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Studying verbal interaction on the Internet: The case of rumor transmission research

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This paper describes the advantages of computer-mediated communication networks (Internet, Bitnet, and Usenet) in the study of verbal interaction. Research involving observation and analysis of rumor transmission patterns is presented as an illustration. Issues related to the generalizability of findings and the ethics of observational research are also briefly discussed.

Computer-mediated communication (CMC) networks, such as the Internet, offer an exciting opportunity to researchers interested in studying linguistic and sociopsychological characteristics of verbal interaction in a naturalistic setting. Millions of people interact daily on the Internet, Bitnet, and Usenet networks (collectively referred to as CMC networks in this paper), with a large part of this interaction involving informal communication in public discussion forums. This provides researchers with a setting in which interpersonal communication can be observed and analyzed.

There are three primary advantages that make CMC networks attractive to social, behavioral, and linguistic researchers. First, as mentioned above, they provide access to a naturalistic setting. Second, computer technology facilitates data collection and transcription by storing the interaction (Beals, 1992). Finally, the most important advantage of CMC networks is that they allow unobtrusive observation in a setting that is ethically defensible. In the following section, I document these advantages of CMC networks for observational research of verbal interaction by citing recent work involving rumor interaction patterns.

RUMOR TRANSMISSION RESEARCH

One of the most influential contributions in the area of rumor transmission was that of Allport and Postman (1947), presented in their classic text *The Psychology of Rumor*. Allport and Postman adopted the serial transmission procedure to study rumor transmission in a classroom demonstration setting. This procedure was originally used by Stern (1902) and Bartlett (1932) to study memory processes. In this procedure, involving 6 or 7 participants, a narrative was transmitted from one person to another in a one-way chain, and the distortions that appeared in the retelling were analyzed.

The use of the serial transmission procedure for studying rumor transmission has been criticized (e.g., by Buckner, 1965; DiFonzo, Bordia, & Rosnow, 1994; Rosnow, 1980; and Shibutani, 1966). The primary criticism concerns inadequacies in mundane realism of the experimental procedure (*mundane realism* refers to "the extent to which laboratory events are likely to occur in a naturalistic setting"; Rosenthal & Rosnow, 1991, p. 624). The participants are not allowed to repeat, seek clarification, question, or interact with each other. This restriction is unlike what occurs in everyday conversation, in which people, upon hearing a rumor, react, interact, and respond in various ways. Further, as Allport and Postman (1947) conceded, there is an absence of motivational involvement of the kind that exists in everyday rumor transmission.

An Observational Study of a CMC Discussion

In the past, in spite of the discontent with the laboratory study of rumor transmission, naturalistic observation of this phenomenon was never carried out. Indeed, a program of research by Rosnow and coworkers identified individual level variables of anxiety, uncertainty, and credulity as determinants of rumor transmission (see Rosnow, 1991, for a review). However, the interactive nature of rumor transmission was never studied, the predicament being how to obtain naturalistic data unobtrusively. In order to observe and record a rumor interaction, a researcher would have to anticipate the likelihood of a rumor discussion. Even if the researcher happened to witness a rumor discussion, the conversation would have to be recorded without the knowledge of the participants for it to be truly unobtrusive. More recently, CMC networks have provided the opportunity to study a rumor discussed within a Bitnet discussion group.

The transcript of this entire discussion, which lasted 6 days, provided Bordia and Rosnow (1995) with the raw data to study rumor interaction patterns. Statements made in the process of rumor transmission reflected variables previously identified in rumor research (Rosnow, 1991). Anxiety was expressed in the form of statements which we call *apprehensive statements*. Uncertainty was reflected in *interrogatory statements* (i.e., questions seeking information), and credulity was evidenced in statements that implied *belief* or *disbelief* in the rumor. Tentativeness or hesitancy in discussing the rumor was reflected in *qual-*

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ifiers, such as "This may or may not be true," or "I have heard . . . ," etc. These particular qualifiers can be labeled *prudent statements*, because they indicate an attempt at avoiding responsibility for what the person said. Further, opinions or information passed on were bolstered with references to credible sources such as the news media. Such statements can be termed *authenticating statements*.

Bordia and Rosnow (1995) studied the frequency and pattern over time of each of these statements. They performed a content analysis using the operationalizations noted above. They also ran a cluster analysis on the individual postings (i.e., a complete message sent to a discussion group) to identify communication styles that people adopted when transmitting rumors. A profile was obtained for each cluster, based on the occurrence of the five kinds of statements.

This observational study led to several interesting results. The presence of *apprehensive*, *interrogatory*, and *belief* and *disbelief* statements provided support and triangulation for previous findings which were based on self-report measures. Also, the content analysis revealed some interesting patterns. For example, the frequency of prudent statements was high in the beginning. Thus the participants were more careful early on, qualifying what they said with statements such as "this may or may not be true." However, as the discussion progressed, discretion was reduced, possibly as a result of the realization that others shared the same interests and concerns. The cluster analysis led to the identification of communication styles, which were previously referred to by Shibutani (1966), but which had never been empirically derived.

This research underscores my point about the three advantages of CMC network generated data. First, the network provides a unique opportunity to observe naturalistic rumor transmission, an opportunity unavailable to researchers in the past. Second, by automatically saving the interactions, the technology facilitates data acquisition. Finally, it ensures nonreactive nature of the data by enabling unobtrusive observation.

Searching for Rumors on the CMC Networks

Although the discovery of the rumor analyzed in Bordia and Rosnow (1995) was serendipitous, future research in this area need not rely on chance findings. In a continuing program of research, I have been able to find several rumors that vary in length, content, and type, by monitoring newsgroups on Usenet and by searching archives on Internet and Bitnet. Several tools and techniques (such as the Veronica utility on Gopher) are available for searching the Internet (Hahn & Stout, 1994). Further, because they are menu driven, these tools are easy to use. Bitnet discussion groups are a little more complicated to search; this search process is described in the Appendix.

GENERALIZABILITY AND ETHICAL ISSUES IN CMC OBSERVATIONAL RESEARCH

Although CMC networks present research opportunities not previously available to investigators, certain caveats need to be addressed. The first regards the generalizability of the findings in the CMC domain to other communication contexts, such as face-to-face (FTF) interaction. The second involves the ethical issue of invasion of privacy in observational research.

CMC Versus FTF Communication

A detailed review of the literature comparing CMC and FTF communication is beyond the scope of this paper (see Bordia, in press, for a review). Briefly, social psychological studies comparing CMC with FTF communication in the 1980s suggested that CMC was less socially oriented than FTF communication, leading to attenuated social pressures and increased uninhibited behavior (Kiesler, Siegel, & McGuire, 1984). However, more recent work has criticized earlier research for generalizability limitations associated with the use of short-term groups of largely unacquainted undergraduate students, who had little experience in CMC (Lea, 1992). Longitudinal studies comparing CMC and FTF communication reported that, over time, differences between CMC and FTF communication decreased (Walther & Burgoon, 1992). Eklundh (1986), in a study of the style of communication in CMC, reported that computer communication is a combination of written and oral styles of communication.

In addition to the sociopsychological and linguistic factors, there are certain basic structural differences in the kinds of communication observed in CMC networks and FTF communication. First, CMC communication is asynchronous. That is, the interchange between people is spread over a period of several days. This allows for uninterrupted and more thought out, often longer, verbalizations. Second, the group discussion forum makes the context more like a pub or a living room, so that it should be distinguished from FTF communication in dyads.

The self-selection bias inherent in a group of people communicating via computers also needs to be acknowledged. In spite of the growing number of people who use computer communication, computers are still available to only a certain segment of the society. According to one survey, approximately 30 million people used the Internet in 1994. Of these, only about 3 million were private consumers. The rest were attached to business organizations, government, or academia (Bournellis, 1995).

Ethical Issues

The primary advantage of CMC network generated data is that they enable unobtrusive observation of verbal behavior, but this raises the ethical issue of invasion of privacy. The type of CMC studied in the rumor research described above was in public discussion forums, however, and presumably the participants were aware that their verbalizations were public domain. The researcher was not snooping on private conversations, such as e-mail between two people, but was one of several people watching a public discussion (in case of on-going discussions) or studying the proceedings of a discussion (in case of archived discussions). In addition, participant

confidentiality was maintained by not identifying individual participants or reproducing large segments of their postings. Rather, the postings were only subjected to statistical analysis, with results presented in the form of aggregates.

Nevertheless, with increasing amounts of private information available on computer databases and in computer archives, there is a potential for the abuse of privacy rights of consumers and employees in the workplace. Rules and regulations guiding researchers have not kept pace with the opportunities that are available as a result of advances in technology (Kiesler, Walsh, & Sproull, 1992). Researchers should be sensitive to the rights of privacy and informed consent when dealing with data in the form of private communications on the CMC networks.

SUMMARY

Progress in science has always been spurred by technological advances facilitating observation and measurement of phenomena. Computer communication offers a new venue to psychologists and linguists studying interpersonal communication. It facilitates data collection and transcription by automatically storing the interaction. But more importantly, it opens new avenues of research by making naturalistic, unobtrusive, and ethical observation possible.

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APPENDIX

The following information on searching Bitnet discussion groups is based on *Listserv: Database Functions* (Thomas, 1988), *Listserv Refcard* and *Lsvguide Memo* (all three documentations are available from most listservs), and Roadmap Workshop Distribution List (Crispen, 1994). Several discussion groups on the Bitnet are archived. Certain activities such as the distribution of messages on these groups are managed by a program called Listserv (Hahn & Stout, 1994). This program allows a user to search its archives by using a keyword or even a phonetic ("sounds like") search.

The first step in the search for rumors was to find out which of the discussion groups managed by a Listserv at a particular site were archived. This information was obtained by sending the message "database list" to the Listserv, which responded by sending a list of archived discussion groups. Next, each of the archived discussion groups was individually searched by sending the following five line command in the Listserv command language:

```
//db JOB ECHO=NO
DATABASE SEARCH DD=cmd
//cmd DD *
SEARCH RUMOR IN RUMDIS
INDEX
PRINT
/*
```

—where RUMOR is the keyword to be searched, in the archives of the fictional discussion group RUMDIS. If there is an occurrence of the word *rumor* in any of the archived postings, the Listserv sends back a list of postings with the keyword in them.

The archives typically consist of postings saved in files, each file consisting of all the postings in a given time period, such as a month. Thus, in the final step, the entire discussion of that rumor can be obtained by retrieving the file that contains the discussion.

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