Professorial collaborations via CMC: Interactional dialectics

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Abstract

We conducted twenty semi-structured interviews with university professors from eight states in the US about their collaborations via computer mediated communication. Our thematic analysis of verbatim transcripts uncovered four dialectical tensions (an interplay of opposing and contradictory forces typically resolved through communication) in such interactions: relational connection and personal autonomy, creativity and the mundane, task and socio-emotional goals, as well as novelty and efficacy.

1. Introduction

Computer mediated communication (CMC) can be an effective tool for professors who engage in scholarly collaborations. Previous research documents the positive influence of both technology (Teles & Ragsdale, 1991) and writing groups on academic writing (Lee & Boud, 2003). For many in the academy, CMC technology has been pivotal in overcoming hurdles of geography (Kraut, Egido, & Galegher, 1988; Watson, 1994), finances, and time (e.g., time away from the university and personal life) to facilitate innovative and fulfilling research, publication, and consulting activities (Schroeder & Fry, 2007).

Professors’ increasing and extensive use of collaborations, especially in research (e.g., Casper, Jong, Meyer, & Moller, 2000) and the production of written scholarship (Bayer, 1991), facilitates the development of knowledge and innovation (Audretsch & Link, 2006). Given the benefits and proliferation of professorial collaboration, it was perhaps inevitable that the communication surrounding such collaborations would become the object of academic study. Such research could increase the efficacy of such endeavors through increased understanding of the communication surrounding professorial collaboration via CMC. While previous researchers have examined professorial collaboration (e.g., Schmitz & Whitworth, 2002), professorial writing (e.g., Oliver, 1986), as well as collaborative research (e.g., Schroeder & Fry, 2007) and writing via CMC (e.g., Barile & Durso, 2002), we could locate no previously published study examining the intersection of these concerns, professorial collaborations via CMC. The purpose of our study was to undertake a preliminary examination of the interactional issues at play in professorial collaborations via CMC.

2. Previous research

In a recent review of the research on communication and technology, Walther, Gay, & Hancock (2005a) described five lines of research: multimedia, hypertextuality, packet switching, synchronicity, and interactivity. Most relevant to our study, interactivity was described as “the extent to which source and receiver are interchangeable roles, exhibiting reciprocal influence” (Walther et al., 2005a). Walther et al. (2005a) praised recent interactivity research (e.g., Rafaeli, 1988) that “sets the stage for conceptualizing serial communications as intertwined and cumulative, as opposed to action–reaction pairs”. Studies of CMC collaborations or virtual collaboration examine such intertwined and cumulative serial communication. Wainfan and Davis (2004, p. 25) defined virtual collaboration as “people working together who are interdependent in their tasks, share responsibility for outcomes, are geographically dispersed, and rely on mediated, rather than face-to-face (FTF), communication”. Professorial collaborations conducted via CMC fit this definition.

Given that many previous studies have examined virtual collaboration (e.g., Barile & Durso, 2002) and given that books have been published on the subject (e.g., Wainfan & Davis, 2004), why...
undertake an additional study of CMC and collaboration? Walther et al. (2005a) noted that “different groups will use technology and communicate in different ways”. Therefore, an examination of professional collaborations, rather than collaborators generally, may reveal unique patterns of interaction. Further “DeSanctis and Poole (1994) suggested that the impact of technology on groups can be assessed by analyzing how groups tend to structure themselves around social routines that are closely linked to the tasks they undertake as well as to their surroundings or context” (Walther et al., 2005a). Therefore, we studied CMC in professional collaborations to observe how professors, as a group, enact their social routines, i.e., their interactions, surrounding one of their professional activities, collaboration.

Further, many researchers have studied virtual collaboration by assessing student collaborations (e.g., Barile & Durso, 2002; Galegher & Kraut, 1992) or interactions between students and instructors (e.g., Paulus & Phipps, 2000a) rather than examining the actual collaborations of professionals (e.g., Kimball & Rheingold, 2005). In contrast, we queried actual professional collaborations to determine their perceptions of their interactional experiences and their perceptions of how CMC influences both the process of collaboration itself as well as their on-going collaborative relationships.

2.1. Advantages of collaboration via CMC

“New media do not determine social and cultural response but, rather, provide opportunities for, and challenges to, existing social structures and cultural values” (Jankowski, Foot, Howard, Jones, Mansell, Schneider, et al., 2001). What challenges and opportunities are created by CMC and how have collaborators responded? CMC provides an effective medium for task accomplishment (VanLear, Sheehan, Withers, & Walker; 2005; Walther & Parks, 2002) as well as the sharing of knowledge about on-going projects (Skovholt & Svennevig, 2006) as well as an effective medium for connectivity (Quan-Haase, Cotthiel, & Wellman, 2005) such as the providing of social support (Burleson, Albrecht, & Satason; 1994; Pennebaker & Traue, 1993) and comforting (Caplan & Turner, 2007). Thus, CMC provides expanded opportunities for collaboration by offering creative and innovative means to engage in collaboration (Ramirez, Walther, Burgoon, & Summafrank, 2002). CMC offers collaborators open access as well as the opportunity to improve time management and overcome geographical distance (Walther & Boyd, 2001; Watson, 1994), while engaging in a socially-created, friendly environment that overcomes many entry barriers common to face-to-face (FTF) interactions (Rheingold, 1991; Rheingold, 1993). Moreover, CMC technology helps define collaborative relationships through the interaction of the collaborators (Walther & Parks, 2002), including how they adapt to the medium itself (Tidwell & Walter, 2002) and the development of new rules appropriate to the collaborative relationships (Watson, 1994). Finally, CMC’s “text-only channels allow senders greater control over message construction by providing more time to craft messages and the ability to edit” (Walther et al., 2005a) – advantages that may be particularly salient to collaborators producing written work products.

Perhaps CMC’s greatest contribution to collaboration may be its ability to allow collectives to initiate and maintain connections (Rheingold, 2002), i.e., collaborators agree to participate in an arena that allows them to create, change, and maintain a co-constructed environment to disseminate information (Rheingold, 1991; Rheingold, 1993). Because academic collaborations tend to be text-based, “introverted participants share their ideas on an equal footing with extroverts” (Johnson, 2001). Further, the medium provides collaborators a “level playing field” by de-emphasizing status and power (Postmes, Spears, & Lea, 1998; Spears & Lea, 1994) and by obscuring the more obvious status distinctions or aggressive behaviors that can dominate FTF conversation (Watson, 1994). Thus, CMC collaboration may appeal to many professional collaborators by freeing them to collaborate as equals (Postmes et al., 1998; Spears & Lea, 1994) and to share knowledge (Metak, 2005). Finally, a pivotal benefit of collaborating via CMC may be that the medium itself provides a less-threatening format for working out details of trust. Research documents the foundational role of trust in collaboration efforts (Hossain & Wigand, 2004), performance (Paul & Reuben, 2004), assessment (Newell & Swan, 2000), liking (Walther & Bunz, 2005), as well as partnership-building and maintenance (Kramer, 1999; Mayer, Davis, & Schoorman, 1995; Whittner, Brodt, Korsgaard, & Werner, 1998).

2.2. Challenges to collaboration via CMC

Despite these advantages, we acknowledge three obvious challenges to collaborating via CMC. First, CMC lacks nonverbal channels inherent in more personal modes of communication, such as FTF and telephonic communication. Indeed, Kato, Kato, and Akabori’s (2007) experimental findings suggested that the few emotional cues in e-mail messages can lead to misunderstanding. However, “e-mail and chat forums are developing pseudo-nonverbal protocols that more and more people accept as true representations of actual non-verbal signals” (Carter, 2003). Thus, many people employ emoticons (symbols that represent emotional states such as a smiley face) to compensate for the absent nonverbal channel. While the frequency of emoticons varies with content and valence of the message (Derks, Bos, & von Grumbkow, 2007), the results of one experiment demonstrated proportional equivalency of expressed affect in electronic versus FTF interaction (Walther, Loh, & Granka, 2005b). In contrast, Byron and Baldrige (2007) reported that the meanings of nonverbal symbols used in e-mail are context bound and vary with recipient’s personality. Nonetheless, Krohn (2004) speculated that younger computer users may find emoticons natural and, hence, they may become a normal part of business in the future.

Second, CMC’s lack of nonverbal channels limits its capacity to transmit cues to identity and meaning (Tanis & Postmes, 2003), thus creating the potential for distrust and misunderstandings among users (Burgoon, Bonito, Bengtsson, Ramierz, Dunbar, & Miczo, 1999). However, the users’ task and interpersonal goals may mitigate such misunderstandings. For example, to pool and judge critical knowledge, collaborators may employ anthropomorphic technologies that simulate humanlike characteristics and promote mutuality. Conversely, collaborators may employ “leaner” technologies (e.g., e-mail) for more routine tasks that do not require critical judgment.

Third, CMC channels, specifically e-mail, appear more appropriate for divisible projects where each collaborator independently completes his/her tasks – tasks which later are combined into larger wholes, e.g., each collaborator writes a section of an essay. Conversely, experimental evidence indicates that work teams tend to employ FTF and telephonic communication in the planning stages of projects as well as through out integrative projects that cannot be easily divided into segments for independent completion (Galegher & Kraut, 1992). Do professional collaborators employ varying communication modalities for interactive verses integrative tasks?

2.3. Purpose and research questions

In sum, CMC aids the collaboration process with its potential to transform and influence relationships among collaborators, in both positive (e.g., de-emphasizing status) and negative (e.g., creating misunderstandings) ways. How does CMC influence professorial collaborations per se and the relationships among professorial collaborators? The purpose of our study was to undertake a preliminary
examination of the interactional issues at play in professorial collaborations enacted via CMC. To this end, we posed the following two research questions:

- **RQ1:** Professors report that CMC influences their collaborations in what ways?
- **RQ2:** Professors report that CMC influences their collaborative relationships in what ways?

### 3. Method

Bradley, Holm, Steere, and Stromqvist (1993) asserted that CMC researchers “need to look at the interaction of people at work from both a quantitative and qualitative perspective”. While many previous analyses of CMC collaboration employed quantitative methods (e.g., Barile & Durso, 2002), we elected to employ a qualitative methodology in our study for five reasons: Qualitative methods (a) are appropriate for exploratory research (Cresswell, 1998), (b) allow the “insiders’ perspective” to emerge, (c) provide a “closer to the actor’s perspective through detailed interviewing and examination” (Denzin & Lincoln, 1998, p. 10), and (d) “stress the socially constructed nature of reality” (Denzin & Lincoln, 1998, p. 8), as seemed appropriate to the study of communication within a virtual reality. (e) Previous researchers employed qualitative methods to examine CMC, including but not limited to “immersion, reading FAQs, or observing” (Walther et al., 2005a).

We employed the specific qualitative methodology of interviewing for three reasons: (a) Previous researchers had employed interviewing successfully as a methodology to “make sense” of on-line communication (Dervin & Clark, 1999), (b) Interviewing allows participants to share their perspectives across multiple projects and years, and thus to provide rich data (Newcomb, 1995), (c) In interviews, participants “are able to point to changes caused by technological... factors” (Newcomb, 1995).

#### 3.1. Participants

We interviewed a convenience sample of 20 US professors. The participants, hereafter called professors, were employed at universities in eight states in the US, i.e., Alabama, Arkansas, Florida, Georgia, Illinois, Mississippi, New York, and Oregon. The sample contained 12 males and 8 females, including professors at various ranks: 9 assistant, 3 associate, and 8 full professors. We interviewed professors from four disciplines, including biomechanics, physical education, and teacher education, but the majority of the interviewees were professors in communication (N = 14), who we believed would be very articulate about interactional issues related to their collaborations.

The professors reported working via CMC in collaborative groups of two to eight colleagues; however, they typically worked in groups of two or three collaborators. Depending on the stage of the collaborative project, the professors reported interacting via e-mail several times daily or as infrequently as once every three months. The more actively involved they were in producing the work product, the more frequently they employed e-mail to interact. Similarly, the professors reported that the amount of time they spend composing a message sent via e-mail varied from a few minutes to over an hour, depending on several factors, i.e., the relationship between the interlocutors (e.g., professor–student), the content of the message (e.g., explaining a complex attachment), and the stage of the project (e.g., asking for edits on an early draft). The professors reported using CMC for multiple aspects of collaboration, but primarily sending drafts and discussing edits. While one professor stated that “there is no aspect of the research process that cannot be accomplished via e-mail,” most reported reserving a few tasks for FTF interactions, including planning the project, idea generation, and addressing conflict.

#### 3.2. Instruments

Three females with Ph.D. degrees in Communication, hereafter called interviewers, each independently conducted six or seven semi-structured interviews following a common protocol. Following Kvale’s (1996) guidelines, we developed an interview protocol consisting of 11 questions about professors’ perceptions of their CMC collaborations. Professors were free to discuss teaching, research, writing, and/or consultative collaborations, but virtually all participants discussed research and writing collaborations. After the interviews, we e-mailed interviewees a one-page, written questionnaire to gather information about the participants’ patterns of CMC that we used to describe our participants (see preceding subsection). The written questionnaire contained four open-ended questions about the CMC they described in the interviews (e.g., on average, how often do you use e-mail to facilitate a research project? Is it several times a day, once a day, a certain number of times per week? Please provide any characterization you deem appropriate.).

#### 3.3. Procedures

After receiving approval from Institutional Review Boards at three universities, we pilot tested the protocol during the first two interviews conducted by each interviewer (N = 6 pilot interviews) and subsequently reworded only a few items. To ensure consistency, we conducted all interviews during the same three week time period in September 2005. Interviews followed a semi-structured format, allowing consistency with flexibility during the interviews, i.e., as needed, interviewers probed for specific answers to posed questions by asking additional questions (Fontana & Frey, 1998). Interviewers knew their interviewees prior to data collection, thus facilitating disclosure and metacommunication. We conducted the interviews via telephone to allow a broader geographic sample than FTF interviews and more immediate responses to answers, such as follow-up questions, than CMC interviews. We audiotaped the 20–30 min interviews, producing 155 double-spaced pages (3359 lines) of verbatim transcripts.

We undertook a thematic analysis of the transcribed data. Its results (explained in detail in the “Results” section below) prompted us to conduct a secondary analysis to discover dialectic tensions (i.e., the interplay of opposing and contradictory forces typically resolved through communication) present in the data. Thus, our analysis followed the same two-phase process as previous dialectical analysts (e.g., Baxter, Braithwaite, Bryant, & Wagner, 2004): (a) discovering themes within the data and (b) connecting themes to form dialectics.

#### 3.4. Phase one: identifying themes

The interviewers read and reread the interview transcripts produced in their respective subsamples to identify themes. Following Boyatzis (1998), themes emerged from the data rather than the researchers imposing a priori conceptual categories on the data. We employed Owen’s (1984) criteria for identifying themes, i.e., repetition (relatively the same language to describe a phenomenon), recurrence (differing language but similar meanings for a phenomenon), and forcefulness (ideas strongly stressed verbally or nonverbally).

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1 A copy of the interview protocol is available upon request from the first author.<e-mail address here>.
The three interviewers conferred via two one-hour conference telephone calls to discuss trends across the sample. Interviewers revealed themes generated from their respective subsamples and then confirmed or denied the presence of these themes in the other interviewers’ transcripts. We deliberately considered negative evidence (discrepant patterns), as per Miles and Huberman’s (1994) guidelines. Through this analysis and discussion, six themes emerged from the data. To verify the validity of the coding procedure and emergent themes, a fourth coder examined randomly selected samples of the data comprising over ten percent of each transcript and confirmed that each theme appeared in more than one transcript across at least two interviewers.

3.5. Phase two: identifying the dialectics

After we identified themes, we turned to the analytic task of finding connections among and within the themes. To begin this secondary analysis, the fourth coder proposed four specific dialectical tensions created by organizing the emergent themes into dialectics. Meeting via e-mail, the interviewers agreed that they had observed the proposed dialectics in the interviews they conducted. To test the validity of these observations, each interviewer reviewed the transcripts of the other two interviewers. Additionally, the fourth coder reviewed the randomly selected segments of each interview. Each of the four coders discovered evidence of at least one entire dialectic (i.e., both poles) in every transcript and evidence of multiple dialectics in most transcripts.

4. Results

4.1. Research question one

“Professors report that CMC influences their collaborations in what ways?” Our thematic analysis uncovered three themes: limited technology, expanded opportunity, and instrumentality. Table 1 provides quotations from the transcripts to illustrate each theme.

4.2. Limited technology

When the professors discussed CMC, they primarily referred to e-mail messages to ask questions, transmit edits, and send attachments. Only one professor mentioned instant messaging, for example.

4.3. Expanded opportunity

Several professors indicated that CMC provided opportunities to collaborate that would have been more difficult or impossible without CMC. Several professors described CMC as “convenient,” specifically noting that CMC “saves time” as collaborators send e-mail messages to one another rather than scheduling FTF or telephone meetings. Moreover, e-mail allowed correspondents to send and answer e-mail messages when convenient.

4.4. Instrumentality

While almost all the professors reported using CMC to communicate with collaborators about virtually all aspects of research, they nonetheless characterized CMC as a “tool” to accomplish instrumental tasks and emphasized that CMC did not replace FTF communication. The professors reported using CMC most frequently for sharing drafts and edits. Thus, they characterized CMC as working well for the mechanical aspects of collaboration such as sending attachments. However, most professors identified FTF discussion as the best process for resolving conflict as well as generating unique and creative ideas.

4.5. Research question two

“Professors report that CMC influences collaborative relationships in what ways?” Our thematic analysis yielded three themes: nonverbal deficit, relational connection, and personal autonomy. See Table 1 for illustrative quotations of each theme.

4.6. Nonverbal deficit

Several professors noted that CMC lacks nonverbal elements. Many professors reported compensating for the lack of nonverbal information by using emoticons or bold letters to stress a particular word or phrase. In addition, several professors reported using language strategically to convey emotion, i.e., being extremely polite, using qualifiers when presenting suggestions such as saying “We don’t have to do it this way but...” Alternatively, some professors stated that because CMC lacks a nonverbal channel, they simply ignored the emotional and/or relational aspects of the statements they composed and instead stayed task-focused by sending e-mail messages they described as short, quick, succinct, and to-the-point.

4.7. Relational connection and personal autonomy

Two themes comprised a dialectic addressing the issues of relational connection and personal autonomy. Whereas most professors thought that CMC provided a way to connect with colleagues to collaborate, other professors noted that collaborating via CMC allowed them to work relatively independently. We explored both poles of the dialectic.

4.8. Relational connection

Professors reported that they preferred handling disagreements and conflicts via FTF. Further, almost all professors stated that they preferred to engage in more personal modes of communication at some point in the project because they desired to connect personally with their collaborators. Additionally, many professors stated that they preferred to know their collaborators before working together via CMC. Several professors used the word “trust” to indicate that they wanted to know they could rely on their collaborators to do what they said they would do. In fact, only two professors reported actually completing projects entirely through CMC. In one case, the professor simply collected data and did not participate in the project’s design. In the other case, the professor knew both collaborators for years and believed strongly in the mission of the project. Other professors acknowledged that, while it may be possible to conduct a project entirely through CMC, they did not prefer that method.

4.9. Personal autonomy

Although many professors preferred more personal modes of communication to CMC, others appreciated the independence that CMC allowed. These professors noted that, with CMC, they set their own work pace, without feeling obligated to engage in “small talk” or personal conversation.

4.10. Secondary analysis

Our analysis yielded six themes with no conceptual overlap. The lack of conceptual overlap as well as the discovery of two themes that formed a dialectic, i.e., relational connection and personal autonomy, prompted us to consider if our initial results might be reconceptualized as a series of dialectics. Thus, we undertook a secondary analysis to discover any additional dialectical tensions.
among the individual themes of expanded opportunities, instrumentality, limited technology, and nonverbal deficit. Table 2 displays quotations from the transcripts to illustrate each dialectic. The *instrumentality* theme contained the oppositional ideas of (a) CMC functioning as a tool and (b) CMC's inability to replace personal communication for creative work. Thus, we conceptualized

<table>
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<tr>
<th>Dialectic</th>
<th>Description</th>
<th>Quotation</th>
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<tbody>
<tr>
<td>Physical</td>
<td>CMC merely functions as a tool to convey information</td>
<td>“I think the lack of the nonverbal channel makes it a little more confusing. Like you know my personality, I have a tendency to smart off and, you know, be sarcastic... I had to be careful about that kind of stuff.”</td>
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<tr>
<td>Physical</td>
<td>CMC provides a way to connect with colleagues to collaborate and</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<td>Physical</td>
<td>collaboration via CMC</td>
<td>“My collaborator and I just really trust each other’s instincts about what oughtta go in or what not to go in.”</td>
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<td>Physical</td>
<td>cannot replace personal communication for creative work</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<td>Physical</td>
<td>that allows relatively independent work</td>
<td>“My collaborator and I just really trust each other’s instincts about what oughtta go in or what not to go in.”</td>
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<td>Physical</td>
<td>The FTF issues in this project were more the</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<td>Physical</td>
<td>FTF issues in this project were more the</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<td>Physical</td>
<td>planning issues</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<tr>
<td>Physical</td>
<td>data sharing-mostly through e-mail</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<tr>
<td>Physical</td>
<td>delegation, scheduling, timelines...</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
</tr>
<tr>
<td>Physical</td>
<td>generally e-mailed attachments and data</td>
<td>“We just say ‘here are the corrections’; we don’t say ‘if you don’t mind’ or ‘how do you feel about that.’ It’s certainly more direct.”</td>
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</table>
the dialectic of creativity and the mundane, two types of activities necessary to the research/writing processes.

The theme nonverbal deficit contained the oppositional ideas of (a) compensating for lack of nonverbal channels by using emoticons and strategic language as well as (b) CMC’s lack of emotionality and low emphasis on the relational aspects of communication, thus allowing interactants to stay task-focused. Thus, we conceptualized the potential dialectic of task and socio-emotional goals, two goals essential to accomplishment of any collaborative task.

The third dialectic came from a combination of the theme noting professors’ use of limited technologies, primarily e-mail and attachments, with the theme of expanded opportunity or viewing CMC in terms of convenience, saving time, and asynchronous discourse. Thus, we conceptualized the dialectic of novelty and efficacy, a dialectic that may be at play in any CMC interaction, i.e., professors employ CMC technologies, e.g., e-mail, when the technology’s efficiency outweighs its difficulty of use; with novel technologies, the difficulty of use may outweigh efficiency and ego efficacy.

To test the validity of the proposed dialectics, each interviewer reviewed the transcripts of the other two interviewers. Additionally, the fourth coder reviewed the randomly selected segments comprising over ten percent of each interview. Each coder discovered evidence of at least one entire dialectic in every transcript and evidence of multiple dialectics in most transcripts. Thus, we offer four dialectics that may represent the interactional challenges of ongoing professorial collaborations conducted via CMC: relational connection and personal autonomy, creativity and the mundane, task and socio-emotional goals, and novelty and efficacy.

5. Discussion

5.1. Summary of results

We undertook a preliminary examination of the interactional issues of concern in professorial collaborations conducted via CMC. To this end, we conducted a thematic analysis of twenty semi-structured interviews with professors from eight states to answer two research questions querying the ways professors report their collaborations with professional friends, it is not surprising that one of Rawlins dialectics emerged from the data. Further, this finding is consistent with previous research recognizing CMC’s potential to provide a venue for relationship development and maintenance; such research has examined interactivity via CMC (e.g., Chang & Wang, 2008), documented the importance of trust in CMC, to this end, we conducted a thematic analysis of twenty semi-structured interviews with professors from eight states to answer two research questions querying the ways professors report their collaborations with professional friends, it is not surprising that one of Rawlins dialectics emerged from the data. Further, this finding is consistent with previous research recognizing CMC’s potential to provide a venue for relationship development and maintenance; such research has examined interactivity via CMC (e.g., Chang & Wang, 2008), documented the importance of trust in CMC, and recognized CMC as an effective medium for social support (Burleson et al., 1994; Pennebaker & Traue, 1993) in a socially created environment that overcomes many entry barriers of telephone or FTF interactions (Rheingold, 1991; Rheingold, 1993).

5.2. Interpretation of results

We did not anticipate finding dialectical tensions at the onset of this project and thus we here provide a brief explanation of communication and dialectics. Dialectical tensions typically occur as a result of the interplay of opposing and contradictory forces, such as tension that occurs as a result of simultaneous needs for autonomy and connection, openness and closure, or novelty and predictability (Baxter, 1988). Dialectical tensions are typically resolved through communication. For example, newlyweds may negotiate the solution to maintain autonomy by reserving one weekend a month to spend time with their individual friends, and maintain connectedness by spending the other weekends together. It is through the communication during their negotiation that they resolve the dialectical tension.

Multiple forms of dialectics exist, many specific to particular relationships and contexts. For example, Papa, Auwal, and Singhal (1995) explored the dialectic of control and emancipation in organizing for social change and Mumby (2005) identified the dialectic of control and resistance as a routine social outcome of daily organizational life. Moreover, Rawlins (1989) uncovered several dialectics specific to young adult friendships such as freedom to be both independent and dependent and Sahlestein (2006) described romance partners as negotiating certainty and uncertainty in long-distance relationships. Similarly, unique tensions may occur among professors who collaborate via CMC. Notably, each dialectic we identified addressed a different aspect of the phenomenon under study, i.e., the collaborative relationship, tasks at hand, goals of the collaboration, and the technologies employed.

(1) Relational connection and personal autonomy represents a relationship dialectic originally identified by Rawlins (1989) in his research on friendships. Given that our professors frequently referenced collaborations with professional friends, it is not surprising that one of Rawlins dialectics emerged from the data. Further, this finding is consistent with previous research recognizing CMC’s potential to provide a venue for relationship development and maintenance; such research has examined interactivity via CMC (e.g., Chang & Wang, 2008), documented the importance of trust in collaboration (Hossain & Wigand, 2004; Whitener et al., 1998), and recognized CMC as an effective medium for social support (Burleson et al., 1994; Pennebaker & Traue, 1993) in a socially created environment that overcomes many entry barriers common to FTF interactions (Rheingold, 1991; Rheingold, 1993).

(2) Creativity and the mundane may represent two opposite but necessary aspects of scholarly endeavors. Indeed, Galegher and Krait’s (2002) speculated that “intellectual team work demands extensive information sharing and coordination, but these communication needs vary over time and tasks”. Consistent with Galegher and Krait’s (1992) findings and Barile and Durso’s (2002) conclusion that “e-mail alone may not be an appropriate setting for writing collaboratively”, our professors expressed a preference for telephone or FTF communication for integrative tasks, such as planning. Indeed, experience may have taught our professors what DeRosa, Smith, and Hantula (2007) concluded in their meta-analysis of the research on electronic group brainstorming, i.e., that groups meeting FTF tend to outperform groups meeting only electronically. Also consistent with Burgoon et al.’s (1999) results suggesting that interfaces such as e-mail may work best for less complex tasks, our professors identified CMC as a useful tool for mundane tasks. Indeed, numerous previous researchers characterized CMC as an effective medium for task accomplishment (Garton & Wellman, 1995; VanLear et al., 2005; Walther & Parks, 2002), due to its ability to expand opportunities and offer alternative means for collaboration (Ramirez et al., 2002) that include providing access, managing time, and overcoming geographical distance (Walther & Boyd, 2001). Further, previous research identifies e-mail as a preferred medium of communication among coworkers (Beaudoin, 2008; Kim, Kim, Park, & Rice, 2007). Thus, in spite of research documenting disadvantages to modality switching (Ramirez & Zhang, 2007), our professors appeared comfortable switching communication modalities, i.e., using CMC for the more mundane tasks and FTF for the more creative aspects of their collaborations.

Among the unique contributions of the present study is the balanced viewpoint provided by our informants who reported collaborating via CMC but employing FTF for more cognitively rich tasks, especially for creative work including hypothesis-generation and conflict management. The viewpoint that both FTF and CMC have a place in collaboration is supported by the results of one of the very few studies that has examined how one mode of communication can influence the other during collaboration, i.e., Dietz-Uhler and Bishop-Clark (2001) concluded that when collaborators employ CMC followed by FTF interactions, they perceive their FTF interactions as “more enjoyable and include a greater diversity of perspectives”.

(3) We are not the first CMC researchers to apply the label “task and socio-emotional” to on-line activities (see Derks et al., 2005; Pena & Hancock, 2006; Savicki & Kelley, 2000). Further, the “task and socio-emotional” label has long been a staple among small group theorists to describe types of leaders and classes of communication (Bales, 2001) as well as activity tracks in decision-making (Poole, Seibold, & McPhee, 1996). Indeed, task and socio-emotional goals may be present in any group or collaborative undertaking. Our professors reported appreciating that CMC can be short, to-the-point, and task-focus. Conversely, and consistent with the observations of Carter (2003) and Parkinson (2008), most professors reported relying on quasi-nonverbal behavior such as emoticons to simulate the nonverbal channel to convey socio-emotional messages. Perhaps many professors balance the dialectic of task and socio-emotional goals by engaging in both behaviors, e.g., write short e-mail messages that include emoticons where appropriate. The notion that collaborators achieve both task and socio-emotional goals via CMC is consistent with emerging contemporary thought that users increasingly achieve interactive goals via modern technology – including interactive goals that traditionally were viewed as only achievable via FTF interactions (Walther et al., 2005a). Indeed, following an extensive meta-analysis, Derks, Fisher, and Bos (2008) concluded that “there is no indication that CMC is a less emotional or less personally involving medium than FTF”.

(4) Novelty and efficacy may only apply in those collaborations enacted at least partially via CMC, as this dialectic clearly refers to the technological elements of interactions. While our professors acknowledged that CMC provided opportunities to collaborate that would have been more difficult or impossible without CMC, they also employed very few types of CMC technology. For example, although many organizations adopt instant messaging technology to increase collaboration among geographically distant co-workers (Cameron & Webster, 2005), only one of our professors mentioned using instant messaging. Indeed, despite the promise of numerous innovative technologies to facilitate communication and collaboration in education (Ingram, Hathorn, & Evans, 2000), not all innovations are readily adopted; as Walther et al. (2005a) noted “even though video cameras for personal computers may often be acquired for less than $10 US, most people rely on e-mail and text-based chat for internet exchanges”. Consistent with Shedletsky and Aitken’s (2001) claim that faculty avoid workshops about computer technologies and consistent with Jankowski et al.’s (2001) belief that “most changes occurring in the educational and research institutions related to communication studies and the Internet are incremental in nature rather than revolutionary”, we speculate that our informants used technologies that maximized efficiency, such e-mail for sending manuscripts, and avoided novel technologies in collaborations when new technologies involved a learning curve that reduced the professors’ collaborative efficiency. A future study could confirm or deny this speculative explanation.

5.3. Interpretation of the findings as a whole

Caplan (2001) observed that CMC provides a unique communication system, not easily described by traditional interpersonal communication theory, traditional mass communication theory, or a combination of theories from both domains. Thus, Caplan called for original theories to describe CMC behavior, such as Walther’s (1996) theory of CMC as hyperpersonal interaction. Each dialectic we identified addressed a different aspect of the phenomenon under study, i.e., the collaborative relationship, tasks at hand, goals of the collaboration, and the technologies employed. Thus, our results do not fit neatly into Walther’s (1996) hyperpersonal theories’ triad of concerns with receivers, senders, and message processes.

Our results appear to better illustrate aspects of Spitzberg’s (2006) model of CMC Competence. Spitzberg’s model contains nine elements; our four dialectics clearly exemplify four of these nine elements: media factors including efficiency (dialectic of novelty and efficacy), message factors, including task-orientation and socio-emotional orientation (dialectic of task and socio-emotional goals), contextual factors including relational factors (dialectic of relational connection and personal autonomy), and finally competence outcomes, including appropriateness (dialectic of creativity and the mundane). The purpose of our study was to undertake a preliminary examination of the interactional issues at play in professorial collaborations. Perhaps these four elements (versus all nine of Spitzberg’s elements) represent the most salient aspects of the CMC competency model at play in professorial collaborations.

5.4. Limitations and suggestions for future research

Given the preliminary nature of our investigation, we employed an appropriate methodology, i.e., in-depth interviews with a small convenience sample, to discover the appropriate directions for more expensive and elaborate future research. Indeed, in-depth interviews with any small sample should reveal major concerns with minimal capital outlay. While such qualitative studies provide detailed information from informants, the samples are necessary limited in size and scope, thus necessarily limiting the generalizability of the findings. Future studies in this line of research could employ larger, more diverse samples to examine further the issues identified in our preliminary study.

Additionally, we gathered data from individual professors. Interviews with professorial work groups or collaborative dyads may illuminate another level of interactional issues. Further, future research could examine interactional concerns at various points in the collaborative process, from the initial idea and planning stages to project completion, as CMC may influence professorial collaborations in differing ways at various stages.

Our preliminary study appropriately interviewed professors. However, an examination of actual e-mail messages exchanged may reveal how collaborators communicate emotions, address relational issues, and frame tasks. The proportion of task-related and relationship-related discourse exchanged may illuminate when and how professors discover potential problems in their collaborative relationships and how quickly they attend to them. Triangulation of interview with observational data may be particularly illuminating.

Finally, future research could examine the influence of CMC on various types of professorial collaborations such as peer vs. mentor-mentee collaborations. Given CMC’s well documented tendency to “even the playing field” (Metatek, 2005; Postmes et al., 1998; Spears & Lea, 1994), perhaps status differences influence how collaborators employ CMC. Finally, future studies might examine collaborations among professionals who are not academics to discover if non-professors grapple with the same set of interactional dialectics when they collaborate via CMC.

5.5. Conclusions

Despite these limitations, our study contributes to an understanding of collaborations via CMC in four ways: (1) It represents the first preliminary examination of the influence of CMC in professorial collaborations. (2) It offers insights into the interactional challenges in professorial collaborations as well as professorial collaborative relationships. (3) We discovered six preliminary themes that formed four dialectics; these dialectics may represent the interactional challenges of professorial collaborations conducted via CMC: relational connection and personal autonomy, creativity and the mundane, task and socio-emotional goals, as well as...
novelty and efficacy. (4) Finally, we offered thoughtful suggestions for future research.

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