



Invisible Whispering: Restructuring Collaborative Decision Making with Instant Messaging

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ABSTRACT

Organizational decision making is dominated by teams. When an important decision is required, a team is often formed to make it or to advise the individual decision maker, because a team has more resources, knowledge, and political insight than any one individual working alone. As teams have become geographically distributed, collaboration technology has come to play an important role in such collective decision making efforts. Instant messaging (IM) is an increasingly prevalent workplace collaboration technology that enables near-synchronous text exchanges on a variety of devices. We examined the use of IM during face-to-face, telephone, and computer-mediated team meetings, a practice we call “invisible whispering.” We introduce Goffman’s characterization of social interaction as dramatic performance, differentiable into “front stage” and “backstage” exchanges, to analyze how invisible whispering alters the socio-spatial and temporal boundaries of team decision making. Using IM, workers were able to influence front stage decision making through backstage conversations, often participating in multiple backstage conversations simultaneously. This type of interaction would be either physically impossible or socially constrained without the use of IM. We examine how invisible whispering changes the processes of collaborative decision making and how these new processes may affect the efficiency and effectiveness of collaborative decision making, as well as participation, satisfaction, relationships among team members, and individual attention.

Subject Areas: Collaborative Decision Making, Team Decision Making, and Virtual Teams.

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INTRODUCTION

All the world's a stage,
 And all the men and women merely players:
 They have their exits and their entrances;
 And one man in his time plays many parts,

—Shakespeare, *As You Like It*.

When truly important decisions have to be made, a team is usually formed to make the decision or advise the individual who must make it (Hackman & Kaplan, 1974). As organizational teams have become increasingly distributed, collaboration technologies have been used to transcend physical barriers to interaction in team decision making (Lipnack & Stamps, 2000). Specifically, these technologies can create new communicative boundaries and reconfigure existing ones (Orlikowski & Yates, 1994). Communicative boundaries influence the content and process of collaborative decision making, whether in one-to-one, many-to-many, or hybrid communication contexts (DeSanctis & Gallupe, 1987). Thus changing these boundaries has the potential to restructure collaborative decision-making processes, likely altering the outcomes, even when the actors involved are unchanged (DeSanctis & Gallupe, 1987; DeSanctis & Poole, 1994; Dennis, Wixom, & Vandenberg, 2001).

Instant messaging (IM) is one of the most rapidly proliferating collaborative technologies in use today (Isaacs, Walendowski, Whittaker, Schiano, & Kamm, 2002; Shiu & Lenhart, 2004; Flanagin, 2005). Though it presents features similar to both e-mail (e.g., text) and telephone communication (e.g., synchronicity), IM's unique structural features enable IM users to engage in novel collaborative decision-making activities, such as multiple, simultaneous, private conversations, that would otherwise not be physically possible in geographically distributed meetings nor socially acceptable in face-to-face settings. The number and diversity of simultaneous conversation configurations using IM is generally limited only by the user's cognitive capacity or facility with the technology.

In this article, we report findings from an interview study of workplace IM use with 23 individuals from two organizations. We began our research with the intention of studying the general use of IM for collaborative decision making, but the focus of the study quickly shifted to one specific use of IM. The study revealed a widespread practice we refer to as "invisible whispering"—the use of IM during face-to-face or teleconference meetings to communicate privately with one or more individuals. Through invisible conversations with attendees of the same meeting, information sources outside the meeting, or ancillary business and social contacts, meeting participants can fundamentally alter the social and spatial boundaries of the meeting and dynamically (re)structure the content and temporal structuring of collaborative decision making.

The purpose of this article is to understand how invisible whispering alters the processes of collaborative decision making and how those changed processes may result in different outcomes. After summarizing the relevant literature, we illustrate the practice of invisible whispering with several examples, drawing on Erving Goffman's (1959, 1974/1986) theatrical framing of social action as a lens to illuminate the changes effected by these invisible conversations on

decision-making meeting processes and boundaries. Next we build a taxonomy of six types of invisible whispering conversations and consider their impacts on collaborative decision-making processes. We then discuss the potential implications of these process changes for the collaborative decision-making outcomes and suggest directions for further study.

PRIOR RESEARCH AND THEORY

We begin with a brief review of research on the use of collaboration technology in decision making. We then examine IM, the structural features it offers that enable new communication configurations, and the key findings of IM studies to date. Finally, we introduce the concepts of “front stage” and “backstage” behavior, from Goffman’s (1959) theatrical analyses of social interaction, to provide both a lens and a vocabulary for describing and analyzing the changes in social structures and processes enabled by IM use.

Collaborative Decision Making

Scheduled collaborative decision-making meetings are typically bounded social structures characterized by norms for attending, contributing, and intruding (Volkema & Niederman, 1995). Participants are invited (or required) to attend and each person’s presence is known to the other attendees. Face-to-face meetings are characterized by a high degree of visibility. Uninvited parties, such as someone delivering a telephone message or summoning a participant, typically do so only in response to situations of perceived urgency.

The rules governing meeting participation may range from strict adherence to Robert’s Rules of Order to “free for all,” depending upon the organizational context and the nature of a particular meeting, but there is social pressure to adhere to established norms, with deviators likely to be ignored or subtly disciplined. Side conversations, a common occurrence that is nevertheless often discouraged in such meetings, are visible and potentially audible to the other attendees, providing opportunities for both collective awareness and social control (Ruhleder & Jordan, 2001; Larsson, Torlind, Mabogunje, & Milne, 2002). For instance, observing side conversations during a meeting can alert an attendee to the formation of coalitions or fault lines in the group that might affect meeting outcomes (Beise, Niederman, & Beranek, 1999). Furthermore, if a side conversation becomes too distracting or if the participants’ lack of attention to the main meeting hinders progress, the meeting organizer may ask those participants to defer the side conversation until after the main meeting (Straus, 2000).

The use of collaboration technology to support collaborative decision making has often been modeled on the traditional face-to-face meeting with the objective of either enhancing traditional meetings, such as through the use of “smart” whiteboards and group support systems, or enabling meetings among physically dispersed participants, such as Web conferencing (DeSanctis & Gallupe, 1987; Nunamaker, Dennis, Valacich, Vogel, & George, 1991; DeSanctis & Poole, 1994; Dennis et al., 2001). A collaboration technology is composed of both a spirit and structural features. The spirit of the collaboration technology is the general intent

of its structural features and is broadly defined to include the system design, its features, user interface, and training materials (DeSanctis & Poole, 1994). The spirit of many collaboration technologies is to promote a meeting process that makes information equally available to all participants, facilitates contributions from all participants, and synthesizes all contributions into a coherent whole that can be viewed simultaneously (DeSanctis & Gallupe, 1987; Nunamaker et al., 1991; Dennis & Garfield, 2003).

Structural features are the specific components of the technology, their capabilities, and the “specific types of rules and resources, or capabilities, offered by the system” (DeSanctis & Poole, 1994, p. 126). Most collaboration technologies enable text communication, which can provide three structural features that may promote more participative interaction: parallelism, meeting memory, and process structure (Zigurs & Buckland, 1998; Nunamaker et al., 1991). Parallelism is the ability for members to exchange information simultaneously. Everyone can type at the same time, so no one needs to wait for others before contributing as they do verbally. Parallelism reduces production blocking, caused by individuals needing to wait their turn and thus being blocked from putting forward their own ideas (Diehl & Stroebe, 1987; Dennis, 1996), but it can also increase information overload and reduce a group member’s ability to pay attention to information (Dennis, 1996; Schultze & Vandenbosch, 1998). A *meeting memory* means that all typed comments are stored, which may increase the equality of participation because every comment that is entered is saved (Nunamaker et al., 1991). The group as a whole owns its memory instead of having one person take notes and be in charge of their collection and distribution. A collaboration technology may also enable the group to explicitly structure their work processes (Nunamaker et al., 1991; Zigurs & Buckland, 1998). Process structure helps a group organize the way in which they work via the development and adjustment of an agenda that the group can follow to perform the assigned task (Zigurs & Buckland, 1998).

Past research has shown considerable variability in the outcomes from using collaboration technology (Fjermestad & Hiltz, 1999; Dennis, Wixom, & Vandenberg, 2001). Studies that focused on groups using a collaboration technology for the first time found that it increased the time needed to make decisions (Fjermestad & Hiltz, 1999; Dennis et al., 2001), while studies of groups with past experience with a given technology (or groups that had expert guidance), have found that its use reduced the time needed to make decisions (Dennis et al., 2001). Experience does not, however, correlate with decision quality. Use of collaboration technology does typically improve satisfaction with the decision-making process (Dennis et al., 2001).

IM

As defined by Nardi, Whittaker, and Bradner (2000), IM is a “tool which allows for near-synchronous computer-based one-on-one [or one-to-many] communication” (p.2) between online parties. It differs from e-mail in that it is a peer-to-peer application, unmediated by a server repository. While currently one of the largest Internet applications, IM began as a predominantly youth-oriented tool (Quan-Haase, 2008). Indeed, teenagers and young adults remain the largest group of IM

adopters (Shiu & Lenhart, 2004; Lenhart, Madden, & Hitlin, 2005; Valkenburg & Peter, 2007). IM is now part of the everyday lives of millions of Internet users and the technology's use has become a central facet of their daily reality (Zhao, 2006; Quan-Haase, 2008). Shiu and Lenhart (2004) found that more than 50 million Americans used IM—42% of the then-current population of U.S. Internet users. Since then, the number of IM users has grown. Depending upon how one defines an IM “user” and what data source one quotes, there may be more than one billion IM users today (Wikipedia, 2009). Many users have more than one IM account on different services (e.g., AOL, MSN, Skype), so this total probably overstates the number of unique IM users. Nonetheless, IM is becoming integral to workplace collaboration.

IM has predominantly been a tool of social collaboration, typically by teenagers and young adults (Huang & Yen, 2003; Flanagin, 2005; Valkenburg & Peter, 2007). However, its use is spreading into the workplace (Chen, 2003; Cunningham, 2003; Shiu & Lenhart, 2004; Lin, Chan, & Wei, 2006; Willkins, 2007). In 2008, Gartner Research estimated that IM was used in over 90% of organizations (Smith & Lundy, 2008).

In the United States, IM use has grown faster than that of e-mail (Flanagin, 2005). In some firms, IM is already more extensively used than e-mail (e.g., Turner & Tinsley, 2002), and International Data Corporation estimates that IM use will surpass e-mail use within businesses by early 2011 (Adduci et al., 2008). IM may be so ingrained as part of the organizational fabric that organizational norms favor IM use (Turner & Tinsley, 2002). Some experts predict that it is only a matter of time before organizations issue IM accounts to new employees in the same way they have long-issued e-mail accounts (Swartz, 2005).

Although IM shares many of the features of the collaborative decision-making technologies that have preceded it (e.g., group support systems, e-mail), the technology's distinct characteristics suggest that it may engender new applications. IM is similar to prior collaboration technologies in that it enables users to send text messages to other users in parallel with many users exchanging messages simultaneously. As the name suggests, IM was originally conceived of as a synchronous tool, but today it can also be used asynchronously (Huang & Yen, 2003; Chung & Nam, 2007). Although use is still most commonly synchronous, users can leave messages for others who are not immediately available, similar to the use of telephone voicemail. IM employs a very small text window for messages, so most messages are quite short.

Drawing on prior characterizations of communicative media (Sproull & Kiesler, 1991; Daft, Lengel, & Trevino, 1987), we identified four structural features of IM applications that, in combination, are particularly important in enabling new communicative practices: silent interactivity, presence awareness, polychronic communication, and ephemeral content. It is the silent interactivity of IM that makes invisible whispering possible. Similar to the telephone in its immediacy and interactivity, the silence of text-based IM, like other collaborative decision-making technologies, enables users to address ideas and questions when they occur without disrupting others or being overheard, even when in a public setting. Presence awareness via a dynamic directory of logged-in IM users, further enables whispering by making visible others who are available for communication (Perttunen &

Riekki, 2004; Li et al., 2005; Shaw, Scheuffle, & Catalano, 2007). This structural feature extends the set of potential communication partners because the directory is visible to and includes everyone logged into a common IM service. Users logged into the system as “available” while messaging with others, talking on the phone, or participating in meetings appear to be as receptive to incoming messages as those working in isolation at their desks. In addition, they are as available to customers, suppliers, and social friends as they are to coworkers, provided that they are logged into the same IM tool.

Like most collaboration technologies, IM also makes it possible to carry on multiple conversations in parallel, a practice Turner and Tinsley (2002) call “polychronic communication.” With IM, each conversation can have its own “pop-up” window on the user’s device screen, undetectable to each of his or her other IM communication partners. Users could be engaged simultaneously in IM conversations with coworkers, their boss, subordinates, and their spouse without the others knowing (Turner & Tinsley, 2002). The number of potential simultaneous conversations is limited only by a user’s capacity to manage them.

Finally, in many currently used IM systems, the interaction transcript is erased automatically when the users close the conversation window, although some systems permit users to save transcripts if they choose to do so (Cunningham, 2003; Li et al., 2005). This ephemerality of the message transcript is in sharp contrast to the meeting memory provided by most collaboration technologies. This structural feature plays a role in many users’ choosing IM rather than e-mail to communicate sensitive, embarrassing, humorous, or critical comments they would prefer not to be archived in the meeting record as would occur with traditional collaboration technology (Lovejoy & Grudin, 2003). Ephemerality may soon disappear, however, as designers build in archiving and transcript-searching capabilities to address managerial concerns about intellectual property protection and liability exposure (Poe, 2001; Chen, 2003; Cunningham, 2003; Lovejoy & Grudin, 2003).

Because of its relative novelty as a workplace communication tool, IM has only recently captured information systems researchers’ attention (Nardi et al., 2000; Isaacs et al., 2002; Cameron & Webster, 2005; Quan-Haase, Cothrel, & Wellman, 2005). Research to date has focused primarily on characterizing IM conversations, usage patterns, and users’ perceptions (Nardi et al., 2000; Isaacs et al., 2002; Volda, Erickson, Kellogg, & Mynatt, 2004) and the factors affecting its adoption and use (e.g., Chung & Nam, 2007). Findings suggest that IM is a more flexible medium than might have been predicted by its interface and structural features and is frequently used for expressive communication (Nardi et al., 2000; Volda et al., 2004). The availability of IM may also enable conversations that would not have occurred if IM had not been available (Cameron & Webster, 2005).

Though some studies do refer parenthetically to IM use during meetings (e.g., Quan-Haase et al., 2005; Woerner, Yates, & Orlikowski, 2007), the nature and implications of invisible whispering in such settings have not yet been explored. If we step outside the workplace and examine the IM literature more broadly, there are a few studies of such simultaneous use of text chat during team activities, which has been labeled “backchannel” IM communication (Cogdill, Fanderclai, Kilborn, & Williams, 2001). Cogdill et al. (2001) studied backchannel one-to-one IM conversations that occurred during class discussions held in a text-based multiuser

domain (a multiuser, online environment). Similarly, McCarthy and Boyd (2005) studied user perceptions of backchannel communication during presentation sessions at a professional conference. Other research has focused on the design of a user interface to make backchannel interaction more convenient (Yankelovich et al., 2005). These three studies show that backchannel interactions can be used to discuss both content and process issues, to encourage participation, and even to alleviate boredom. This research supports our perception that concurrent IM use in team contexts exists, but they offer little insight about whether (or how) IM affects collaborative decision-making processes in workplace settings.

Goffman's Dramaturgical Frame

In this study, we use Erving Goffman's (1959) studies of interpersonal interaction as a lens for exploring invisible whispering in IM-supported team decision making. Though based on face-to-face communication, Goffman's work provides a useful vocabulary for describing interaction practices regardless of the medium employed. The portion of his work particularly relevant to the phenomenon under study here is the conceptualization of social action as theater, segmented into front and back regions, or stages, differentiated from one another by (i) physical boundaries, (ii) behavioral expectations, and (iii) the nature of the relationships among the people copresent in the region.

Front stage behavior is characterized by the presence of an "audience," individuals who expect one's actions to be consistent with an official role and the relationship of that role to the audience. Social actors perceiving themselves to be in the presence of an audience tend to modify their behavior to be more consistent with an idealized notion of their formal role (e.g., team leader, technical expert). For instance, members of an organization may share a conception of a "good" team leader as someone who is "on top of things," keeps everyone informed, and runs a good meeting. Consequently, team leaders in such an organization, when in the presence of their team members, may try to behave in ways that they believe exhibit those traits and capabilities.

Backstage behavior, in contrast, is characterized by interactions among "teammates," people who share the same role with respect to the audience or who collaborate to foster the same impression (Meyrowitz, 1990). When backstage, actors relax the illusion of the idealized role and behave in ways that may be incongruent with a previously projected front stage persona. For instance, the team leader in the previous example, when out of visual and auditory range of team members, may acknowledge that he or she feels insecure about managing an emerging situation.

The same physical location may be experienced as either a front or back region depending upon the others present. For example, an informal hallway conversation between peers could begin as a backstage interaction but immediately be transformed into a front stage "performance" when joined by an audience, such as their boss or a customer.

In face-to-face situations, social actors are constrained, socially and physically, to participate serially in front and backstage conversations and actions; that is, to behave consistent with either one's front stage or one's backstage persona. In

fact, we depend upon audience segregation, whether by physical barriers, such as doors and walls, or by social conventions, such as establishing distance between conversation groups in an open setting, to enable variations in our behavior across roles. When boundaries are ambiguous or misinterpreted by one actor or another, front and backstage behaviors may inadvertently overlap, creating an uncomfortable “breach” of unwritten social agreements, such as when one’s boss or client overhears a disagreement with one’s spouse or child.

The integration of IM into meetings offers new possibilities for redrawing the boundaries between front stage and backstage. In this article, we explore the use of IM during face-to-face, and teleconference meetings to consider how IM use may affect the structuring of meeting boundaries and, ultimately, the efficiency and effectiveness of team decision-making processes.

METHOD

Participants

Our study is primarily an interview-based study, although we observed six face-to-face meetings as well. The interview participants were 23 managers and workers from two U.S.-based, globally distributed organizations whose members use IM on a daily basis. The two organizations offered variation in both industry and work tasks while the participants themselves were relatively similar with respect to education and experience using IM.

GlobalNet, a high-tech company, manufactures and sells computer products and consulting services to corporations, public institutions, and small businesses on a global level (All names are pseudonyms). The eleven GlobalNet participants—three managers and eight individual contributors ranging in age from 22 to mid-50s—worked in the educational services unit with roles in program development, operations support, and systems administration. The members of the systems administration group were colocated with one another and with their manager, but the members of the program development and operations support groups were geographically distributed. Interestingly, even members who lived in the same city and were based in the same organizational campus considered themselves to be “distributed” because they often worked from home. All three groups served remote internal and external customers with whom they communicated through a combination of media including telephone, e-mail, and IM. At the time of our study, the educational services unit had been using AmericaOnline Instant Messenger (AIM), free software available through the Internet, for approximately three years. The newest members to the group had adopted AIM “within days of being hired,” one year prior to our study. Though the participants’ use of IM varied, each participant reported using IM at least daily.

PharmaCo develops and manufactures a broad spectrum of pharmaceutical products. Twelve PharmaCo members—two managers and ten individual contributors also ranging in age from 22 to mid-50s—represented two subgroups of the information technology (IT) services group: systems administration and IT auditing. The members of the systems administration group were colocated and worked with colocated internal customers. The members of the IT auditing group

Table 1: Summary of sample characteristics.

| Sample Characteristic | GlobalNet | PharmaCo |
|--|---|--|
| Number of participants | 11 interviewees - 3 managers (regional manager, marketing manager, program manager) | 12 interviewees - 2 managers (SAP implementation manager, information technology (IT) audit manager) |
| | - 8 knowledge workers (2 statistical report analysts, 3 technical support analysts, 3 marketing representatives) | - 10 knowledge workers (3 systems analysts, 4 auditors, SAP team coordinator, audit team coordinator, statistical report analyst) |
| Ages | 22 to mid-50s | 22 to mid-50s |
| Organizational role of workgroups | Educational services - Program development - Operations - Systems administration | IT services - Systems administration - IT audit |
| Physical configuration IM application | Primarily distributed AmericaOnline Instant Messenger (AIM) | Primarily colocated IBM SameTime |

were based in the same office as the systems administration group but worked remotely on an ad hoc basis when performing audits at other PharmaCo sites. Both groups communicated among themselves daily via a combination of face-to-face, telephone, e-mail, and IM exchanges. At the time of the study, the PharmaCo participants had been using IBM's SameTime, an IM tool bundled with Lotus Notes, for about 18 months. Though the intensity of use varied, 11 of the 12 participants reported using IM daily. Table 1 summarizes the participants at both organizations.

Data Collection

Due to the limited number of published studies of workplace IM use, we designed the study to be an exploration of IM use in the workplace, intended to capture the full range of its use. We observed a series of six meetings at GlobalNet that involved the same unit from which the interview participants were drawn, but this is primarily an interview-based study. Using an interview protocol based on descriptions of IM use in prior studies (Nardi et al., 2000; Isaacs et al., 2002) as our starting point, we used a semistructured approach to interview the eleven GlobalNet participants. During the interviews, we encouraged participants to demonstrate their use of IM to prompt articulation of practices that might only be evoked through activity (Duguid, 2005), including any additional ways they used IM that were not covered by our questions. Participants also often received instant messages during the

interview, providing an opportunity to observe their response practices and to ask additional questions.

In these interviews, we noted that most of the GlobalNet participants discussed IM use during meetings, a practice which we found interesting, with implications for both research and practice. We added explicit inquiries about IM use during meetings to the interview protocol for the 12 PharmaCo members. The final interview guide is provided in Appendix A.

Interviews in both organizations lasted approximately one hour each, and were conducted by two authors. Most interviews were conducted face-to-face, but some were conducted over the phone. During the interview, we made handwritten notes because neither organization permitted audio recording, capturing many verbatim quotes, which we later transcribed.

Data Analysis

A multistep analysis process was employed (Eisenhardt, 1989; Yin, 1994). We began with a general analysis of IM use in both organizations. This analysis provided a context for interpreting the more particular case of IM use during meetings in each organization. After the first round of interviews at GlobalNet, one author, who had not participated in the data collection, reviewed the interview note transcriptions and coded them in NVivo (a qualitative analysis software) using the topics of the interview guide as the initial categories (Appendix A presents the interview guide and Appendix B presents the initial coding scheme used in the analysis). In addition to participants' demographic information and job characteristics, these included "frequency of IM use," "purposes of IM messages," "heuristics for choosing IM" versus other available media, and perceptions of the "benefits" and "downsides" of IM use. During the coding process, the authors created additional categories and revised original code labels to more accurately represent the data. For instance, new categories included IM "as an adjunct to other media" and "expectations of response time." Some existing categories, such as benefits, were broken into more narrowly defined subcategories.

The interview guide was revised based on the revised coding scheme and the interviews at PharmaCo were conducted. After these interviews, the authors choose to focus on invisible whispering. The data from PharmaCo were coded by one coder. Another author, who had participated in data collection, reviewed the coding against the original transcripts and identified differences with the first coder. The two discussed each difference to determine final category definitions in the coding scheme. Then the entire data set was recoded using the revised coding scheme. Finally, the two authors reviewed these coding results and combined similar categories containing two or fewer entries. This coding provided a portrait of overall IM use that served as background for analyzing invisible whispering behavior. The final column in the table in Appendix B presents the final coding scheme.

Next we focused only on those categories associated with the use of IM in meetings. Using Goffman's framework, we defined front stage to be the focal meeting activity and any communication intended for all meeting participants and backstage to include any communication occurring during the meeting that was not

intended to involve all meeting participants. Then narrowing our focus once more to consider only the backstage interactions, we drew on the notions of genre and subgenre (Yates & Orlikowski, 1992) to analyze each example of backstage IM use. We identified six subgenres of backstage conversations differentiable by their purposes with respect to the focal meeting. We refined the subgenre definitions by reapplying the theatrical framework to consider the roles played by participants in each subgenre.

Finally, we used Goffman's framework and the identified subgenres to compare "single-channel" meetings (i.e., face-to-face, audioconference) with "dual-channel" settings (e.g., IM used in combination with the main meeting medium) to assess the nature and extent of the structural and process changes resulting from within-meeting IM use.

ANALYSIS

Invisible whispering was an integral part of the communicative infrastructure at both organizations. Even in face-to-face meetings where the behavior was obvious (i.e., a participant would focus on his or her laptop, type a message, and return his or her attention to the meeting), it was perceived as culturally appropriate. Invisible whispering was so common at GlobalNet—even in face-to-face meetings—that meeting organizers often included instructions for invisible whispering in the meeting announcement or at the start of the meeting:

The conference host will sometimes request that participants use the chat feature of WebEx [a web conferencing tool] rather than AIM to communicate with him or her. . . . Occasionally a meeting host will ask participants to refrain from using IM altogether. . . .

Because our data are from a single point in time in both organizations, 12 and 36 months after IM adoption, we do not have a definitive explanation for why or how such a use culture developed at each of the organizations. A key factor that likely played a role, however, was managers' modeling the practice and explicitly asking subordinates to use IM as a mechanism for crossing the communicative boundary of a meeting when the managers were in meetings. These actions sent a strong signal that invisible whispering was not just tolerated but expected.

We now look more closely at the actual practice of invisible whispering. We begin with a few examples to illustrate the diverse decision contexts in which invisible whispering occurred and users' concurrent enactment of multiple roles through participation on parallel stages. We then examine how these parallel conversations can alter the socio-spatial boundaries of a firm and affect the processes—and potentially the outcomes—of collaborative decision making.

Enacting Multiple Stages in Meetings

Four typical meetings—one series of face-to-face meetings and three telephone conference calls—illustrate the changes in participant roles and the collaborative decision-making processes resulting from the concurrent use of IM in the meeting.

The project review meeting

The project review meeting was a series of six face-to-face meetings over one day between various GlobalNet participants and an external two-person consulting team. The goal was to assess the prior year's work and to jointly develop a plan for the next year. The external consulting team had worked with GlobalNet for four years and was deeply familiar with the individuals and the corporate culture. Unlike the other meetings which were recounted to us in interviews, we observed these meetings.

All but one of the meetings were small meetings between the consulting team and one to three GlobalNet participants who had responsibility or expertise for the project; the sixth meeting was a presentation and discussion of the progress to date with all stakeholders. The small meetings were held in the offices or cubicles of the GlobalNet participants, so at least one GlobalNet participant had access to a computer; usually all GlobalNet participants brought their laptops into the meetings. The GlobalNet participants used invisible whispering to seek information for the consulting team from other GlobalNet employees and to adjust the consulting team's schedule as meetings ran short or long and other events occurred that required changes to the schedule.

Almost all GlobalNet participants also received IM messages during these meetings, most of which were not related to the consulting team's meeting. When this occurred, they would simply turn to their computers and read the message. About half the time, they would type a response and rejoin the conversation. Very rarely would a participant say "excuse me" (or the like) or even acknowledge that they had attended to a message.

The sixth meeting was a one-hour status report meeting in which the external consulting team presented their interim findings to a dozen GlobalNet participants. The consulting team used PowerPoint to present their results at the front of the room, while the GlobalNet participants listened and asked questions. All but two GlobalNet participants had laptops in use for invisible whispering. Most of the invisible whispering was for activities external to the meeting (e.g., answering questions unrelated to the meeting from those outside the meeting). In two cases, it was used to obtain information pertinent to the meeting from those external to the meetings. In both cases, a question arose that required information not known to the meeting participants. A meeting participant used IM to ask a staff member to locate the information, as the meeting continued. After a few minutes, the meeting participant provided the needed information to those in the meeting.

At least two GlobalNet participants used invisible whispering to discuss the consulting team's presentation. One lower level participant had a technical concern about part of the presentation, but was not sure if her concern was valid. Rather than interrupt the flow of the meeting, she chose to use IM to invisibly whisper her question to a more senior GlobalNet participant, who responded with an explanation as to why her concern was misplaced. As the more senior participant put it:

IM is not chatter. It is a meaningful business conversation.

This example illustrates the potential for invisible whispering to alter the temporal and socio-spatial boundaries in communication. First, it enabled participants, both in small and large meetings, to manage extra-meeting activities and decide if those activities needed to be dealt with immediately or could be postponed. Second, it enabled participants to influence collaborative decision making by bringing information from individuals outside the meeting into the meeting. Finally, it enabled participants to conduct a private discussion back stage that a junior participant was not comfortable bringing onto the public front stage.

The job interview

The job interview described to us by two members of one group was conducted via a telephone conference call. The audible interactions over the telephone that were accessible to everyone participating in the interview, including the interviewee, constituted the front stage. At the same time, all the interviewers had formed a “group” in IM prior to the interview, enabling the equivalent of a chat window that served as a collective backstage, invisible to the interviewee. In addition, the interviewers retained the ability to engage in one-to-one messaging among themselves as well as with anyone else logged into IM at the same time.

Although the group had developed a plan of questions prior to the interview, they used IM to modify the plan, changing the content and order of the questions (and questioners) on the fly in response to the candidate’s answers as described in the following comment:

She didn’t know as much about this one technical point as I thought she would and as we had agreed was needed for the position. So I shot off a message saying, ‘She doesn’t understand A. Skip the questions about B and go straight to C’.

By enabling the group to change the questioning strategy in the middle of the interview through backstage interactions, IM enabled them to change the information they sought from the candidate on the front stage. The backstage enabled the group to make immediate revisions to their information-gathering plan without disturbing the front stage activity or taking time away from it, as they might have done without IM.

The manager described how others in the interview contributed similar comments and suggestions to the group IM window. She went on to say that she thought this interview process had been very efficient and that she planned to use it for more interviews:

Usually we have to have a meeting after the interview to discuss our impressions. This was much more efficient. We could do all of that at once. After the interview was over, we stayed online for a couple more minutes to make our decision, and we were done.

In addition to messages posted to the whole group, the manager indicated that she had also exchanged one-to-one messages with her coworkers during the interview, sharing impressions of both the candidate and the process, and had continued to field messages (on other topics) from coworkers not participating in the interview. In this case, the use of invisible whispering shortened the time needed

for collaborative decision making by incorporating the deliberation and decision processes into the interview session itself, rather than leaving that to a subsequent meeting. In this way, the use of IM offered a fundamental reshaping of the socio-spatial boundaries of the actors by shifting decisions and exchanges that would have occurred prior or subsequent to the focal discussion into the context of the conversation, fostering a more fluid process. There is no evidence, of course, about the effectiveness of this restructured decision process and whether it led to a better or worse decision, but participants perceived the shortened process to be an improvement that resulted in more focused information gathering and more efficient decision making. However, it is also possible that the same integrated information-gathering–deliberation–decision process could lead to premature closure in other decision contexts with less clear decision criteria.

The pitch meeting

In the “pitch” meeting, the same group that had conducted the interview was now in the “hot seat” as the primary performers, seeking approval for a new idea from a senior executive team via a telephone conference call. Unbeknownst to the front stage audience, the presenting group used IM backstage to collaboratively decide how to adjust their front stage actions in an effort to maximize the quality of the arguments they made and to have the greatest impact on the decision makers. In this setting, members of the presenting group sent messages to the group spokesperson, suggesting points to emphasize, terms to clarify, and alternative ways to respond to the executives’ questions, like a prompter whispering instructions from backstage in a traditional theatrical environment. The spokesperson told us about receiving these messages while making the presentation:

I was struggling with how to word the response to a particular question and an instant message from Marie popped up on my screen saying ‘say this,’ and I read it and it sounded pretty good, so I said that.

Marie described her experience of the same episode as virtual ventriloquism:

I could tell he was struggling, and I shot off a message saying, ‘say this. . .,’ and a few seconds later I heard David saying my words. It was like being a virtual ventriloquist.

Other members of the presenting group also described exchanging messages among themselves about the quality of the spokesperson’s presentation, the executives’ responses, and alternative strategies if the executives did not seem favorably inclined toward the idea. Here again, the IM backstage altered the communicative boundaries of the actors, by enabling invisible real-time collaborative decision making among the presenting group to drive consensus on the best way to influence the decision making on the front stage. Then the communication of that consensus to the front stage was achieved through the spokesperson without the front stage audience seeing the backstage effort.

In both of these examples, one party, whether a person or a group, took on the primary role of “performer” while another party, took on the primary role of audience for the duration of the meeting. The communication between the two parties, albeit more interactive and bidirectional than in traditional theater,

constituted the front stage activity, which participants supported, managed, and critiqued in concurrent backstage IM interactions. In the next example, the project team meeting, the roles of performer and audience were less clearly delineated and more dynamically enacted.

The project team meeting

The project team meeting was a status meeting where the team leader made decisions about work products, work assignments, and the project schedule. This was a collaborative effort, but as in many organizations, the project leader had the ultimate decision-making authority. As the meeting progressed, the focus shifted from one participant to another as each provided a status report on his or her assignments and posed questions to other team members. Even when not speaking, attendees often considered themselves very much “on [stage]” due to interdependencies between their own assignments and the other topics being discussed. Participants reported using IM in this context for a range of purposes including gathering needed information from colleagues outside the meeting, asking questions of other meeting attendees, and continuing discussions of topics raised in the front stage meeting, including negotiations on schedule or product changes. One respondent noted that participants could be involved in a significant number of concurrent backstage conversations:

In really hot meetings, there might be five or six or more conversations going on—and those would just be the ones involving me—but I can only handle about three at the same time. More than that, and I get overwhelmed and start shutting them down.

This example illustrates the potential for invisible whispering to alter socio-spatial boundaries in communication and to directly influence collaborative decision making by bringing more information to bear on the task and enabling better integration of information among meeting participants. At the same time, it shows that the potential for backstage decision support conversations may exceed a participant’s cognitive capacity before approaching any technical limitations of the medium.

Invisible Whispering as a Unique Communication Genre

These uses of IM during collaborative decision making constitute instances of backstage interaction, conversations that allow the participants to interact informally with their peers, relaxing the communicative boundaries, behaviors, and language expected when presenting themselves front stage. Though a parallel of the age-old practices of face-to-face whispering or note passing, invisible whispering via IM is distinct from those practices. First, in face-to-face meetings, both the content and participants in backstage whispering was invisible to others on the front stage while for telephone conference calls, the entire occurrence of whispering was invisible to others on the front stage. Second, meeting attendees were able to participate in backstage conversations with remote others, a practice not possible in face-to-face interaction nor in technology-mediated meetings without IM where participants are constrained to front stage interactions (Larsson et al.,

2002). Third, they were able to participate in multiple backstage conversations simultaneously without leaving the front stage.

Based on these observations, we propose that invisible whispering constitutes a distinct communicative genre (Yates & Orlikowski, 1992; Freedman & Medway, 1994). Genres are distinguishable from one another by both their substance and form. “‘Substance’ refers to the objective, themes, and topics being addressed in the communication” (Yates & Orlikowski, 1992, p. 301), while “‘form’ refers to the observable physical and linguistic features of the communication” (p. 301). Though genre can be defined independently of the media used, the media employed can be a defining feature of the form. Communicative genres are associated with particular recurrent, socially defined, and, thus, socially recognizable situations (Yates & Orlikowski, 1992), characteristics we see in invisible whispering.

We analyzed the invisible whispering in our data and developed a set of six subgenres, recurring communicative actions socially recognizable as instances of a particular genre, but distinct from other examples of that genre in either purpose or form (Yates & Orlikowski, 1992): directing the meeting, providing task support, seeking clarification, providing social support, participating in a subgroup meeting, and managing extra-meeting activities.

These subgenres are summarized in Table 2. All six are examples of invisible whispering, but they vary in purpose. All draw on IM’s ability to reshape the temporal and socio-spatial boundaries of the environment by providing polychronic communication and silent interactivity, and some also draw on presence awareness and ephemeral content. In the next section, we describe the subgenres in more detail, exploring the diverse roles played by meeting participants employing them and considering how their use could impact collaborative decision making.

The Impact of Invisible Whispering on Decision-Making Processes

Based on participant reports, the identified subgenres could be employed to both enhance and detract from meeting efficiency, decision quality, and group participation. The roles played by participants engaging in each type of interaction also varied, from “director” to “disinterested bystander,” as they might in any meeting, regardless of the medium employed for the front stage interaction. What distinguishes the roles played by meeting participants engaged in invisible whispering is that each participant is likely to enact multiple roles concurrently. For analytic clarity, we begin by describing each invisible whispering subgenre and its likely impacts in turn. Table 2 summarizes the descriptions that follow. Later in this article, we consider the implications for decision-making meetings in which many of the subgenres, and the corresponding participant roles, are being enacted concurrently by multiple team members.

Directing the meeting

Invisible whispering conversations categorized as directing the meeting are characterized by language intended to influence the content of the meeting or the meeting agenda itself. Messages typically included instructions about what to say (or not say) or the ordering of actions or topics to achieve a particular outcome or create a particular impression. Meeting contexts where these exchanges occurred

Table 2: Summary of invisible whispering subgenres.

| Subgenre | Definition | Example | Participant Roles | Potential Impact on Outcomes |
|-------------------------------------|--|--|-------------------------|---|
| Directing the meeting | Messages among team members intended to influence the content or agenda of the meeting | “You’re losing them. Go back to X and define Y and tell them how that relates to their group.” | Director or prompter | Improved effectiveness and efficiency |
| Providing task support | Messages intended to keep the group on task and minimize process losses due to delays for information; may be between meeting attendees or to someone outside the meeting. | “The way this conversation is going, I think they’re going to ask for last month’s numbers [so you should have them ready.]” | Stage manager | Improved effectiveness and efficiency |
| Seeking clarification | Requests among meeting attendees for facts or explanations to improve one’s understanding of the meeting. | “John said there are now 25 test sites. Did we lose some?” | Engaged audience member | Improved efficiency |
| Providing social support | Conversations between meeting attendees that address the affective dimension of meeting participation. | “That was kind of harsh. Are you ok?” | Coach | Improved relationships and improved satisfaction |
| Participating in a subgroup meeting | Messages among a subgroup of meeting attendees on a topic related to the meeting but independent of current meeting events. | “If they change the production schedule, we’re going to have problems. If we reprioritized, could we get done any faster?” | Stage hand or critic | Improved efficiency erosion of team relationships |
| Managing extra-meeting activities | Messages exchanged between a meeting attendee and someone outside the meeting on a topic unrelated to the meeting | “Are you playing volleyball tonight?” | Disinterested bystander | Impaired local efficiency and effectiveness; improved global efficiency |

included the settings discussed above (e.g., the job interview, making a pitch to senior management, and project team meetings). For example:

One of my managers was presenting in a global conference call and had a hard time keeping the attention of other members. . . One of the other team members used SameTime to send a message saying ‘you’re losing them’ and gave him pointers on how to get them back.

The example of “virtual ventriloquism” described in the previous section would also be an example of directing the meeting.

This practice resembles that of the “prompter” in live theater whose role is to feed lines and directions to an actor in the event that he or she falters. Unlike traditional theater, the “lines” of organizational actors depend on the comments and actions of their audience, requiring some degree of improvisation across the front stage-backstage boundary. This use of IM allows actors to come to one another’s aid to enact a better collective performance (Quijada, 2006).

Similar strategies are also employed in diplomatic-style meetings where the meeting delegates, sitting in an inner circle, are surrounded by an outer circle of aides who whisper in the delegates’ ears or pass notes to them throughout the meeting. The practice described here, however, differs substantially from its copresent predecessor in that boundary-spanning discussions are invisible. Not only is the content of the messages unknown to parties outside the exchange, but the very occurrence of the exchange remains unknown, even to people in the same room because of IM’s silent interactivity. Even in face-to-face meetings where the use of laptops or handheld computing devices is visible, IM integrated into the user’s flow of note taking, researching the discussion topic, or monitoring e-mail remains invisible except to those able to view the whisperer’s device screen.

Providing task support

Interactions in this subgenre were intended to help the group accomplish its work and to minimize process losses due to missing information, lapses in attention, or set-up time. A common practice was taking advantage of IM’s ephemerality to alert a coworker (suspected of being distracted by other work) with a brief IM saying he or she is about to be called on. The following quote represents recurring comments:

[When we’re meeting], I’ll ping her so she’ll know that she needs to get on the call or will be called on [to produce numbers, explain a situation, etc.].

Though typically conducted between meeting attendees, task support conversations also included requests from a meeting participant to someone outside the meeting for needed input. We were told that this was a very common practice and that IM was even used to invite outsiders into the meeting briefly to provide information and answer questions directly rather than relaying comments through a meeting attendee. This type of external engagement represents a particularly salient form of temporal and socio-spatial boundary spanning in that it draws upon actors outside the immediate context of discussion. It is IM’s ability to provide presence awareness of the availability of the outsiders (as well as its polychronic

communication ability) that enables the rapid inclusion of outsiders in the decision-making process.

When participating in conversations that provide task support, meeting attendees act in the role of a stage manager, looking ahead to the next “scene” and getting the necessary people and resources in place. Without the concurrent use of IM during the meeting, this type of work would need to precede the meeting, result in delays during the meeting, or require follow-up after the meeting. As an adjunct to premeeting planning, this seems to be a constructive use of invisible whispering, enhancing meeting efficiency. Some study participants, however, suggested that, over time, the practice had also had an unanticipated negative effect:

... The downside is that people may be less prepared for meetings because they know they can get it [any needed information] in real time during the meeting.

So rather than supplementing good meeting practices, such as thorough premeeting planning and data gathering, the ability to use IM during meetings may actually discourage preparation.

Seeking clarification

Another reportedly frequent use of invisible whispering was asking another meeting participant to verify or explain a third participant’s comments. Examples of conversations in this category include asking for the meaning of a term, checking the accuracy of a fact, checking one’s understanding, or asking for background information to put a comment in context, as illustrated below:

If there’s something in a meeting you don’t understand, you can send a quick IM, ‘Hey, so and so said this. What does he mean?’

Participants reported that these exchanges helped them to stay engaged in meetings by having their questions answered in real time. Such questions may prevent groupthink phenomena (Janis, 1972) and the premature closure of discussion by encouraging other group members to think about the issues. When participating in these conversations, the meeting attendees are primarily in the role of audience members (e.g., listening to others with the intention of understanding the interactions in the front-stage arena).

Participating in a subgroup meeting

This conversation type is the invisible analog of side conversations in traditional meetings, typified by conversations catalyzed by, and related to, the focal meeting but independent of its current content and flow. The examples of this subgenre in our data typically involved more than two meeting attendees and were of one of two types: a subgroup working to solve a problem surfaced by the main meeting and a subgroup critiquing the meeting or its participants. The problem-solving subgroup enters into a problem-resolution or strategy-development conversation in response to new information received in the meeting. Participants perceived this use of IM to be a time saver:

Use of IM in the background shortens meeting times because it prevents subsequent meetings to enable some teams to draw conclusions. For example,

one group in a meeting can have private conversations to reach a conclusion that would normally require adjournment and a subsequent meeting to discuss.

A theatrical analogue to this conversation type might be an impromptu meeting of the stage hands to resolve a set malfunction, seemingly oblivious to the current performers on stage. The difference here is that the “stage hands” are also “actors” straddling the front stage–backstage boundary—standing on the metaphorical stage of the focal meeting while invisibly engaging in backstage interaction due to IM’s polychronic communication and silent interactivity.

The second example of this type of conversation, the critique session, involved several participants commenting on the meeting and other participants. These conversations are characterized by the exchange of personal opinion and, in contrast to the problem-solving subgroup, the absence of a work-related objective. Gossip and critical commentary are not new phenomena in organizations but traditionally have been reserved for the “meeting after the meeting” that occurs in the hallway or via e-mail. In this case, however, the actors engage in backstage interaction while physically “on stage,” whether bodily in a room or on the phone.

The types of invisible whispering conversations described to this point were intended to facilitate the meeting and support meeting participation in ways that might have been handled traditionally through premeeting coordination, note passing, side conversations, or overt interruptions. A recurring theme across the organizations was the perception that invisible whispering’s polychronic communication and silent interactivity provided a “less intrusive” or “more polite” way to accomplish the same objectives.

Providing social support

Invisible whispering conversations that provide social support are defined as those occurring between meeting attendees to address the affective dimension of meeting participation. Participants described examples of offering one another comfort when criticized or given bad news in the meeting. The following quote is illustrative:

Like sometimes you can tell that a comment hurt someone’s feelings or some announcement came as sort of a shock, and you might send a message saying ‘ouch!’ or ‘sorry about that’ or ‘hang in there.’ People have sent messages like that to me. Sort of a pat on the back.

Another common example was using IM to invite quieter members to contribute. Similar to calling on quieter participants in face-to-face meetings, IM was used to privately encourage someone to contribute without the risk of embarrassing him or her. Participants also reported using IM to elicit social support from others. A common practice in one group was sending instant messages to “poll” other meeting participants to assess one’s base of support before introducing a new topic or asserting a particular position. This manager was aware of the practice occurring in his team:

People can be shy about bringing up problems in meetings without approval from their peers. Background IM enables them to check before they bring it up.

Invisible whispering conversations providing social support resemble the conversations an actor might have backstage with another cast member or the director either before going onstage or after coming off. These conversations bolstered confidence and provided a reality check for one's perceptions. These same conversations may occur before or after meetings not supported by IM interaction, but it is the polychronic communication, silent interactivity, and ephemerality of invisible whispering that shifts the temporal and socio-spatial boundaries of the group by enabling such discourse to occur during the performance, potentially altering the actor's behavior in real time and, consequently, introducing new information that can influence the processes and outcomes of decision making.

Managing extra-meeting activities

Conversations to manage extra-meeting activities are characterized by interaction between a meeting attendee and one or more others outside the meeting about topics unrelated to the focal meeting. As such, they do not contribute to the collaborative decision-making meeting itself, but may have an impact on other organizational decision making. A common justification for engaging in this practice by managers was the need to be accessible to their subordinates. Prior to the use of IM, either voice or e-mail messages would accumulate until the recipient returned to his or her desk or the external issue would necessitate an explicit interruption of the meeting. IM's polychronic communication, silent interactivity, and presence awareness enables someone outside the meeting to cross the communicative boundary of the meeting and access a meeting participant—and vice versa—as needed, with minimal interruption to the front stage activities. Although this may detract attention from the front stage, being able to monitor extra-meeting activities made participants feel less “trapped” by their extensive meeting obligations. One GlobalNet participant noted that the chances of receiving a response from someone engaged in a meeting were about “50/50.”

The Impact on Decision-Making Outcomes

Overall, the study participants perceived invisible whispering to enhance both meeting outcomes and their individual work performance. Because this was a qualitative interview study, we cannot either validate or refute their claims with quantitative measures, but triangulating across multiple accounts of the same decision processes allowed us to draw inferences. Here we summarize the participants' perceptions and our inferences regarding the impact of invisible whispering on the four dimensions of collaborative decision-making outcomes typically considered indices of decision process and outcome quality: efficiency, effectiveness, participation, and satisfaction. We also include two additional dimensions that surfaced repeatedly in the data—team relationships and individual attention—that we argue, when combined with the four more commonly examined dimensions, result in a more comprehensive assessment of the consequences of collaborative decision making.

Efficiency

Participants in our study pointed to increased efficiency in collaborative decision making as a key outcome from invisible whispering. For instance, in the group job interview described earlier, participants reported that they found the process to be more efficient because they were able to complete their decision process during the interview using backstage conversations to exchange information and impressions, eliminating the need for a follow-up meeting. Without invisible whispering, the front stage and backstage portions of the interview process would have occurred in sequence: planning in backstage, interviewing on front stage, discussing and deciding in backstage. With invisible whispering, the discussing and deciding occurred in parallel with the interview itself, greatly reducing the time needed after the interview to reach a group decision. Participants also emphasized that invisible whispering enabled them to change the course of the interview to omit topics no longer of interest and allowed individuals to seek clarification of a point, or to provide new information from outside sources, without delaying the interview itself. Participants offered similar explanations to bolster their claims of increased efficiency in other types of collaborative decision meetings.

These claims are logical and consistent with the literature. Collapsing decision-making processes into fewer stages and enabling more activities to be performed in parallel should result in a more efficient decision-making process (Kennedy, Te'eni, & Treleaven, 1998; Kowalski, 2006). Likewise, dynamically changing a meeting agenda in mid-meeting to eliminate activities that are no longer needed and bringing external information into a meeting on a just-in-time basis would also be expected to improve efficiency (Nunamaker et al., 1991).

The participants did, however, note one exception to their efficiency claims. When meeting attendees engaged in extensive conversations to manage events outside the meeting, participants agreed that decision-making efficiency could be compromised by loss of attendee attention, a topic we discuss in a later section.

We conclude that use of some subgenres, such as directing the meeting, providing task support, seeking clarification, and participating in a subgroup meeting, are likely to improve decision-making efficiency (see Table 2). Use of other subgenres, such as managing extra-meeting activities, may both improve and impair efficiency depending upon the viewpoint.

Effectiveness

Participants also claimed that invisible whispering improved decision-making effectiveness in some cases. For example, in the pitch meeting described above, participants using invisible whispering to assist the presenter on the front stage argued that they had delivered a more effective collective performance. Whether this enhanced front stage performance resulted in a better decision for the organization as a whole is open to debate, but from the perspective of the participants using invisible whispering, it resulted in a more favorable outcome for them. In other contexts, such as the job interview or the multiple team meetings described to us, participants believed their teams had arrived at the same decision they would have without invisible whispering, just more efficiently as described earlier.

Findings from prior studies both support and challenge the participants' perceptions. As we discussed above, invisible whispering enables participants to condense multiple, serial decision-making steps into parallel performances. Prior research suggests that participants are likely to share more observations the closer in time that discussion occurs to the point at which new information was discovered (Diehl & Stroebe, 1987, 1991), so a condensed process may increase information sharing. Yet when bits of unique information are shared through electronic media such as IM, there is a general tendency to fail to hear, understand, and integrate them, often resulting in poorer quality decisions (Dennis, 1996).

We conclude that use of some subgenres, such as directing the meeting and providing task support, are likely to improve decision-making effectiveness (see Table 2). Use of other subgenres, such as managing extra-meeting activities, may both improve and impair effectiveness depending upon the viewpoint.

Participation

More equal participation is expected to result in better decision outcomes because the decision-making process is more participative and reflective of the ideas and opinions of all participants (Dennis and Garfield, 2003). Participants in our study described invisible whispering as having an overall positive impact on meeting participation. The mere availability of the IM channel allowed team members to contribute when they might have been unable to obtain air time in a strict single-channel meeting, such as face-to-face or audioconference. Participants reported that providing task support, seeking clarification, and providing social support encouraged participation by keeping team members "in the game" of the meeting who might have otherwise "checked out" when they became frustrated or confused.

This claim is consistent with the literature. In prior studies of collaborative technology to support decision-making processes, the availability of multiple electronic channels has resulted in more equal participation (Fjermestad & Hiltz, 1999). In some cases, more equal participation has resulted in different decision outcomes because the ideas and opinions of team members have been heard and influenced the key decision makers (Dennis & Garfield, 2003).

Satisfaction

Participant satisfaction with decision processes is important because it can influence participants' willingness to support the decision going forward (Nunamaker et al., 1991; Dennis & Garfield, 2003) as well as to contribute to future team efforts (Hackman, 1991). Overall, invisible whispering seemed to contribute to participants' satisfaction with decision processes, especially when receiving social support. Though participants varied considerably in their ability and desire to manage multiple, simultaneous conversations, they consistently valued the ability to seek and receive clarification and to contribute unobtrusively to group discussions. Prior research has been inconsistent on the impact of collaboration technology on team member satisfaction (Dennis et al., 2001), suggesting that impacts on satisfaction may be context sensitive.

Relationships

The use of invisible whispering to provide behind-the-scenes social support suggests that invisible whispering can affect the interpersonal dynamics within the group, a factor that team researchers agree simultaneously affects and reflects group performance (Hackman & Morris, 1975; McGrath, 1984; Druskat & Wolff, 2001). Our data indicate that the social support provided via IM was intended to provide assistance, comfort, and encouragement, and that recipients appreciated receiving these messages. Participants also indicated that many of these supportive contributions would not have occurred without IM, which allowed them to send the message in the moment and across distance.

The possibility that invisible whispering could enhance group dynamics suggests the question, could it also inhibit positive group dynamics or erode cohesiveness and goodwill? Due to social desirability concerns (Podsakoff & Organ, 1986), participants may be unlikely to report sending negative instant messages, but we would expect to have heard about receiving criticism or reprimands via invisible whispering, and we did not. Participants did acknowledge, however, using IM to criticize and gossip about one another with others during the meeting, so the net impact of invisible whispering on the interpersonal dynamics of the groups we studied is unclear. Invisible whispering can—and was—used to both encourage and denigrate teammates.

Individual attention

Many of the tools and strategies developed to improve meeting effectiveness have been attempts to improve the collective focus of participants' attention on the task at hand (Nunamaker et al., 1991). Contrary to this conventional wisdom, invisible whispering requires participants to divert their attention away from the meeting's front stage, where the primary work of the meeting occurs, to compose messages or read incoming communications on a backstage.

Consistent with Yankelovich et al. (2005), our participants reported that conversations to direct the meeting, provide task support, and seek clarification helped them stay engaged with the meeting, while conversations to provide social support, engage in parallel subgroup meetings, and manage extra-meeting activities diverted their attention from the front stage decision making. Although diversions, providing social support and engaging in subgroup meetings were reported to contribute to the group itself and, by extension, perhaps to front stage decision making as well. In contrast, managing extra meeting activities was more likely to decrease the effectiveness and efficiency of the collaborative decision making occurring on the front stage, as it diverted participants' attention to something unrelated to the decision at hand.

Our data suggest that while these extra-meeting activities diverted attention from the front stage, it was usually to serve a purpose equally important (or more important) to the organization as a whole. Participants believed these diversions were necessary to keep other projects moving forward, thus improving global, or overall organizational, efficiency at the expense of local, or team, efficiency and effectiveness. Of course, it is easy to imagine situations in which participants' extra-meeting IM conversations could lead to poor performance with little global

benefit—situations less likely to be reported to researchers (Podsakoff & Organ, 1986).

DISCUSSION

IM provides the usual structural features of collaboration technology in terms of parallel communication and process structuring but also affords silent interactivity, presence awareness, polychromic communication, and ephemeral content. It is this combination of features that enables users to engage in invisible whispering during decision-making meetings. Using Goffman's distinctions of front stage and backstage behavior enabled us to differentiate invisible whispering, a type of backstage communication among peers, from the collaborative decision-making conversations occurring on the front stage, where participants are socially obligated to enact their formal role relationships. By considering the relationship of the backstage conversations to the front stage collaborative decision-making process, we identified six subgenres of invisible whispering, distinguishable by their purposes: directing the meeting, providing task support, seeking clarification, providing social support, participating in a parallel subgroup meeting, and managing extra-meeting activities. Identifying the purposes of the invisible whispering and the roles played by those engaged in each type of interaction revealed the impacts of invisible whispering on the structuring of the collaborative decision-making process and the potential impact on the outcomes of collaborative decision making. Our main finding is that engagement in invisible whispering dynamically restructures the temporal and socio-spatial boundaries of the traditional decision-making process.

Invisible whispering collapses many of the temporal boundaries between decision-making steps, making it possible to perform one or more steps in parallel. The physical and temporal boundaries of traditional meetings have typically provided for at least some segmentation of the decision-making process into sequential phases, stretched over a series of meetings, each dedicated to one or two steps in the decision-making process (i.e., information gathering and dissemination, discussion, deliberating, and, deciding). Invisible whispering enables these to be done in parallel, resulting in increased decision-making efficiency.

The impact of collapsing temporal boundaries on decision effectiveness is less clear. Current research indicates that temporally segmenting the process into at least two steps, information gathering followed by "integration and decision," increases the likelihood that all relevant information will be surfaced and used (Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002; Kerr & Tindale, 2004; Heninger et al., 2006). Increasing the quantity and diversity of information available to decision makers and providing that information close in time to when it is needed can improve the effectiveness of the decision-making process (DeSanctis & Gallupe, 1987; Nunamaker et al., 1991; Dennis & Garfield, 2003).

However, if engaged in unreflectively, invisible whispering could inhibit decision quality. For instance, participants experiencing "urgency for closure" (Kruglanski & Webster, 1991, 1996; Karau & Kelly, 1992; Kelly & Karau, 1999) could take advantage of the speed afforded by invisible whispering, pushing for a decision before individuals have had enough time to fully integrate the

available information. Another risk is that combining the information-gathering and impression-formation stages could hinder decision quality through “anchoring” (Rutledge, 1993). For example, in the case of the candidate interview, the expression of a strongly positive or strongly negative opinion early in the process could serve as an “anchor” for others’ perceptions of the candidate, thus prematurely narrowing subsequent lines of inquiry.

Because we do not have outcome data for a sufficient sample of decision processes involving invisible whispering, it will be important for future research to explore whether this backstage exchange of information fosters a more multidimensional, and, thus, potentially superior information-gathering process, or whether it predisposes a team to anchoring, limiting the decision-makers’ queries and receptivity to disconfirming information.

Invisible whispering can also expand or transcend the socio-spatial boundaries of the decision team. Both organizations in this study operate internationally, so it is common for decision-making teams to span multiple locations within and outside the United States. Invisible whispering enabled team members to further extend the team’s boundaries by reaching outside the team, or even beyond the organization, to seek or provide task and social support and to manage extra-meeting activities. These practices enabled team members to obtain information in real-time as the need emerged and to obtain the just-in-time input of additional stakeholders. This too increased efficiency and potentially improved decision quality.

Participating in subgroup meetings restructures the social boundaries within the team. These conversations were catalyzed by the front stage activity but continued on a trajectory independent of the front stage discussion. In a study comparing face-to-face and video-conference engineering design team meetings (Larsson et al., 2002), researchers found that the side conversations, considered by the engineers to be normal in the face-to-face context, served constructive purposes and were sorely missed in the videoconference context where participants (apparently without IM access) were constrained to using only the front stage medium. It would be useful to identify the characteristics of the problem and the contextual factors that promote or require constructive side conversations and to determine if such conversations remained predominantly constructive when conducted via IM rather than in the socially monitored space of a face-to-face meeting. It would also be useful to know the conditions under which the information sharing that occurs via invisible whispering subgroup meetings alleviates or exacerbates information asymmetries, expands or contracts the information-gathering process. Depending upon the answers to these questions, managers might be encouraged to either promote or restrict IM use during important decision-making meetings.

Unsurprisingly, the ability to transcend the meeting’s social boundary also led to communication with external others unrelated to achieving the meeting objectives. As noted in the analysis, most of the extra-meeting interactions focused on other organizational initiatives that were also important for the organization’s performance. An important question for future research would be how much time participants spend in decision-making meetings attending to extra-meeting activities and whether or not that time compromises their contribution to the decision team by splitting their attention across too many diverse foci.

The split attention required to participate concurrently in a team decision-making meeting and one or more invisible whispering conversations certainly deserves further scrutiny. All six types of invisible whispering involved polychronic communication, an example of multitasking (Cameron & Webster, 2005; Reinsch, Turner, & Tinsley, 2008). The psychological literature on multitasking and cognitive load (Carpenter, Just, & Reichle, 2000; Rubinstein, Meyer, & Evans, 2001) and prior collaborative decision-making studies (Dennis, 1996; Schultze & Vandenbosch, 1998; Grise & Gallupe, 1999/2000; Heninger, Dennis, & Hilmer, 2006) have repeatedly demonstrated that humans have a limited ability to attend to multiple information sources.

Applying this general principle to the specific case of invisible whispering, it is reasonable to anticipate that invisible whispering participants may miss important information on the front stage, may misinterpret a hastily read IM, or may respond inappropriately to an IM message. Several participants mentioned “embarrassing” IM experiences, including having confused IM conversations and directing a comment to the wrong conversation partner. Multicommunication researchers have theorized that the performance erosions observed in multitasking studies would be even more pronounced in multicommunicating scenarios (Cameron & Webster, 2005; Reinsch et al., 2008) because even single conversations are cognitively complex due to the simultaneous management of task information and relational dynamics.

One important question for future research is to determine whether the split attention required by IM poses a real problem in organizational environments in contrast to the laboratory settings that characterize much of the research in this area. It is possible that invisible whispering, particularly that devoted to managing extra-meeting activities, may impair performance in the short run by diverting attention but improve overall performance by increasing the efficiency of the tasks that are the subject of that invisible whispering. Alternatively, not all aspects of all meetings require all participants’ undivided attention. So participants may engage in invisible whispering only when their attention is not required by the front stage meeting, suggesting the potential for improvement in global efficiency without impaired local effectiveness. The fact that some meeting convenors had requested participants to refrain from using IM during the meeting, however, suggests that at least some perceived the practice to be detrimental to the focal meeting. Understanding the relationship between invisible whispering and local versus global efficiency and effectiveness would be very valuable to managers trying to maximize the use of busy people’s time while yielding good outcomes from the decision task at hand.

In the case of invisible whispering, split attention also corresponds with rapid and frequent role transitions. Each invisible whispering conversation potentially calls upon a participant to enact different role expectations. Consider the case of the typical manager attending several meetings per day and using IM not only to participate in backstage conversations regarding the focal meeting of the moment but also to keep in touch with subordinates, other projects, and family members. Based on the invisible whispering practices reported to us, it would not be uncommon for a manager to be concurrently enacting the roles of peer, subordinate, manager, spouse, parent, and peer on a second team. The literature

on role stress (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007; Dale & Fox, 2008) would predict that invisible whispering could exacerbate workplace stress, and some participants' comments indicated that they had been "overwhelmed" by too many concurrent IM conversations. However, they also reported closing conversations and choosing to not respond to keep the number of conversations to one they considered manageable.

Other research (and speculation) has suggested that the problems typically associated with attention splitting are generational. "Digital natives," younger people who have grown up using continually evolving suites of multimedia tools (Prensky, 2001; Naughton, 2006), may have developed neural pathways that enable them to process more information streams simultaneously or at least in more rapid succession than their "digital immigrant" coworkers, people now over age 40 who learned "digital" as a second language (Prensky, 2001).

We have suggested several directions for additional research specific to the unanswered questions raised by this study, but there is also a need for more fundamental research on the practice of invisible whispering within organizations to develop more generalizable theory. Studies of diverse collaborative decision-making situations in multiple organizations are called for to determine the similarities and differences in invisible whispering across them. Is our taxonomy of invisible whispering subgenres complete? What is the volume of invisible whispering occurring in different settings and do some subgenres dominate? What strategies have invisible whispering participants developed to manage their attention? Ethnographic studies involving observation and in situ interviewing could be useful in addressing these questions coupled with postmeeting recall checks of key decision processes as a measure of whether invisible whispering hindered comprehension and retention of front stage content. Laboratory studies could provide finer-grained testing of the impacts of each of the conversation types on decision outcomes in particular decision contexts (e.g., choice, judgment, or negotiation tasks).

The cultural appropriateness of invisible whispering is also an important topic for future research. In these two organizations, invisible whispering was considered an integral aspect of day-to-day organizational life. What was it about these organizations that made invisible whispering an accepted part of the culture, while breaking away from a meeting to handle an IM message in another organization would be considered rude? We speculate that it may be the nature of the competitive environment and the difficulty of reaching very busy employees who spend much of their days in meetings. Without an organizational imperative for rapid decision making combined with extensive use of meetings for collaborative decision making, there might be less need for invisible whispering. More research is needed to better understand the organizational factors that promote or inhibit a culture of invisible whispering.

As with any study, our study has limitations. We observed only one day of meetings and interviewed 23 participants in only two organizations. It is possible that these participants or organizations are unique and their experiences were shaped by the specific cultures of their organizations. Because we conducted our research in the field, we can offer no controlled tests in a laboratory setting to verify the impact on efficiency or effectiveness. Nonetheless, we believe that our conclusions offer valuable implications for future research and practice.

CONCLUSION

In this article, we examined the use of IM to enable undetectable conversations among team members, aka invisible whispering, during collaborative decision-making meetings. We used Goffman's theatrical conceptualization of social interaction to differentiate between the focal decision-making processes occurring on the front stage and the invisible whispering occurring backstage among meeting participants. In contrast to traditional meetings, or even technology-mediated meetings occurring via a single, shared channel (i.e., Web conferencing or teleconferencing), the use of IM during meetings enables meeting attendees to participate simultaneously in front stage and backstage interactions.

We argued that invisible whispering constitutes a new communicative genre and identified six types, or subgenres, of invisible whispering. We then described how meeting participants used these six communicative practices to restructure the socio-spatial and temporal boundaries of collaborative decision-making processes and considered the impacts of the resulting processes on the decision outcomes.

Our primary conclusion is that invisible whispering is likely to improve the efficiency of collaborative decision making but have mixed effects on decision quality, satisfaction, individual comprehension, and the relationships among group members. But perhaps the most important point is that IM was created as a communication tool, not as a decision-making tool, so its impacts on decision processes are likely more variable than technologies designed specifically for decision making. Nonetheless, it is being used in decision-making contexts to alter decision-making processes in ways uninformed by theories of group dynamics and cognition, making it important to understand its impacts, to do in situ studies, and to consider how participants' experience with it might impact their use of other collaboration technologies.

We believe that invisible whispering will become more important to both researchers and practitioners as workplace IM use grows. We look forward to additional studies to refine our understanding of the conditions under which invisible whispering is most and least beneficial in collaborative decision-making processes and the actions managers can take to encourage constructive applications of the practice. [Received: February 2009. Accepted: May 2010.]

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APPENDIX A: FINAL INTERVIEW GUIDE

1. Work profile/role
2. Coworker/contact profile (location, distribution)
3. How they started using IM
4. How they use IM
5. Buddy list content/characteristics (Master list from J? Edited version of master list? Custom list only?)
6. Media choice/perceptions of IM relative to other media
7. Common uses of IM
8. Invisible whispering
9. Management of IM interaction
 - a. Personal vs. business
 - b. On/off/away practices
 - c. Initiation—when, why, and how
 - d. Responding—when, why, and how
 - e. Nature of the interaction itself—length; poly or monochromic; content?)
 - f. Closing/ending conversations
 - g. Availability/visibility (mgmt of)
 - h. Interruptions (mgmt of)
 - i. Feature use
10. Expectations and Interpretations of others' IM presence and interaction
11. Innovative uses of IM (i.e., meetings; notepad; coaching; etc.)
12. Depersonalizing effects of IM
13. Interviewee commentary on org context

APPENDIX B: EVOLUTION OF THE CODING SCHEME

| Initial Coding Scheme (from Interview Protocol Based on Prior Literature) | Revised Coding Scheme (Expanded "Purposes," Including Invisible Whispering) | Final Coding Scheme (Refined to Represent Full Data Set with Finer-Grained Analysis of Whispering Examples) |
|---|---|---|
| <p>I. Work profile</p> <ul style="list-style-type: none"> A. Worker's "customer" mix <ul style="list-style-type: none"> 1. Internal 2. External B. Primary coworkers' relative physical location <ul style="list-style-type: none"> 1. Colocated 2. Remote <p>II. Individual IM use/volume</p> <ul style="list-style-type: none"> A. Heavy (initiate > 10 IMs per day) B. Medium (initiate 6–10 IMs per day) C. Light (initiate 1–5 IMs per day) <p>III. How introduced to IM?</p> <p>IV. Purposes of IM messages</p> <ul style="list-style-type: none"> A. Short/fast question and answer B. Coordination (e.g., "Ready to go?") C. Establish availability (e.g., "Are you available to discuss the report?") D. Initiate communication through another medium (i.e., "Give me a call") E. Social interaction (e.g., "hi") F. Heuristics for choosing IM G. Other | <p>I. Work profile</p> <ul style="list-style-type: none"> A. Worker's customer mix <ul style="list-style-type: none"> 1. Internal 2. External B. Primary coworkers' relative physical location <ul style="list-style-type: none"> 1. Colocated 2. Remote <p>II. Individual IM use/volume</p> <ul style="list-style-type: none"> A. Heavy (initiate > 10 IMs per day) B. Medium (initiate 6–10 IMs per day) C. Light (initiate 1–5 IMs per day) <p>III. How introduced to IM?</p> <ul style="list-style-type: none"> A. At company <ul style="list-style-type: none"> 1. With training 2. No training B. Personal/at home use <ul style="list-style-type: none"> 1. With training 2. No training <p>IV. Purposes of IM use</p> <ul style="list-style-type: none"> A. Short/fast question and answer | <p>I. Work profile</p> <ul style="list-style-type: none"> A. Worker's customer mix <ul style="list-style-type: none"> 1. Internal 2. External B. Primary coworkers' relative physical location <ul style="list-style-type: none"> 1. Colocated 2. Remote <p>II. Individual IM use/volume</p> <ul style="list-style-type: none"> A. Heavy (initiate > 10 IMs per day) B. Medium (initiate 6–10 IMs per day) C. Light (initiate 1–5 IMs per day) <p>III. How introduced to IM?</p> <ul style="list-style-type: none"> A. At company <ul style="list-style-type: none"> 1. With training 2. No training B. Personal/at home use <ul style="list-style-type: none"> 1. With training 2. No training <p>IV. Purposes of IM use</p> <ul style="list-style-type: none"> A. Short/fast question and answer |

Continued

APPENDIX B: (Continued)

| Initial Coding Scheme (from Interview Protocol Based on Prior Literature) | Revised Coding Scheme (Expanded "Purposes," Including Invisible Whispering) | Final Coding Scheme (Refined to Represent Full Data Set with Finer-Grained Analysis of Whispering Examples) |
|---|---|--|
| V. Reasons for using other media | <ul style="list-style-type: none"> B. Coordination (e.g., Ready to go?) C. Establish availability (e.g., Are you available to discuss the report?) D. Initiate communication through another medium (i.e., Give me a call) E. Social interaction (e.g., hi) F. Electronic notes to self G. Interact with nonnative English speakers | <ul style="list-style-type: none"> B. Coordination (e.g., Ready to go?) C. Establish availability (e.g., Are you available to discuss the report?) D. Initiate communication through another medium (i.e., Give me a call) E. Social interaction (e.g., hi) F. Electronic notes to self G. Adjunct to another medium |
| <ul style="list-style-type: none"> A. Face-to-face 1. Fast 2. No record 3. More "personal" 4. Recipient's preferred medium 5. Other | <ul style="list-style-type: none"> H. As an adjunct to another medium I. Maintain supervisory contact | <ul style="list-style-type: none"> H. Maintain supervisory contact I. "Whisper" in meetings (see new category below for more detail) |
| <ul style="list-style-type: none"> B. Phone 1. Fast 2. Less urgent than IM; more urgent than e-mail 3. No record | <ul style="list-style-type: none"> J. Whisper in meetings (see new category below for more detail) | |
| <ul style="list-style-type: none"> 4. More personal 5. Recipient's preferred medium | V. Examples/descriptions of whispering conversations in meetings | V. Whispering |
| <ul style="list-style-type: none"> 6. Other | <ul style="list-style-type: none"> 1. Strategize 2. Obtain external information 3. Group maintenance | <ul style="list-style-type: none"> A. Contexts |
| <ul style="list-style-type: none"> C. e-mail 1. Not urgent 2. Want a record of conversation 3. Other | VI. Reasons for using other media | <ul style="list-style-type: none"> 1. Face-to-face meetings 2. Audioconference 3. Computer conference (e.g., WebEx) 4. Other |
| | <ul style="list-style-type: none"> A. Face-to-face 1. Fast 2. No record 3. More personal | <ul style="list-style-type: none"> B. Conversation configurations 1. Dyads within meetings 2. Dyads with someone outside meeting 3. Groups within meeting |

Continued

APPENDIX B: (Continued)

| Initial Coding Scheme (from Interview Protocol Based on Prior Literature) | Revised Coding Scheme (Expanded "Purposes," Including Invisible Whispering) | Final Coding Scheme (Refined to Represent Full Data Set with Finer-Grained Analysis of Whispering Examples) |
|---|---|--|
| <p>VI. Characteristics of IM messages</p> <ul style="list-style-type: none"> A. Length of IM messages B. Duration of IM conversations C. Message style (i.e., formal vs. informal) <p>VII. Group norms/etiquette for IM use</p> <ul style="list-style-type: none"> A. Initiation practices B. Availability/visibility C. Closing/terminating conversations D. Business vs. personal content <p>VIII. Benefits of IM use</p> <ul style="list-style-type: none"> A. Fast B. Private C. Other | <ul style="list-style-type: none"> 4. Recipient's preference 5. Other <p>B. Phone</p> <ul style="list-style-type: none"> 1. Fast 2. Less urgent than IM; more urgent than e-mail 3. No record 4. More personal 5. Recipient's preferred medium 6. Other <p>C. e-mail</p> <ul style="list-style-type: none"> 1. Not urgent 2. Want a record of conversation 3. Time zone differences do not allow synchronous interaction 4. Other | <ul style="list-style-type: none"> a. Whole group b. Subgroups 4. Other <p>C. Purposes of whispering conversations</p> <ul style="list-style-type: none"> 1. Strategize 2. "Feed words to the speaker" 3. Seek clarification 4. Test for consensus 5. Manage other issues in parallel 6. Alert teammates re: needed information 7. Gossip/critique 8. Other <p>D. Process observations (i.e., how whispering occurs and how it affects meeting process)</p> <p>E. Perceptions of whispering</p> <ul style="list-style-type: none"> 1. Good/bad 2. Necessary 3. Productive 4. Fun 5. Other |
| <p>IX. Downsides of IM use</p> <ul style="list-style-type: none"> A. Untimely interruptions B. No permanent record of conversation C. Other | <p>VII. Characteristics of IM messages</p> <ul style="list-style-type: none"> A. Length of IM messages B. Duration of IM conversations C. Message style (i.e., formal vs. informal) | <p>E. Perceptions of whispering</p> <ul style="list-style-type: none"> 1. Good/bad 2. Necessary 3. Productive 4. Fun 5. Other |
| <p>X. Strategies for managing downsides</p> <p>XI. Miscellaneous</p> | <p>VIII. Group norms/etiquette for IM use</p> <ul style="list-style-type: none"> E. Initiation practices F. Expectations of response time G. Availability/visibility H. Closing/terminating conversations I. Business vs. personal content | <p>VI. Reasons for using other media</p> <ul style="list-style-type: none"> A. Face-to-face 1. Fast 2. No record 3. More personal |

Continued

APPENDIX B: (Continued)

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|--|--|--|
| <p>IX. Benefits of IM</p> <ul style="list-style-type: none"> A. Fast B. Private C. Polite D. Polychronic E. Time saving F. Other <p>X. Downsides of IM</p> <ul style="list-style-type: none"> A. User laziness B. Untimely interruptions C. Feel "monitored" by others D. No permanent record of conversation E. Other <p>XI. Strategies for managing downsides</p> <p>XII. Miscellaneous</p> | <p>4. Recipient's preference</p> <p>5. Other</p> <p>B. Phone</p> <ul style="list-style-type: none"> 1. Fast 2. Less urgent than IM; more urgent than e-mail 3. No record 4. More personal <p>5. Recipient's preferred medium</p> <p>6. Other</p> <p>C. e-mail</p> <ul style="list-style-type: none"> 1. Not urgent 2. Want a record of conversation 3. Time zone differences do not allow synchronous interaction 4. Other | <p>4. Recipient's preference</p> <p>5. Other</p> <p>B. Phone</p> <ul style="list-style-type: none"> 1. Fast 2. Less urgent than IM; more urgent than e-mail 3. No record 4. More personal <p>5. Recipient's preferred medium</p> <p>6. Other</p> <p>C. e-mail</p> <ul style="list-style-type: none"> 1. Not urgent 2. Want a record of conversation 3. Time zone differences do not allow synchronous interaction 4. Other |
| <p>VII. Characteristics of IM messages</p> <ul style="list-style-type: none"> D. Length of IM messages E. Duration of IM conversations F. Message style (i.e., formal vs. informal) <p>VIII. Group norms/etiquette for IM use</p> <ul style="list-style-type: none"> J. Initiation practices K. Response time expectations L. Availability/visibility M. Closing/terminating conversations N. Business vs. personal content | | |

Continued

APPENDIX B: (Continued)

| Initial Coding Scheme (from Interview Protocol Based on Prior Literature) | Revised Coding Scheme (Expanded "Purposes," Including Invisible Whispering) | Final Coding Scheme (Refined to Represent Full Data Set with Finer-Grained Analysis of Whispering Examples) |
|---|---|---|
| | | <ul style="list-style-type: none"> G. Fast H. Private I. Polite J. Polychronic K. Time saving L. Easier interaction with nonnative English speakers M. Other |
| | | <p>IX. Benefits of IM</p> |
| | | <p>X. Downsides of IM</p> <ul style="list-style-type: none"> a. User laziness b. Untimely interruptions c. Feel monitored by others d. No permanent record of conversation e. Other |
| | | <p>XI. Strategies for managing downsides</p> <p>XII. Miscellaneous</p> |

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