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###      ##      ##      ##      #      ##      #      Interpersonal Computing and
###      ##      ##      ##      ##      ##      ##      Technology:
###      ##      ##      ##      ##      ##      ##      An Electronic Journal for
###      #####      ##      ##      ##      ##      ##      the 21st Century
###      ##      ##      ##      ##      ##      ##
###      ##      ##      ##      ##      ##      ##      ISSN: 1064-4326
###      ##      ##      ##      ##      ##      ##      January, 1993
#####      ##      #####      ##      ##      ##      Volume 1, Number 1
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Published by the Center for Teaching and Technology, Academic Computer Center, Georgetown University, Washington, D.C.

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STARVING AT THE BANQUET: SOCIAL ISOLATION IN ELECTRONIC COMMUNICATION MEDIA

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ABSTRACT

The rise in use of electronic computer-mediated communications systems (CMCS) has been suggested to provide benefits for members of small groups in increasing the amount of communication and reducing social isolation in organizational and other settings. However, social and technological issues related to CMCS use may in fact increase the perceived social isolation experienced by users of CMCS. This paper defines isolation in the context of communication access and information exchange. Included in this context are characteristics of communications media and organizational tasks which vary in amount and content of communication supported. CMCSs vary in their ability to support these communications, and use of a system which cannot adequately support the communications needs of the group will fail to allow efficient and successful use of the CMCS in the group process. Suggestions are provided for future research and for relevant criteria to establish bases of CMCS requirements to support productive group process.

INTRODUCTION

By definition, any communication technology or medium acts to produce contact between persons through the sharing of ideas and symbols. This contact can be immediate, reciprocal, and evident, such as a face-to-face meeting, or it can be very distant in time and place, and unidirectional in effect, such as a journal article or recorded television program. Advanced communication technologies, particularly computer-based electronic communications, seek to increase the amount of contact, and therefore decrease "distance" between persons--either physical, temporal, or social--through the communications medium.

Interpersonal communications play an especially strong role in organizations, as a method of sharing and maintaining organizational culture (Schein, 1990), organizing and clarifying work group tasks (Sundstrom, DeMeuse, and Futrell, 1990), and reducing work stress (Bradley, 1989; Sauter, Murphy, & Hurrell, 1990). In particular, the lack of appropriate social support and communication is seen as a primary source of work stress (see Sauter et al., 1990), and that improved support is related to resistance to stress, illness, or pain (see, for example, Feuerstein, Sult, & Houle, 1985; Ouellette Kobasa & Puccetti, 1983).

The social, organizational, and technological barriers to implementing and evaluating a computer-mediated communication system (CMCS) or other electronic medium provide significant social as well as technical problems for system designers and administrators, managers of organizations, and behavioral researchers (Bradley, 1989; Eason, 1988; Olson, 1989). Some researchers suggest that as few as 20% of system implementations are successful (Eason, 1988). Major factors contributing to system failures and reduced productivity include poor integration of the CMCS into organizational activities, or cultural resistance to CMCS adoption (Caldwell, 1992b; Eason, 1988; T. Lowry, personal communication, October 15, 1992). Inadequate advance planning or system installation also lead to limited CMCS use (Maryniak, Nelson) & Caldwell, 1992).

If, then, a majority of new CMCS implementations result in partial or major failure, organizations may actually increase, rather than decrease, communication distances between members of the organization by forcing inappropriate CMCS use. An understanding of the uses, requirements and capabilities of electronic communication between group members is essential to understanding the role of CMCS in social and organizational behavior.

DEVELOPMENT OF COMMUNICATION MEDIA INDICES

Communications media provide varying amounts of information content due to the restrictions in the modes or types of information which can be shared through the medium (Daft & Lengel, 1984; Rice, 1984; Short, Williams, & Christie, 1976). For instance, written messages fail to communicate many non-verbal cues such as intonation, body posture, or facial expression. A number of indices have been proposed to quantify the capability of various communication media to support the communication process. Short, Williams, and Christie (1976) discuss

media in terms of "social presence," which relates to perceptual and affective characteristics such as warmth and support for personal and sensitive interaction (see also Fulk, Steinfield, Schmitz, & Power, 1987). An alternative view characterizes media in terms of "information richness" (Daft & Lengel, 1984, 1986; Trevino, Lengel, & Daft, 1987); Rice (1984) uses the term "bandwidth" to describe similar concepts. Richness is defined primarily by objective and technical medium characteristics, including speed of feedback and information transmission capacity of communication channels available with the medium.

Several authors (for instance, Allen & Hauptman, 1987; Daft & Lengel, 1986; Fulk, et al., 1987; Trevino, et al., 1987) discuss aspects of social presence and information richness as distinctions between objective and subjective media characteristics. Although there may be some logical dependence between these characteristics, it may be more profitable to conceive of objective and subjective characteristics as complementary but different dimensions of communications media. The authors' research (Taha & Caldwell, 1992) has shown that acceptability of 12 communications media with increasing transmission delay was significantly related to information richness, but not social presence as originally defined by Short, Williams, and Christie (1976).

An important factor in perceived acceptability was the objective medium characteristic of whether the medium was synchronous (interactive) or asynchronous (sequential) (Caldwell, 1992b; Taha & Caldwell, 1992). An additional issue is that task requirements and types of interactions vary in the level and type of information required for effective performance of a task in an organizational setting. Some relevant task variables differing in required characteristics of information exchange include task ambiguity, immediacy, and information channels required (Trevino et al., 1987); or task structure, organizational goals, and task duration (Allen & Hauptman, 1987; Keen, 1987). Research on group process feedback and CMCS use in group task performance (Losada, Sanchez, & Noble, 1990) indicated that a lack of group process feedback to group members led to a reduction in social exchanges in the CMCS. This reduction in social information was not offset by increases in task-related information. Therefore, the lack of group process feedback led to an overall decline in CMCS use (communication exchange) by group members.

COMMUNICATION AND SOCIAL ISOLATION

The lack of appropriate communication can be considered characteristic of social isolation. As defined by Altman (1975), isolation is the state where one's achieved level of social contact is lower than one's desired level of contact. Isolation differs from privacy in that privacy occurs when desired and achieved interpersonal contact match (Altman, 1975; Altman & Taylor, 1973). In Altman's view, social invasion occurs when actual or perceived contact exceeds desired contact. Individuals vary in their requirements for communication based on personality, situational, and task demand variables (Altman & Taylor, 1973; McGrath, 1984; Rice, Hughes, & Love, 1989; Sundstrom, 1987/1991; Sundstrom et al., 1990). If the individual's information exchange or social contact demands exceed the capability of the medium, a case of relative isolation will result.

The emphasis of desired contact by an individual and environmental allowances to achieve contact, described by Altman (1975), is also seen in Murray's (1938) elaboration of manifest or latent needs and environmental "press". Altman (1975) and Murray (1938) discuss social contact at the level of an individual interacting with other individuals. Other research (Bechtel & Ledbetter, 1980; Caldwell, 1992a) has discussed social contact and isolation at the group level. A group is considered isolated when the number of contacts with persons outside the group is small relative to the number of contacts with other members of the group. Bechtel and Ledbetter (1980) describe a group contact ratio of within group contacts to total contacts: complete group isolation would occur with a contact ratio of 1.0.

Research in social networks and social support (Rice, Grant, Schmitz, & Torobin, 1990; Rice et al., 1989) has demonstrated that persons with broader and more varied social contacts are shown to be more resistant to stress. (More varied contacts would be demonstrated by low group contact ratios for any group of which the person is a member). Such research suggests that social isolation (either as an individual not in contact with anyone, or as a member of a group with limited contact outside of the group) has significant health detriments.

CMCS AND ISOLATION IN THE ORGANIZATION

Substantial research has addressed where and how CMCS is used in organizations, and the effectiveness of CMCS technologies (see, for example, Balasubramanian, 1987; Hiltz & Johnson, 1990; Papa & Papa, 1990; Rice, 1984; Rice & Williams, 1984; Rice et al., 1990). In the context of reducing social isolation, a CMCS is effective to the extent that it allows persons to achieve desired levels of contact relative to their needs for information and social or professional interaction.

In some cases, the difficulty of access to or use of the system may be a barrier to appropriate use of the CMCS (Eason, 1988; Rice & Shook, 1988); social and organizational support for the CMCS also significantly influence CMCS use (Blomberg, 1987; Rice et al., 1990; Taylor, 1987). Research has shown that processes of developing group norms and group decision making are affected by the cues transmitted through the medium (Archer, 1990; Spears, Lea, & Lee, 1990).

A necessary fraction of communications between group members, even in task-oriented groups, is social or emotionally-based communication (McGrath, 1984; Parsons, 1955; Radloff & Helmreich, 1968). When adequate feedback about the group interaction is not given to group members, the amount of social information exchanged in the CMCS is reduced, without an increase in the amount of task information exchanged (Losada et al., 1990). It is clear that CMCS as a sole method of interaction will not be acceptable for many workers, as is seen by the difficulties in implementing full telecommuting (Mokhtarian, 1991). A major reason for this lack of universal acceptance is the social isolation which results from the restrictions in unplanned, informal face-to-face contact with coworkers (BYTE Roundtable, 1991; Sproull & Kiesler, 1991).

CMCS AND CONTACT REQUIREMENTS IN THE ORGANIZATION

Considering Altman's (1975) view of isolation in terms of desired vs. achieved contact, isolation in the organization can have social and technological origins, and not simply physical distance characteristics. In a survey of perceived isolation among 137 National Park rangers, ratings of perceived physical isolation of park areas were very clearly related to objective characteristics of park use and distance to urban centers of varying sizes. Approximately 64% of differences in physical isolation ratings was explained by distance and park use variables. Ratings of perceived social isolation, however, were only partially explained by objective physical characteristics. Only 36% of variations in social isolation ratings were explained by distance to cities or park use variables (Caldwell, 1990). As the use of CMCS and other electronic media expands to increasing numbers of remote areas and telecommuters, physical distance is a less effective parameter in explaining characteristics of an individual's perceived isolation from the organization.

Research by Spears, Lea & Lee (1990) suggests that groups formed through CMCS may not prefer face to face interaction, due to the conflicts in cues between the CMCS experience and more visual or spontaneous interaction. In addition, anonymous CMCS interactions often generate more critical comments and less personal satisfaction with group process (Jessup, Connolly, & Tansik, 1990). The greater ability to control interactions and impressions other group members have of the individual may lead some individuals to prefer to interact solely through CMCS (Sproull & Kiesler, 1991). Social contact for those persons would then be limited to the information and interactions permitted through that technology. Paraverbal or nonverbal cues that are not available in text-based CMCS are less effectively transmitted. This absence of cues forces users to attempt activities inadequately which rely on such cues, or not attempt them at all (IPCT, 1992).

Restricting communications to these relatively sparse types will not sufficiently address the span of tasks and information cues required of the small group in the organization. Researchers such as Daft and Lengel (1984, 1986; Trevino, Lengel, & Daft, 1987), M. Papa (Papa & Papa, 1990; Papa & Tracy, 1988), and Rice (1984; Rice, et al., 1990) point out that much of the communication in organizations depends on these paraverbal or nonverbal cues and that individuals prefer to use media which can transmit those cues. Promoting CMCS technologies for broad ranges of group interactions and decision-making will not benefit all types of group processes (Archer, 1990; Kiesler, Siegel, & McGuire, 1984; Smolensky, Carmody, & Halcomb, 1990), and will not be equally appropriate or efficient for all individuals in the organization (Papa & Tracy, 1988; Rice et al., 1989; Rice et al., 1990).

FUTURE REQUIREMENTS AND CONSIDERATIONS

In order to maximize productivity, an effective CMCS technology should fit appropriately into the communications needs of an organization, and allow for desired communications types and modes with a minimum of perceived restrictions or organizational or economic costs (Eason, 1988). However, CMCS research often focuses on very restricted communications modalities (McGrath, 1984; Taha & Caldwell, 1992), even though some quantitative comparisons have

been completed between communications modes or media (see, for example, Caldwell, Maryniak, & Taha, 1992; Rice, 1984; Rice & Williams, 1984; Short et al., 1976). The increased power of new computer hardware and software to provide additional information capabilities in "groupware" contexts (see Michalski, 1991) may provide additional capability for providing richer and more diverse types of interpersonal communication. Previous research in CMCS use, however, has not evaluated groupware such as computer video conferencing or group document preparation (Landow, 1990; Taha & Caldwell, 1992).

Research in examining CMCS acceptability has shown significant influences of situational demands and system delay on medium acceptability (Caldwell, 1992b; Caldwell et al., 1992). Perceived acceptability of transmission delays for 12 media in three distinct survey groups was related to synchronicity (capability for interactive, rather than sequential, communication) and perceived information richness of the media. The relationships between delay and acceptability were described by a differential equation model also used to characterize electronic and mechanical feedback systems (Caldwell, 1992b). Coefficients of the equation corresponding to "costs" (reducing use of the CMCS) and "benefits" (increasing use of the CMCS) were both related to perceived information richness as defined by Trevino, Daft, and Lengel (1987).

Further research into CMCS processes in organizations should address the impact of situational and technological variables on users' satisfaction with and use of the system. Additional understanding of media delay and information exchange influences on perceived costs and benefits of CMCS use are also needed. As new communication media are developed and tested, data must be integrated in a consistent and clear manner with the classic social process and communication literature. In addition, the knowledge gained by additional understanding of the influence of CMCS variables on group activity will also suggest the most advantageous designs of CMCS technologies to pursue. These contributions will enhance basic understanding of small group interactions and permit empirical tests of previously inseparable variables. As use of CMCS continues to grow, transfer of small group and organizational behavior research to product design will permit greater satisfaction and more appropriate system utilization by users of the CMCS. Improved use and satisfaction by users thereby allows them to partake of the banquet of improved group interactions without losing their appetite for a range of social interaction or finding themselves weak and ill-fed by unused or inappropriate CMCS technology application.

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