channels, communication satisfaction, and various demographic measures.

This company was a very early adopter of computer mediated communication channels of electronic mail and voice mail for its professional workforce. They used PROFS email through their mainframe system with terminals on every professional worker's desk. Also their telephone system had the voice mail feature for use by the same workers. The company's management was very proud of their early adoption of these features and referred to them frequently. They also used the meeting feature of PROFS to schedule their meetings since each of them kept their calendar on the PROFS system.

These employees were in the accounting, financial, information systems, purchasing, and engineering areas of the company. Thus as the demographic data will show most were college educated and experienced in their areas of work. Given the time of this study (in the late 80's), women were outnumbered by the men almost 4 to 1. This presents an interesting context in which to investigate communication channel usage differences. The computer mediated communication channels were relatively new at this point and men were still the majority of the workers in the professional work force.

Study Results

All 180 respondents responded to the Likert scaled items (1 to 5) of task analyzability, task variety, information amount, and information equivocality (Daft and Macinstosh; 1981). Also they indicated their extent of use (Likert scaled, 1 to 5) of the communication channels and satisfaction in general with their work-related communication with four questions. Correlations reveal no multicollinearity in these study measures.

Table 1 contains t-test comparisons of the study's measures across gender. Females showed significantly higher use of email while there were no significant differences in the usage of the other communication channels. Women were also more satisfied with the quality of the information that they sent and experienced less task variety and information equivocality. Women's job level and years employed were also significantly lower. Splitting the data by the mean age of 40 resulted in significantly less task analyzability for those over 40 and also significantly more information equivocality but no significant differences in channel usage. Also those over 40 were more satisfied with the information that they received.

Table 2 correlates the communication channel usage measures with the task dimensions and with the four measures of communication channel satisfaction. Less task variety and more information equivocality is correlated with e-mail usage while satisfaction with access to communication channels is highly and significantly correlated with e-mail usage. Satisfaction with communication in general was correlated slightly significantly with e-mail usage. Voice mail was significantly correlated with information equivocality. Across the thirteen other communication channels there are few significant correlations except for the significant relationships between task variety and the various forms of meetings. These correlations suggest that something unique is occurring in this context with email as compared to the other communication channels.

In Table 3 hierarchical regression of gender, task analyzability, task variety, information amount,

information equivocality, the four measures of communication satisfaction, job level, and age on the communication channels shows that electronic mail produced the best fit (r-square of .18). This regression shows that besides being a female, greater task analyzability, less task variety, and greater information equivocality results in more electronic mail usage. Interestingly the next computer mediated communication channel, voice mail, produced an r-square of .12 where the significant predictors of voice mail usage were job level, task variety, and information equivocality. The other twelve communication channels produced low r-squares. The computer mediated channels do appear to be unique.

Relating these Results to Communication Channel Richness Theory

Systematic gender differences in communications in general have been shown (Borisoff, D., & Merrill, 1992; Lakoff, 1975; Tannen, 1990). Also it has been argued that the two genders represent different cultures with different norms and expectations (Gilligan, 1982: Lakoff, 1975; Meyers et al, 1997; Wood, 1994). Men are believed to value competition more than women, and women are more connected to others. While this does not explain the findings of this study, this research does show that there are gender differences in communication channel usage.

In information richness theory (Daft and Macintosh, 1981; Daft and Weick, 1984; Daft and Lengel, 1986), it is proposed that communication channels vary in their ability to convey information and meaning. This theory suggests a continuum where the richest channels are those that provide for more face-to-face interaction and feedback since they allow those communication channels to convey nuances, often unspoken, in adding meaning to communication. The leanest channels are those written or printed. Since research into information richness theory has met with conflicting results especially in the area of email studies (Rice & Love, 1987; Schmitz & Fulk, 1991), other theories and theory extensions have been explored. Neither voice mail nor email allow for face to face interaction but voice mail leaves the actual voice of the speaker while email is much quicker than printed media

Using the social influence model of technology use, Fulk, Schmitz, & Steinfield (1990) and Schmitz and Fulk (1991) proposed that perceptions of communication media such as richness are socially constructed. They found that individuals were more influenced in communication channel use and perceptions by their co-workers then by their supervisors. Also they found that keyboard skill and computer experience were important predictors of perceptions of electronic mail richness.

Could the adeptness of females at typing then lead to more email usage among female co-workers or do these women use email more when communicating to all their co-workers?

Ngwenyama and Lee (1997) proposed a critical social theory perspective for communication channel richness using the work of Weick (1969) and Habermas (1984), they posit that the richness of a communication channel is determined by how the person using that channel enacts the channel. Thus critical social theory pushes this notion that the interpretation of the information conveyed through a channel is in the mind of the receiver. Some may filter complex, rich information and seek to simplify it to fit their simplistic view of the organization. While others may embrace complex, rich information and revel in trying to interpret the many dimensions of often ambiguous but rich information. The results of this study imply that there is some difference in enactment by the genders, but it is not clear what that enactment is. It can not be assumed that greater usage means a richer channel. It may just mean that the channel is more accessible or easier to use for short messages than the telephone or face-to-face media.

Is the issue for these women mutual enacted meaning? The object of most communication is to convey information so that the partners reach a mutual understanding regarding the topic at hand. Habermas (1984) in his theory of communicative action addresses the concept of communicative rationality where a mutual understanding is reached through processes that signal commonalities in culture that promote understanding. Do these women feel that email allows them to reach mutual understanding with another person better than the other channels? Is it easier for women to express themselves in email as opposed to face-to-face situations?

Addressing this issue of enacted meaning, Carlson and Zmud (1999) proposed communication channel extension theory and showed that one's past communication experiences both in terms of the communication channels and the person with whom one is communicating via the channel will in turn shape one's perception of a communication channel. Thus different levels of experience with a computer mediated channel in an organizational context will shape one's perceptions and use of such computer mediated channels just as one's past experiences in engaging in face-to-face communication will influence face-to-face communication. Yet this still does not explain why one gender would significantly differ from another gender on email usage and perceptions in a given organizational context. It is not clear why under channel expansion theory that women would enact email differently than their male counterparts.

A different explanation has been proposed with little relationship to richness theory: flow theory (Trevino and Webster, 1992; Ghani and Deshpande, 1994). In flow theory the channel is enacted as an article of amusement. Flow theory (Csikszentmihalyi, 1975; Miller, 1973) suggests that a flow state is a playful, exploratory experience where flow is a continuous variable from none to intense. Thus some communication channels, particularly the computer mediated ones, may enact such playful behavior. Trevino and Webster (1992) proposed that through flow the individual has a sense of control of the interaction and thus finds it more interesting. Is the answer control: does email give the woman more control over the communication context and thus increase her comfort level as opposed to other types of communication channels?

Discussion

These results suggest that future exploration is needed into gender differences in perceptions of channel richness. Communciation channel richness does appear to have cultural/ gender differences which in turn lead to differences in channel usage. In this relatively small sample of profession women, they used electronic mail far more than their male counterparts. The interesting question is why?

Why do women favor this face less context? Is it more comfortable for them? Does it allow them to avoid conflict? Research has shown that women tend to avoid conflict (Hawkins and Power, 1999). However Hawkins (1995) showed that in small group situations of emerging leadership there were no differences in the amount of communication between males and females. The issue here may be the anonymity of email. As suggested by Keisler and Sproull (1992) anonymity has an equalizing effect on communication in group decision making. Does this suggest that women feel more an equal participant when the communication channel enables face less communication?

It can be speculated that this type of face less communication will result in fewer opportunities for these women to influence their coworkers? Is this behavior limiting their careers? Those who are willing to engage their coworkers in face to face contact – will they be more highly promoted? This is certainly counter to research that shows women's desire to be connected.

The regressions imply that the nature of the individual's work activity is an important indicator of email usage. As predicted by the information processing literature, greater task analyzability and less variety lead to more demands for routine information but the significance of information equivocality is puzzling. Since information equivocality puts the burden of

information interpretation on the receiver, are the women using electronic mail to deal with equivocal information? Is this an appropriate match? Can equivocal information be appropriately processed through the medium of electronic mail?

This research has raised many gender issues for communication channel research. Specifically better studies are needed with larger numbers of women. Interestly the face less voice mail channel did not have gender as a significant predictor but job level, task variety, and information equivocality were significant predictors. Thus voice mail is a channel used in work situations to reduce ambiguity. While voice mail is a face less channel, women did not use it more than men. Is the explanation that a woman may feel some disadvantage from voice messages as opposed to the printed word of email? Or could it be that women are just more adept at typing. Clearly, more research is needed to determine the answers to these issues.

While the typing skill answer is a handy one, the breadth of communication research on gender (Fishman, 1983; Meyers et al, 1997; Allen and Griffeth, 1997) would indicate that selection of email may have far deeper implications about women's comfort level in work based communication. If in controlled studies, the email results are supported in a current day office, then women must ask themselves if this is advantageous for their careers. By being a member of the email club, are they excluding themselves from the social networks based on interpersonal communication that can lead to recommendations and encouragement for career advancement?

It could also be argued that email then promotes and enables other type of communication channel usage. So intercorrelations of the communication channel usage measures were analyzed. For the men these correlation show that increased email usage is related to increase usage of voice messaging and voice conferencing. For the women increased email usage is correlated with increased usage of printed documents and charts and graphs. Interestingly for the women increased usage of email is related to less usage of one on one chats and voice conferencing but the relationships are not significant. The men thus are using the computer mediated channels, voice mail and email, as would be expected with adopters of new technologies. For the women these results imply that those women using email then use the other face less media of printed documents and charts and graphs. Needed is further research to determine if these results can be replicated and if indeed women are tending to use the face less media more than the face to face media. The women appear to be avoiding those channels that would promote their inclusion in

networks of influence through impromptu chats, formal meetings, or telephone calls.

References

Allen, D.W. and Griffeth. R.W. "Vertical and Lateral Information Processing: The Effects of Gender, Employee Classification Level, and Media Richness on Communication and Work Outcomes, *Human Relations*, Oct 1997, (50:1), 1997, pp. 1239-1260.

Borisoff, D., & Merrill, L. *The Power to Communicate: Gender Differences as Barriers* (2nd ed.). Prospect Heights, IL: Waveland, 1992.

Carlson, J.R. and Zmud, R.W. "Channel Expansion Theory and the Experiential Nature of Media Richness Perceptions," *Academy of Management Journal*, (42:2), 1999, pp. 152-170.

Csikszentmihalyi, M. *Beyond boredom and anxiety*. San Francisco: Jossey-Bass, 1975.

Daft, R. L., & Lengel, R.H. "Organizational Information Requirements, Media Richness and Structural Design," *Management Science*, (32), 1986, pp. 554-571.

Daft, R. L. and Macintosh, V.B. "A Tentative Exploration into the Amount and Equivocality of Information Processing in Organizational Work Units," *Administrative Science Quarterly*, (26), 1981, pp. 207-224.

Daft, R. L., and Weick, K. E. "Toward a Model of organizations as interpretation systems," *Academy of Management Review*, (9), 1984, pp. 284-295.

Fishman, P. "Interaction: The Work Women Do." In B. Thorne, C. Kramarae, & N. Henley (Eds.), *Language, Gender and Society*, Cambridge, MA: Newbury House, 1983, pp. 89-101.

Fulk, J., Schmitz, J. A., & Steinfield, C. W. "A Social Influence Model of Technology Use." In J. Fulk & C. Steinfield (Eds.), *Organizations and Communication Technology*, Newbury Park, CA: Sage, 1990, pp.117-140.

Gefen, D. and Straub, D. "Gender Differences in the Perception and Use of E-mail: An Extension to the Technology Acceptance Model", *MIS Quarterly*, (21:4), 1997, pp. 389-401.

Ghani, J. and Deshpande, S. "Task Characteristics and the Experience of Optimal Flow in Human-Computer Interaction," *The Journal of Psychology*, (128:4), 1994, pp. 381-390.

Gilligan, C. *In a Different Voice*. Cambridge, MA: Harvard University Press, 1982.

Habermas, Jurgen *The Theory of Communicative Action, Vol. 1, Reason and the Rationalization of Society*, Boston: Beacon, 1984.

Hawkins, K. "Effects of Gender and Communication Content on Leadership Emergence in Small Task-Oriented Groups, *Small Group Research*, May 1995, Vol. 26(2), pp. 234 - 250.

Hawkins, K. and Power, C.B. "Gender Differences in Questions Asked During Small Decision-Making Group Discussions," Small Group Research, 30(2), 1999, pp. 235-256.

Lakoff, R. *Language and Woman's Place*. New York: Harper Colophon, 1975.

Lind, M.R. "The Gender Impact of Temporary Virtual Work Groups," *IEEE Transactions on Professional Communication*, 42(4), December, 1999, pp. 276-285.

Meyers, R. A., Brashers, D. E., Winston, L., & Grob, L. "Sex Differences and Group Argument: A Theoretical Framework and Empirical Investigation," *Communication Studies*, 48, 1997, pp. 19-41.

Miller, S. "Ends, Means, and Galumphing: Some Leitmotifs of Play, " *American Anthropologist*, (75), 1973, pp. 87-98.

Ngwenyama, O.K. and Lee, A.S. "Communication Richness in Electronic Mail: Critical Social Theory and the Contextuality of Meaning," *MIS Quarterly*, (21:2) June 97, pp. 145-168.

Rice, R., & Love, G. "Electronic Emotion." *Communication Research*, 14, 1987, pp. 85-108.

Tannen, D. *You Just Don't Understand: Women and Men in Conversation*. New York: Ballantine, 1990.

Trevino, L.K. and Webster, J. "Flow in Computer-Mediated Communication," *Communication Research*, (19:5), 1992, pp. 539-574.

Weick, K.E. *The Social Psychology of Organizing*, Addison-Wesley,Reading, MA, 1969.

Wood, J. T. *Gendered Lives: Communication, Gender, and Culture*. Belmont, CA: Wadsworth, 1994.

Table 1 T-tests

Communication Channel [1]	Males N = 142	Females N = 38	signif. t-test Gender	<= 40 N = 69	> 40 N = 111	Signif. t-test Age
Charts and Graphs	2.11 (.89)	2.03 (.81)	ns	2.15(.83)	2.01(.87)	ns
Voice Messaging	3.27 (1.51)	3.07 (1.51)	ns	2.98(1.55)	3.29(1.45)	ns
Voice Conferencing	1.83 (1.00)	1.57 (1.10)	ns	1.73(1.03)	1.80(1.05)	ns
Facsimile	1.35 (.70)	1.47 (.82)	ns	1.42(.77)	1.33(.71)	ns
One on One Conference	3.85 (.89)	3.83 (.95)	ns	3.88(.86)	3.99(.83)	ns
One on One Chats	3.92 (.88)	4.03 (.89)	ns	4.19(.77)	4.03(.84)	ns
Group Meetings	3.00 (.85)	2.93 (.78)	ns	3.14(.87)	3.03(.90)	ns
Group Gatherings	2.78 (.92)	3.00 (.87)	ns	3.02(.90)	2.94(.97)	ns
Telephone	3.52 (1.01)	3.40 (.93)	ns	4.10(.87)	3.96(1.06)	ns
Handwritten Notes	2.78 (1.01)	2.97 (1.00)	ns	3.17(1.06)	3.32(1.05)	ns
Typed Written Report	2.49 (.94)	2.37 (.81)	ns	2.96(1.01)	2.81(1.11)	ns
Electronic Mail	3.50 (1.33)	4.07 (1.23)	**	2.65(1.52)	2.59(1.45)	ns
Printed Document	2.58 (.95)	2.70 (.79)	ns	2.81(.97)	2.77(.97)	ns
Computer Report	2.46 (.91)	2.70 (1.02)	ns	2.50(.94)	2.42(.97)	ns
Sat1 – information receive	3.58 (.83)	3.73 (.94)	ns	3.35(.90)	3.76(.78)	**
Sat2 – information you send	3.79 (.66)	4.07 (.69)	*	3.77(.67)	3.89(.67)	ns
Sat3 – access to communication channels	3.64 (1.08)	3.83 (1.15)	ns	3.58(1.14)	3.74(1.08)	ns
Sat4 – communication in general	3.69 (.75)	3.80 (.71)	ns	3.60(.69)	3.77(.77)	ns
Task Analyzability	2.98	3.01	ns	3.17(.87)	2.92(.66)	*
Task Variety	3.80 (.65)	3.50 (.80)	*	3.70(.77)	3.76(.64)	ns
Information Amount	3.33 (.59)	3.25 (.45)	ns	3.25(.49)	3.30(.62)	ns
Information Equivocality	3.35 (.59)	3.09 (.65)	*	3.11(.53)	3.36(.61)	**
Job Level	3.73 (1.23)	2.44 (3.12)	*	2.43	3.35	**
Years Employed	17.43 (8.26)	10.0 (6.40)	***	8.63	20.04	***
Education Level	2.91 (.07)	2.80 (.92)	ns	3.05	2.77	*
Age	44.64 (7.83)	38.63 (7.80)	***			

* p < .10
** p < .01
*** p < .001

[1] Measured by self report of usage on a Likert Scale from 1 to 5.

Table 2
Correlations

Communication Channels	Task Anal	Task Variety	Inf Amt	Inf Equiv	Sat I	Sat II	Sat III	Sat IV
One on One Conference	.06	.14*	.01	.08	.02	.04	-.12	.06
Group Meeting	.12	.16*	.05	.11	-.05	.04	.00	.00
Group Gathering	.10	.21**	.12	.12	-.05	.08	-.02	-.04
Telephone	.03	.06	.05	.05	-.13	-.07	-.08	-.17
Handwritten Note	.02	.07	-.04	.15*	-.03	.14	-.06	.02
Typed/Printed Document	.04	.03	.01	.07	-.19	-.08	.00	-.10
Electronic Mail	.19	-.22**	.02	.18*	.07	.21	.29***	.13*
Printed Document	.20**	-.09		.07	.07	-.04	.11	.01
Computer Report	.20**	-.01	.13*	.04	-.04	-.02	.04	.02
Charts and Graphs	-.06	.07	.03	.08	-.01	-.05	.14	.01
Voice Messaging	-.12	.21	0.01	.18*	-.01	.02	.03	-.03
Voice Conferencing	.14	-.05	.03	.18*	.01	.16*	.06	.03
Fax	-.04	.07	-.07	.08	-.03	.01	.05	-.03
One on One Chats	-.06	.07	-.09	.06	.11	.03	.04	.06

N = 180
* $p < .1$
** $p < .01$
*** $p < .001$

Table 3
Hierarchical Regression

Communication Channels (Dep Variable)	Interc	Sex²	Age	Job Lev	Task Anal	Task Var	Infor Amt	Infor Equi	Sat1	Sat2	Sat3	Sat4	R²
One on One Conference	3.26 ***	ns	ns	ns	ns	.19 *	ns	ns	ns	ns	ns	ns	.02
Group Meeting	9.34 **	ns	ns	ns	.18 *	.25**	ns	ns	ns	ns	ns	ns	.05
Group Gathering	1.24 *	ns	ns	ns	.17 *	.31 **	ns	ns	ns	ns	ns	ns	.06
Telephone	ns	ns	ns	ns	ns	ns	ns	ns	-.20	ns	ns	ns	.02
Handwritten Note	2.48 ***	ns	ns	ns	ns	ns	ns	.22*	-.17	.36*	ns	ns	.03
Typed/Printed Document	2.59 ***	ns	ns	ns	.20 *	ns	ns	ns	.22*	ns	.12	ns	.02
Electronic Mail	.86	.87 **	ns	ns	.29*	-0.39 *	. ns	.65 ***	ns	ns	ns	ns	.18
Printed Document	1.65***	ns	ns	ns	.24 *	ns	ns	ns	ns	ns	.12*	ns	.04
Computer Report	1.67	ns	ns	ns	.27 **	ns	ns	ns	ns	ns	ns	ns	.04
Charts and Graphs	1.64**	ns	ns	ns	ns	.15	ns	ns	ns	-.20*	.18*	ns	.05
Voice Messaging	.76	ns	ns	.27 ***	ns	.41 *	ns	.35*	ns	ns	ns	ns	.12
Voice Conferencing	-.64	ns	ns	ns	.16	ns	ns	.28 *	ns	.26	ns	ns	.07
Fax	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
One on One Chats	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

N = 180
* $p < .10$
** $p < .01$
*** $p < .001$
² Sex is a blocking factor with 1(females) and 0 (males).