

The purpose of this paper is to investigate the effect of "powerful" and "powerless" language on small computer-mediated groups. Subjects ($n = 27$) were placed into 1 of 3 conditions with 2 confederates and asked to communicate via computer in a decision-making context. In the first condition, both confederates used *powerful* language, in the second both used *powerless* language, and in the third condition one confederate used *powerful* language and the other used *powerless* language. Our results lead us to two general conclusions. First, language style has a significant impact on impression formation in computer-mediated groups. Generally, the user of a powerful language style in a computer-mediated group is perceived as more credible, attractive, and persuasive than the user of a powerless language style. Second, contrasting language styles caused perceptions to be more extreme than if users shared a common language style.

THE POWER OF LANGUAGE IN COMPUTER-MEDIATED GROUPS

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Human beings in both oral and literate cultures use language to exert control over their existence (Ellis, 1982). For decades, scholars have studied human expression in an oral and a written form to determine the effects of language use on human interaction (Bernstein, 1975, 1981; Bradac, Bowers, & Courtright, 1979; Burgoon & Miller, 1971; Ellis, 1982, 1992; Ellis & Hamilton, 1985; Ong, 1982). According to Ong (1982), literacy is an extension of orality: First, there is oral interaction, then a transformation to a written record. In a computer-mediated environment, language is especially important because the information exchange process is conversational, yet a sender can only encode a textual message.

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Hence the language used in a computer-mediated environment does not have the formal structure of a letter or the unrecorded free flow of oral communication. Therefore, language use in a computer-mediated environment is unique and demands attention.

Approaches taken by communication scholars toward language research have been multifaceted. These approaches include, but are not limited to: language structure and meaning (e.g., Bernstein, 1975, 1981; Jacobs, 1985), the linguistic experience of an individual in a specific communication context (e.g., Ellis, 1982, 1992), the role of argument as an influence process (e.g., Alderton & Frey, 1986; Meyers, Seibold, & Brashers, 1991), and the influence of language form on interaction (e.g., Bradac, Hemphill, & Tardy, 1981; Bradac & Mulac, 1984a; Bradac & Street, 1990). Recently, language use in a computer-mediated communication (CMC) environment has become a central focus of communication research (Adkins, 1991; Rice & Love, 1987; Sproull & Kiesler, 1986; Walther, 1992). This increased attention to language in computer-mediated interaction is due in part to the widespread use of CMC in organizational and home settings (Capron, 1990).

In CMC, senders and receivers can only send written text to convey messages, yet interaction is "conversational" in that text can be exchanged between sender and receiver instantaneously (Capron, 1990). There are few social context cues (i.e., gender, status cues, and vocal inflection) available in CMC to distract the communicators or to enhance the meaning of the message (Fowler & Wackerbarth, 1980; Hiemstra, 1982; Rice & Love, 1987; Sproull & Kiesler, 1986; Williams, 1978), especially if the interaction is conducted anonymously (Jessup, Connolly, & Tansik, 1990) or if groups have little or no history. Therefore, language is a focal point of computer-mediated interaction, and an important avenue of research.

The purpose of this article is to investigate the effect of powerful and powerless language use in computer-mediated group interactions. Specifically, an experiment was designed to evaluate the relationship between language style and perceptions of social power in a computer-mediated group environment. We begin by

reviewing and integrating research on key components of computer-mediated interaction and social context, powerful and powerless language styles, and assumptions of Social Judgment Theory. Next, an experiment is described that was designed to test hypotheses about the effect of powerless and powerful language styles in computer-mediated interaction. Finally, the results of the experiment are reported and discussed.

COMPUTER-MEDIATED COMMUNICATION

According to Walther (1992), "computer-mediated communication (CMC) is synchronous or asynchronous electronic mail and computer conferencing, by which senders encode in text messages that are relayed from senders' computers to receivers' " (p. 52). CMC may be applied to group planning, problem solving, and decision making (Jessup & Valacich, 1993) through "a group support system (GSS), [which] is described as an environment that contains a series of networked computer workstations that enable groups to meet face-to-face, with a computer-supported electronic communication channel used to support or replace verbal communication" (Valacich, Dennis, & Nunamaker, 1992, pp. 49-50). When GSS is applied to group decision making: (a) Ideas can be exchanged among group members and organized into distinct categories, (b) the categories can be analyzed by group members exchanging information through electronic file folders, and (c) consensus can be developed between group members.

A GSS can have critical effects on group interaction. For example, research has shown that in a face-to-face group meeting 20% of the people do 80% of the talking because some group members are shy, of lesser status, intimidated, or too polite (Kirkpatrick, 1992). This lack of participation among group members may lead to lower overall productivity or less critical evaluation of ideas. In a GSS, anonymous CMC provides the opportunity for all group members to participate equally (Nunamaker, Dennis, Valacich, Vogel, & George, 1991). Equal participation has the potential to improve the quality of interaction and perhaps provide the opportunity for more critical discussion of decision alternatives

(Brashers, Adkins, & Meyers, 1994; Jessup & Valacich, 1993). Thus people who have used GSSs claim that electronic meetings are more effective than face-to-face interactions for group planning, problem solving, decision making, and group interaction (Dennis, Heminger, Nunamaker, & Vogel, 1990; Vogel, Martz, Nunamaker, Grohowski, & McGoff, 1990).

Group support systems are being used with increasing frequency in a variety of organizations (see Brashers, Adkins, & Meyers, 1994, for examples of organizations using a GSS; see also other case studies, such as the Grohowski, McGoff, Vogel, Martz, & Nunamaker, 1990, study at IBM) where computer technology has been a vehicle for change. The rapid development of technology has led to an increased awareness on the part of organizations of the potential for computers as a communication medium, including applications such as electronic messaging, voice mail, and conferencing systems (Culnan & Markus, 1987). As CMC is being applied to more tasks done in organizations, researchers are studying the medium as a facilitative interaction tool (Brashers, Adkins, Meyers, & Mittleman, 1994; Connolly, Jessup, & Valacich, 1990; Kiesler, Siegel, & McGuire, 1984; Nunamaker, Vogel, & Konsynski, 1989; Rice, 1987; Rice & Case, 1983; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). This relatively new communication channel raises interesting pragmatic research areas addressing questions about how interpersonal relationships are initiated and maintained (Hellerstein, 1986; Rice, 1987; Rice & Blair, 1984; Rice & Case, 1983; Steinfield, 1986; Walther, 1992; Walther & Burgoon, 1992) and how humans adapt to the use of computer-mediated communication (e.g., Poole & DeSanctis, 1990; Poole, Holmes, Watson, & DeSanctis, 1993).

One area of research that has been the focus of considerable attention is how the lack of social context cues influences interaction. Different media have differing "bandwidths," which are the "diversity of cues that a particular medium can transmit, including physical distance between the participants; expressions and gestures; tone, volume, and rate; verbal meaning; and numeric data" (Rice, 1987, p. 67). More than a decade and a half has passed since

researchers described computer conferencing as a print medium judged to have less "social presence" (Hiltz & Turoff, 1978; Rice, 1984; Short, Williams, & Christie, 1976) due to its inability to transmit the full bandwidth of human communication codes. Short et al. (1976) stated that encoded paralinguistic messages, common in face-to-face interaction, would be limited by the available bandwidth in electronic communication. This lack of social cues has led some to speculate that the effects of messages on receivers might be lessened. Some researchers (Kiesler et al., 1984; Sproull & Kiesler, 1986) have proposed that limiting the transmission of communication codes leads to impersonal uninhibited electronic communication. Yet, despite the fact that CMC restricts the means of communication, research has shown that effects on influence attempts can be more pronounced. Short (1974) and Lea and Spears (1992) demonstrated that conditions of low social presence (e.g., CMC) provide for greater social influence than conditions of higher social presence (e.g., face-to-face communication). Scott (1992) found "that group members perceived a significant difference between normally high and normally low influence group members, even after the GDSS meeting designed to eliminate such distinctions" (p. 22).

More recently, Walther (1992; Walther & Burgoon, 1992) provided an alternative to the social presence framework with the social information processing perspective. Walther's work explained how relational communication development thrives (although it may be more time consuming) within the available bandwidth in CMC. Walther and Burgoon (1992) found that ratings of relational indicators (e.g., receptivity, trust, social orientation, and dominance) changed over the course of CMC interactions, indicating that individuals' perceptions of each other can be influenced without face-to-face meetings.

What remains constant across these lines of research is the argument that we need to understand how relationships are developed and maintained by those using CMC (Rice & Love, 1987), despite the fact that CMC provides few of the context cues that are often associated with impression formation. The rationale for the

present study is that in a computer-mediated group, text is the primary basis for impression formation and maintenance.¹ Past research has shown that computer-supported groups develop differently than face-to-face groups (Chidambaram, Bostrom, & Wynne, 1991). Without the benefit of social buffers to regulate the interaction, the development of relationships and routinized patterns of interaction between group members is based primarily on textual language use.

Using language to develop and to present an image is cumbersome because the level of expression always must be equal to intention; that is, messages are inherently ambiguous (Eisenberg, 1984; Weick, 1979) so the precise use of language is essential to impression management in a computer-mediated context. Members of a computer-mediated group must be especially careful to choose messages that accurately reflect their intended meaning because there are few other cues available in the medium to assist message decoding. Compounding this difficulty is the fact that messages may be multifunctional and constructed in many different ways (O'Keefe, 1988). Thus, in computer-mediated interaction, the relationship between group members is a function of both an individual's language style and the other group members' language use. Determining the effect of language style on CMC is consequential because CMC is changing how organizational members interact. For example, executives using GSS or CMC often are in the position to interact in groups or teams without the conventional status symbols, courtesy buffers, or gatekeepers (Adkins, 1991; Danowski & Edison-Swift, 1985). Without the benefit of status or a formal structure for sending messages (i.e., business letter or a formal memo), executives are often in an unfamiliar position of having their ideas on equal status with other group members.

POWERFUL AND POWERLESS LANGUAGE

In the past two decades, an abundance of research investigating language and impression formation suggests a relationship between language style and attributions of social power. Research has shown that variations in language strongly affect the receiver's impression

of the sender (Bradac, 1982; Bradac et al., 1981; Erickson, Lind, Johnson, & O'Barr, 1978). This impression is a central feature of relationship development (Burgoon, Buller, & Woodall, 1989; Knapp, 1984; Knapp, Ellis, & Williams, 1980). Impressions are formed quickly and automatically and are used to draw inferences about the message sender (Burgoon et al., 1989); attributions are made about professional status, background, education, and even intent of communication from linguistic choices (Burgoon & Miller, 1987).

Style of communication is a variable receiving increasing attention within the research literature of CMC. For example, Rice, Chang, and Torobin (1992) predicted that a *communicator* style would influence the adoption, use, and evaluation of CMC. A *language* style variable that is a factor in influencing impressions and perceptions is powerful and powerless speaking style. Hosman (1989) argued that powerless speech is conceptualized as uncertainty in presentation, marked by hesitancy and tentativeness. The use of powerless language can lead to perceptions of insecurity or self-doubt, decreasing perceptions of power. A powerless language style typically is operationalized as overuse of polite forms ("Yes, sir, . . ."), hedges ("I sort of did"), hesitations ("I . . . uh . . . like this"), deictic phrases ("That man over there . . ."), intensifiers ("He really did"), and tag questions ("It is, isn't it?"). Powerless language should be thought of as the cumulative effect of these various indicators. In contrast, powerful language style is the absence of those indicators. Bradac and Mulac (1984a) reported "that messages exhibiting the linguistic indicants of powerlessness have consistently produced relatively low ratings of speaker power in experimental research" (p. 307).²

The user of powerless language is not necessarily low in social power or social status, but conveys that impression because of the use of the powerless language style. As eyewitnesses in trials, powerless language users may be the most accurate sources of information, but they are seen as less credible, less attractive, and less persuasive because of their language style. In turn, this lowered social power influences how judges and juries perceive their testi-

mony (O'Barr, 1982). Specifically, communication containing frequent uses of hedges, hesitations, tag questions, intensifiers, extreme polite forms, and sentence fragmentation have produced perceptions of low speaker power (Bradac et al., 1981; Bradac & Mulac, 1984a, 1984b; Erickson et al., 1978; Hosman, 1989; Hosman & Wright, 1987; Morrill & Facciola, 1992; Newcombe & Arnkoff, 1979; O'Barr, 1982; Wright & Hosman, 1983), leading "judges" in experimental settings to give smaller damage awards to hypothetical injury victims (Lee & Ofshe, 1981).

If a powerless language style conceals ideas and hides an individual's identity, group work will be difficult to facilitate. In face-to-face group meetings, members use authority, status structure, and power to help express ideas (Gouran, 1982). These three characteristics are limited in GSS (e.g., through anonymity) to help generate free flow of ideas. Yet, without authority, status structure, and power, group members must be vigilantly aware of the effect of language style on group interaction.

Perceptions have strong influences on group interaction because they dictate how much attention group members pay to each other's ideas (Hirokawa & Scheerhorn, 1986; Jablin & Seibold, 1978; Jessup et al., 1990; Valacich et al., 1992). Members are often exposed in group situations to multiple language styles concurrently, so investigation of how these styles interrelate is needed. Lee and Ofshe (1981) studied the effects of powerful and powerless speech in a group setting, but failed to account for the gestalt or combined effects of various group member styles. Additionally, when members are perceived to be of higher status in group interaction, they are given more opportunity to talk. Those higher status members' ideas and opinions are received more favorably and given more value than ideas and opinions of lower status individuals (Ridgeway & Berger, 1986). Finally, group decision making often is history-dependent (March & Shapira, 1992) or based on heuristics such as expertise (Hardwig, 1985). Therefore, it is critical to understand how message features such as language choice might serve to replace these other features in the evaluation of decision alternatives.

Summary

We make interpersonal evaluations based on limited information (Goffman, 1959). With the use of CMC and GSS increasing in organizations (Johansen, 1988, 1989; Rice, 1987), individuals will be making more evaluations on less information because the medium has a limited bandwidth (Rice, 1987; Sproull & Kiesler, 1986). One specific information cue used in interpersonal evaluations is communication style or form. In a small electronically connected group, conflicting styles will be interacting simultaneously and affecting group members' perceptions of each other. Language style is an important characteristic of computer-mediated communication because it is a cue used in generating impressions. These impressions are used by message receivers to decide future communication strategies and means of relational development. In the following section, Social Judgment Theory is used as a framework to determine how language style may affect perceptions in a computer-mediated group.

SOCIAL JUDGMENT THEORY

The Social Judgment Theory (Hovland & Sherif, 1957; Sherif & Hovland, 1953, 1961; Sherif, Taub, & Hovland, 1958) is used here to derive predictions regarding varying language styles in CMC. The main claim of the Social Judgment Theory is that stimulus items do not have absolute stimulating value, but are responded to because of the context in which they appear (Granberg, 1982; Granberg & Aboud, 1969). For example, after working for an hour in a freezer at -10° F, going outside to 20° F would seem warm. On the other hand, if the inside temperature of a car was 65° F and one went out to 20° F, it would seem cold. The first temperature given in the preceding examples is the "anchor" perception of the second. An anchor is any factor that is relatively important, at a given time, in the constellation of factors comprising an individual's frame of reference (Granberg, 1982). Sherif and colleagues argued that people develop subjective standards by which to judge unknown or uncertain events, based

on known or perceived information. This standard can produce a distorting effect, especially if the anchor lies toward an extreme value. Infante, Rancer, and Womack (1990) noted that:

Research in physiological psychology indicates if a person is given an "anchor" in making judgments, objects which are close to the anchor are seen as more similar to the anchor than they really are (they are *assimilated*). Objects which are far from the anchor are perceived as more dissimilar than they are (they are *contrasted*). (p. 180)

Sherif et al. (1958) stated that "as the anchors are placed at increasing distances from the upper and lower ends of the series, the distribution of judgments will be placed in the direction away from the anchor and the whole judgmental scale will be constricted (contrast effect)" (p. 151). The concept of contrast effect in the Social Judgment Theory will be the point of departure for the current research on powerful-powerless language style in computer-mediated groups.

Using the constructs of the Social Judgment Theory as a base for studying the language style in computer-mediated group interaction is fruitful because there is an expectation that members of a computer-mediated group will naturally identify other group members via their language use and place them into categories according to their language style. In addition, CMC allows for more control of extraneous variance and uses language as a focal point of message exchange (Adkins, 1991; Danowski, 1982; Sproull & Kiesler, 1986).

Several assumptions are used here to illustrate the structure of the contrast effect and the subsequent relationship to powerful and powerless language in a computer-mediated group. Language style creates distinguishable impressions of the sender and communicates beyond the content of the message. O'Barr (1982) suggested that message form must support content or people will question the validity and sincerity of the message. Past research supports O'Barr's contention that every message has both a content and relational meaning and that these two levels of meaning affect impression formation (cf., Watzlawick, Beavin, & Jackson, 1967).

Communicators who use a powerless speech style frequently are perceived as less credible, less competent, and less attractive than those who use a powerful language style.

The receiver will form an impression of the sender even though CMC offers limited social presence and few social context cues. People form impressions on little information to satisfy practical and psychological needs. Individual perceptions will cluster to form impressions, and impressions will play a role in defining relationships (Burgoon et al., 1989).

Assuming powerful and powerless language styles as opposite ends of a continuum allows the contrast effect to be used as a base for prediction of interpersonal perceptions of computer-mediated group members. By using one language style as anchor and the other for contrast, the perceptions associated with the powerful language style (i.e., higher attraction and higher credibility) can be predicted as higher than if there was no anchor or contrast in language style. The Social Judgment Theory allows us to assume that contradictory language style is an anchoring point with one language style in contrast to the opposite language style.

From these assumptions, we investigate how powerful and powerless language influences group members' perceptions of the other group members. The combined literature of computer-mediated communication, language style, and Social Judgment Theory leads to five propositions:

Proposition 1: Group members in a computer-mediated group will form impressions of other group members despite the limited social context cues available in CMC.

Proposition 2: Language style in CMC will function as a base to foster impressions of attraction, credibility, and persuasiveness.

Proposition 3: Perceived social power in CMC is a function of perceived credibility, perceived attraction, and perceived persuasiveness.

Proposition 4: The receiver's perception of the sender's social power is a function of the bipolar nature of powerful and powerless language style used in a small computer-mediated group.

Proposition 5: A contrast of language style will produce more extreme effects than no contrast in language style.

Propositions 1, 2, and 3 are based on the assumptions that group members will form impressions despite the limited bandwidth of CMC. Propositions 4 and 5 derive from the contrast effect expected from predications of the Social Judgment Theory. Taken together, these two sets of propositions lead to the following hypotheses:

H1: In a group in which one member uses powerful language and the other uses powerless language, the powerful language user will be perceived as more attractive, credible, and persuasive than the powerless language user.

H2: Groups in which members use powerful language exclusively will be perceived as more attractive, credible, and persuasive than groups in which members use powerless language exclusively.

H3: Powerful language will cause greater perceptions of attraction, credibility, and persuasion than powerless language use.

H4: In groups that combine both powerful and powerless language use, the powerful language user will be perceived as more attractive, credible, and persuasive than groups where both confederates use powerful language.

H5: In groups that combine both powerful and powerless language use, the powerless language user will be perceived as less attractive, credible, and persuasive than groups where both confederates use powerless language.

H6: Differences in language style will produce greater perceptions of social power in the following trend: powerful language use in a mixed speech style group > powerful language use in a group that exclusively uses powerful language > powerless language use in a group that exclusively uses powerless language > powerless language use in a mixed speech style group.

METHOD

Overview

Subjects were assigned randomly into one of three conditions and directed to solve a problem regarding teacher evaluations at the university level (see Appendix). Groups were composed of three people. In each condition, two group members were confederates who had been trained to use either powerful or powerless language. The confederates used language style in the following configurations: In Group 1, both confederates used a powerful language style (powerful-powerful); in Group 2, both confederates used a powerless language style (powerless-powerless); and in Group 3, one confederate used a powerful language style and the other confederate used a powerless language style (powerful-powerless). The subjects were stopped after 20 minutes and asked to complete several measures regarding their perceptions of the other group members. The perceptions the subjects had of the confederates were used as a baseline for comparison. First, the powerful member of Group 3 was compared to the powerless member of Group 3. Second, perceptions of Group 1's members were compared to Group 2. Third, the perceptions of Group 1's members were compared to the perceptions of the powerful person in Group 3. Finally, the perceptions of Group 2's members were compared to the respective counterpart in Group 3, the powerless person.

SUBJECTS

The subjects were 8 males and 19 females ($n = 27$) enrolled in various undergraduate communication courses at the University of Arizona. The subjects volunteered for the project if they could type 40 or more words per minute and wished to receive extra credit in their courses.

INDEPENDENT VARIABLE

Powerless language style. Powerless language was conceptualized as uncertainty in presentation, marked by hesitancy and tentativeness (see Hosman, 1989). Powerless language was operationalized by the confederate's consistent use of hedges ("I sort of did."), hesitations (long pause between words), intensifiers, ("He *really* did!"), and tag questions ("It is, isn't it?"). The following is an example from the dialogue of a confederate using a powerless style:

Pat: Well, I think, what I mean is, maybe interviews would be sorta a good thing to use when getting the real opinions of students, do you think so?

Powerful language style. Powerful language is the opposite of powerless language. The confederates avoided using hedges, hesitations, tag questions, and intensifiers. The following is an example from the dialogue of a confederate using a powerful style:

Pat: Okay. Interviews with the students give a more reliable measure than the form we use now.

CONFEDERATES

Two confederates participated in approximately 15 hours of training in preparation for the experiment. The confederates learned to use the technology and practiced using powerful and powerless language. They were trained with a powerful or powerless language script, but were instructed to interact with the flow of the group "conversation" when simulating powerful or powerless language.

Procedure

The computer-mediated group interaction was conducted in the University of Arizona's College of Business and Public Administration's Decision and Planning Laboratory. The lab is a GSS facility that has a main room with 16 microcomputers interconnected to support group interaction. Subjects were greeted by an

assistant, then asked to wait in the waiting room and to read the scenario regarding teacher evaluation criteria. Then the subjects were escorted into a break-out room and informed that they were going to interact for 20 minutes with two peers via a computer, to develop a solution to the situation. The subjects were told that the other group members with whom they were interacting were in another building. In addition, the confederates' names were given as "Pat" and "Lee," so the subjects did not know the confederates' gender or physical description. After a brief training period with the technology, the interaction began. An observer drifted in and out of the room periodically to answer questions regarding the technology.

After 10 minutes of interaction, the observer stopped the interaction and asked the subjects to type their global impressions of Confederate 1 and Confederate 2.³ When they finished entering their impressions, they were told they had 10 minutes to develop a solution. After the confederates and subjects had been conversing on the computers for about 18 minutes, one of the confederates suggested that they had to reach a decision. If the confederate was playing the role of a powerless speaker, the suggestion might be: "I am not sure, but I think we might be running out of time. Maybe we could come up with something." The powerful speaker might say, "We have 2 minutes to come up with a solution." If the confederates were in the powerful-powerless scenario, the powerless confederate would suggest the group come up with a solution.

Upon completion of the interaction, the subjects were asked to type their impressions of the other two group members' communication style. When the subjects finished typing their open-ended responses to the interaction, they were escorted to another room and asked to complete several measures of interpersonal perceptions. Finally, the subjects were given a debriefing statement that outlined the project and were asked if they had questions regarding the study.

Throughout the interaction, the confederates were able to monitor each other's communication style and communicate verbally. The confederates were sitting next to each other, watching their own monitor as well as a screen that documented the whole interaction as it was occurring. During the interaction, the confederates and the subjects never observed each other.

TABLE 1: Results of Manipulation Check

	Condition			Reliability	
	1 Powerful- Powerful (n = 8)	2 Powerless- Powerless (n = 9)	3 Powerful-Powerless (n = 10)		
Intensifiers	0	206	0	120	0.92
Hedges	4	340	3	192	0.87
Hesitations	0	183	1	201	0.85
Tag questions	0	119	0	78	0.63
Total	4	848	4	591	
Statements	179	254	120	128	
Ratio	0.02	3.57	0.03	4.82	

MANIPULATION CHECK

Post hoc analysis for powerless language was completed on all the transcripts for each of the three conditions. The transcripts were coded for number of intensifiers, hedges, hesitations, and tag questions. Two coders (the first author and an independent coder naive to the purpose of the experiment) coded 25% of the total transcripts. Because reliabilities were deemed adequate (see Table 1), the remaining transcripts were coded by the independent coder. A ratio of the total number of statements to total number of powerless forms indicates the level of powerlessness in a condition. Table 1 presents the results of the manipulation check.

The results of the manipulation check demonstrate that those confederates who were expected to use powerless language used many more powerless statements than did the powerful language users. The number of instances of each indicator of powerless language compared for two groups (speakers using powerful language and speakers using powerless language) was significantly different, with $\chi^2(1) = 11.98, p < .001$. Taken with the fact that confederates were trained extensively in the use of powerful and powerless language, this gives us confidence that the manipulations worked as intended.

DEPENDENT MEASURES

Attraction scale. McCroskey and McCain's (1974) 15-item Likert-type scale was used to measure interpersonal attraction. This measure consists of three dimensions: physical attraction, social attraction, and task attraction. However, the five items measuring physical attraction were not used for this investigation because subjects did not see the target person. The alpha reliability estimates obtained in this investigation were 0.93 and 0.94 for task attraction, and 0.92 and 0.93 for social attraction.⁴

Credibility scale. The credibility measure consists of 20, seven-interval, semantic differential items measuring the dimensions of competence, composure, character, sociability, and extroversion (McCroskey, Holdridge, & Toomb, 1974; McCroskey, Jensen, & Valencia, 1973). Alpha reliabilities were 0.91 and 0.92 for competence, 0.60 and 0.71 for composure, 0.71 and 0.78 for character, 0.80 to 0.89 for sociability, and 0.64 to 0.82 for extroversion.

Persuasiveness scale. During the computer-mediated group interaction, the degree to which subjects were influenced by the confederates was indexed with 10, seven-interval, Likert-type items related to persuasiveness (Newton, 1988; Newton & Burgoon, 1990). The internal consistency of this scale was 0.92 and 0.94.

RESULTS

WITHIN-GROUP COMPARISONS

As expected, two-tailed correlated *t* tests on Group 1 (powerful-powerful style) showed no significant difference between the ratings of Confederate 1 and Confederate 2 on perceived attractiveness, credibility, and persuasiveness. In Group 2 (powerless-powerless), two of the comparisons between Confederate 1 and

TABLE 2: Results of Hypothesis Tests

	Condition				<i>eta</i> ²
	1 Powerful- Powerful (n = 8)	2 Powerless- Powerless (n = 9)	3 Powerful-Powerless (n = 10)		
Hypothesis 1					
Attractiveness					
Task Attraction			5.98	3.24	0.81*
Social Attraction			4.88	4.00	
Credibility					
Competence			6.14	3.55	0.84*
Composure			5.44	3.59	0.67*
Character			5.28	4.64	
Extroversion					
Sociability			4.92	5.15	
Persuasiveness			4.36	2.40	0.64*
Hypothesis 2					
Attractiveness					
Task Attraction	5.03	3.72			0.29*
Social Attraction	4.58	4.40			
Credibility					
Competence	5.16	3.92			0.32*
Composure	4.28	4.11			
Character	5.01	4.70			
Extroversion	4.29	4.77			
Sociability	4.88	5.01			
Persuasiveness	3.66	2.64			0.12*
Hypothesis 3					
Attractiveness					
Task Attraction	5.03	3.72	5.98	3.24	0.68*
Social Attraction	4.58	4.40	4.88	4.00	
Credibility					
Competence	5.16	3.92	6.14	3.55	0.71*
Composure	4.28	4.11	5.44	3.59	0.35*
Character	5.01	4.70	5.28	4.64	
Extroversion	4.29	4.77	5.08	4.80	
Sociability	4.88	5.01	4.92	5.15	
Persuasiveness	3.66	2.64	4.36	2.40	0.39*
Hypothesis 4 ^a					
Attractiveness					
Task Attraction	5.03		5.98		0.18*
Social Attraction	4.58		4.88		
Credibility					
Competence	5.16		6.14		0.23*
Composure	4.28		5.44		0.25*
Character	5.01		5.28		

TABLE 2 Continued

	Condition			<i>eta</i> ²	
	1 Powerful- Powerful (n = 8)	2 Powerless- Powerless (n = 9)	3 Powerful-Powerless (n = 10)		
Extroversion	4.29		5.08	0.32*	
Sociability	4.88		4.92		
Persuasiveness	3.66		4.36		
Hypothesis 5					
Attractiveness					
Task Attraction		3.72	3.24		
Social Attraction		4.40	4.00		
Credibility					
Competence		3.92	3.55		
Composure		4.11	3.59		
Character		4.70	4.64		
Extroversion		4.77	4.80		
Sociability		5.01	5.15		
Persuasiveness		2.64	2.40		
Hypothesis 6 ^b					
Attractiveness					
Task Attraction	5.03	3.72	5.98	3.24	0.71*
Social Attraction	4.58	4.40	4.88	4.00	0.08*
Credibility					
Competence	5.16	3.92	6.14	3.55	0.75*
Composure	4.28	4.11	5.44	3.59	0.48*
Character	5.01	4.70	5.28	4.64	0.10*
Extroversion	4.29	4.77	5.08	4.80	
Sociability	4.88	5.01	4.92	5.15	
Persuasiveness	3.66	2.64	4.36	2.40	0.42*

Note: * $p < 0.05$.

a. For the contrast in Hypothesis 3, Condition 1 and the Powerful member of Condition 3 were compared to Condition 2 and the Powerless member of Condition 3.

b. For linear contrasts in Hypothesis 6, means were ordered as Powerful member in Condition 3 > Condition 1 > Condition 2 > Powerless member of Condition 3.

Confederate 2—attraction and credibility—were nonsignificant. However, the persuasiveness comparison between confederates was significant, $t(8) = -2.61$, $p < .05$, ($M_1 = 2.14$ and $M_2 = 3.16$). The relative lack of significance within Group 1 and Group 2 allows the collapse of separate confederate ratings into one rating of attraction, credibility, and persuasion. Thus combined ratings from

Group 1 members and Group 2 members can be compared to the powerful and powerless ratings from Group 3.

BETWEEN-GROUP COMPARISONS

The hypotheses were tested by a series of planned comparison t tests. The results of significance tests are reported in Table 2 and summarized below.

Hypothesis 1 predicted that the powerful group member in the powerful-powerless condition would be perceived as more attractive, persuasive, and credible than the powerless group member. Planned comparisons comparing the powerful member to the powerless member in Group 3 partially confirmed Hypothesis 1.⁵ In the powerful-powerless condition, the powerful member was perceived as more task-attractive, competent, composed, and persuasive than the powerless member.

Hypothesis 2 predicted that the group members in the powerful-powerful condition would be perceived as more attractive, persuasive, and credible than the group members in the powerless-powerless condition. Planned comparisons comparing the powerful-powerful group to the powerless-powerless group partially confirmed Hypothesis 2. The powerful-powerful group was perceived as more task-attractive, competent, and persuasive than the powerless-powerless group.⁶

Hypothesis 3 predicted that powerful language use would cause perceptions of attraction, credibility, and persuasiveness to be greater than powerless language use. To analyze Hypothesis 3, perceptions of the powerful language users were compared to perceptions of the powerless language users regardless of experimental condition. Hypothesis 3 was partially supported: Powerful language users were perceived as more task-attractive, competent, composed, and persuasive.⁷

Hypothesis 4 predicted that the combination of both powerful and powerless language use would cause the powerful language user to be perceived as more attractive, credible, and persuasive than those groups where both speakers used powerful language exclusively. This hypothesis was partially supported. Planned

comparisons revealed that powerful language users in a contrast situation were perceived as more task-attractive, competent, composed, and extroverted than speakers in groups where both confederates used powerful language exclusively.

Hypothesis 5 predicted that the combination of both powerful and powerless language use would cause the powerless language user to be perceived as less attractive, credible, and persuasive than those speakers who used powerless language exclusively. The data did not support Hypothesis 5.

Hypothesis 6 predicted perceptions of social power (attractiveness, credibility, and persuasiveness) across a continuum of language style, and predicted powerful language use would produce greater perceptions of social power in the following trend: powerful language use in a mixed speech style group > powerful language use in a group that exclusively uses powerful language > powerless language use in a group that exclusively uses powerless language > powerless language use in a mixed speech style group. This hypothesis was partially supported. The predicted linear trend was found for task attraction, social attraction, competence, composure, character, and persuasiveness.

DISCUSSION

Powerful and powerless speech affect interpersonal perceptions (Bradac, 1982; Bradac et al., 1981; Erickson et al., 1978; O'Barr, 1982). Considering that text is the primary stimulus on which most interpersonal perceptions are based when using CMC and GSS, the evaluation of how powerful and powerless language affect interpersonal perceptions is important. This study explored the idea that the contrast between powerful and powerless language style in a computer-mediated group would affect group members' interpersonal perceptions of other group members. The results of this study support the contention that contrasting language style used in a computer-mediated group interaction can increase perceptions of credibility, attraction, and persuasiveness for a powerful language user, and decrease the same perceptions for a powerless language

user. The following is a discussion of the theoretical and practical implications of this study.

Implications

The six hypotheses in this study were used to predict how group members would evaluate each other based on language style. In a typical group interaction, variation in group members' individual language style is likely to occur and to affect perceptions of those members. Meetings in GSS facilities often are taken as opportunities to bring people from throughout the organization together to work on organizational decision making and problem-solving tasks. Often, group members will be from diverse backgrounds, and therefore language styles may vary markedly.

The concept of group members using divergent language styles simultaneously in a group interaction leads to the first general question: How do group members respond to contrasting language styles? The results of Hypothesis 1 indicate that powerful language users in a group where group members are using different language styles are perceived as more task-attractive, more competent, more composed, and more persuasive than group members using a powerless language style. The results of Hypothesis 2 indicate that powerful language users in a group where two group members are using a powerful language style exclusively are perceived as more task-attractive, more competent, and more persuasive than members of a group in which both are using a powerless language style. The results of Hypothesis 3 indicate that powerful language users, in general, are perceived as more task-attractive, more competent, more composed, and more persuasive than group members using a powerless language style.

As expected, language style has a significant impact on impression formation in computer-mediated groups. The user of a powerful language style in a computer-mediated group generally is perceived as more credible, attractive, and persuasive than the user of a powerless language style. These perceptions may have an impact on behavior in a computer-mediated group. CMC and GSS users often operate without established authority relations or status

structure (e.g., in an anonymous or zero-history group), and therefore may only have the strength of ideas expressed in text available to create an identity. This study supports the claim that powerless language use masks ideas (e.g., persuasiveness) and alters a sender's identity (e.g., credibility and attractiveness). An individual identity crisis may occur within the group for the powerless language user as well as for the whole group. Lea and Spears (1992) argued that individual and group identities each play a role in explaining influence processes. If some members' ideas are not being "heard," the group as a whole suffers. Further, if individuals recognize that their ideas are not being acknowledged, the GSS interaction can be a frustrating experience. Decision making may suffer if groups are less cohesive (due to decreased attraction) or if members fail to be convincing in their defense of a decision alternative (due to decreased credibility or decreased persuasiveness). Moreover, for those who wish to assume a leadership role in the group, using powerful language may be a means of achieving that goal. Brashers, Adkins, and Meyers (1994) argued that GSS users might transfer familiar norms and behaviors from face-to-face settings to their computer-mediated interactions. If leaders in face-to-face settings are those who are most likely to use powerful language, it may be that they also will become leaders in computer-mediated interactions through powerful language use.

An interesting implication of this finding is that impressions seem to be formed in a relatively quick fashion. This study involved zero-history groups in which members had no basis to form impressions prior to the interaction. Although Walther (1992) argued that impression formation and relationship development could be a time-consuming process, subjects in this study formed distinguishable impressions of group members within a 20-minute interaction. It may be that group members form judgments based on initial reactions, especially when those impressions are based on language style. In their explication of the Structuration Theory for group interaction, Poole, Seibold, and McPhee (1985) speculated that the interaction roles of a group member might be a function of the member's initial or early comments in an interaction. Thus it may be that group members have a short time in which to present an

image of themselves. Members of computer-mediated groups should carefully attend to their initial turns in the conversation if they wish to manage the impression that others have of them.

Saying that language use is the primary means of forming impressions assumes that impressions have not been already formed. The fact that the group members in this study had no history is important when considering the generality of our findings. Of course, impression formation based on the text in CMC is most likely to occur in zero-history groups (which may occur relatively infrequently outside of experimental settings) or in groups where members are interacting anonymously (which *does* occur frequently in GSSs). Both conditions are similar in that members will be searching for identity clues in the text of messages because of the lack of prior knowledge about the other group members. Some might argue that anonymous groups provide no basis for impression formation, based on the notion that sets of comments cannot be attributed to one individual. However, our entire formulation about language and impression formation is that language choices are the basis for judgments (in the absence of external cues). Therefore, messages can generate attributions of powerfulness or powerlessness even in the absence of a collective identity. Thus the effects of powerful and powerless language use should be more pronounced with zero-history groups or with groups interacting anonymously. When groups have met previously and individuals are aware of the identity of group members, they will bring their relational histories and prior knowledge to the interaction, and perhaps be influenced less by language style.

The second general question we addressed is: Do contrasting styles have a greater impact on perceptions than similar styles? In this study, the Social Judgment Theory was used to examine the effect of contrasting language styles on interpersonal perceptions in a computer-mediated group interaction. Group members in a computer-mediated group were expected to identify group members via their language use and place them into categories according to their language style. It was assumed that users of a powerful language style and users of a powerless language style would be placed at opposite ends of a continuum. Thus the powerful language

style would contrast, or be an anchor for, the powerless language style. The general prediction derived under the Social Judgment Theory is that a contrast of language style will cause more extreme perceptions than no contrast of language style in a computer-mediated group.

Hypotheses 4, 5, and 6 were derived to test the contrast effect. The results of Hypotheses 4 and 6 support predictions derived from the Social Judgment Theory. Results for Hypothesis 4 indicate that powerful language users in a contrast condition were perceived as significantly more task-attractive, competent, and persuasive than powerful language users in a condition where powerful language was used exclusively. The data for Hypothesis 6 produced a linear trend between no contrast conditions and a contrast condition on perceptions of competence, composure, character, task attraction, social attraction, and persuasion. The trend of means from highest to lowest for these variables is as predicted: (a) highest for perceptions of the powerful language user in the contrast condition; (b) second highest for perceptions of the powerful language user in the no-contrast condition; (c) third highest for perceptions of the powerless language user in the no-contrast condition; and (d) lowest for perceptions of the powerless language user in the contrast condition.

The data did not support a contrast effect predicted in Hypothesis 5. It may be that the 20-minute interaction was not enough time to define the powerless anchor at the opposite end of the powerful-powerless continuum. Walther (1992) suggested that neglecting chronometry in CMC research is a severe limitation that may preempt normal communication patterns. In addition, interacting in the powerless-powerless condition seemed to frustrate the subjects to a degree, and this may have been a factor in determining perceptions of group members. Thus it may be that powerful communicators produce more of an anchor effect, whereas powerless speakers generally are rated lower on dimensions such as persuasiveness, attractiveness, or credibility. However, the fact that the linear contrast testing Hypothesis 6 was significant for most dependent measures gives us some confidence that the contrast occurred at *both* ends of the continuum.

Contrasting styles can lead to more extreme judgments when those styles serve to anchor members' perceptions. O'Barr (1982) argued that a powerless language style provides information regarding a person's position in society and that having this information provides a base to make impressions. Although O'Barr did not consider contrast effects in language style choices, his research domain (courtroom trials) provides an excellent example of how contrast effects might have important practical consequences. If we assume that lawyers are trained to use powerful styles and that witnesses often use powerless language styles, we might predict that witnesses using powerless styles would be perceived to be even less persuasive or credible because of the contrast effect. Plous (1993) suggested another implication of contrast effects: The use of worst- or best-case scenarios in decision making can lead to unintended contrast effects. He notes, "for instance, after considering the profitability of a business venture under ideal conditions, it is difficult to arrive at a realistic projection" (p. 152). Our findings support Social Judgment Theory predictions that having powerful and powerless language styles as anchors will cause judgments about message senders to be more extreme than they might have been without the anchors to create a contrast effect. In computer-mediated environments, this is likely to influence perceptions of messages and message senders.

Several areas worthy of further exploration are suggested by this research. First, respondents seemed to differentiate task and social dimensions of our dependent measures. Social attraction in the Attractiveness scale and sociability in the Credibility scale did not seem to be associated with powerful language use in this setting. One explanation for the absence of these effects could be that powerful language is seen as more task-oriented, whereas powerless language use may be judged to be more social. Because group members were involved in completing a task in a relatively short amount of time (with people whom they had never met), task-oriented language may have seemed more appropriate. It is possible that in other types of interaction, social attractiveness might actually be enhanced by the less task-oriented powerless language style.

Second, we expect that the contrast effect predictions of the Social Judgment Theory would hold for other message features that have been shown to alter perceptions of the message sender, or for message content variables, although we only tested the contrast effect for powerful and powerless language. For example, argument quality is used in the Elaboration Likelihood Model to predict outcomes of persuasive messages (e.g., Gleicher & Petty, 1992; Petty & Cacioppo, 1986). Using strong and weak arguments within a single group interaction may cause the strong arguments to appear even stronger when contrasted with the weak arguments.

Third, it would be interesting to determine what effect language style choices of the confederates have on the language style choices of subjects in the study. A research project extending the present study might involve coding the statements of the subjects to see if language choices would tend to mimic the language style of the confederates in groups where one style is used (i.e., the powerful-powerful condition and the powerless-powerless condition). Speech Accommodation Theory (Street & Giles, 1982) could be a useful framework for predicting the convergence or divergence of speech styles. However, the most interesting analysis might be the mixed-style condition (i.e., powerful-powerless) because if the confederate does match speech styles it would be less certain whose style would be the most likely candidate to be matched. Because group members often team up to advance arguments in support of decision alternatives (Brashers & Meyers, 1989), it may be that participants would most likely match the style of the confederate whose proposal is most like their own.

Finally, although it would be premature to recommend that managers be trained in the use of powerful language, there is abundant evidence in the literature, combined with the results of this study, warranting the suggestion that organizational members should be made aware that choices they make while communicating play an important role in how they are perceived. Additionally, they should be made aware that the effect of communication or language style choices will become increasingly salient, given that computer-mediated interactions are becoming more frequent in organizational settings.

APPENDIX

The Teacher Evaluation Case

One persistent problem in university affairs has been that of developing adequate measures of teaching effectiveness. For at least two reasons it is important to find good methods of evaluating teaching skill: (a) If such skill can be measured, then good teachers could be identified so students could make more informed choices between instructors, and (b) if adequate evaluation techniques existed, good teachers could be rewarded with recognition, such as teaching awards and tenure (job security).

Existing methods of evaluating teachers have not been satisfactory. Students have filled out evaluation forms on their teachers at the end of a term or semester, but this technique has been justifiably criticized. One criticism has evolved from the fact that a strong positive correlation between grades and evaluation is known to exist. Student evaluations therefore are called unreliable because they seem to measure how well a student has done in a course rather than how well the teacher instructs. The technique also has been called invalid because it is not at all certain that previous student evaluations identified and measured the skills, attitudes, or qualities that constitute quality in a teacher.

Using your experience as a student and your knowledge of other students' opinions, please discuss this problem and make recommendations as to (a) what ought to be measured in evaluations of teachers and (b) how such measurements can most reliably be obtained.

NOTES

1. We include words and symbols as "text" used in CMC. People who use computers as a communication medium frequently replace nonverbal communication with symbols that become part of the text. For example, the combination of a colon and right parenthesis often is used as a smiling face:

:)

to denote that a part of a message is intended to be humorous.

2. It might be imagined that because CMC is "less spontaneous," it will be more like written than oral communication and that "powerless" language use may be less likely to occur naturally or may seem unduly strange to the reader. However, as Lea and Spears (1992) have argued, users of CMC tend to find ways to be "more spontaneous" including "paralanguage produced by keyboard tricks, the lack of etiquette for salutations, the playfulness of much CMC and the variety of persona or 'voices' that are adopted in computer conferences" (p. 36). This reinforces the notion that CMC is more like spoken than formal written

communication. Additionally, our own observation of naturalistic groups confirms our belief that messages in CMC are as likely to vary in language style as are messages in spoken communication.

3. The subjects' accounts at the 10-minute mark of the interaction and at the end of the interaction will be analyzed as part of a second research project.

4. The subjects' rating of Confederate 1 and Confederate 2 are reported as separate reliabilities.

5. Hypothesis 1 was tested with correlated *t* tests.

6. Because of heteroscedasticity the separate variance estimate was used for competence (Pedhazur, 1982).

7. Because of heteroscedasticity the separate variance estimate was used for extroversion (Pedhazur, 1982).

REFERENCES

- Adkins, M. (1991, May). *Effects of computer-mediated communication on interpersonal perceptions*. Paper presented at the meeting of the Eastern Communication Association, Pittsburgh, PA.
- Alderton, S. M., & Frey, L. R. (1986). Argumentation in small group decision making. In R. Y. Hirokawa & M. S. Poole (Eds.), *Small group decision-making* (pp. 157-174). Beverly Hills, CA: Sage.
- Bernstein, B. (1975). *Class, codes and control* (Vol. 3). London: Routledge & Kegan Paul.
- Bernstein, B. (1981). Codes, modalities, and the process of cultural reproduction: A model. *Language in Society, 10*, 327-363.
- Bradac, J. J. (1982). A rose by another name: Attitudinal consequences of lexical variations. In E. B. Ryan & H. Giles (Eds.), *Attitudes toward language variation: Social and applied contexts* (pp. 99-115). London: Edward Arnold.
- Bradac, J. J., Bowers, J. W., & Courtright, J. A. (1979). Three language variables in communication research: Intensity, immediacy, and diversity. *Human Communication Research, 5*, 257-269.
- Bradac, J. J., Hemphill, M. R., & Tardy, C. H. (1981). Language style on trial: Effects of "powerful" and "powerless" speech upon judgements of victims and villains. *Western Journal of Speech Communication, 45*, 327-341.
- Bradac, J. J., & Mulac, A. (1984a). A molecular view of powerful and powerless speech styles: Attributional consequences of specific language features and communicator intentions. *Communication Monographs, 51*, 307-319.
- Bradac, J. J., & Mulac, A. (1984b). Attributional consequences of powerful and powerless speech styles in a crisis-intervention context. *Journal of Language and Social Psychology, 3*, 1-19.
- Bradac, J. J., & Street, R. L. (1990). Powerful and powerless styles of talk: A theoretical analysis of language and impression formation. *Research on Language and Social Interaction, 23*, 195-242.
- Brashers, D. E., Adkins, M., & Meyers, R. A. (1994). Argumentation and computer-mediated group decision making. In L. Frey (Ed.), *Communication in context: Studies of naturalistic groups* (pp. 263-282). Hillsdale, NJ: Lawrence Erlbaum.
- Brashers, D. E., Adkins, M., Meyers, R. A., & Mittleman, D. (1994, June). *The facilitation of argumentation in computer-mediated group decision making*. Paper presented at the conference of the International Society for the Study of Argumentation, Amsterdam, The Netherlands.
- Brashers, D. E., & Meyers, R. A. (1989). Tag team argument in group decision making: A preliminary investigation. In B. G. Gronbeck (Ed.), *Spheres of argument: Proceedings of the sixth SCA/AFA Conference on Argumentation* (pp. 542-550). Annandale, VA: Speech Communication Association.
- Burgoon, J. K., Buller, D. B., & Woodall, W. G. (1989). *Nonverbal communication: The unspoken dialogue*. New York: Harper & Row.
- Burgoon, M., & Miller, G. R. (1971). Prior attitude and language intensity as predictors of message style and attitude change following counterattitudinal advocacy. *Journal of Personality and Social Psychology, 20*, 246-253.
- Burgoon, M., & Miller, G. R. (1987). An expectancy interpretation of language and persuasion. In H. Giles & R. N. St. Clair (Eds.), *Recent advances in language, communication, and social psychology* (pp. 199-229). Hillsdale, NJ: Lawrence Erlbaum.
- Capron, H. L. (1990). *Computers: Tools for an information age* (2nd ed.). Redwood City, CA: Benjamin & Cummings.
- Chidambaram, L., Bostrom, R. P., & Wynne, B. E. (1991). A longitudinal study of the impact of group decision support systems on group development. *Journal of Management Information Systems, 7*(3), 7-25.
- Connolly, T., Jessup, L. M., & Valacich, J. (1990). Idea generation in a GDSS: Effects of anonymity and evaluative tone. *Management and Science, 36*, 97-120.
- Culnan, M. J., & Markus, M. L. (1987). Information technology. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication* (pp. 420-444). Newbury Park, CA: Sage.
- Danowski, J. (1982). Computer mediated communication: A network based content analysis using a CBBS conference. In M. Burgoon (Ed.), *Communication yearbook, 6* (pp. 905-924). Newbury Park, CA: Sage.
- Danowski, J., & Edison-Swift, P. (1985). Crisis effects on intraorganizational computer based communication. *Communication Research, 12*, 251-270.
- Dennis, A., Heminger, A., Nunamaker, J., & Vogel, D. (1990). Bringing automated support to large groups: The Burr-Brown experience. *Information and Management, 18*, 111-121.
- Eisenberg, E. M. (1984). Ambiguity as strategy in organizational communication. *Communication Monographs, 51*, 227-242.
- Ellis, D. G. (1982). Language and speech communication. In M. Burgoon (Ed.), *Communication yearbook 6* (pp. 34-62). Beverly Hills, CA: Sage.
- Ellis, D. G. (1992). Syntactic and pragmatic codes in communication. *Communication Theory, 2*, 1-23.
- Ellis, D. G., & Hamilton, M. (1985). Syntactic and pragmatic code usage in interpersonal communication. *Communication Monographs, 52*, 264-279.
- Erickson, B., Lind, A. E., Johnson, B. C., & O'Barr, W. M. (1978). Speech style and impression formation in a court setting: The effects of "powerful" and "powerless" speech. *Journal of Experimental Social Psychology, 14*, 266-279.
- Fowler, G., & Wackerbarth, M. (1980). Audio teleconferencing versus face to face conferencing: A synthesis of literature. *Western Journal of Speech Communication, 44*, 236-252.
- Gleicher, F., & Petty, R. E. (1992). Expectations of reassurance influence the nature of fear-stimulated attitude change. *Journal of Experimental Social Psychology, 28*, 86-100.

- Goffman, E. (1959). *The presentation of self in everyday life*. Garden City, NY: Doubleday.
- Gouran, D. (1982). *Making decisions in groups*. Glenview, IL: Scott Foresman.
- Granberg, D. (1982). Social judgment theory. In M. Burgoon (Ed.), *Communication yearbook 6* (pp. 304-329). Beverly Hills, CA: Sage.
- Granberg, D., & Aboud, J. (1969). A contextual effect in judgments of visual numerosness. *American Journal of Psychology*, 82, 221-227.
- Grohowski, R. B., McGoff, C., Vogel, D. R., Martz, W. B., & Nunamaker, J. F., Jr. (1990). Implementation of electronic meeting systems at IBM. *MIS Quarterly*, 14, 369-383.
- Hardwig, J. (1985). Epistemic dependence. *Journal of Philosophy*, 82, 335-349.
- Hellerstein, L. (1986, November). *Electronic messaging and conferencing with an emphasis on social use: An exploratory study*. Presented at the Speech Communication Association Conference, Chicago, IL.
- Hiemstra, G. (1982). Teleconferencing, concern for face, and organizational culture. In M. Burgoon (Ed.), *Communication yearbook 6* (pp. 874-904). Newbury Park, CA: Sage.
- Hiltz, S. R., & Turoff, M. (1978). *The network nation*. Reading, MA: Addison-Wesley.
- Hirokawa, R. Y., & Scheerhorn, D. R. (1986). Communication in faulty group decision making. In R. Y. Hirokawa & M. S. Poole (Eds.), *Communication and group decision-making* (pp. 63-80). Beverly Hills, CA: Sage.
- Hosman, L. A. (1989). The evaluative consequences of hedges, hesitations, and intensifiers: Powerful and powerless speech styles. *Human Communication Research*, 15, 383-406.
- Hosman, L. A., & Wright, J. W., II (1987). The effects of hedges and hesitations on impression formation in a simulated courtroom context. *Western Journal of Speech Communication*, 51, 173-188.
- Hovland, C., & Sherif, M. (1957). Assimilation and contrast effects in reactions to communication and attitude change. *Journal of Abnormal and Social Psychology*, 55, 244-252.
- Infante, D. A., Rancer, A. S., & Womack, D. F. (1990). *Building communication theory*. Prospect Heights, IL: Waveland.
- Jablin, F. M., & Seibold, D. R. (1978). Implications for problem solving groups of empirical research on "brainstorming": A critical review of the literature. *Southern States Speech Communication Journal*, 43, 327-356.
- Jacobs, S. (1985). Language. In M. L. Knapp & G. R. Miller (Eds.), *Handbook of interpersonal communication* (pp. 313-343). Newbury Park, CA: Sage.
- Jessup, L. M., Connolly, T., & Tansik, D. A. (1990). Toward a theory of automated group work: The deindividuating effects of anonymity. *Small Group Research*, 21, 333-348.
- Jessup, L. M., & Valacich, J. S. (1993). *Group support systems: New perspectives*. New York: Macmillan.
- Johansen, R. (1988). *Groupware*. New York: Free Press.
- Johansen, R. (1989, November). *Groupware: Future directions and wild cards*. Paper presented at the meeting of Organizational Computing, Coordination, and Collaboration, IC Institute, University of Texas, Austin.
- Kiesler, S., Siegel, J., & McGuire, T. W. (1984). Social psychology aspects of computer-mediated communication. *American Psychologist*, 39, 1123-1134.
- Kirkpatrick, D. (1992, March 23). Here comes the payoff from PCs. *Fortune*, pp. 93-102.
- Knapp, M. L. (1984). *Interpersonal communication and human relationships*. Boston: Allyn & Bacon.
- Knapp, M. L., Ellis, D. G., & Williams, B. A. (1980). Perceptions of communication behavior associated with relationship terms. *Communication Monographs*, 47, 262-278.
- Lea, M., & Spears, R. (1992). Social influence and the influence of social in computer-mediated communication. In M. Lea (Ed.), *Contexts of computer-mediated communication* (pp. 30-65). New York: Harvester Wheatsheaf.
- Lee, M. T., & Ofshe, R. (1981). The influence of behavioral style and status characteristics on social influence: A test of two competing theories. *Social Psychology Quarterly*, 44, 73-82.
- March, J. G., & Shapira, Z. (1992). Behavioral decision theory and organizational decision theory. In M. Zey (Ed.), *Decision making: Alternatives to rational choice models* (pp. 273-303). Newbury Park, CA: Sage.
- McCroskey, J. C., Holdridge, W., & Toomb, J. K. (1974). An instrument for measuring the source credibility of basic speech communication instructors. *The Speech Teacher*, 23, 26-33.
- McCroskey, J. C., Jensen, T., & Valencia, C. (1973, June). *Measurement of credibility of peers and spouses*. Paper presented at the meeting of the International Communication Association, Montreal.
- McCroskey, J. C., & McCain, T. A. (1974). The measurement of interpersonal attraction. *Speech Monographs*, 4, 261-266.
- Meyers, R. A., Seibold, D. R., & Brashers, D. E. (1991). Argument in initial group decision-making discussion: A refinement of a coding scheme and a descriptive quantitative analysis. *Western Journal of Speech Communication*, 55, 47-68.
- Morrill, C., & Facciola, P. C. (1992). The power of language in adjudication and mediation: Institutional contexts as predictors of social evaluation. *Law and Social Inquiry*, 17(2), 191-212.
- Newcombe, N., & Arnkoff, D. B. (1979). Effects of speech style and sex of speaker on person perception. *Journal of Personality and Social Psychology*, 37, 1293-1303.
- Newton, D. A. (1988). *Influence strategies used by relational partners during disagreements*. Unpublished doctoral dissertation, University of Arizona.
- Newton, D. A., & Burgoon, J. K. (1990). The uses and consequences of verbal influence strategies during interpersonal disagreements. *Human Communication Research*, 16, 477-518.
- Nunamaker, J., Dennis, A. R., Valacich, J. S., Vogel, D. R., George, J. F. (1991). Electronic meeting systems to support group work. *Communications of the ACM*, 34(7), 40-61.
- Nunamaker, J., Vogel, D., & Konsynski, B. (1989). Interaction of task and technology to support large groups. *Decision Support Systems*, 5, 139-152.
- O'Barr, W. M. (1982). *Linguistic evidence*. New York: Academic Press.
- O'Keefe, B. J. (1988). The logic of message design. *Communication Monographs*, 55, 80-103.
- Ong, W. J. (1982). *Orality and literacy*. London: Methuen.
- Pedhazur, E. J. (1982). *Multiple regression in behavioral research*. Fort Worth, TX: Holt.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 19). New York: Academic Press.
- Plous, S. (1993). *The psychology of judgement and decision making*. New York: McGraw-Hill.
- Poole, M. S., & DeSanctis, G. (1990). Understanding the use of group decision support systems: The theory of adaptive structuration. In J. Fulk & C. Steinfield (Eds.), *Organizations and communication technology* (pp. 173-193). Newbury Park, CA: Sage.

- Poole, M. S., Holmes, M., Watson, R., & DeSanctis, G. (1993). Group decision support systems and group communication: A comparison of decision making in computer-supported and nonsupported groups. *Communication Research, 20*, 176-213.
- Poole, M. S., Seibold, D. R., & McPhee, R. (1985). Group decision making as a structural process. *Quarterly Journal of Speech, 71*, 74-102.
- Rice, R. E. (1984). Mediated group communication. In R. E. Rice & Associates (Eds.), *The new media: Communication, research, and technology* (pp. 129-156). Beverly Hills, CA: Sage.
- Rice, R. E. (1987). Computer-mediated communication and organizational innovation. *Journal of Communication, 37*, 65-94.
- Rice, R. E., & Blair, J. (1984). New organizational media and productivity. In R. E. Rice & Associates (Eds.), *The new media: Communication, research, and technology* (pp. 185-216). Beverly Hills, CA: Sage.
- Rice, R. E., & Case, D. (1983). Computer based messaging in the university: A description of use and utility. *Journal of Communication, 33*, 131-152.
- Rice, R. E., Chang, S. J., & Torbin, J. (1992). Communicator style, media use, organizational level, and use and evaluation of electronic messaging. *Management Communication Quarterly, 6*, 3-33.
- Rice, R. E., & Love, G. (1987). Electronic emotion. *Communication Research, 14*, 85-108.
- Ridgeway, C. L., & Berger, J. (1986). Expectations, legitimation, and dominance behavior in task groups. *American Sociological Review, 51*, 603-617.
- Scott, C. R. (1992, May). *An examination of perceived influence and process, role, and outcome satisfaction in a group decision support system meeting*. Paper presented at the annual meeting of the International Communication Association, Miami.
- Sherif, M., & Hovland, C. (1953). Judgmental phenomena and scales of attitude measurement: Placement of items with individual choice of number of categories. *Journal of Abnormal Psychology, 48*, 135-141.
- Sherif, M., & Hovland, C. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. New Haven, CT: Yale University Press.
- Sherif, M., Taub, D., & Hovland, C. (1958). Assimilation and contrast effects of anchoring stimuli on judgments. *Journal of Experimental Psychology, 55*, 150-155.
- Short, J. (1974). The effect of medium of communication on experimental negotiation. *Human Relations, 27*, 225-234.
- Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunication*. London: Wiley.
- Siegel, J., Dubrovsky, V., Kiesler, S., & McGuire, T. (1986). Group processes in computer mediated communication. *Organizational Behavior and Human Decision Processes, 37*, 157-187.
- Sproull, L., & Kiesler, S. (1986). Reducing social context cues: Electronic mail in organizational communication. *Management Science, 32*, 1492-1512.
- Steinfeld, C. (1986). The social dimensions of computer mediated communications. In M. McLaughlin (Ed.), *Communication yearbook 9* (pp. 777-804). Newbury Park, CA: Sage.
- Street, R. L., Jr., & Giles, H. (1982). Speech accommodation theory: A social cognitive approach to language and speech behavior. In M. Roloff & C. R. Berger (Eds.), *Social cognition and communication* (pp. 193-226). Beverly Hills, CA: Sage.
- Valacich, J. S., Dennis, A. R., & Nunamaker, J. F. (1992). Group size and anonymity effects on computer-mediated idea generation. *Small Group Research, 23*, 49-73.

- Vogel, D., Martz, B., Nunamaker, J., Grohowski, R., & McGoff, C. (1990). Electronic meeting system experience at IBM. *Journal of Management Information Systems, 6*, 25-43.
- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research, 19*, 52-90.
- Walther, J. B., & Burgoon, J. K. (1992). Relational communication in computer-mediated interaction. *Human Communication Research, 19*, 50-88.
- Watzlawick, P., Beavin, J. B., & Jackson, D. D. (1967). *Pragmatics of human communication*. New York: Norton.
- Weick, K. E. (1979). *The social psychology of organizing*. New York: Random House.
- Williams, E. (1978). Teleconferencing: Social and psychological factors. *Journal of Communication, 28*, 125-131.
- Wright, J. W., II, & Hosman, L. A. (1983). Language style and sex bias in the courtroom: The effects of the male and female use of hedges and intensifiers on impression formation. *Southern Journal of Speech Communication, 48*, 137-152.

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