A COMPARISON OF COMMUNICATION MOTIVES OF ON-SITE AND OFF-SITE STUDENTS IN VIDEOCONFERENCE-BASED COURSES

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The objective of this investigation is to determine whether student site location in an instructional videoconference is related to students' motives for communicating with their instructor. The study is based, in part, on the work of Martin et al. who identify five separate student-teacher communication motives. These motives, or dimensions, are termed relational, functional, excuse, participation, and sycophancy, and are measured by a 30-item questionnaire.

Several communication-related theories were used to predict differences between on-site and off-site students, Media richness theory was used, foundationally, to explain differences between mediated and face-to-face communication and other theories such as uncertainty reduction theory were used in conjunction with media richness theory to predict specific differences.

281 completed questionnaires were obtained from Education and Library and Information Science students in 17 separate course-sections employing interactive video at the University of North Texas during the Spring and Summer semesters of the 2001/2002 school year.

This study concludes that off-site students in an instructional videoconference are more likely than their on-site peers to report being motivated to communicate with their instructor for participation reasons.

If off-site students are more motivated than on-site students to communicate as a means to participate, then it may be important for instructors to watch for actual differences in participation levels, and instructors may need to be well versed in pedagogical methods that attempt to increase participation, The study also suggests that current teaching methods being employed in interactive video environments may be adequate with regard to functional, excuse-making, relational and sycophantic communication.

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CHAPTER 1

INTRODUCTION

Statement of the Problem

Education is changing. Robust telecommunication technologies and the Internet have brought about an explosion of information that is available to learners in several different modalities, from several different sources, and available most anywhere and any time, day or night. This would seem like a golden opportunity for higher education. Educators should be able to choose from this smorgasbord of available information to provide a highly customized educational experience to each learner.

Unfortunately, it is not easy to see whether these technological advancements are the cause or the remedy to growing pressures placed on higher education. Harley (2001) summarizes these pressures as a "triad" of "1) holding down costs, 2) increasing access to an increasingly diverse demographic, and 3) maintaining quality" (p.10). As a result of these pressures, higher education is busily evaluating each new technology and its related teaching and learning modalities with a critical eye of comparison to the face-to-face techniques of the past. Video mediated content delivery is particularly attractive to educators since it appears to offer some of the same benefits as face-to-face content delivery yet may include distant learners and may be specifically woven into web-based content delivery.

Communication is the heart of education. While education certainly includes self-

discovery and personal exploration, the process of education may be largely considered to be the sharing of information among educational participants. In order to share information, participants must communicate. Thus, whatever form educational communication takes, educational researchers are apt to spend time evaluating it. This study attempts to evaluate video mediated instruction in light of student communication motives. For the purposes of this study, mediation involves any use of any media to communicate an instructional message.

Face-to-face communication is valued in educational contexts because it appears to allow participants to experience nonverbal cues that can help direct the flow, extent, and even content of verbal interaction. Two-way interactive video, often called videoconferencing, has been used to allow students to participate at a distance, presumably with some of the same capabilities to experience nonverbal cues as face-to-face communication. In other words, educators often presume that video-mediation has little impact on the communication process.

There have been several studies of classroom communication aimed at determining student motivation when communicating with an instructor. Researchers Martin, Myers, and Mottet (1999) suggest that the reasons students communicate with instructors in class can be narrowed down to five major factors: relational, functional, excuse, participation, and sycophantic.

To a great extent, researchers have been unable to demonstrate that mediation alone greatly affects the quantity or even quality of verbal interaction in a learning environment. Specifically, researchers cannot consistently demonstrate that the levels of

verbal interaction in instructional videoconferencing differ between local sites and distant sites. Murphy (1995) suggest that instructors can differentially control the amount of verbal interaction that occurs at various sites in a videoconference. Even so, research (Anderson, Smallwood, MacDonald, Mullin, & Fleming, 2000) has demonstrated repeatedly that participants' perceptions are altered by mediation in various ways. Several studies are cited in the Literature Review that address the concept of mediation and participant perceptions. Many of these studies indicate that even when rich media fail to produce different levels of verbal interaction, students perceive existing verbal interaction as more robust. If student perceptions are altered, then motivation (whether it relates to further communication or learning in general) may also be altered. Ellis (1993) points out the risks posed when the instructor fails to understand the impact of videoconference-based instructional delivery: "The risk, then, becomes one of damage to the motivation of the student if a change is brought in as a permanent and the student becomes even less involved with their [sic] own learning activities." (p. 200)

If it is true that instructors are differentially able to control levels of interaction among sites, (Murphy, 1995) and if students perceive value in richer media, it may be important to understand a student's perception of the motivation behind any verbal communication with a professor. Such an understanding might lead to improved instructional strategies or improved media selection in distributed learning situations.

Definition of Terms

Copresence

Some researchers have referred to the physical presence of communication

participants as copresence. Copresence refers to the synchronous occupation of physical space by communication participants; thus, it involves sharing both space and time. On-site students would be copresent with the instructor.

Distance Learning

Distance learning is the mediated delivery of educational interaction specifically employed to overcome the effects of time or distance between participants.

Distributed Learning

Distributed learning is the integration of multiple media to provide interaction between educational participants. Because distance learning is necessarily mediated, it may be considered a sub-set of distributed learning in situations that involve multiple media. Distributed learning strategies may be employed even in situations that do not require overcoming time or distance. Thus, the terms are complimentary rather than identical. Some researchers (Freitas, Myers, & Avtgis, 1998) use a more narrow definition of distributed learning, which simply refers to the "use of computers in distance learning." (p. 367)

On-Site/Off-Site

Students located at the same (local) site as the instructor are said to be on-site students. Students located at a different (distant) site from the instructor are said to be off-site students.

Sycophant / Sycophancy

"One who attempts to win favor or advance himself by flattering persons of influence; a servile self-seeker"(Morris (Ed.), 1976, p. 1302.).

Teledata

Teledata is recorded media that can be replayed or recalled upon demand. No synchronous interaction with a human is involved.

Telepresence

Telepresence is the use of any technology to allow two or more persons to communicate and interact with one another as if they were physically present. Telepresence is operationally defined by the technology involved, in that as technology improves, new methods of telepresence may become available. The "talking head" videoconference is an example of a telepresence that allows participants to see and hear one another at a distance. A recorded version of a talking head replayed on demand (teledata) would not be considered telepresence.

Traditional Classroom Setting

The traditional classroom setting may be defined as a situation in which an instructor uses lecture, demonstration, and other pedagogical techniques to impart knowledge to a group of learners. These learners attend class by sitting in the same classroom with the instructor during the lecture period (synchronous). Communication occurs directly with the instructor and with other students.

Videoconference

Videoconferencing is the use of telecommunications technology to communicate with other individuals in other locations. The use of video cameras, monitors, and telecommunication technologies allows users to see and hear one another with varying degrees of quality. Participants must be present in one of the specified locations in order

to take part in the discussion (synchronous). This technology is often referred to as interactive compressed video (Chen, 1997, p. 6).

Significance of the Problem

The primary goal of this research is to better understand the effects of mediation (specifically the impact of on-site or off-site student participation in a videoconference-based course) as measured by the student's self-reported communication motivation. Information about this topic can assist administrators as they determine the value of offering videoconference-based courses. It can also assist instructors and instructional designers as they develop improved curriculum, pedagogical methods, and learning strategies related to videoconference-based instruction. The same information might also be used to pre-screen students or predict student success in distance-learning environments. Similarly, an understanding of communication motives of those students enrolled in videoconference-based courses will provide administrators with a better insight into student preferences and levels of satisfaction. Such an understanding would contribute to more strategically aimed marketing and recruitment efforts.

Colleges and universities are expanding their borders daily by offering courses via videoconference. It therefore becomes increasingly important to understand the characteristics of students who receive instruction via any sort of mediation, including videoconferencing and the relationship of these characteristics to various types of mediation.

Research Question and Hypotheses

Research Question

Is the student site-location in an instructional videoconference related to students' motives for communicating with their instructor as defined by the research of Martin, Motet and Myers (1999)?

Hypotheses

In order to adequately answer the research question, the following hypotheses are tested. Note that H_0^1 is overarching in nature, and H_0^2 through H_0^6 are specific to each of the five motivational factors set forth by Martin, Mottet, and Myers (1999).

General hypothesis.

$H_0^{(1)}$ There is no difference in self-reported motives for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences as measured by the individual items on the Martin, Mottet and Myers 30-item measure (Martin, Mottet, & Myers, 1999b).

Specific hypotheses.

$H_0^{(2)}$ There is no difference in self-reported relational motivation for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

$H_0^{(3)}$ There is no difference in self-reported functional motivation for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

$H_0^{(4)}$ There is no difference in elf-reported participation motivation for

communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

$H_0^{(5)}$ There is no difference in self-reported excuse-making motivation for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

$H_0^{(6)}$ There is no difference in self-reported sycophantic motivation for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

CHAPTER 2

LITERATURE SURVEY

Introduction

This literature review is divided into four major sections. The initial section is a survey of literature related to video-mediated communication, which is followed by a section focused on discussion of the research and literature related to communication motives. The third section covers the discussion of theoretical foundations pertinent to the hypotheses of this study, and finally a summary section contextually links certain predictive constructs of each of the communication theories to communication motives.

Video and Mediation Research

Kathleen Finn (1997) edited a volume called Video-Mediated Communication, which addresses several issues related to this area of research. In her introduction to the volume, she wrote a paragraph that is well worth including here.

> Unless one were familiar with the intrinsic and fundamental differences across studies … one might be quite startled to compare the related studies based on their results alone. Although in some cases the results cannot be compared because they really address different aspects of the VMC issue (e.g., some studies compared VMC with face-to-face, whereas others compared VMC with a condition in which there was no video channel or other visual component), in other instances the results do not

> seem to have much in common with one another. It is not so much the case that some studies concluded, "VMC is equivalent to face-to-face communication," whereas others concluded it is not, or that some research claimed video has no effect on anything. There are as many areas of discontinuity across studies as there are of overlap, making direct comparisons of studies an inexact science. (p. 4)

Similarly Abigail Sellen (1997) said the " . . . research has tended not to follow a well-defined path. Although researchers themselves may be systematic about their own work, there seems to be little systematicity or cohesion across VMC studies, resulting in a body of work that is unusually diverse" (p. 95).

Finn's (1997) and Sellen's (1997) statements illustrate the complexity of directly comparing mediation studies. Categorizing these studies is a complex task because of the number of variables involved. It is common, for instance, for some researchers to include non-video-related technologies or different variables in their studies, causing them to use a variety of categorization schemes (Payne, 1998). Even so, studies on video-mediated communication and videoconferencing can generally be divided into five specific categories.

1. Cost benefit analysis or effectiveness considerations. Researchers in this area have addressed the question of whether or not courses delivered by videoconference are as cost-effective or beneficial as courses delivered face-to-face (Hinton & Kramer, 1998; Dennis & Kinney, 1998; Habash, 1999; Morehouse, 1987; Barker & Patrick, 1988; Barron, 1996).

2. Design considerations or pedagogy. Researchers in this area have questioned if teaching methods or instructional design should be different between media conditions (Childers & Berner, 2000; Telg, 1996b; Dolhon, 1999b; Dolhon, 1999a; Dede, 1996b; Dede, 1996a; Etzioni & Etzioni, 1999; Rodgers, 1998; Guerrero & Miller, 1998; Wilbur, 1997; Mane', 1997; Yamaasi, Cooperstock, Narine, & Buxton, 1996; Acker & Levitt, 1987; Jones, 1995; Okada, Fumihiko, & Matsushita, 1994; Inoue, Okada, & Matsushita, 1995; Kuzuoka, 1992; Sutton, 1996; Lynch, 1998; Telg, 1996a; Kalyuga, Chandler, & Sweller, 2000).

3. Student achievement or participant comprehension. Researchers in this area questioned if students performed as well academically in a videoconference-based course as they do in a face-to-face course. Similar research in non-educational settings has addressed whether or not participant comprehension or understanding is identical between conditions (Childers & Berner, 2000; Colston & Schiano, 1995; Suh, 1998; Suh, 1998).

4. User perceptions, preferences, or satisfaction. Researchers in this area questioned if users in videoconference-delivered courses were as satisfied with their educational experience as they might have been within a face-to-face environment. In addition, users were asked if their class performance and value of education received would have been the same if they had been in a face-to-face classroom environment (Grove, 1998; Witt & Wheeless, 1999; Freitas et al., 1998; Scott & Rockwell, 1997; Reinsch & Lewis, 1983; Mottet, 2000; Schmitz & Fulk, 1991; Witt, 1997; Chen, 1997; Bellotti & Bly, 1996; Reinhart & Schneider, 1998; Acker & Levitt, 1987; Anderson et al.,

2000; Jones, 1995; Fulford & Zhang, 1993; Johnson & Silvernail, 1994; Zhang & Fulford, 1994; Silvernail & Johnson, 1992; Morikawa & Maesako, 1998; Squire & Johnson, 2000; Witt, 1997; Zhang & Fulford, 1994; Witt & Wheeless, 1999; Acker & Levitt, 1987; Bellotti & Bly, 1996; Chen, 1997; Freitas et al., 1998; Fulford & Zhang, 1993; Grove, 1998; Johnson & Silvernail, 1994; Jones, 1995; Mottet, 2000; Reinhart & Schneider, 1998; Reinsch & Lewis, 1983; Schmitz & Fulk, 1991; Scott & Rockwell, 1997; Silvernail & Johnson, 1992)).

5. Amount or type of interaction. In general, most studies in the literature do not reflect significant differences in the type or amount of interaction between on-site and off-site conditions. Studies by (Murphy, 1995; Chen, 1997; Manning, 1999; Sellen, 1992; Barker & Patrick, 1988; Haynes & Dillon, 1992), and Suh, 1998 are included in both sub-categories. There are, however, several pieces of research that have demonstrated specific differences (O'Conaill & Whittaker, 1997; Takao, 1999; Whittaker & O'Conaill, 1997; Bauer & Rezabek, 1992; Sellen, 1992; Farr & Muscarella, 1991; Lynch, 1998; Kalyuga et al., 2000).

Note that the research cited above represent both quantitative and qualitative research, and many include several dimensions that extend beyond straightforward video-mediation research. Also the five categories mentioned above are not mutually exclusive and, as a result, a limited number of citations occur in more than one of the categories. Specifically, several occur in both Category 5 (which discriminates whether or not there is a quantitative difference in the type or amount of interaction between conditions) and one of the other four categories. The inclusion of one study in more than one category is

necessary due to contextual differences in methodologies and the complex nature of mediation research.

Approaches and Limitations

All of these studies seem to share two limitations. Courses delivered primarily by videoconference almost always include instructional content delivered through other media. E-mail, chat sessions, mailing lists, and web-based instructional materials are often used to supplement, enrich, or even replace the synchronous delivery of course content or interaction that might normally be included in a videoconference. Even technical terminology has changed to reflect this fact. Currently, the term *distributed learning* is more commonly used among the academic community in lieu of the older term, *distance learning*. Distributed learning implies that course content and interaction occur in a distributed manner through multiple media and in both synchronous and asynchronous modes. Since videoconference-based courses often include interactions and content delivered through other media, it is difficult to attribute specific quantifiable communication characteristics to the effects of video-mediation alone.

A second limitation of these studies is that many have been built on the assumption that videoconference-based courses should mimic face-to-face courses in order to be effective. This approach is logical, but fails to encourage research that might demonstrate different, but improved, pedagogical methods.

There seem to be three general defining characteristics of the body of research devoted to video-mediated communication. First, a majority of the research involving the significance of video in mediated communication uses subjective measures primarily

concerned with users' perceptions of its value or effectiveness rather than objective measures of outcome. Second, only a limited portion of the overall research appears to use truly experimental designs that attempt to control for multiple types of variance. This may be due to the overall complexity of the face-to-face and visual communication processes as well as the difficulty of imposing laboratory-type control within a traditional educational setting. Finally, the studies in question have taken place in several different contexts. Consequently, identical variables are seldom studied in separate research and a consistent set of variables has not emerged to provide a common framework for the field. There have been only limited efforts to duplicate specific research with identical follow-up studies.

Overview

Since the late 1950s, research has been conducted on the value of video in mediated communication. The studies have taken place in several contexts including mass media, instructional settings, organizational settings, group problem-solving settings, and interpersonal communication situations. Because there appears to be a lack of any organized longitudinal approach to the research in any one of these contexts, there are few over-arching findings that can be promoted with confidence. Generally, the findings can be summed up in two statements.

1. In studies that compare the value of audio and video, including combinations of the two, audio is consistently rated higher subjectively. In various contexts, research has concluded that audio quality is more important than video quality or, in some cases, even the presence of video (Bauer & Rezabek, 1992).

2. Users tend to perceive video as valuable even in situations where little or no value is found using objective measures. Zhang and Fulford (1994), regarding one of their mediation studies, state that "Learner perceptions did not accurately reflect the length of interaction that occurred. The implication is that the psychological concept of interaction dominates the technological reality" (p. 63). The more experimental research, particularly those that use objective measures, do not support the value of video in mediated communication as strongly as those studies using subjective measures. Because video-mediated communication is complex, there seems to be several variables that can influence outcomes; some are difficult to isolate and many are considered to be context-specific. As a result, much of the research has been context-specific and will likely continue to be so until a few of these variables have been adequately proven to be broadly significant. Whittaker (1995) expresses a similar concept in his suggestion that quantifiable benefits to video mediation are "task- and situation-specific" (p. 525). Since the choice of variables is closely related to supporting theories, it is likely that similar but context-specific theories will continue to advance until a few methodologies are accepted and proven to measure certain variables accurately and across multiple contexts.

In 1983, Richard Clark of the University of Southern California performed a meta-analysis of previous research related to the impact of mediation, which included but was not limited to, video-mediation. Clark concluded that "all current reviews of media comparison studies suggest that we will not find learning differences that can be unambiguously attributed to any medium of instruction" (Clark, 1983). Clark's study, of course, was limited to research prior to 1983; as a result, most of the media-types

included in his analysis were one-way in nature and did not include a feedback loop with a live instructor. Thus, prior to 1983, there were limited opportunities to study two-way interactive media primarily as a result of technological limitations. Consequently, much of this research was focused on comparing media in which instructional materials underwent significant translation as a result of mediation. (This is not necessarily the case in video-mediated situations that employ two-way, interactive video technology.) Clark (1994) later restated his belief that media are "mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (p. 22). Clark stated this renewed discussion was to create dialogue among his peer researchers, and he was successful.

Several researchers reacted to Clark's 1994 article which appeared in a special issue of the journal Educational Technology Research and Development. Of those who disagreed with his premise, most echoed a single theme that suggested Clark's approach was too narrow to ever allow an understanding of the relationships between internal and external learner resources. Kozma (1994) posited that any environmental factor had the potential to interact with a learner's "cognitive resources" (p. 8), and seemed to suggest that such interaction might be easier to identify in a holistic research approach. Similarly, Morrison stated that it would be valuable to "consider the effectiveness of the whole unit of instruction rather than the individual components" (Morrison, 1994). Reiser (1994) also attacked Clark's approach by suggesting he "fails to acknowledge the fact that certain media attributes make certain methods possible" (p. 45).

Almost all of the articles written in response to either Clark's 1983 or 1994

articles, and particularly those that disagree with Clark, have a common theme. Nearly all of them suggest that either the debate must be restructured (Jonassen, Campbell, & Davidson, 1994) or the terminology defined in such a way to insure researchers are discussing exactly the same issue (Shrock, 1994). Media research has certainly benefited from the healthy exchange of ideas that has been partially fueled by this single researcher.

Classroom Communication and Communication Motives Research

In a self-critical essay on his and others' work toward developing communication theory, Vernon Cronen said that their goal "was to create a communication theory, not a theory about communication from the perspective of another discipline" (Cronen, 1998). His statement reflects two important facts about communication research. First, communication is one of the most studied of all human activities, and second, communication is so central to most human behavior that it has been studied from the viewpoint of several disciplines. Even so, Sereno and Mortensen (1970) preface their book on communication theory by saying "though astonishingly popular as an object of research, the field of human communication has not established any sharply-defined boundaries or domains" (p. 25). Although this statement is 30 years old, it still seems accurate today. In fact the current study relies upon the examination of communication from several different, but occasionally overlapping, disciplines.

In what follows communication research is examined in light of its relationship to classroom instruction and the idea of communication motivation. Certain studies involving communication motives seem distant to the classroom or instructional contexts.

Graham, Barbato, and Perse (1993) demonstrate that communication motives "affect who we talk with, how we interact with others, and what we talk about" (pp. 172-186). While classroom communication can be robust, the choice of communication partners is often limited or predefined, the topic is, to some extent, mandated, and the method of interaction is frequently dictated by classroom procedures. Thus, it seems that traditional research methodologies for exploring communication motives must be altered somewhat to operate effectively within these boundaries.

If traditional methodologies are ill suited to the purpose, it may be due to the artificial communication barriers that seem to be a part of the classroom environment. Hans van der Meij (1988) states, "In school there arise numerous situations in which pupils need the help of others to progress in their learning. Pupils should have the necessary freedom and cognitive and social skills to solicit help in such situations" (pp. 401-405). His statement recognizes that instructional environments often include unique communication situations with special rules of engagement. Additionally, it implies that if robust communication exists, it does so because students are particularly motivated to make it happen. Such motivation can be viewed as a trait of successful students or another element that is taught to students and thus leads to success. Christophel and Gorham (1995) states that student motivation has often been conceptualized "either as a general, enduring predisposition toward learning (trait orientation) or as an attitude toward a specific class (state orientation)" (pp. 292-306). Such a conclusion does not necessarily imply that student motivation is influenced by instructors, but the Christophel and Gorham study is founded upon prior research that specifically indicates that

instructors seem to be able to influence student motivation (Christophel, 1990).

Many studies that connect the two domains of communication motivation and instructional communication do so by assuming a particular motive for specific classroom communication. Ann Darling (1989) has conducted a qualitative study of how students signal non-comprehension in the classroom. The assumed student motivation in this study is functional and specifically involved clarification. Darling identifies three strategies that students use to seek clarification and stated that "focused and directive strategies require that the person signaling the problem both have a sense for the essence of the problem and an idea about an appropriate clarification device" (p 39). On the surface, such a strategy seems to be motivated by a need to clarify instructional content (functional), but in reality it might be used to demonstrate a student's knowledge to the instructor (sycophancy) or even as a simple means to meet an instructor's demand for individual participation. The distinction may seem limited, but if student communication motives are linked to affective and cognitive learning, the distinction may be a valuable resource to those wishing to understand classroom communication. In a follow-up study, Kendrick and Darling (1990) state that "tactical use is related not only to the problem type but also to the situation within which the problem occurs" (p. 15). Clearly, it is possible that a statement meant to clarify an instructional issue may be concurrently motivated by other student needs or concerns.

Student motivation is complex in nature, and researchers often assume that certain strategies can be employed by instructors to increase student motivation in certain areas. If this is true, it is necessary that the perceptions of instructors and students coincide, at

least to some degree. Virginia Richmond has co-authored several articles with various colleagues concerning power in the classroom (Richmond, 1990; McCroskey & Richmond, 1983), each of which emphasize the importance of shared perceptions between teachers and students. One assumption in Richmond's 1990 study is that a "critical concern is what students think the teacher does and what impact those perceptions have on other meanings stimulated in the mind of the student" (Richmond, 1990).

Cognitive learning theory, in many ways, orbits student perception; thus, when instructors come to better understand student perceptions, they are more likely to eventually impact learning. Developing positive student relationships is a paramount task for any instructor; and the assumption is that communication strategies can be specifically employed to promote such relationships. West and Pearson (1994) assert that "teachers are in a position to create a positive atmosphere that actually fosters student questions" (p. 299). Even so, when it comes to motivation, Gorham and Millette (1997) suggest that students are likely to attribute "more of their motivation to factors they bring with them to a course (and beyond the teacher's control): their personal credit or grade orientation and their desire to please others, frequently their parents" (p. 257). In any case, all of these studies seem to imply that there is value to understanding what motivates students to communicate with their instructors.

Communication Motives

Rubin, Perse, and Barbato (1988) state that "little research has been conducted to determine why people initiate communication with other people" (p 603). They juxtapose

this communication-initiation with the more common aim of research into communication function. Rubin et al. (1988) identify 18 possible interpersonal communication motives which they subsequently expanded to 59 motives. After several rounds of factor analysis and testing, the authors have reduced these variables to six factors that account for 62.8% of the total variance in the data. The factors are described as pleasure, affection, inclusion, escape, relaxation, and control.

Several years later, Matthew Martin, Timothy Mottet, and Scott Myers began a series of studies aimed at understanding students' motives for communicating with their instructors. The initial study (Martin et al., 1999) used focus groups to identify 54 reasons why students talk to their instructors and employed factor analysis to distill these reasons down to 5 factors, or dimensions, which account for 63.7% of the variance in the data. The original five factors were labeled relate, functional, excuse, participation, and sycophancy. Martin et al. (1999) defined these factors as follows:

> When students communicate to Relate, they are trying to develop personal relationships with their instructors. Communicating for functional reasons includes learning more about the material and the assignments in the course. Students also communicate to offer excuses, attempting to explain why work is late or missing or to challenge grading criteria or a grade. A fourth reason students give for communication is participation. Students want to demonstrate to their instructors that they are interested in the class and that they understand the material. The fifth reason is to get on the instructor's good side, Sycophancy). Some students report they communicate in order to make a favorable impression,

communicating in a way that they know the instructor will approve (e.g., earning brownie points). (Martin et al., 1999)

The Martin et al. (1999) study compared the five factors with trait interpersonal motives measured by the Interpersonal Communication Motives Scale developed by (Rubin et al., 1988).

In a second study, Martin et al. (1999a) added 19 new items to 24 identified in the previous study. After factor analysis, they retained the six top items for each of their original five factors to create an instrument with 30 items overall. The instrument itself is referred to as the Martin, Mottet and Myers 30-Item Measure. Table 1 details the placement of each of the 30 individual items into the Martin et al. (1999) factors, or dimensions, and indicates the number, or ordering, assigned to each individual item as it appears in the questionnaire used in the current study.

The results of this second study were then compared to affective learning as measured by Mottet and Richmond's Affective Learning Measure (Martin et al., 1999a) and cognitive learning as measured by a single question asking "students to rate from zero to nine how much they had learned in the class immediately preceding the current class" (p. 12). The authors found that "students who report higher amounts of affect toward the course, as well as higher amounts of perceived cognitive learning, report being motivated to communicate with their instructors for reasons to relate, for functional reasons, and to participate" (p. 13).

This same group of researchers again used the 30-item measure to compare student communication motivation to students' socio-communicative orientation and

instructors' socio-communicative style. They found that "students whose social styles are more dominant, independent, and competitive are motivated on multiple levels to accomplish tasks or objectives, and will communicate with their instructors in order to bring about the desired objectives" (Martin et al., 1999b). Additionally, they found that "students who have a responsive orientation are motivated to talk to their instructors for functional, participation, and excuse-making motives" (Martin et al., 1999b)

The original questionnaire devised by Martin et al. (1999) and subsequently revised (Martin et. al 1999a) asks students to use a Likert-type system to express the degree to which each of the 30 items reflect their own reasons, or motives, for communicating with their instructors. The possible responses range from "not at all like me," to "exactly like me" coded from 1 to 5, respectively.

Table 1

The individual items on the Martin Mottet and Myers –30-Item Measure grouped according to the communication motives they represent.

Motives	Item*	Scale Items
Relational	20	- to learn about him/her personally
	11	- so we can develop a friendship
	29	- to build a personal relationship
	18	- to learn more about the teacher personally
	2	- because I find him/her interesting
	10	- because we share common interests
Functional	23	- to clarify the material
	3	- to get assistance on the assignments/exams
	30	- to learn how I can improve in the class
	1	- to ask questions about the material
	17	- to get academic advice
	15	- to get more information on the requirements of the course
Participation	4	- to appear involved in class
	9	- because my input is vital for class discussion
	19	- to demonstrate that I understand the material
	28	- to demonstrate my intelligence
	25	- because my classmates value my contribution to class
	21	discussions
		- because my instructor values class participation
Excuse-	5	- to explain why work is late
Making	22	- to explain absences
	24	- to explain why I do not have my work done
	16	- to challenge a grade I received
	26	- to explain why my work does not meet the instructor's expectations
	8	- to explain the quality of my work
Sycophantic	6	- to pretend I'm interested in the course
	12	- to give the instructor the impression that I like him/her
	13	- to give the impression that I think the instructor is an effective teacher
	7	- to give the impression that I'm learning a lot from the instructor
	13	- to give the impression that I'm interested in the course content
	27	- to get special permission/privileges not granted to all students

*Ordering of items in the questionnaire used for the current study

As indicated in Table 2, the instrument has been shown to have high internal consistency, reflected by values of Chronbach's alpha, in all three studies conducted by Martin et al. (1999, 1999a, 1999b)

Table 2

Reliability data for three studies

Factor	(Martin et al., 1999)	(Martin et al., 1999a)	(Martin et al., 1999b)
Relate	$\alpha = .89$	$\alpha = .90$	$\alpha = .88$
Functional	$\alpha = .84$	$\alpha = .87$	$\alpha = .87$
Excuse	$\alpha = .82$	$\alpha = .89$	$\alpha = .84$
Participation	$\alpha = .81$	$\alpha = .86$	$\alpha = .86$
Sycophantic	$\alpha = .78$	$\alpha = .89$	$\alpha = .87$

Theories

This study is communications-related within an educational technology context. Therefore theory must be considered both from a communications perspective as well as from an educational or learning perspective. This section will therefore include discussions of both areas. Learning theory will be addressed first, almost exclusively from a cognitive learning theory perspective, and communication theory will be discussed and drawn from research in communication, specifically human communication, human factors and industrial psychology. Human factors oriented communication research, and to some extent industrial psychology oriented communication research, often takes place in technological contexts and is therefore particularly appropriate to this study.

Cognitive Learning Theory

Much of the research regarding instructional technology assumes that the

technology should be socially translucent. Some sociologists say the media should have a similar quality called social presence (Short, Williams, & Christie, 1976). In this context, a system or technology is generally considered socially translucent if it is able to pass through the social and communicational cues that would normally be transmitted during face-to-face classroom interaction. While this assumption holds for most aspects of instructional communication, it does not take into account the fact that some social or communicational cues might be removed from instructional interaction and actually improve certain outcomes. As instructional technology is introduced into the learning environment, educators often depend on the learner to make the appropriate adjustment to deal with any changes in the amount or type of communication that occurs. Cognitive learning theory includes descriptions of learners that suggest they are capable of making such adjustments.

Cognitive learning theory is largely based on the assumption that all learning takes place as a result of applying new knowledge to an existing schema or existing knowledge base. This theory focuses on the interrelationship between a learner's existing knowledge and attitudes and it assumes that new experiences or stimuli cause a learner to transfer old information into a new context or new information into an old context. It is clear, then, that cognitive learning theory requires the learner to take an active roll in his or her own learning process. Further, if learners are actively involved in their own learning, then their motivation becomes central to the process itself.

Cognitive learning theory rests on other assumptions: that learners are intrinsically motivated to develop competence and that "motivation affects the amount of

time that people are willing to devote to learning" (Bransford, Brown, & Cocking, 2000). Similarly, Bransford et al. (2000) indicated that the motivation to learn could be altered by social interaction and communication, (p. 61) emphasizing that opportunities for social communication are necessary to a robust learning environment.

Cognitive learning theory includes the concept of metacognition, which suggests that individuals are at least partially aware of their own learning and thinking processes. The theoretical framework that seems to explain metacognition also includes descriptions of how an individual's goals and motives can influence learning. Kirby (1984) stated that individuals use goals and motives as broad guides to structure what he calls macroplans for learning. Such research implies an importance to understanding student motivation as it is related to instructional communication; both from the perspective of using such knowledge in instructional design and helping students understand their own motives to improve their learning strategies.

Cognitive learning theory generally paints a picture of learners as resilient and adaptable. This adaptability might be described as a response to internal changes in motivation, or a sense of instructional accountability. Instructional communication is goal-oriented and it certainly creates accountability among participants. The tension that results from this instructional accountability causes participants to adjust or calibrate their communication-related behavior to meet the demands of accountability. There are several major theories that appear to explain instructional calibration. Specifically, the nonverbal communication hypothesis, (Freitas et al., 1998; Gorman, 1969; Christophel & Gorham, 1995; Christophel, 1990), which includes the theory of nonverbal immediacy, and the

theory of affinity-seeking behavior support the idea that educational participants calibrate their communication behavior under various instructional conditions.

Communication Related Theory

This section discusses seven communication-related theories that seem to be applicable to this study. Sereno and Mortensen (1970) state that "Human communication is in no small measure influenced by the social context in which it occurs" (p. 8). Indeed communication related theories abound partially due to the need to study communication from several different perspectives. The seven theories presented here were chosen from dozens of, often interrelated, theories that allow researchers from several other fields of research to include communication as one dimension of an overall study.

Communication research involving educational technology is often conducted by researchers in fields such as industrial psychology and human factors in addition to the field of human communication. Figure 1 graphically depicts these seven theories along a continuum in an attempt to characterize the origins of the literature used in this study. There is much overlap both in the origins and application of these theories. Thus this characterization is meant only to provide a broad view of the types of literature involved in educational technology related communication studies. This section is divided into two parts. The first part discusses media richness theory that helps describe why face-to-face communication might be more robust than mediated communication. The second part includes the discussion of several theories that might explain why more, or less, robust communication might alter student's communication motives. Langenbach (1994) states, "A research project need not deal with an entire theory (i.e., a complete set of

interrelationships) but may, and usually is, confined to certain aspects of a theory" (p. 38). Because many of the theories discussed in this section are narrowly applied to a context of mediated communication, the discussion of each theory is focused on the specific constructs within each theory that most readily fit the context.

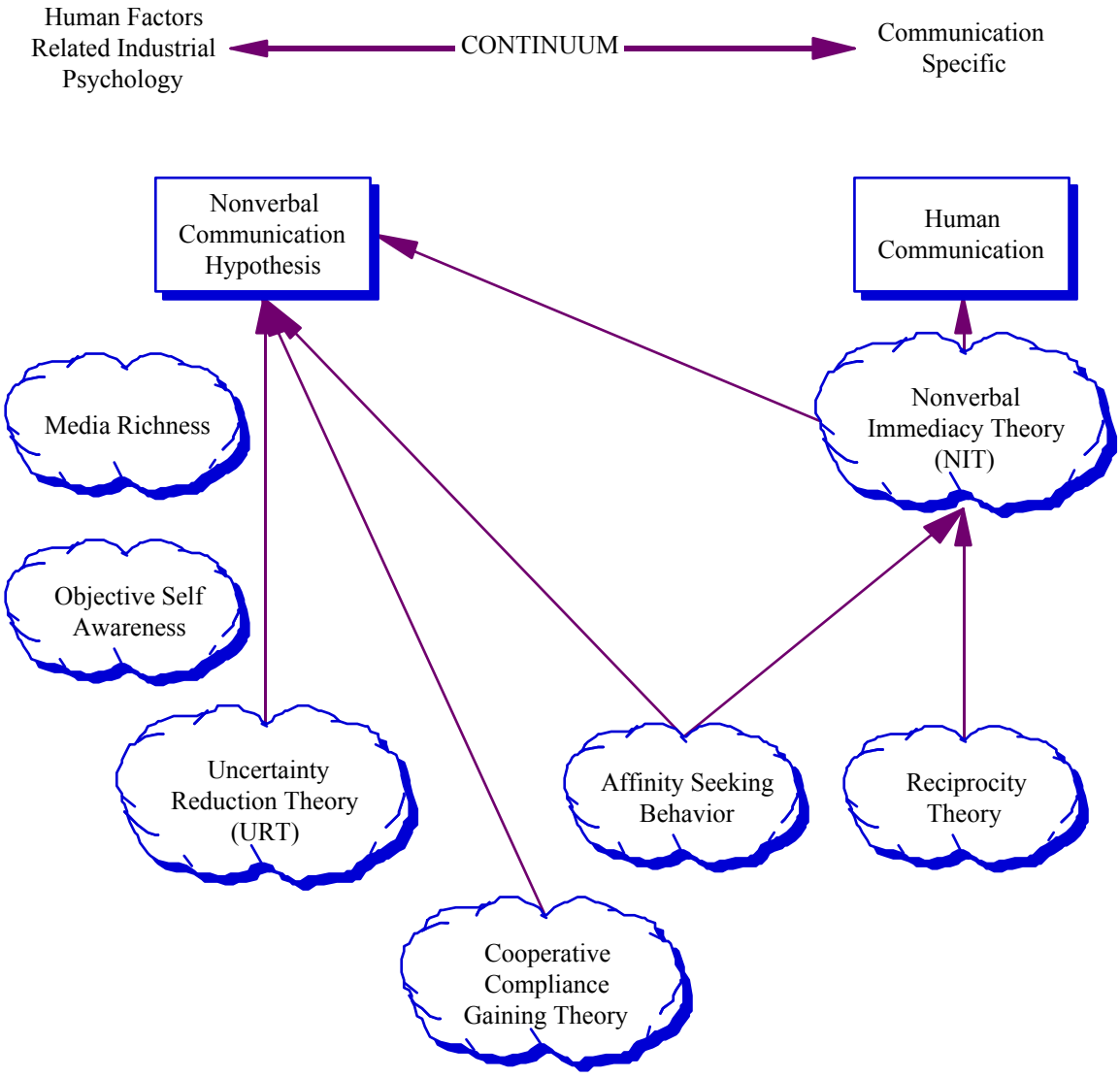

Figure 1. Graphical depiction of seven theories along a continuum attempting to characterize the origins of the literature used in this study.

Media Richness

McCroskey and Richmond (1983) state that "Students will respond in the classroom on the basis of how they perceive that classroom to be, not the basis of how their teacher perceives it" (p. 183). If this is true then anything that alters a student's perception of the classroom has the potential to alter a student's motivation to respond. Media richness theory argues that some media are more capable than others of transmitting information and, that if communication participants choose richer media they may experience improved performance for equivalent tasks (Dennis & Kinney, 1998, p. 257). Suh (1998) says "Face-to-face is considered the richest medium, because it allows rapid mutual feedback, permits the simultaneous communication of multiple cues (e.g. body language, facial expression, tone of voice), uses high-variety natural language, and conveys emotion" (p. 296).

Media richness theory was proposed in an attempt help business managers choose the least expensive or most effective media to accomplish a given communication purpose. In media richness theory, the more capable the media of transmitting communication information, the more rich it is considered. For example, a videoconference would be considered a richer medium than an audio-only teleconference and face-to-face communication would be considered richer than most mediated communication. Richness involves the ability of the medium to transmit similar levels of shared meaning between participants. Most of the research in the field has been related to assisting managers to choose the least rich, and therefore least expensive, medium for a given communication task. In the educational context of this study media richness theory

is proposed to juxtapose the face-to-face communication that occurs between the instructor and on-site students and the mediated communication that occurs between the instructor and off-site students. The same juxtaposition occurs in student-to-student communication, but is not fully explored here, because this study is primarily related to student's communication motives for communicating with their instructor.

Media richness theory, alone, seems to allow prediction of certain communication motives. Morehouse, (1987) for example, lists several disadvantages to video mediated instruction including "…occasional technical problems, delays in materials transfer, problems with the logistics of make-up work, and conflicting school calendars and daily schedules" (p. 5). All of these disadvantages are directly attributable to mediation and they all seemingly imply extra communication effort is necessary to compensate for the mediation. If this is true, then it is highly likely that this lack of media richness will motivate off-site students to put forth the extra effort to communicate, especially for functional reasons if not for every reason.

Verbal conversations that take place within videoconferences are often less fluid than face-to-face conversations. Media richness theory helps explain this fact primarily by suggesting that video mediated communication is less rich than face-to-face communication as it is less capable of transmitting conversational process cues. These process cues allow for the meshing, timing and close coordination of expressions within verbal communication that seem to be vital to high rapport conversations. (Manning, 1999) In some regards, communication aimed at creating or building relationships would essentially include high rapport elements. Manning (1999) says "Expressions in normal

conversation follow a more or less alternating pattern, but conversants in highly interactive conversation often speak simultaneously, interrupt, and constructive process is common in conversation, particularly in informal conversation and most particularly in conversation between friends and others participating in a high rapport interaction. The absence of these conversational features, as in a more formal verbal interaction, can be indicative of a relatively low rapport interaction" (p. 10). High rapport communication tends to build "… mutual feelings of warmth and respect, feeling in unison with the other person and by a high level of interpersonal coordination" (Manning, 1999). If mediated communication reduces the process cues that appear to accompany high rapport conversations, off-site students may not feel a high rapport with the instructor. If this is true, they may be more motivated to communicate relationally.

Olson and Olson (1997) report that "People will also vary their participation with their perceived value or difficulty in the communication modes" and further "that if the communication channels are heterogeneous (e.g., one person is on a speakerphone and all others have high-bandwidth video), participation will vary and may change the affect of the meeting" (p. 86). It is likely that off-site students perceive communication to be more difficult than on-site students. Individuals alter their communication based upon their perception of the fidelity of the communication medium. In verbal communication participants seem to adapt their communication from "hypo- to hyper-clear speech" (Oviatt, MacEachern, & Levow, 1998, p. 92). Specifically Oviatt et al. (1998) say "When a speaker perceives no particular threat to their listener's ability to comprehend them, he or she typically economizes by relaxing articulatory effort …." and "when a threat to

comprehension is anticipated, as in a noisy environment or when a listener's hearing is impaired, the speaker will adapt their [sic] speech toward hyper-clear to deliver more explicit signal information" (p. 92). Verbal communication that is video-mediated often includes lag time (O'Conaill & Whittaker, 1997, p. 111.). Such a lag time is just one aspect of video-mediated communication that causes participants to perceive communication difficulty. Thus as any off-site students, nervous about the medium, communicate, they may adapt their communication to hyper-clear and thus provide cues to their off-site peers that they perceive difficulty with the communication process. These cues may cause other off-site students to have the same perception. Therefore media richness theory may help predict that off-site students, if they perceive communication to be more difficult, may be less motivated to communicate as a means to participate. Conversely on-site students may be more likely to be motivated to communicate for participation reasons.

If more channels of information or greater amounts of information are made available to on-site students, then on-site students may have a communication advantage over off-site students. Thus media richness theory becomes a building block upon which other theories may rest. In this context, media richness theory can be viewed as a theoretical reason that one student might receive more or less information than a peer. Such an assumption allows other more specific theories to be used to explain potential changes in student's communication motives.

In the figures that are included in the following discussion you may note that media richness theory is often graphically depicted in conjunction with other theories.

This is due to the fact that in the context of this study both theories may be necessary to predict a particular outcome. Media richness theory provides a theoretical reason to suggest that off-site students may receive different if not less communication than their on-site peers. The remaining theories discussed in this section, which include nonverbal immediacy theory, reciprocity theory, uncertainty reduction theory, objective self-awareness, and affinity seeking behavior theory provide a basis to understand why a different level of communication might alter student's communication motives. While it is not necessary to superimpose all of these theories onto media richness theory in order to predict potential outcomes, it seems beneficial to do so as a means to narrow the context in which these theories are applied.

Nonverbal Immediacy

Nonverbal immediacy theory (NIT) suggests that communication is substantially more robust where nonverbal cues and feedback are available to participants. Nonverbal immediacy theory can include aspects of such closely related theories as uncertainty reduction, affinity-seeking behavior, cooperative-compliance gaining, and reciprocity. Similarly the nonverbal communication hypothesis provides a broad view of the impact of nonverbal communication on communication at large. The nonverbal communication hypothesis terminology appears to be favored by the human factors' community, particularly the Association of Computing Machinery (ACM) and its subgroups, which specifically study collaborative work environments. To some extent, the nonverbal communication hypothesis can be divided into three sub-categories that address three distinct features of communication behavior: (a) cognitive cues that provide information,

(b) process cues that provide assistance with turn taking, and (c) social cues. Nonverbal immediacy theory is primarily concerned with social cues but can involve both cognitive and process cues in various contexts.

Among the theories proposed to predict educationally related communication behavior in video-mediated settings, nonverbal immediacy theory seems to be the most overarching with regard to applicability. It translates well from context to context and seems to apply to both objectively and subjectively gathered measures. In addition, it can be applied in various contexts, including interpersonal communication, organizational communication, group problem solving, and instructional communication.

Nonverbal immediacy theory seems particularly appropriate for instructional communication within a video-mediated environment due to the fact that it has been frequently used to predict and evaluate instructional communication in traditional instructional environments. Freitas et al. (1998) discusses the nonverbal immediacy theory in a distributed learning setting by saying "Students enrolled in the distributed learning classroom are unable to respond to instructor use of gestures or eye contact as quickly or as readily as students enrolled in the conventional classroom and are unable to react to instructor movement and/or use of space" (p370). Even more importantly (Freitas et al., 1998) postulate, "Students enrolled in the distributed learning classroom may simply expect less teacher nonverbal immediacy from the onset of the course" (p370). If off-site, or distributed, learners have different communication expectations from their on-site peers, it may certainly be possible they also have different communication motives from their on-site peers.

Christophel (1990) states "… teacher immediacy may impact levels of learning by modifying student classroom motivation" (p. 325). Christophel was not specifically discussing student's communication motives, but her comment amplifies the thought that immediacy, particularly teacher immediacy, has the potential to impact student's motivation. In a later study Christophel and Gorham (1995) state "… immediate teachers are viewed by students as being more positive and effective, which, in turn, leads to increased affect toward the instructor and the course" (p. 293). Sprague (1998) discusses immediacy by saying "If I am a warm approachable person, or if I typically do certain relation-building things like standing close to students or using self-disclosure then this will either lead to compliance from students or feelings of affinity toward me and my subject matter or perhaps even enhanced learning" (p. 197). Again, these researchers are not specifically discussing student's communication motivation, but they are discussing student affect and its relationship to immediacy which has the potential to impact student-teacher relationships. Thus nonverbal immediacy theory has the potential to allow explanation of student's communication motivation and particularly motivation pertaining to relationships between student and teacher.

Nonverbal immediacy has the potential to define the social relationships between communication participants. As a result, relationships have the potential to alter communication. Graham et al. (1993) states "There are three reasons why relationship level affects communication. First, people maintain relationships through talk (Duck & Pond, 1989). Second, relationships provide a context that focuses interaction (Rubin, 1977). Finally, relationship level signals the amount of uncertainty existing between two

people (Berger, 1987, 1988; Douglas, 1990, 1991). Such constructs as physical and psychological closeness and approachability are also cited as a link between immediacy and human relationships (Guerrero & Miller, 1998, p. 33). These facts help underscore the value of examining nonverbal immediacy theory as it pertains to students relational communication motives.

Nonverbal Immediacy theory includes an assumptive construct of media richness theory in that it suggests that some media are more capable than others of transmitting certain types of information and that face-to-face communication may be more capable than most mediated communication when it comes to transmitting certain types of information.

Nonverbal immediacy theory is broad in scope. Therefore, there are several related theories that either define aspects of nonverbal immediacy more narrowly or share constructs of nonverbal immediacy theory to promote a more specific outcome.

Uncertainty Reduction Theory

The uncertainty reduction theory (URT) basically sets forth that humans are uncomfortable with uncertainty and will communicate as a means to reduce uncertainty. Uncertainty reduction theory is closely associated with the nonverbal immediacy theory in that it involves observation of nonverbal cues. Douglas (1991) says that uncertainty reduction is dependent upon participants ability to perceive a communication partner's "...nonverbal affiliative expressiveness" (p. 356). Uncertainty reduction theory strategies often involve seeking immediacy from communication partners. Most of the theories presented in this study are interdependent. Schmitz and Fulk (1991) for example say

"Ambiguity reduction is a function of a medium's richness, that has the capability of (a) facilitating feedback, (b) communicating multiple cues, (c) presenting individually tailored messages, and (d) using natural language to convey subtleties" (p. 488). These researchers discuss ambiguity reduction rather than uncertainty reduction, but the concepts are too interrelated to completely separate.

Communication, when it involves an attempt at uncertainty reduction, also appears to be dependent upon the perceived relationship between communicants, thus relational communication is greatly impacted by nonverbal immediacy. Burgoon and Koper (1984) state "While people may verbalize on occasion about their relationship, more often relational messages take an implicit or nonverbal form" (pp. 602-603). Additionally, Bergoon and Koper (1984) characterize immediacy-non-immediacy by saying "This dimension of relational communication clusters together themes signaling detachment, distance and lack of involvement. If any relational message theme should characterize reticents, it is this one" (p. 605). Uncertainty reduction theory appears to tie together nonverbal immediacy and the importance of relationships in communication in an attempt to explain how communication partners act to reduce uncertainty. Brashers et al. (2000) state that "Uncertainty is a fundamental human experience that has been used to explain the development and decline of interpersonal relationships.." (p. 63).

Relational communication is central to the basic propositions in uncertainty reduction theory. Therefore it seems obvious that uncertainty reduction theory might be valuable in assisting the prediction of relational communication motives, but uncertainty reduction theory may also be valuable in predicting increased functional, excuse,

participation and sycophantic communication motives particularly for off-site students receiving their communication in a mediated form.

Students located at the distant sites in a videoconference often express that they feel they are left out of certain communications or activities. Particularly when breaks are in progress, distant students wonder if important communication is occurring that they are missing. Brashers et al. (2000) state that "Successful uncertainty reduction leads to increased ability to predict and explain the target's interactional behavior and a subsequent reduction in information-seeking behavior." (p. 64) If the application of uncertainty reduction theory can increase the ability to predict interactional behavior, it might also be valuable in helping identify student's communication motives.

Off-site students, for example, might experience uncertainty regarding information they may have missed during a break when microphones were muted, and therefore be motivated to use functional communication strategies in an attempt to reduce that uncertainty. Functional strategies might include what Darling (1989) calls "clarification devices (e.g., restatement, rephrasing, translations, additional examples an/or explanations, etc.)" (p. 36). Similarly there is a strictly technical aspect to uncertainty reduction in that off-site students in videoconferences are often left to deal with technical problems on their own. Murphy (1995), regarding communication mediation technology, suggests that off-site students are often uncomfortable with "…. the protocols required to interact with the instructor that are imposed by these technologies" (p. 25). Palloff and Pratt (1999) discuss the need for instructors to become "…..proficient and comfortable with the technology so as to ensure the comfort of the

participants and to make the technology as transparent as possible" (p. 80). Such proficiency is more likely to positively impact on-site students since an instructor's lack of proficiency in a videoconference might leave off-site students without any communication with the instructor. Thus, when video-communication is disrupted due to technical difficulties, off-site students would seemingly be highly motivated to communicate with their instructor for the functional purpose of re-establishing full communication links. The issue, then, is not whether the student is actually able to communicate with their instructor, but whether they would be motivated to communicate with their instructor for a particular purpose. In this case, functional communication aimed at re-establishing full communication would seem to be an uncertainty reduction strategy.

Central to the relationship between uncertainty reduction and communication is the process of questioning. "Questioning begins with a certain puzzlement, perplexity, cognitive conflict, or the like. Factors that affect the raising of questions in this phase are knowledge, commitment, and tolerance of uncertainty among others." (van der Meij, 1988, p. 401).) It is not necessarily true, however, that such questioning, motivated by uncertainty reduction will be aimed at the instructor. Students may use questioning strategies among themselves. Jones (1995) reports that off-site students "spoke among themselves considerably more often than did those in the teacher's classroom" (p. 19). Similarly Haynes & Dillon (1992) state that ". . . distant students seemed to use peer teaching strategies during class, although at times they complained that this kind of interaction interfered with attending to the instructor" (p. 41). The implications of these

findings may be that off-sites students fail to attend to the instructor as well as on-site students and may therefore be more uncertain about certain class activities or instructions. If this is true, this altered communication pattern for off-site students may lead to student motivation to communicate functionally to reduce uncertainty.
Off-site students may also be motivated to use sycophantic strategies if communicational uncertainty causes them to feel disadvantages as compared to their on-site peers. Specifically off-site students might go out of their way to communicate as a means to be favorably noticed by the instructor due to their perception of uncertainty about their level of involvement. The same argument would apply to students motivated to communicate for participation reasons.

Uncertainty reduction theory seems to especially suggest that both sycophantic and relational communication motives might increase for any student experiencing uncertainty and in this context uncertainty reduction theory would specifically suggest off-site students might be more motivated to communicate for sycophantic and relational reasons. While uncertainty reduction theory is especially suited to predicting increased sycophantic and relational communication motives for off-site students, it is probable that it is well suited to predict similar increased functional, excuse and participation motivation.

Affinity-Seeking Behavior

Affinity-seeking behavior theory suggests that individuals use communication strategies in an attempt to cause interactional partners to like them. Students use particular affinity-seeking strategies to increase liking and credibility while reducing the

chances of conflict. Two of the strategies used involve conversational rule keeping and nonverbal immediacy. The theory of affinity-seeking behavior also has the potential to explain communication motive differences in videoconference environments.

Affinity-seeking behavior often begins as a result of subtle nonverbal cues such as eye contact, a slight smile, or even the proximity of the other communicant. These subtle cues encourage or motivate participants to complete the communication loop and interact with those who have demonstrated immediate behavior to them. If this is true, then on-site students, who presumably would be able to perceive these very subtle cues more completely than their distant counterparts, would be more motivated by affinity-seeking behavior to communicate relationally.

Likewise off-site students are potentially less likely to perceive or appreciate very subtle nonverbal cues provided by the instructor at a distance and therefore may be motivated to communicate specifically to cause the instructor to like them. Such motivation could be characterized as sycophantic in nature. Therefore Affinity-seeking behavior might explain a difference in the sycophantic motivation between on-site and off-site students. Baringer and McCroskey (2000) state "…. it is reasonable to conclude that students who are perceived as immediate (compared to those that are less immediate) also are perceived more positively in other ways by their teachers" (p. 184). Sycophancy is directly related to a student's desire to have an instructor perceive them more positively. A student's communication intended to foster a relationship between the student and an instructor and communication directed at an instructor for strictly sycophantic reasons might seem very similar to an observer, but the motivation behind

such communication is radically different. Wanzer (1998) says that students perceive one of the most effective affinity seeking strategies "for gaining liking from their teachers was to flirt or compliment the instructor" (p. 374). Affinity seeking behavior theory supports the prediction that on-site students will be more motivated to communicate relationally with the instructor, while off-site students will be more motivated to communicate sycophantically with the instructor.

Reciprocity

Reciprocity is also an operational version of the nonverbal immediacy theory. The rule of reciprocity suggests that as teachers see students exhibiting nonverbal immediate behavior such as smiling at teachers, leaning forward, etc., they will respond by exhibiting more immediate behavior such as verbally immediate and nonverbally immediate behaviors. If mediation diminishes the communication channel in any way, students may be less likely to be motivated to respond to instructor immediacy. Conversely, if on-site students are more able to perceive subtle nonverbal cues they may be more motivated to communicate to enhance or further a perceived relationship with the instructor.

Mane (1997) studied what he called "group space" which is viewed as "a collectively inhabited and socioculturally controlled physical setting" (p. 402). Mane indicates that communication participants get a sense of group space based upon various cues that they perceive from one another. One of those cues "is concerned with sensing the relationship among individuals in the group" (p. 403). This sense of relationship motivates certain types of communications. He specifically contrasts face- to-face

communication, where reciprocity is likely, with email, where reciprocity is not possible, by saying " flaming in email—use of abusive and aggressive language that is so common when the communication channel affords a very low level of social presence. Arguably, flaming takes place "because a person composing an electronic message lacks tangible reminder of his or her audience (Sproull & Kiesler, 1991, P. 49)." (p. 406)

The theory of reciprocity may allow prediction that off-site students, who are less physically immediate to the professor, would be less inhibited to speak out in a negative or disingenuous context including sycophancy. Thus they would be more likely to be motivated to communicate for sycophantic reasons. Conversely on-site students, who may experience more physical immediacy with the professor, may be more inhibited to speak out disingenuously and more likely to communicate for relational reasons than their off-site peers. Mottet says that "interactive television instructors' perceptions of students' nonverbal responsiveness are positively related to their impressions of students, their perceptions of their teaching effectiveness and satisfaction, their perceptions of teacher-student interpersonal relationships …."(p. 161). Thus, nonverbal cues at the heart of the theory of reciprocity do have an impact on student-teacher perceptions of relationship. It is likely then that on-site students, with more access to such cues, would be more likely to be motivated to communicate relationally.

Objective Self-Awareness

The theory of objective self-awareness promotes the idea that communication participants behave differently when they perceive they are being monitored. In educational contexts, objective self-awareness has been studied in relation to

performance. When individuals perceive they are being monitored, they tend to show improved performance on routine to moderately difficult tasks and show diminished performance on difficult tasks. The effect is heightened when educational participants believe an evaluator or some other authority figure is monitoring them. In the case of students at distant sites, mediation effects may cause such participants to feel unmonitored. As a result, they feel less motivated to communicate.

It is somewhat more difficult for instructors to monitor off-site students as fully as on-site students. The mediation creates a perception of distance, or non-immediacy, that seems to be equivalent in some ways to the perceived distance created between instructor and student in large classrooms. McCroskey and McVetta (1978) studied seating arrangements in classrooms and reported "certain seats to be highly associated with increased interaction . . ." and that "sitting in certain seats in a classroom increases a student's participation . . . ." (p.106) It is difficult to draw conclusions from these facts, but the researchers do elaborate by saying "When given free choice, highly verbal students will sit where interaction is the easiest, less verbal students will sit farther away from the center of interaction" (p. 110). Whether students choose to sit farther away from the instructor as a result of their desire to avoid communication or whether the distance itself promotes reduced communication is not critical to this discussion. What does seem to be evident is, that in any case, lack of communication or the lack of motivation to communicate, seems in some way linked to the perceived distance between the student and the instructor. If more distant students feel less monitored, then objective self-awareness may provide an explanation to why distant students are less motivated to

communicate.

Participation is often included as a graded class activity in university settings. As a result students may be motivated to participate in communication as a means of complying. Richmond (1990) says, "compliant behavior will only occur in the presence (physical and /or psychological) of the compliance-seeking person" (p.182). If off-site students feel less monitored, then the theory of objective self-awareness may be used to predict that on-site students will be more likely to be motivated to communicate as a means of participation.

Kendrick and Darling (1990) studied several tactics that students use to clarify information provided by the instructor. They found "…. that in large classes, problems were more likely to be ignored, and we found that ignoring responses were more likely with problems that entailed not understanding the relevance of the material to the course or to what was previously being discussed" (p. 27). This effect would seem to be consistent with the concept of objective self-awareness in that certain students in larger classrooms feel less monitored and therefore are less likely to be motivated to ask for clarification or provide excuses for material that they do not understand. If the same is true for off-site learners it could be predicted that off-site students will be less likely to be motivated to communicate for functional reasons and less likely to be motivated to communicate for excuse reasons. Conversely, objective self-awareness would support the prediction that on-site students would be more likely to communicate for functional and excuse related reasons.

Since both of these conclusions come from the likelihood that distant, or off-site,

students are more likely to ignore problems related to their learning experience, it may also be useful to consider the motivation of those on-site students who are less likely to ignore the same type of problem. Kendrick & Darling (1990) state that, "There is some indication from this data that students may see it as the teacher's responsibility to "be clear." Although contingent on problem type, the first tactics that students use tend to be ones that place most of the responsibility for clarifying on the teacher" (p. 28). This statement was made about students that Kendrick and Darling identified as those willing to address rather than ignore problems. The theory of objective self-awareness, then, supports the idea that this would include the on-site, and more immediate, students. This, in turn, would support the prediction that on-site students would be more likely to communicate for excuse reasons.

Summary

Metacognition is a construct, explained by cognitive learning theory, which implies that learners are at least partially aware of their own learning processes. If learners are aware of their own learning processes, then it is likely they can alter those processes, and if they can alter their own learning processes, then understanding student motivation becomes critical to understanding learning. This study is particularly concerned with student communication motives for communicating with their instructor in a video-mediated environment.

Martin et al. (1999) described five motivations that students have to communicate with their instructor. These motivational factors are relational, functional, excuse, participation and sycophancy. Martin et al. (1999) developed an instrument to measure

these five factors and compared their findings to other related measures. Specifically they compared student communication motives to student's affective and cognitive learning, student's socio-communicative orientation and instructor's socio-communicative style.

The communication theories outlined in this section are broad in scope, but can be contextually operationalized to predict student communication motives within the specific context of video-mediated communication. Media richness theory, the theory of nonverbal immediacy, reciprocity theory, uncertainty reduction theory, affinity seeking theory, and the theory of objective self-awareness are all closely related, but when applied in this context they have the potential to operationally offset one another. Specifically, one theory might allow the prediction that relational communication motives would be increased for off-site students, while another of the theories might allow the same prediction for on-site students. The two theories are not mutually exclusive since each seems to explain why students would be relationally motivated. As a result, it seems possible that this study might find no significant difference between on- and off-site conditions with regard to student motivation without disputing either theory.

The summary that follows includes a figure for each of the five communication motives set forth by Martin et al. Each figure places one or more of the communication theories used for this study along a horizontal line. The horizontal line is not meant to depict a continuum, but if a theory is visually portrayed along the left side of the graphic, which represents the on-site students, it is intended to suggest that the theory supports the prediction that on-site students will be more likely to be motivated to communicate for a particular reason than off-site students. Theories that are visually situated along the right

side of the graphic imply the prediction of increased motivation for off-site students. The theories are organized here according to their operational context and their prescriptive aspects as they relate to video-mediated communication. Only limited citations occur in this summary section, since few quotations are included here, and the concepts are potentially redundant from the more thorough discussion that precedes this section. The following discussion attempts to integrate specific operational aspects of several communication theories with each of the communication motives set forth by Martin et al. (1999) in an attempt to predict a difference between the communication motives of on-site and off-site students.

Relational Communication Motivation

Nonverbal immediacy theory is especially applicable to communication that is relationally oriented. Warmth, closeness and approachability, are all communicated by physical closeness and many other subtle nonverbal social cues. If mediation reduces a student's perception of these social cues, then the on-site student will be more likely to be motivated to communication for relational reasons.

Similarly, affinity-seeking behavior often begins as a result of nonverbal cues such as eye contact, a slight smile or proximity between communicants. Because these cues may be more readily perceptible to on-site students, they may be more likely to be motivated to communicate in an attempt to form a greater relationship with the instructor. Virtually the same argument is supported by the theory of reciprocity. Affinity seeking, reciprocity theory and nonverbal immediacy are highly related.

Conversely, based on uncertainty reduction theory, off-site students may be

motivated to communicate for relational reasons. Communication is more robust among individuals with a relationship as a result of shared experiences and perceptions. Thus off-site students intuitively may seek a relationship with an instructor, to broaden communication channels and therefore reduce uncertainty.

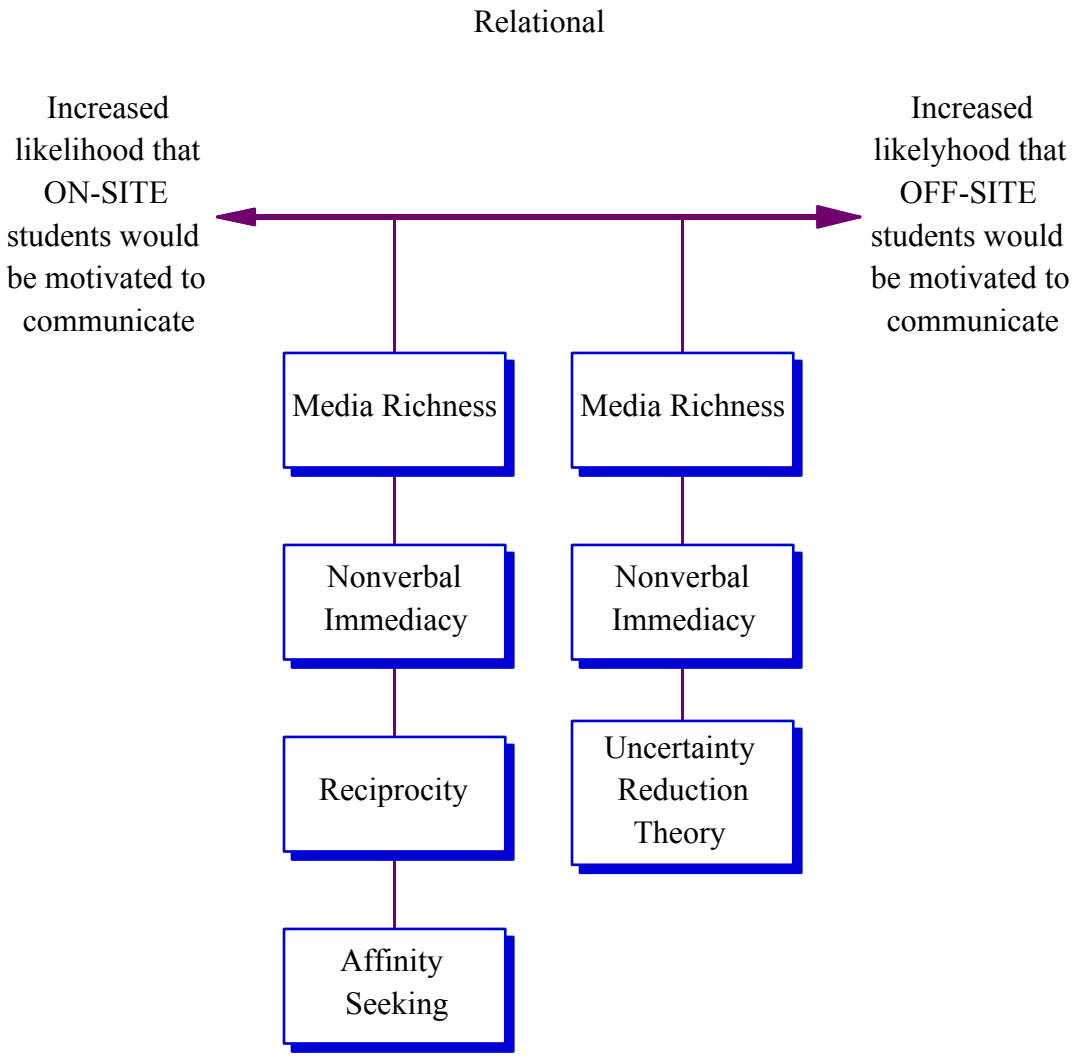

Figure 2. Theories operationalized to predict relational communication motives Functional Communication Motivation.

The theory of objective self-awareness supports the idea that monitoring by an

instructor seems to motivate students to ask clarifying, functional questions, and give excuses when they perceive they are not performing adequately. If on-site students feel more monitored than off-site students, then it is likely they will feel more motivated than off-site students to ask functional questions and provide excuse related statements.

Based on media richness theory, off-site students may be more likely to be motivated to communicate for functional reasons. Certain apparent disadvantages such as audio and video lag, occasional technical difficulties, and delays in materials transfer may motivate students to communicate functionally more than their on-site peers.

Additionally if mediated communication reduces process cues that appear to accompany high rapport conversations, then off-site students, wishing to have a relationship with the instructor, may be more motivated to communicate relationally than their on-site peers who perceive high rapport with the instructor based on these same process cues.

Off-site students often communicate more with one another than their on-site peers, even during lectures. This may occasionally cause them to miss instruction. Based on uncertainty reduction theory, off-site students may be motivated to use functional communication to compensate for the perception that they have failed to receive complete information, especially regarding informal class activities such as breaks and group exercises. Similarly if technical problems exist, off-site students may be forced to communicate functionally simply as a means to re-establish communication.

The theory of objective self-awareness supports the idea that monitoring by an instructor seems to motivate students to ask clarifying, functional questions, and give excuses when they perceive they are not performing adequately. If on-site students feel more monitored

than off-site students, then it is likely they will feel more motivated than off-site students to ask functional questions and provide excuse related statements.

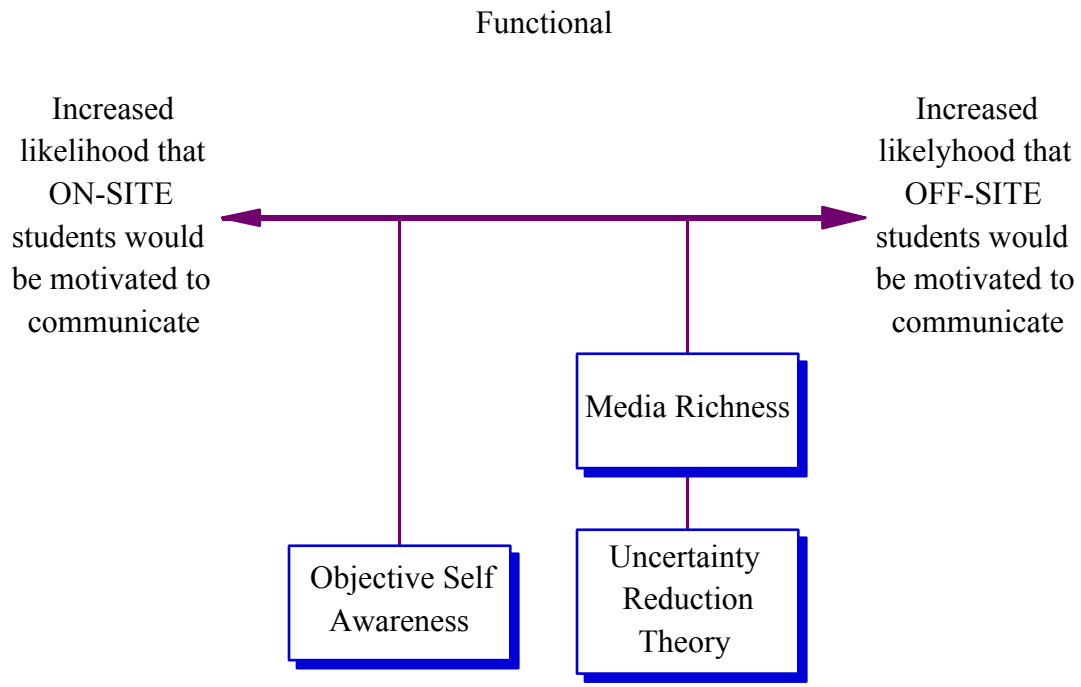

Figure 3. Theories operationalized to predict functional communication motives.

Excuse Communication Motives

The theory of objective self-awareness allows the prediction that on-site students may be more likely to offer excuses to their instructors based upon their increased perception that they are being monitored. The theory implies that if students feel more monitored, particularly by someone in authority, they will be motivated to perform at a higher level. If students feel more motivated to perform at a higher level, they may also be more motivated to offer excuses when they fail.

Based on uncertainty reduction theory off-site students, potentially uncertain about such things as an instructor's receipt of course materials, timely arrival of students

for class sessions and participation levels, might be motivated to communicate for excuse reasons.

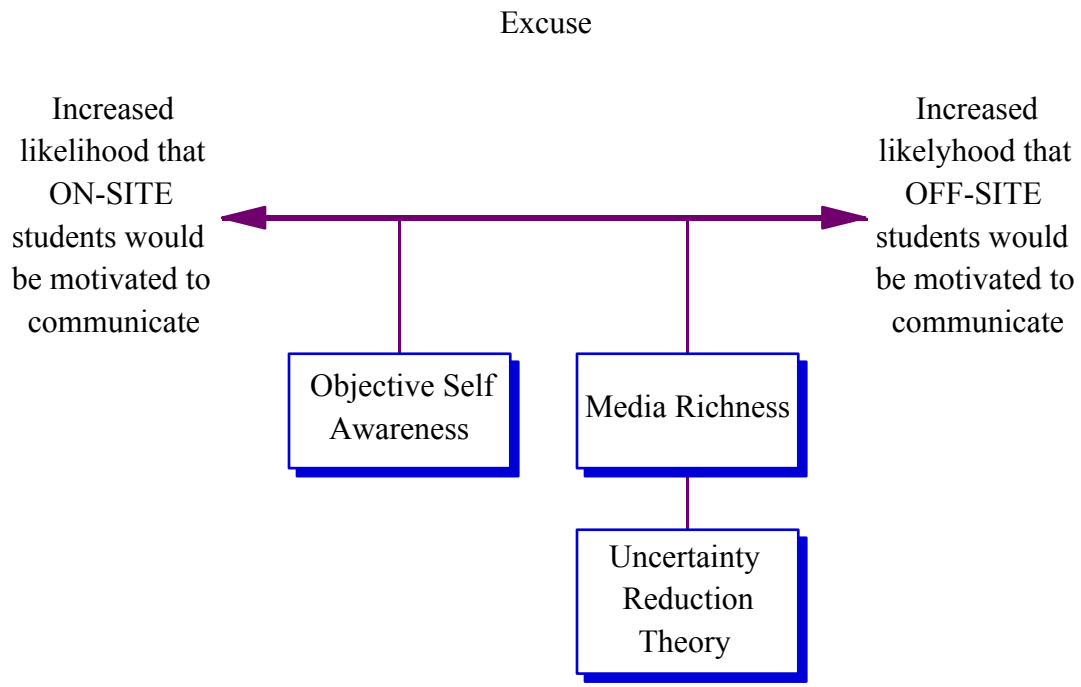

Figure 4. Theories operationalized to predict excuse communication motives.

Participation Communication Motives

On-site students may feel more constant monitoring by an instructor than off-site students. As a result, and based on the theory of objective self-awareness, on-site students may feel more motivated to communicate as a means to participation, since students are often graded on participation levels. Communication participants may alter participation patterns when they perceive communication difficulties. (Olson & Olson, 1997, p. 86.) Therefore media richness theory might be used to predict that on-site students will be more likely to be motivated to communicate for participation reasons based upon reduced perception of communication difficulties. Conversely off-site students, sensing

communication difficulties might be less motivated to participate.

Based on uncertainty reduction theory, off-site students, potentially uncertain that they are being noticed by an instructor as much as their on-site peers, may be motivated to communicate as a form of participation.

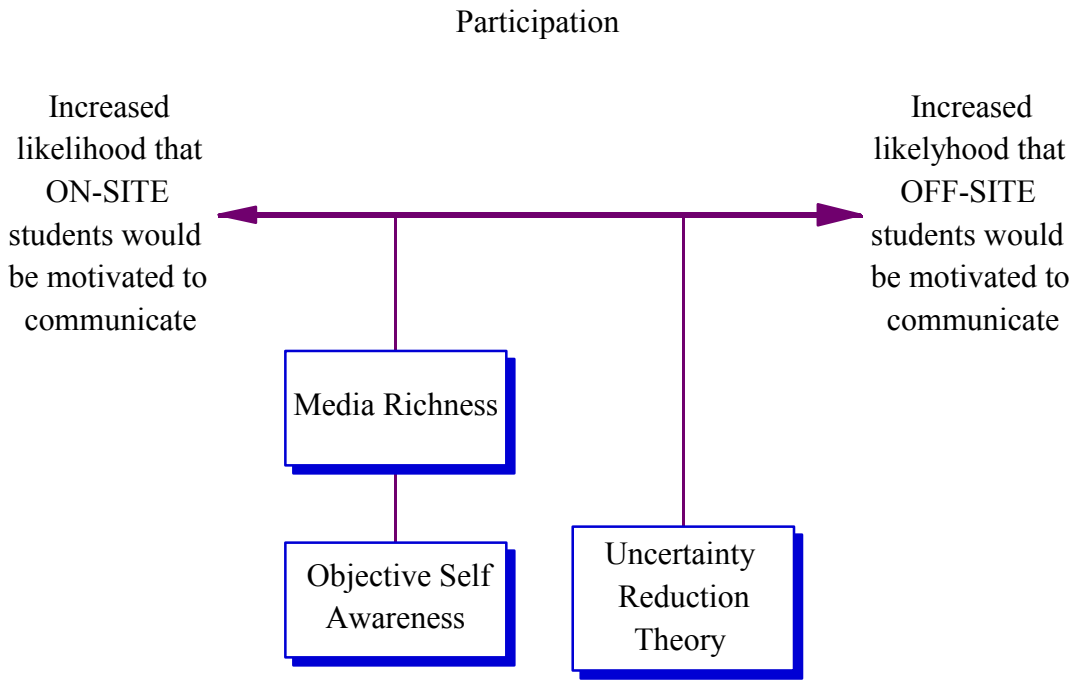

Figure 5. Theories operationalized to predict participation communication motives.

Sycophantic Communication Motives

Off-site students may be motivated to use sycophantic strategies if communicational uncertainty causes them to feel disadvantages as compared to their on-site peers. Additionally if off-site students are less physically immediate with the instructor, some research suggests they may be perceived less favorably by the instructor. (Baringer & McCroskey, 2000, p. 184.) Affinity seeking behavior suggests students will communicate to be liked by an instructor. If students believe they are perceived less

favorably by their instructor than their on-site peers, they may be motivated to communicate sycophantically. Reciprocity theory also supports the notion that off-site students might be more motivated to communicate sycophantically because they are less physically immediate to the instructor, and therefore less inhibited to speak out in any sort of negative way, including sycophantically.

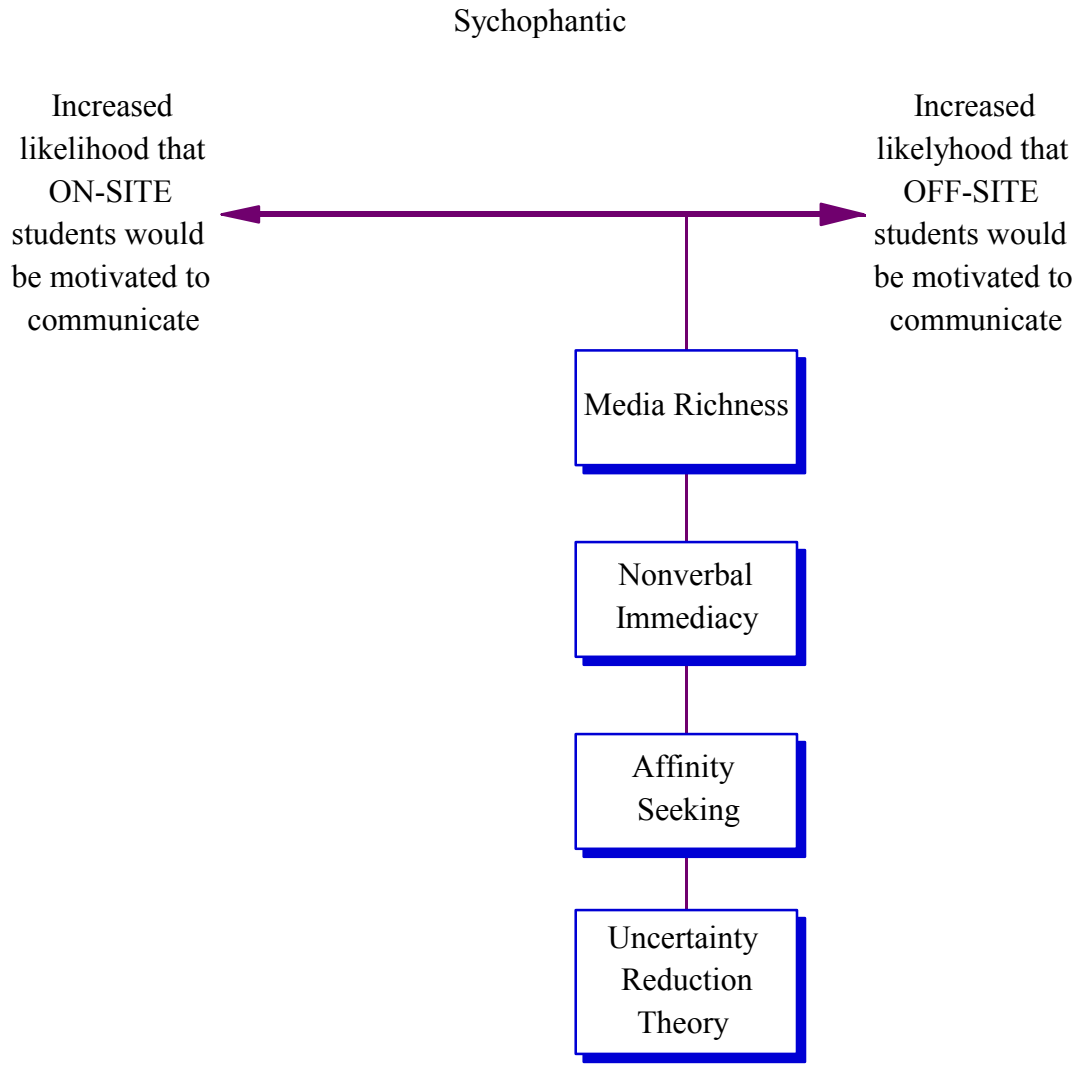

Figure 6. Theories operationalized to predict sycophantic communication motives.

Theory Summary

Operationally each of the theories detailed here have the potential to predict more student-teacher interaction for on-site students in one context and more student-teacher interaction for off-site students in another. The change in context may simply be the change in student motives for communicating with their professor. This study attempts to determine if this motivational context varies between the on-site and off-site condition.

CHAPTER 3

METHODOLOGY

Introduction

For this study, a 30-item instrument was used to collect data on students' motivations for communicating with their professor. Data were collected in videoconference-based courses and separated according to whether the student was located on- or off-site. This chapter details the subjects, the instrument used, the procedures for collecting the data, the statistical analysis, and the limitations and delimitations of the study.

Subjects

The target population for this study consisted of graduate students in videoconference courses at medium-sized state universities. The accessible population consisted of graduate students at the University of North Texas enrolled in courses within the School of Library and Information Sciences or courses within the College of Education during the Spring 2001 and Summer 2001 semesters.

Questionnaires were only administered to students in course-sections employing videoconferencing. A course-section is defined to be an individual section of a course taught by a single instructor. For example, SLIS 5210.001, Organization and Control of Information Resources I, is a single course-section even though there were student participants both in Denton (on-site) and ONVOY (off-site) in Minneapolis MN. Twenty

course-sections were offered during the semesters included in this study. Instructors were contacted regarding all 20 separate course-sections. Three course-sections were not included because the instructors were unwilling to participate. Hence students from 17 separate course-sections actually participated in the study. The 17 represent 16 distinct courses. EDSP 5800 was offered in two course-sections during one semester, and both classes participated. Instructors for all course-sections employing videoconferencing in the College of Education and the School of Library Sciences were asked to participate. Therefore, the final sample was drawn from all course-sections taught by instructors willing to participate.

The number of students in course-sections ranged from six to 80, with the average number being 27. Ten of the 17 course-sections included more than 10 and less than 35 students. It is not known how many students chose not to participate in the study. There were 281 total responses to the questionnaire made up of 246 identifiable individuals. Thus there were 31 participants who responded to the questionnaire in more than one of their classes, though it is not possible to determine if any of these 31 responded more than twice to the questionnaire. Four individuals did not indicate whether or not they had completed the questionnaire in another course-section, therefore it is possible that as many as 35 participants responded to the questionnaire more than once. The number of remote sites for each course-section ranged from one to three. Instrumentation

As noted in the Literature Review, Martin, Motet, and Myers (1999) originally developed the instrument, or questionnaire, used for this research study. The process used to construct it is discussed there.

Because this instrument was developed and refined in several studies over the course of a number of years, attribution for the original studies used in this dissertation will henceforth be denoted as "Martin et al. (1999)" each time the studies are generally referenced, unless a specific study is intended.

The questionnaire consists of 30 items representing students' motives for communicating with instructors. These 30 questions encompass five major dimensions, or scales (six items each), with each dimension representing a different primary motive. As previously noted, the five dimensions are identified by Martin, Motet, and Myers (1999) as relational, functional, participation, excuse, and sycophancy (sycophantic). Henceforth, these are referred to as the MMM dimensions. Table 1, (see Chapter 2) contains a brief abstract of each question, or item, and indicates its specific alignment with one of the five communication dimensions.

Two changes were made to the questionnaire to make it more suitable to the present study. Martin et al. (1999) often asked students in one course to complete the questionnaire based upon their experience in another of their courses. Thus, a minor change in the questionnaire instructions was necessary to make them more directly applicable. Specifically, the word *this* was added so that the instructions read "rate how each of the statements reflects your own reasons for talking to the instructor for *this* class."

In addition, the questionnaire was reorganized in such a way as to minimize bias in the ordering of questions. The 30 items were first input into a Microsoft Excel spreadsheet in the order in which they were originally presented by Martin et al. (1999)

then, the random number function in Microsoft Excel was used to assign each item a random number between 0 and 1. The items were subsequently sorted in ascending numerical order to determine the final sequence of presentation. A copy of the questionnaire (with the revised ordering of questions) is provided in Appendix C (see also Table 1).

Procedures

The physical classroom environment varied from site to site with regard to arrangement of furnishings and the specific technology involved. The questionnaire was administered during or after the third week of long semesters, or the second week of summer semesters, to insure learners had ample exposure to the videoconference environment.

Instructors for each course-section were contacted in advance to obtain permission for administering the questionnaire and to work out the logistical details of how it would be distributed and eventually returned. An instruction sheet was created for each course-section that included a standard script to be read to the students by the individual administering the questionnaire. Each student received a blank questionnaire and a Research Information Letter as required by the University of North Texas Committee for the Protection of Human Subjects. Copies of the instruction sheet and the Research Information Letter are provided in Appendix A and B respectively. The instructions were read to the class, and the questionnaires were distributed and collected by the course instructor, a site coordinator, a student volunteer, or the researcher.

For situations in which the completed questionnaires could not be personally

retrieved by the researcher, self-addressed stamped envelopes were provided to facilitate their return. The envelopes were coded to insure that the completed surveys were assigned to the appropriate course-section and site. The individual survey instruments were consecutively numbered and coded with appropriate location identifiers to provide an audit trail.

Statistical Analysis

Independent and Dependent Variable(s)

There is a single independent variable for this study. The independent variable is the location at which students receive their instruction; that is, locally (on-site) or at a distant site (off-site). In order to establish the desired two-group comparison, all distant sites are considered to be equivalent regardless of their actual geographic location.

The number and structure of the dependent variables depend on the study hypothesis being considered. The dependent variables relative to $H_0^{(1)}$ are the communication motives represented by the 30 individual questions contained in the study instrument. The values of these variables are the responses (ratings) given to the questions by the study participants (students).

The dependent variables associated with the remaining hypotheses ($H_0^{(2)}$ through $H_0^{(6)}$) are the five MMM communication dimensions.. The values of the variables are determined by calculating the average of each student's responses to the six questions associated with each dimension, resulting in a single composite score for that dimension.

Assumptions

Two major assumptions affected the outcomes of the study. First, the participants,

though not randomly selected as a probability sample, were assumed to be representative of all students in the target population. Second, the five-dimension "model" of student-instructor communication motives described by Martin et al. (1999) was assumed to be appropriate for the target population.

Data Processing

Twenty questionnaires were returned with individual missing values or blank items. Specifically 15 questionnaires were returned with only one item missing, two were returned with all items missing, and three were returned with 16 to 24 items missing. Of the three with several items missing all were returned from a single course-section. Results from all returned surveys were included in the database even though some of the individual items were not completed. Thus any missing values were treated as item non-response with the remaining items on all returned questionnaires being included.

Prior to beginning the data analysis, each item on the questionnaire was identified by a number representing its chronological position and a letter representing the communication dimension to which it was assigned by Martin et al. (1999). As an example, Q2R was the second question appearing in the questionnaire and was one of the six items associated with the relational dimension.

Data Analysis

The reliability of the instrument in this particular research setting was evaluated by computing Chronbach's alpha (α) for each of the five MMM dimensions using the responses from all students combined. Separate values of Chronbach's alpha were computed using the responses from on-site and off-site students.

SPSS 10.0 for Windows (SPSS for Windows, 2000) was used to conduct the statistical analysis of the data (including the computation of Chronbach's Alpha). The first step in the data analysis involved the computation of basic descriptive statistics and the construction of appropriate graphical displays to summarize the information. Descriptive statistical analysis provided a first look at the responses to the individual items in the questionnaire, an assessment of demographics, and a comparison of the responses from on-site and off-site students.

Frequencies and percentages were computed to evaluate the demographic composition of respondents regarding age and gender, as well as positioning of the course (in which the questionnaire was given) within the respondents' academic programs. Bar charts were constructed to graphically portray the distribution of respondents on these bases.

Values of the mean, median and standard deviation of all responses to each of the 30 items were tabulated and compared to provide an overall assessment of response patterns. Because responses to individual questions comprise ordinal scale measurements, histograms were also constructed for each of the items to facilitate a more complete analysis and to provide a visual check of the assumptions (for example, normality) underlying higher level statistical analyses.

A test of $H_0^{(1)}$ relative to each of the 30 questionnaire items was conducted using one-way analysis of variance (ANOVA). ANOVA provided the formal mechanism for determining whether differences in average responses between groups (in the present study, on-site versus off-site) were statistically significant. The end result of the ANOVA

was to compute an F-test that could be evaluated at the desired level of significance (in this case, .05).

ANOVA was selected in order that the procedures employed by Martin et al. (1999) could be mimicked to some degree (ANOVA for two groups is equivalent to a two-group t-test). However, ANOVA requires the scale of measurement to be interval or ratio (Dillon & Goldstein, 1984, p. 2), whereas, as noted above, responses to individual items in the questionnaire yield responses on the ordinal scale. ANOVA also requires the data to be normally distributed. (Hinkle, Wiersman, & Jurs, 1998, p. 367). Consequently, Chi-square analysis, which is more directly applicable to ordinal scale measurements or even nominal data (Hinkle et al., 1998, p. 575), was used to corroborate the results obtained with ANOVA.

$H_0^{(2)}$ through $H_0^{(6)}$ were evaluated by applying ANOVA to the composite mean scores computed for the five MMM communication dimensions. In this case, ANOVA provided the formal mechanism for testing the statistical significance of differences in the average values of the composite scores associated with on-site and off-site students. For conducting these tests, the usual restrictions on the use of ANOVA were assumed to be satisfied because the composite scores represent continuous, interval or ratio scale data.

As noted in the Literature Review, Martin et al. (1999) used factor analysis to construct the five communication dimensions. Consequently, to further investigate the differences in communication motives between on-site and off-site students, the factor loadings derived by Martin et al. (1999) for each of the five dimensions were applied directly to the responses to the questions obtained in the present study. As a result, a

factor score for each of the five dimensions was computed for every respondent. These factor scores were subsequently subjected to ANOVA to determine whether differences in the average factor scores associated with on-site and off-site students were statistically significant. This step represented a direct application of the MMM "model" to the data obtained in the present study.

Finally, in an effort to validate application of the MMM "model" to the data in this study, a factor analysis was conducted using an approach as nearly identical to the one used by Martin et al. (1999) as possible. Specifically, eigenvalues were limited to 1.0 or below and the factor analysis solution employed principal component analysis and varimax rotation to extract them from the correlation matrix. Factor analysis was applied to the combined data set of all observations, the on-site only data set, and the off-site only data set.

Limitations and Delimitations

There are six important limitations to this research.

First, the subjects for the study comprise graduate students pursuing programs in Education or Information Sciences at a mid-sized state university. The classroom environment, including the size of the facility, equipment used, the number of distant sites, furniture arrangements, and geographic locations differed from course to course and section to section. Additionally the courses contained varying subject matter and content and were taught by different instructors. Thus the results may not be generalizable to other groups or categories of students.

Second, the instrument used for the research (identical in terms of the actual

questions to the 30-item instrument used by Martin et al., (1999)) has been validated using only undergraduate speech and communication students at a different mid-sized state university. Since the participants for the present study are graduate students, they represent different disciplines, and they are enrolled at a different mid-sized state university, comparability of the results to those obtained by Martin et al. (1999) may be limited.

Third, the selection and application of data analysis methodologies is sometimes more artistic than scientific. Because of the qualitative nature of some of the results, all conclusions and interpretations are subject to scrutiny. Consequently, every attempt has been made to evaluate the findings of the research in proper context and with due regard to potential differences of interpretation.

Fourth, variation in instructional and learning styles are acknowledged to be important factors in studies of this nature. However, no attempt has been made to compensate for instructional and learning style differences, choosing, instead, to defer such considerations to future research.

Fifth, this research does not involve the use of a formal control group. Only students enrolled in courses that involve videoconference instruction are included. Non-availability of identical or comparable courses that do not involve videoconferencing, and/or insufficient numbers of students, precludes the establishment of a formal control group. Hence, it is unknown whether the physical environment of instructional videoconferencing has an effect or not relative to a more traditional classroom setting.

Finally, at least 31 of the participants responded to the questionnaire in more than

one course-section and it is possible as many as 35 may have responded in more than one course section. Thus even though each of these participants presumably responded to the questionnaire in conjunction with different instructors it is likely that once a student has seen the questionnaire he or she is potentially biased with a carry-over effect on the second occurrence.

CHAPTER 4

RESULTS

Introduction

Descriptive Statistics

A total of 281 questionnaires were returned. Of this total, 48 (17.1%) were completed by male students and 227 (80.8%) were completed by female students. Six (2.1%) students did not indicate their gender. The mean age of those responding was 35.94 years (36.53 for males; 35.88 for females). The percentage distribution of age for all respondents is shown in Figure 7.

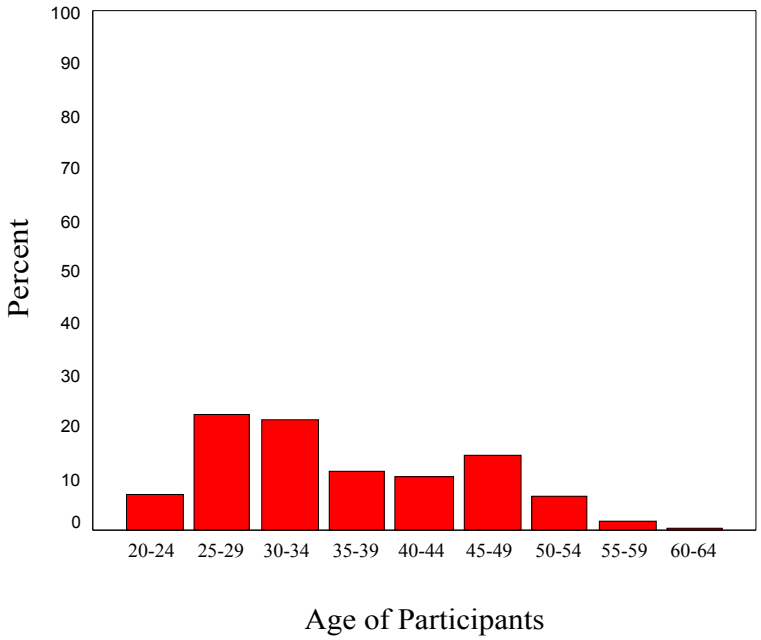

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Figure 7 Percentage distribution of age of respondents.

In an attempt to determine where students were in their progression of course-work toward their degrees, individuals were asked, “Where does this class fall in your overall classwork?” Their options included “First Third,” “Middle Third” or “Last Third.” More than 50% of respondents reported they were in the first third of their programs of study, while approximately 20% were in the middle third and approximately 30% were in the final third. Figure 8 depicts the percentage distribution of responses.

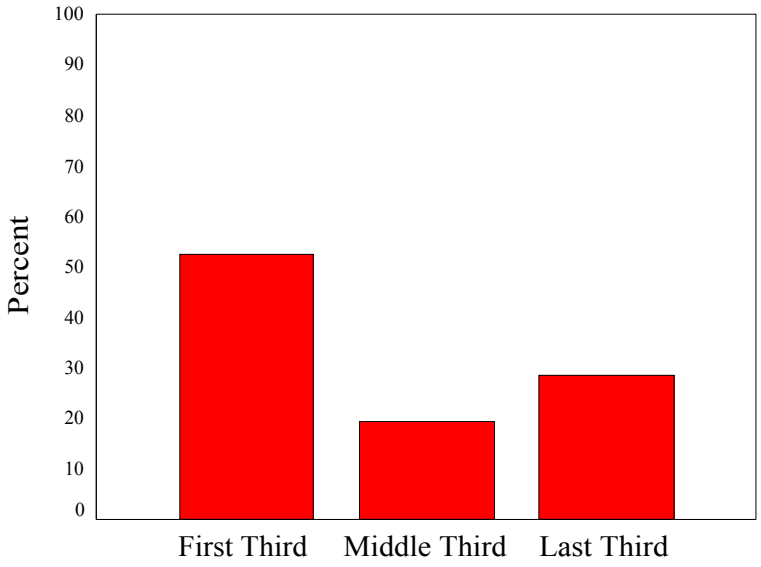

Figure 8. Percentage distribution of the position of respondents in their programs of study.

Percentage distributions of the responses of all students to each of the 30 items on the study instrument are presented in Appendix D. Many, though not all, of the distributions are positively skewed, with skewness coefficients ranging from –1.04 to 1.50. Figure 9 represents one of the items whose distribution is more symmetric and

normal-shaped, while Figure 10 is illustrative of the skewness observed in the response distributions.

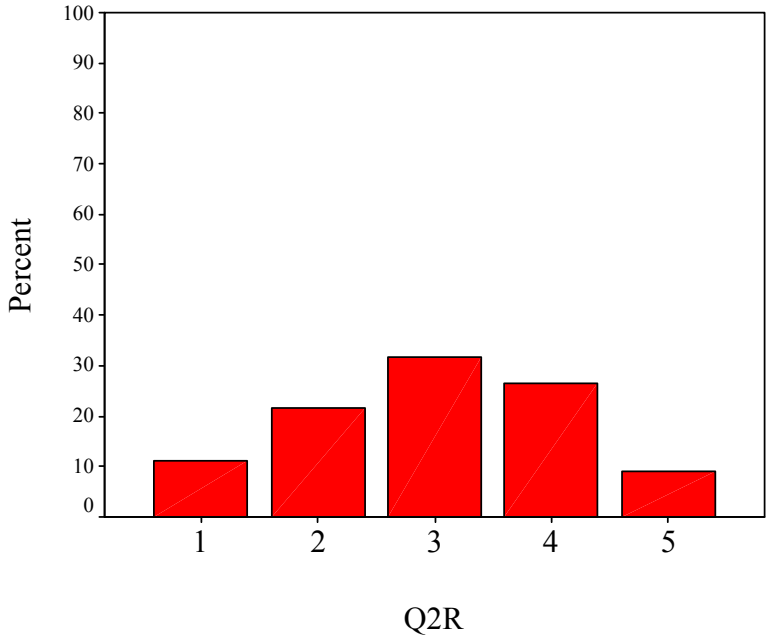

Figure 9. Percentage distributions of responses to Question 2R, all responses combined (1 = not at all like me, 2 = not much like me, 3 = somewhat like me, 4 = a lot like me, 5 = exactly like me). The distribution is approximately symmetric and normal shaped. Skewness is -.104.

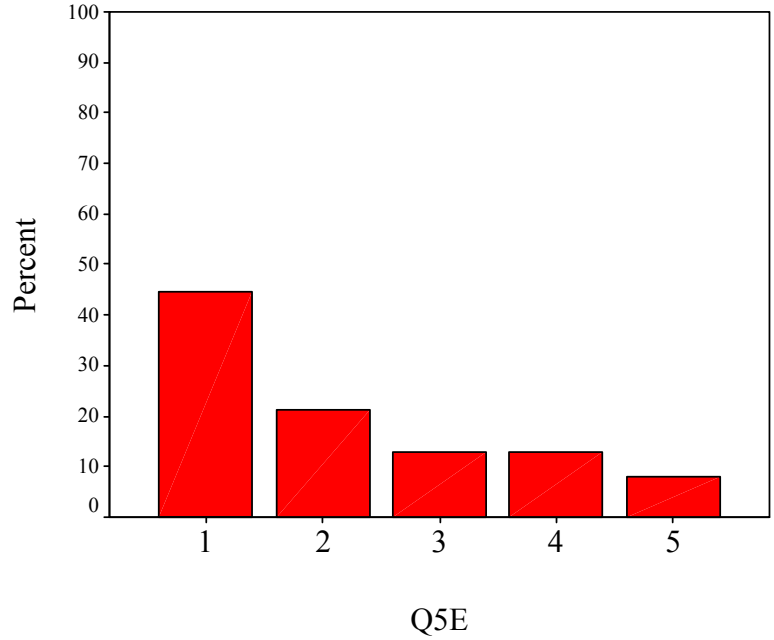

Figure 10. Percentage distribution of responses to question 5E, all responses combined (1 = not at all like me, 2 = not much like me, 3 = somewhat like me, 4 = a lot like me, 5 = exactly like me). The distribution is positively skewed. Skewness is .803.

The means, medians, and standard deviations for the 30 individual items, organized according to the MMM dimensions with which they are associated, are reported in Appendix E. Statistics are shown for the total set of respondents, as well as for those associated with on-site and off-site locations.

Reliability Data

Cronbach's alpha was computed in three separate ways for each of the MMM dimensions: using all responses combined, using only the on-site responses, and using only the off-site responses. Table 3 reports the resulting scores. Column Four of Table 3 presents an average of the corresponding reliability scores from three of the Martin et al. (1999) studies (also see Table 2 in Chapter 2).

The reliability scores for the functional dimension in this study are somewhat lower than the average of the Martin et al. (1999) studies, but the scores for the other four dimensions are comparable.

Table 3

Reliability Data

Factor	Alpha Combined	Alpha On-site	Alpha Off-site	Martin et al. Average
Relational	$\alpha = .88$	$\alpha = .90$	$\alpha = .86$	$\alpha = .89$
Functional	$\alpha = .72$	$\alpha = .76$	$\alpha = .68$	$\alpha = .86$
Excuse	$\alpha = .83$	$\alpha = .86$	$\alpha = .80$	$\alpha = .85$
Sycophantic	$\alpha = .83$	$\alpha = .85$	$\alpha = .81$	$\alpha = .85$
Participation	$\alpha = .83$	$\alpha = .84$	$\alpha = .82$	$\alpha = .84$

Because the primary focus of this study is the comparison of on-site and off-site responses to questions representing each of the dimensions presented by Martin et al. (1999), an overall composite score was calculated for each dimension. These composite scores, presented in Table 4, consist of the mean of all responses by all participants to all questions associated with each dimension. Table 4 shows the overall composite scores along with the standard deviations of all responses encompassed by the scores, as well as corresponding information associated with on-site and off-site locations.

Table 4

Overall composite scores for each dimension

ONOFF		Relational	Functional	Excuse	Sycophantic	Participation
On-site	Overall Composite Score	2.4339	3.6638	2.0718	1.8725	2.7302
	N	115	116	116	115	116
	Std. Deviation	.9426	.6947	.9424	.8187	.8899
Off-site	Overall Composite Score	2.4429	3.7646	2.1380	1.9399	2.9374
	N	163	163	163	163	163
	Std. Deviation	.8779	.6274	.8412	.7251	.8417
Total	Overall Composite Score	2.4392	3.7227	2.1105	1.9120	2.8513
	N	278	279	279	278	279
	Std. Deviation	.9036	.6569	.8836	.7645	.8665

Hypothesis Testing for $H_0^{(1)}$ - ANOVA

The research question in this study is addressed by several hypotheses. As a means to test $H_0^{(1)}$, the data from each of the 30 items on the instrument were subjected to a one-way ANOVA. $H_0^{(1)}$ states: There is no difference in self-reported motives for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences as measured by the individual items on the Martin, Mottet and Myers 30-item measure. (Martin et al., 1999b) For clarity, Tables 5-9 present the one-way ANOVA results in tabular form and grouped

according to the factors identified by Martin et al. (1999) An asterisk is used to denote items that are statistically significant at the $\alpha = .05$ level. Note that $H_0^{(1)}$ is rejected for five of these individual items. Tables 5-9 also present the on-site and off-site means (repeated from Appendix E) to facilitate comparison. In these and all succeeding tables that present ANOVA results, the term "groups" refers to on-site and off-site respondents. The results from the six items identified as relational by Martin et al. (1999) are presented in Table 5. Note that $H_0^{(1)}$ is not rejected for any item in this dimension.

Table 5

ANOVA Results for the Six Items that Comprise the MMM Relational Factor

		Sum of Squares	df	Mean Square	F	Sig.	Mean On-site	Mean Off-site
Q2R	Between Groups	1.030E-02	1	1.030E-02	.008	.929	3.00	3.01
	Within Groups	355.975	273	1.304				
	Total	355.985	274					
Q10R	Between Groups	.445	1	.445	.300	.584	2.84	2.93
	Within Groups	404.283	273	1.481				
	Total	404.727	274					
Q11R	Between Groups	2.744E-03	1	2.744E-03	.002	.963	2.23	2.23
	Within Groups	341.210	275	1.241				
	Total	341.213	276					
Q18R	Between Groups	.535	1	.535	.415	.520	2.30	2.21
	Within Groups	352.142	273	1.290				
	Total	352.676	274					
Q20R	Between Groups	.142	1	.142	.115	.735	2.08	2.12
	Within Groups	337.811	274	1.233				
	Total	337.953	275					
Q29R	Between Groups	3.907E-03	1	3.907E-03	.003	.957	2.17	2.17
	Within Groups	377.021	275	1.371				
	Total	377.025	276					

The results from the six items identified as functional by Martin et al. (1999) are presented in Table 6. $H_0^{(1)}$ is rejected for questions Q1F, Q15F, and Q23F in this dimension.

Table 6

ANOVA Results for the Six Items that Comprise the MMM Functional Factor

		Sum of Squares	df	Mean Square	F	Sig.	Mean On-site	Mean Off-site
Q1F	Between Groups	4.210	1	4.210	4.273	.040*	3.92	3.67
	Within Groups	271.962	276	.985				
	Total	276.173	277					
Q3F	Between Groups	.143	1	.143	.165	.685	3.81	3.86
	Within Groups	236.817	273	.867				
	Total	236.960	274					
Q15F	Between Groups	4.356	1	4.356	4.736	.030*	3.80	4.06
	Within Groups	252.937	275	.920				
	Total	257.292	276					
Q17F	Between Groups	1.859	1	1.859	1.546	.215	3.55	3.71
	Within Groups	329.344	274	1.202				
	Total	331.203	275					
Q23F	Between Groups	4.875	1	4.875	5.999	.015*	3.73	4.00
	Within Groups	222.643	274	.813				
	Total	227.518	275					
Q30F	Between Groups	1.433	1	1.433	1.002	.318	3.16	3.30
	Within Groups	393.362	275	1.430				
	Total	394.794	276					

* $p <= .05$.

The results from the six items identified as excuse by Martin et al. (1999) are presented in Table 7. Note that $H_0^{(1)}$ is not rejected for any of the items in this dimension.

Table 7

ANOVA Results for the Six Items that Comprise the MMM Excuse Factor

		Sum of Squares	df	Mean Square	F	Sig.	Mean On-site	Mean Off-site
Q5E	Between Groups	1.998	1	1.998	1.119	.291	2.08	2.25
	Within Groups	490.977	275	1.785				
	Total	492.975	276					
Q8E	Between Groups	.341	1	.341	.255	.614	2.35	2.42
	Within Groups	365.244	273	1.338				
	Total	365.585	274					
Q16E	Between Groups	.486	1	.486	.422	.516	2.15	2.06
	Within Groups	317.891	276	1.152				
	Total	318.378	277					
Q22E	Between Groups	2.106	1	2.106	1.110	.293	2.19	2.37
	Within Groups	519.532	274	1.896				
	Total	521.638	275					
Q24E	Between Groups	.336	1	.336	.241	.624	1.86	1.93
	Within Groups	382.022	274	1.394				
	Total	382.359	275					
Q26E	Between Groups	.973	1	.973	.886	.347	1.71	1.83
	Within Groups	302.030	275	1.098				
	Total	303.004	276					

The results from the six items identified as sycophantic by Martin et al. (1999) are presented in Table 8. $H_0^{(1)}$ is not rejected for any of the items in this dimension.

Table 8

ANOVA Results for the Six Items that Comprise the MMM Sycophantic Factor

		Sum of Squares	df	Mean Square	F	Sig.	Mean On-site	Mean Off-site
Q6S	Between Groups	.106	1	.106	.136	.713	1.63	1.59
	Within Groups	214.212	275	.779				
	Total	214.318	276					
Q7S	Between Groups	1.938E-03	1	1.938E-03	.002	.965	1.87	1.86
	Within Groups	280.056	275	1.018				
	Total	280.058	276					
Q12S	Between Groups	1.047	1	1.047	1.103	.295	1.78	1.91
	Within Groups	261.176	275	.950				
	Total	262.224	276					
Q13S	Between Groups	2.594	1	2.594	1.783	.183	2.17	2.37
	Within Groups	395.629	272	1.455				
	Total	398.223	273					
Q14S	Between Groups	3.354	1	3.354	2.421	.121	2.09	2.31
	Within Groups	379.602	274	1.385				
	Total	382.957	275					
Q27S	Between Groups	.507	1	.507	.525	.469	1.70	1.61
	Within Groups	264.696	274	.966				
	Total	265.203	275					

The results from the six items identified as participation by Martin et al. (1999) groupings are presented in Table 9. $H_0^{(1)}$ is rejected for items Q19P and Q25P in this dimension.

Table 9

ANOVA Results for the Six Items that Comprise the MMM Participation Factor

		Sum of Squares	df	Mean Square	F	Sig.	Mean On-site	Mean Off-site
Q4P	Between Groups	.855	1	.855	.612	.435	2.72	2.83
	Within Groups	385.623	276	1.397				
	Total	386.478	277					
Q9P	Between Groups	4.266	1	4.266	2.910	.089	2.79	3.04
	Within Groups	401.687	274	1.466				
	Total	405.953	275					
Q19P	Between Groups	4.910	1	4.910	3.859	.050*	3.03	3.30
	Within Groups	349.949	275	1.273				
	Total	354.859	276					
Q21P	Between Groups	4.017	1	4.017	2.976	.086	3.25	3.50
	Within Groups	369.935	274	1.350				
	Total	373.953	275					
Q25P	Between Groups	8.904	1	8.904	6.863	.009*	2.34	2.70
	Within Groups	352.881	272	1.297				
	Total	361.785	273					
Q28P	Between Groups	1.312	1	1.312	.919	.339	2.13	2.27
	Within Groups	391.076	274	1.427				
	Total	392.388	275					

In all, $H_0^{(1)}$ was rejected for five of the 30 items. Of the items where $H_0^{(1)}$ was rejected, three of the items (1F, 15F, 23F) were included in the functional dimension identified by Martin et al. (1999) and two of the items (19P, 25P) were included in the participation dimension identified by Martin et al. (1999)

Chi-square analysis was used to corroborate the ANOVA results because the responses for most items are not normally distributed. In this case, $H_0^{(1)}$ was rejected for three of the 30 items: question 23F, which is included in the functional dimension identified by Martin et al. (1999), and questions 21P and 25P, which are included in the participation dimension. Table 10 provides a comparison of the ANOVA and Chi-square results.

Table 10

Comparison of ANOVA and Chi-square Results on Questions for which $H_0^{(1)}$ is Rejected.

Question	ANOVA	Chi Square	Comparison
Q1F	.040*	.161	
Q15F	.030*	.057	
Q21P	.086	.004*	
Q23F	.015*	.031*	$H_0^{(1)}$ Rejected in both ANOVA and Chi-square analysis
Q19P	.050*	.219	
Q25P	.009*	.008*	$H_0^{(1)}$ Rejected in both ANOVA and Chi-square analysis

Hypothesis Testing for $H_0^{(2)}$ through $H_0^{(6)}$

In an attempt to test $H_0^{(2)}$ through $H_0^{(6)}$ the 30 items were organized according to the Martin et al. (1999) dimensions, and a composite (mean) score for the items associated with each dimension was computed for each respondent. These mean scores were then subjected to a one-way ANOVA, and the results are presented in Table 11. Significance at the .05 level is denoted by an asterisk. Note that $H_0^{(4)}$, which relates to the participation dimension, is rejected while $H_0^{(2)}$, $H_0^{(3)}$, $H_0^{(5)}$ and $H_0^{(6)}$ are not. The mean of the composite scores for the participation dimension for on-site students is 2.73, while the corresponding mean for off-site students is 2.94.

Table 11

ANOVA Based on the Composite Scores

		Sum of Squares	df	Mean Square	F	Sig.
Relational	Between Groups	.0055	1	.0055	.007	.935
	Within Groups	226.142	276	.819		
	Total	226.147	277			
Functional	Between Groups	.689	1	.689	1.600	.207
	Within Groups	119.258	277	.431		
	Total	119.947	278			
Excuse	Between Groups	.297	1	.297	.380	.538
	Within Groups	216.768	277	.783		
	Total	217.065	278			
Sycophantic	Between Groups	.306	1	.306	.523	.470
	Within Groups	161.594	276	.585		
	Total	161.900	277			
Participation	Between Groups	2.911	1	2.911	3.917	.049*
	Within Groups	205.839	277	.743		
	Total	208.750	278			

In an attempt to further test $H_0^{(2)}$ through $H_0^{(6)}$ the factor loadings derived by Martin et al. (1999) for each of the five dimensions were applied directly to the responses obtained in this study. A factor score for each of the five dimensions was consequently computed for every respondent (these are referred to as the MMM factor scores). An ANOVA was then conducted using these scores, the results of which are presented in Table 12. Based on this analysis, the difference in the mean factor scores associated with the MMM participation dimension is significant at $\alpha = .05$. The mean participation factor score for on-site students is 18.62, while for off-site students it is 20.00.

Table 12

ANOVA Using MMM Factor Scores

		Sum of Squares	df	Mean Square	F	Sig.
Relational	Between Groups	37.467	1	37.467	1.130	.289
	Within Groups	8484.633	256	33.143		
	Total	8522.100	257			
Functional	Between Groups	45.078	1	45.078	2.850	.093
	Within Groups	4049.433	256	15.818		
	Total	4094.511	257			
Excuse	Between Groups	42.279	1	42.279	1.736	.189
	Within Groups	6333.876	260	24.361		
	Total	6376.155	261			
Sycophantic	Between Groups	31.351	1	31.351	1.220	.270
	Within Groups	6578.530	256	25.697		
	Total	6609.881	257			
Participation	Between Groups	119.102	1	119.102	4.595	.033*
	Within Groups	6635.199	256	25.919		
	Total	6754.301	257			

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Factor Analysis

The data collected in this study were subjected to factor analysis in an attempt to confirm the results of Martin et al. (1999). In an attempt to match the parameters of the factor analysis of Martin et al. (1999), the analysis employed the principle components method and varimax rotation with Kaiser normalization. The size of the eigenvalues was limited to less than 1.0. A threshold of .50 was applied to factor loadings. The results from this factor analysis, in terms of the rotated component matrix, are presented in Table

13.

Six factors converged in the analysis accounting for 62.85% of the total variance. In comparison, 63.7% of variance was explained by the five factors obtained by Martin et al. (1999) in their study. The difference between the six factors obtained here and the five factors obtained by Martin et al. (1999) was primarily due to functional items converging into two side-by-side factors rather than one. The relational factor was the only dimension that converged identically to the results of Martin et al. (1999). All six individual items associated with the relational dimension converged together and all items loaded above .50.

Out of the total of 30 items, Q8E (excuse) and Q19P (participation) did not load above the .50 threshold. On the other hand, item Q8E converged into the same component as most of the sycophantic items. Q19P failed to load above .50, but it did converge into the same factor as the other participation items.

Of the remaining items, only two converged into factors other than those anticipated by Martin et al. (1999). Item Q4P (participation) converged into the sycophantic factor and item Q27S (sycophantic) converged into the excuse factor.

Table 13. Rotated[a] Component Matrix

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Q13S	.793					
Q14S	.756					
Q7S	.747					
Q12S	.680					
Q4P	.632					
Q6S	.572					
Q8E	*					
Q20R		.835				
Q18R		.828				
Q11R		.775				
Q29R		.717				
Q10R		.644				
Q2R		.628				
Q24E			.867			
Q26E			.796			
Q5E			.793			
Q22E			.784			
Q27S			.634			
Q16E			.530			
Q25P				.770		
Q9P				.741		
Q21P				.679		
Q28P				.528		
Q19P				*		
Q23F					.690	
Q15F					.656	
Q30F					.582	
Q17F					.569	
Q1F						.786
Q3F						.768

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 8 iterations.
* Factor loading below the .50 threshold.

The data were also divided according to on-site and off-site groupings and subjected to factor analysis employing the previously described methodology. Table 14 and 15 respectively display the results of these factor analyses in terms of rotated component matrices. In both of these cases the data converged into seven factors instead of five. Note that the relational dimension factored identically to that of Martin et al. (1999) studies in both cases.

Table 14. Rotated[a] Component Matrix On-Site

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Q18R	.898					
Q20R	.897					
Q29R	.782					
Q11R	.739					
Q2R	.573					
Q10R	.550				.516	
Q26E		.854				
Q24E		.851				
Q5E		.849				
Q22E		.818				
Q27S		.621				
Q7S			.807			
Q13S			.799			
Q14S			.766			
Q6S			.725			
Q4P			.669			
Q12S			.605			
Q3F				.752		
Q1F				.712		
Q15F				.681		
Q23F				.546		
Q30F				.543		
Q19P					*	
Q9P					.741	
Q21P					.718	
Q25P					.666	
Q16E						.658
Q8E						.549
Q17F						*
Q28P						*

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 11 iterations.
* Factor loading below .05 threshold.

Table 15. Rotated[a] Component Matrix Off-Site

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Q20R	.810						
Q11R	.783						
Q18R	.760						
Q29R	.705						
Q10R	.660						
Q2R	.624						
Q24E		.899					
Q5E		.807					
Q22E		.742					
Q26E		.716					
Q16E		.555					
Q25P			.800				
Q9P			.722				
Q21P			.656				
Q28P			.642				
Q19P			.626				
Q13S				.794			
Q14S				.751			
Q12S				.735			
Q4P				.671			
Q8E					*		
Q3F					.825		
Q1F					.751		
Q15F					.685		
Q23F					.540		.504
Q17F					.510		
Q6S						.653	
Q27S						.595	
Q7S				.505		.567	
Q30F							.603

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 9 iterations.
* Factor loading below .05 threshold.

An additional factor analysis of the total data set was also conducted limiting the number of factors to five based upon the-priori assumption that there are five dimensions associated with the instrument per Martin et al. (1999). The results of this factor analysis are presented in Appendix F.

Additional ANOVA conducted as a result of the findings of the factor analyses.

The factor groupings derived from the analysis of the entire data set largely replicate the dimensional groupings found by Martin et al. (1999). However, because the ANOVA of both composite scores (Table 11) and MMM factor scores (Table 12) suggest a potential difference between on-site and off-site students with regard to participation communication motives, the convergence of the participation items in this factor analysis is of particular interest. As a further investigation of this question, two additional ANOVAs were conducted to inform $H_0^{(4)}$ which specifically addresses the participation dimension. Table 16 contains results from an ANOVA using only the four participation items that loaded above .50 and converged to the participation factor grouping. Table 17 presents results from an ANOVA using all five of the items that converged into the participation factor, even though one of them (Q19P) did not load above .50. Note that $H_0^{(4)}$ is rejected in both instances.

Table 16

ANOVA - Participation Composite Score based on only 4 items

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.799	1	3.799	4.239	.040*
Within Groups	246.484	275	.896		
Total	250.283	276			

Table 17

ANOVA - Participation Composite Score based on only 5 items

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.411	1	3.411	4.025	.046*
Within Groups	233.880	276	.847		
Total	237.291	277			

Summary

Martin et al. (1999) identified five motivations that students have for communicating with their instructor. The five are, functional, relational, excuse, sycophantic, and participation. The Martin et al. (1999) instrument included 30 items with six items associated with each of the five dimensions. This study indicates there is a difference in students' self reported communication motives related specifically to class participation between students located at the local site and students located at distant sites in instructional videoconferences. The mean composite score for the participation dimension is higher for off-site students than for on-site students.

It may also be important to note that even though the difference was only statistically significant for the participation dimension, the average composite score for every dimension was higher for off-site students than for on-site students. Similarly the standard deviation of the composite scores for the off-site students was lower in every dimension.

A factor analysis was conducted in this study using the parameters set forth by Martin et al. (1999) and it was found that the dimensions were largely replicated in this population. The factor groupings were highly similar though not identical. For the

participation dimension five of the six items identified by Martin et al. (1999) converged together but one of the items did not load above the .50 threshold set for this study. Additionally one of the participation items converged into the sycophantic factor. Due to this fact, two additional ANOVAs were conducted and were limited to scores from the participation items that converged together in this study. In every case the difference was shown to be statistically significant.

Table 18 compares the significance and means for all four ANOVAs conducted using various scores associated with the participation dimension. Column 1 represents the composite scores comprised of responses to all using all six individual items identified by Martin et al. (1999) in the participation dimension; Column 2 represents the factor scores obtained by applying the Martin et al. (1999) factor loadings to the responses obtained in this study; Column 3 represents the composite scores associated with only the four items that converged in the participation dimension and loaded above the threshold of .50; and Column 4 represents the composite scores associated with the five items that converged in the participation dimension regardless of their loading. Note that $H_0^{(4)}$ is rejected in every case and the mean for off-site students is higher in each case.

Table 18

Comparison of ANOVA results using various scores associated with the Participation Dimension

	ANOVA [1] Composite	ANOVA [2] Factor score	ANOVA [3] 4 items	ANOVA [4] 5 items
Significance	.049	.033	.040	.046
On-site mean	2.73	18.62	2.63	2.73
Off-site mean	2.94	20.00	2.86	2.95
Overall	2.85	19.43	2.77	2.86

1 Composite scores based on all six items associated with the MMM participation dimension.
2 Factor scores computed from the MMM factor loadings
3 Composite scores based on four items that converge into the MMM participation dimension and satisfy the .50 factor loading threshold in the factor analysis.
4 Composite scores based on five items that converge into the MMM participation dimension.

CHAPTER 5

DISCUSSION

Introduction

The objective of this investigation is to determine whether student site-location in an instructional videoconference is related to students' motives for communicating with their instructor. The study is based, in part, on the work of Martin et al. (1999) who identify five separate student-teacher communication motives— termed the MMM communication dimensions—used to formulate the hypotheses of the research. Again, the five dimensions are relational, functional, excuse, participation, and sycophancy.

The primary methodology employed to test differences in student site-location is ANOVA applied to the MMM communication dimensions. As a result, the majority of this chapter is devoted to a discussion of differences, or the lack of differences in these dimensions, the theoretical support for the findings, and the implications to instructional design. There is also discussion of the supporting analyses, including ANOVA and Chi Square, applied to the individual items and the factor analysis scores. Finally there are some recommendations for future research.

Overview of the Results

The analysis of the data obtained in this study consisted of three major components. First, differences in average responses given by students in on-site and off-site instructional videoconferences to each of 30 individual questionnaire items were

statistically evaluated using ANOVA and Chi-square analysis (the rationale for using both ANOVA and Chi-square analysis is discussed in Chapter 4). The average responses for 22 of the items were found to be higher for the off-site group; the average responses for six of the items were found to be higher for the on-site group; and the average responses for the remaining two items were found to be identical (when rounded to two digits) for the two groups. Among these differences, a total of six were found to be statistically significant at the $p = .05$ level (ANOVA produced five significant differences, while Chi-square analysis produced three, of which two were identical to those produced by ANOVA). For five of these six items, the average responses from off-site students were higher than those for on-site students. For the other item (Item 1F), the average response from on-site students was higher than that for off-site students. Item 1F was found to be significant using ANOVA ($p = .04$) but not when using Chi-square analysis ($p = .161$).

Second, for each student, an average response was computed for all the questions associated with each of the MMM dimensions (referred to as composite scores in Chapter 4). These averages were, themselves, subjected to ANOVA to determine whether the differences between on-site and off-site students associated with the various dimensions were significant. Only the participation dimension was significantly different. In every dimension, however, the mean composite score for off-site students was higher than the mean composite score for on-site students.

Finally, several renditions of factor analysis were applied to the data to learn more about the structure of the response patterns associated with on-site and off-site students.

Applying factor analysis to the entire data set (i.e., without a distinction between on-site and off-site students), using an approach as close to that of Martin et al. (1999) as possible, resulted in factor groupings of questionnaire items that were similar, though not identical, to those represented by the six MMM dimensions. However, when factor analysis was applied separately to the on-site and off-site groups using the same methodology, the resulting factor groupings of questionnaire items were more disparate. When separated according to on-site and off-site groupings, six factors converged in the on-site group and seven factors converged in the off-site group.

The Primary Finding

Recall that $H_0^{(2)}$ through $H_0^{(6)}$ deal with the relational, functional, participation, excuse, and sycophantic dimensions respectively. $H_0^{(4)}$ (participation) was rejected ($p < .05$), but $H_0^{(2)}$, $H_0^{3)}$, $H_0^{(5)}$, and $H_0^{(6)}$ were retained ($p > .05$). The following sections discuss the participation dimension individually, the other dimensions as a group, and the implications of the findings to pedagogy.

Participation Motivation – A Significant Motivation for Communication in Videoconference Settings

This study concludes that off-site students in an instructional videoconference are more likely than their on-site peers to report being motivated to communicate with their instructor for participation reasons. This finding relates directly to $H_0^{(4)}$ which states that there is no difference in self-reported participation motivation for communicating with their instructor between students located at the local site and students located at distant sites in instructional videoconferences.

Media richness theory in conjunction with uncertainty reduction theory was used in this study to predict such an outcome. Media richness theory is based upon an assumption that some media are richer than others, and are therefore, more able to transmit shared meaning between communicants. In this study, media richness theory was specifically used to describe, in terms of media, potential differences between face-to-face communication and video-mediated communication. Other theories, such as uncertainty reduction theory, were then used to predict outcomes based upon these potential communication differences. What follows is a discussion of media richness theory as a stand-alone predictor, and media richness theory in conjunction with uncertainty reduction theory as a predictor.

Media Richness Theory as a Predictor of the Primary Significant Finding

Media richness theory was used in the Literature Review to predict that off-site students may be less motivated than on-site students to communicate to participate. This is the opposite of what was actually found. The prediction was based on the aspect of the theory that indicates that off-site communication is less rich, and therefore more difficult, than on-site communication. Based upon this assumption, it was predicted that off-site students would be less motivated to participate. However, in its original context, media richness theory includes the secondary aspect of cost-benefit-analysis that may actually lead to an opposite prediction. What follows is a discussion of media richness theory including a discussion of the nature of cost-benefit-analysis.

Media richness theory grew out of the business world, as a means to evaluate the costs associated with business related communication. Media richness theory is made up

of two primary tenants. First, some media are more capable than others of transmitting shared meaning between communicants. Secondly, some media may be more costly to use than others, and cost/benefit analysis is necessary to allow managers to effectively choose the best media for a given communication situation. In this study media richness theory was used explicitly to suggest that face-to-face communication may be more robust than videoconference based communication. This assumption has provided a foundation upon which other theories could rest in making predictions of outcomes in this study.

However, it may also be valuable to apply media richness theory, especially the aspect of cost/benefit analysis, separately to these findings as a means of explaining outcomes. Specifically, off-site students may, in essence, conduct an informal cost/benefit analysis and find that the benefits outweigh the costs. In this case the costs may be less robust communication while the benefits may be travel avoidance.

Videoconferencing, as a means of providing distance education has inherent benefits to off-site learners. Clark and Jones (2001) compared traditional course offerings to online offerings, and pointed out that students who choose distance education opportunities do so as a means to organize "their lives to achieve a college education despite a heavy schedule of work beyond the classroom" (p. 117). They also proposed that distant students value non-traditional opportunities as a matter of convenience, and tend to specifically value the benefit of not having to travel in order to be a part of a course. Their research was specific to online courses but seems applicable to any non-traditional course offering with similar benefits.

It is possible, therefore, that off-site students receive a natural benefit of videoconference course delivery in that they do not have to spend time commuting to a central campus. As a result it is also possible that off-site students are pre-disposed to appreciate the positive aspects of video-mediated communication while downplaying the negative aspects of videoconference course delivery. It would seem likely that off-site students might feel frustrated and out of control as a result of the technical problems that occasionally accompany video-conference based course delivery. However, off-site students may be able to limit the anxiety these technical problems might cause, based upon their perception that the benefits outweigh the costs.

Chesebro and McCroskey (2001) suggested that "Students with increased positive affect and greater perceptions of control over their environment are likely to experience less anxiety while learning."(p. 61) Further, they advocate that "Students who are apprehensive when receiving classroom messages are likely to have difficulty listening to and processing information effectively" (p. 66). On-site students, experiencing the same technical disruptions to class as their off-site counterparts, but without perceiving the value provided by the technology, may experience higher anxiety than off-site students. Thus, on-site students may have higher communication expectations than off-site students and less tolerance for technical difficulties, and it is possible this difference might limit motivation to communicate.

On-site, the instructor is in the same room with the on-site students. Therefore, on-site students expect a normal face-to-face learning environment. Instead, they may receive a face-to-face learning environment that is disrupted by the technical difficulties

associated with videoconference delivery of the course to other sites. Frymier and Weser (2001) suggested that "The expectations we have for a communication event influence . . .our subsequent behavior" (p. 314). They discuss this in the context of expectancy violations. Specifically they say, "expectancy violations occur when the behavior of others is not consistent with the expectations that we initially possess for that behavior" (p. 323). In this case, if on-site students come to class expecting high verbal and non-verbal immediacy and are frustrated in their expectations due to technical issues, they may in turn react by being less motivated to communicate.

Conversely, off-site students may expect less than on-site students. If this is true, and if they perceive that the class communication is largely as good as it would have been in a face-to-face setting, then it may be said that their expectations were positively violated. Frymier and Weser (2001) explained the concept of positively violated expectations by saying "that there are circumstances under which violations of social norms or expectations can result in better outcomes than conforming to expectations" (p. 323). Further "If a student does not expect verbal immediacy from teachers, a teacher who behaves in this way violates the student's expectation. If the student views this behavior as helpful and positive, the student's expectation regarding this behavior has been positively violated. This outcome would be a sort of pleasant surprise for the student, who in turn would be more satisfied and pleased with the situation than if his/her original expectation had been met" (p. 324).

In the case at hand, the positive violation of expectations may be essentially the result of cost-benefit-analysis. Off-site students may weigh the costs (less robust

communication) against the benefits (travel avoidance) of videoconference-based course delivery and determine that the benefits outweigh the costs. On-site students are not likely to share the same view. Thus the combination of positive affect and limited expectations may motivate off-site students to participate more enthusiastically than their on-site peers.

Uncertainty Reduction Theory and Media Richness Theory Combined as Predictors of the Primary Significant Finding

Uncertainty reduction theory in conjunction with media richness theory, was used in this study to predict higher reports of participation motivation by off-site students. Media richness theory implies that off-site students may be more likely to perceive communication barriers. Students at distant sites often express that they feel left out of certain classroom communication or activities. Morehouse (1987) lists some of the communication disadvantages as "occasional technical problems, delays. . .etc" (p.5). Similarly Manning (1999) discusses lag-time and other difficulties of video mediated communication in the context of conversational timing. These disadvantages seem to inhibit the meshing, timing and close coordination of expressions within verbal communication. The removal of these process cues that customarily accompany high-rapport conversations may mean off-site students are more likely to perceive communication barriers than on-site students.

Olson and Olson (1997) suggest that people may vary their participation based upon the perceived "difficulty in the communication modes." Thus the combination of media richness theory, which suggest that off-site students may perceive greater

communication difficulties than on-site students, and uncertainty reduction theory, which suggests that off-site students may be motivated based upon that uncertainty to communicate, has the potential to explain why off-site students may be more likely than on-site students, to report being motivated to communicate as a means to participate.

Similarly, Tomoska, (2000), suggested that in certain circumstances students may be more likely to participate in class discussion if they perceive that the instructor's talk is error-prone. If errors increase uncertainty, then uncertainty reduction theory suggests that errors would increase students' motivation to communicate as a means to overcome the uncertainty.

Oviatt et al. (1998) characterized certain communication situations as "at risk" (p. 92). Additionally, they discussed "exaggeration" (p. 93) of communication and "adaptation" (p. 92) of communication in situations in which communication participants perceive themselves to be at risk. The concept of exaggerated communication implies amplification or an increase in some aspect of the communication process. Thus, uncertainty reduction theory, seems to explain why communicants who feel they are at risk may be more likely to report being motivated to increase various forms of their communication. In an educational context, where participation is often valued and emphasized as a success strategy it would seem likely that communicants who perceive that they are at risk, in this study the off-site students, might especially be motivated to communicate for participation reasons.

Dimensions, Which are Not Significant to Communication in Videoconference Settings

Recall that $H_0^{(2)}$, $H_0^{(3)}$, $H_0^{(5)}$ and $H_0^{(6)}$ address the relational, functional, excuse,

sycophantic dimensions respectively. Further recall, that all the off-site means for all five dimensions were higher than the on-site means but only the sycophantic dimension was statistically significant. While this research found that off-site students reported being significantly more motivated than their on-site peers to communicate with their instructor for participation reasons, it is important to note that the study also found no significant differences ($p > .05$) in student reports of motivation for relational, functional, excuse, and sycophantic dimensions. Specifically $H_0^{(2)}$, $H_0^{(3)}$, $H_0^{(5)}$ and $H_0^{(6)}$ were retained. While this finding seems counterintuitive, based upon the apparent communication limitations that accompany videoconference-based instruction, it is a common finding in similar studies.

For example, recall from the Literature Review that courses delivered primarily by videoconference almost always include instructional content delivered through other media. E-mail, chat sessions, mailing lists, and web-based instructional materials are often used to supplement, enrich, or even replace the synchronous delivery of course content or interaction that might normally be included in a videoconference.

This may point to two closely related issues that mitigate the likelihood of finding significant differences in communication motivation between on-site and off-site students. First, substantial communication through other media often accompanies videoconference-based instruction. Thus perceived limitations in video-mediated communication may be overcome by robust communication through other media or channels. Secondly, for various reasons, off-site students may be provided with extra communication as a result of special attention from instructors.

In this study, the sample was drawn from graduate courses in Education and Information Science. Arguably, Education instructors, and to some extent Information Science instructors might be more likely to have received training in instructional design. With increased exposure to pedagogical training, these instructors may naturally be more likely to consider instructional design needs for a particular situation. If, for example, Education instructors are more trained to look for at-risk students than instructors in other professional areas, they may also be more likely to compensate based upon perceived needs of off-site students. Instructors specifically trained in identifying at-risk students may naturally offer the reassurance and verification needed by off-site students to maintain their comfort level. Thus, if off-site students are not more likely to report being motivated for relational, functional, excuse and sycophantic reasons, it may be due to the fact that they are receiving special attention from instructors.

Similarly, the ranks of instructors assigned to videoconference-based courses are often filled with what might be described as early adopters. Thus instructors willing to accept videoconference-based courses may be more likely to appreciate the challenge and extra effort that often accompanies videoconference-based courses. If this is true, then, once again, off-site students may be receiving special attention that they are not accustomed to receiving in face-to-face courses. This may explain why many of the off-site students' reported motives for communicating are not significantly higher than their on-site counterparts.

Implications for Instructional Design and Classroom Practice

This study concludes that off-site students in an instructional videoconference are

significantly more likely than their on-site peers, to report being motivated to communicate with their instructor for participation reasons. However, it is important to note that this research does not necessarily indicate that off-site students actually communicate more than on-site students for participation reasons. Similarly this research does not indicate causation, except in the limited discussion of theories that may potentially explain the differences.

With this in mind there are three important implications to this research as it relates to instructional design and classroom teaching methodology. First, there are differences in students' reports of their participation related communication motives between on-site and off-site students, therefore instructors should be watchful for differences in actual participation levels. Secondly, it may be important for instructors to be well versed in active learning teaching methodologies that have the potential to increase participation levels. Finally, teaching methodologies currently employed in videoconference-based courses may be adequate with regard to most communication motives other than participation.

The Adequacy of Face-To-Face Teaching Methodologies

This study found that there is not a significant difference ($p > .05$) between students self-reported communication motives for functional, relational, sycophantic, and excuse related communication. In the strictest sense, if this is true, there are few instructional design issues that must be considered by instructors attempting to teach videoconference-based courses. This may mean that videoconference-based courses should be taught in essentially the same manner as face-to-face courses.

Supplemental Research Aims

It is a stated limitation of this research that because the participants for the present study are graduate students, they represent different disciplines, and they are enrolled at a different mid-sized state university, comparability of the results to those obtained by Martin et al. (1999) may be limited. Thus this research assumes, to some extent, that the factor structures identified by Martin et al. (1999), and referred to in this research as the MMM communication dimensions, exist in the population. Each dimension is measured by responses to six individual questionnaire items. However, in addition to attempting to detect differences between on-site and off-site students for each dimension ($H_0^{(2)}$ through $H_0^{(6)}$), a supplemental attempt was made to measure differences between these same groups for each of the individual questionnaire items. This research aim was reflected in hypothesis testing for $H_0^{(1)}$ and was implemented here to strengthen any findings of the primary research

The analysis of each item individually allows anecdotal comparison of the significance of the individual items and their relation to their associated dimension. The following section discusses hypothesis testing using the individual items, and the factor analyses conducted to support the notion that the underlying factor structure identified by Martin et al. (1999) does indeed exist, to some extent, in the target population and that the grouping of the individual items into dimensions provides an adequate means to test between conditions.

Individual Items versus Dimensions, a Discussion of $H_0^{(1)}$

The formal mechanism used in this study for hypothesis testing related to $H_0^{(1)}$ was

a combination of ANOVA and Chi Square. In other words, $H_0^{(1)}$ was considered to be rejected if it was statistically significant in either ANOVA or Chi Square. Using ANOVA, $H_0^{(1)}$ was rejected ($p < .05$) (significantly different) for five of the items and retained ($p > .05$) (not significantly different) for the remaining 25 items.

Chi Square analysis was also conducted for each of the items, and two items were significantly different, including one item that was not found significant in the ANOVA. Therefore six of the individual items were significantly different in either the ANOVA or Chi Square analysis between the on-site students and the off-site students. Three of the six items came from the functional dimension and three came from the participation dimension. You may refer to Table 10 for a tabular comparison of these items.

Three of the six participation items were individually significant. Additionally the mean scores for all six participation items were higher for the off-site group than for the on-site group. Both of these facts tend to strengthen and substantiate the primary finding. Interestingly, of the five items that converged together in the main factor analysis, these three items loaded as the highest, middle and lowest scores. Item 25P loaded the highest (.770), item 21P was the middle score (.679) and item 19P was the lowest loading (.493) of the five that converged into the participation factor. While it is difficult to interpret this finding, it potentially suggests that the significance found in hypothesis testing for $H_0^{(4)}$ was not simply the result of one or two highly correlated items. In other words, the individual items seem to consistently represent the overall participation dimension.

It is also interesting that three of the functional items were individually significant while the functional dimension was not significant ($p = .207$). Means for five of the

functional items were higher for the off-site group than for the on-site group, but the mean for item 1F, which was individually significant (p = .040 in ANOVA), was higher for the on-site group than for the off-site group. It appears that item 1F, (*to ask questions about the materia*l), is therefore different in some way from the remaining items in the functional dimension. In terms of face validity it appears to be very similar to item 23F (*to clarify the material*). Both items were significant, but the items converged into separate factors, and the mean for items 1F was higher for on-site students while the mean for item 23F was higher for off-site students. These results seem to indicate that further study might be productive as it relates to this dimension and a specific recommendation regarding this is made later in this chapter.

The findings related to the individual items associated with the functional dimension may also validate the idea that, for future research, the best way to obtain a composite score for each dimension is to use factor loadings for each of the individual items to obtain a weighted average. The methodology for this study called for a composite score to be calculated for each respondent. Each composite score represents average of the responses for each of the six items associated with a particular dimension. This approach allows each item to receive equal weight.

Recall that as a confirmatory measure in this study, an additional ANOVA was conducted using the factor scores for each dimension obtained by applying the Martin et al. (1999) factor loadings to the responses. The participation dimension was significant in both ANOVAs (p = .049 using composite scores, and p = .033 using Martin et al. (1999) factor loadings. Similarly the functional dimension was not significant in either ANOVA

(p = .207 using composite scores, and p = .093 using the Martin et al. (1999) factor scores. Note that the functional dimension more closely approached significance when the factor scores were used. In this study, the reportable outcomes were the same regardless of which methodology was used.

Factor Analysis

Factor analysis was used in this study in an attempt to verify that the factor structure identified by Martin et al. (1999) exists in the target population. The results of the factor analysis strengthened the primary finding of this research. Specifically the underlying participation dimension ($H_0^{(4)}$) was defined and tested in this study using increasingly strict criteria based upon the results obtained from the factor analysis. The participation dimension was defined and tested in three different ways: 1) using the six individual items according to the Martin et al. (1999) original factor grouping, 2) using only the five individual items that converged together in the factor analysis conducted on this data sample, and 3) using only the four items that converged together in the factor analysis conducted on this data sample that loaded above the .50 threshold. In each case $H_0^{(4)}$ was rejected. This result would have not been possible without factor analysis.

The factor analyses in this research were supplementary to the primary purpose of this dissertation, and the methodology related to the factor analyses were taken, where discernable, directly from the research of Martin et al. (1999) Thus they are still exploratory in nature. The decision to use a similar methodology allows for comparability of results to the MMM dimensions.

Martin et al. (1999) used factor analysis to assist in the creation of an instrument

that purports to measure five dimensions known as student communication motives. Their 30-item instrument includes six individual questionnaire items associated with each of the dimensions or communication motives. Their instrument was primarily used in undergraduate sections of Communication classes at a mid-sized state university.

In the present study the same 30 items were presented in a questionnaire to graduate students in Education and Library and Information Sciences courses at a mid-sized state university. Thus the population studied in this research may be different from the population studied by Martin et al. (1999). Not surprisingly then, the factor analysis of the items yielded slightly different results in the new population.

The differences in the results of the factor analyses can be summed up in two statements. First, in this study, the six items associated with the functional dimension converged into two side-by-side factors rather than one. Also three other individual items converged into factors other than those found by Martin et al. (1999). Question 4P "to appear involved in class," and question 8E "to explain the quality of my work," both converged into the sycophantic factor and question 27S "to get special permission/privileges not granted to all students" converged into the excuse factor. Note that the participation dimension, which relates to the primary finding of this research, included no extraneous loadings above the .50 threshhold.

It may be beneficial to look at these three items with regard to face validity. Sycophancy in particular, carries with it a negative connotation related to disingenuous communication versus genuine communication. Five items in the sycophantic dimension include either the wording "to pretend" or "to give the impression." In question 4P "to

appear involved in class," the word "appear" may carry with it a disingenuous communication connotation that is similar to the items in the sycophantic dimension, causing question 4P to appear multidimensional.

Similarly the word "explain" in question 8E "to *explain* the quality of my work," may cause this question to be multidimensional. Andrews and Kacmar (2001) among others have researched the concept of impression management. Impression management in many ways is sycophantic in nature. Andrews and Kacmar (2001) discuss certain impression management tactics that "are proactive behaviors undertaken by individuals to create a specific identity to further their careers" (p. 143). Indeed impression management as a theory base potentially explains sycophantic communication as well as any communication that may be perceived as insincere including certain excuse making tactics.

For example one of the items on the scale developed by Andrews and Kacmar (2001) said "When a superior compliments me on good work for which someone else is responsible, I don't bother to *explain* otherwise" (p. 150). Notice the use of the word "explain" in this context. It may be that the language of excuse making and the language of sycophancy are related in that they both are potentially associated with disingenuous communication.

Similarly question 27S "to get special permission/privileges not granted to all students" does not seem to include wording that may be associated with disingenuous communication. Thus the lack of single dimensionality of the sycophantic factor may be the result of specific language that carries with it negative connotations.

Sycophancy is an impression management tactic that involves feigned communication that shifts according to situational demands. Therefore, it may be that self-report measures of sycophantic tendencies are inherently flawed. Sycophantic behavior tends to demonstrate that an individual is willing to communicate in an insincere fashion if he or she perceives a benefit to doing so. Shallar and Conway (1999) discussed individuals who will "strategically alter the contents of their communications in response to impression management goals" (p. 821).

Sycophantic individuals tend to communicate in such a way as to promote "positive self presentations" (Tedeschi & Rosenfeld, 1981 p. 159). Thus sycophantic individuals may not be willing to risk the negative self-presentation associated with accurate self-reports of sycophantic behavior, especially if they perceive there is a chance an instructor might be able to view responses to the questionnaire. The goal here is not to stereotype individuals that exhibit sycophantic behavior as liars, but to suggest that certain impression management goals that tend to accompany sycophantic communication may contravene straight forward and honest responses on self-report instruments that attempt to measure sycophancy or any other potentially unflattering trait.

Kim and Mueller (1978)(78, p. <25 Page(s)>) said that often "the real research problem at hand is almost always more complex than the factor analysis model assumes to be true" (p. 7). Specifically they say that "one may have minor factors whose identification is not the primary concern but whose presence affects the identification of major common factors. (p. 7) Therefore, it appears that the some of the items, and especially the items associated with the sycophantic dimension identified by Martin et al.

(1999) are multidimensional.

Recommendations for Future Research

In this study, off-site students reported being more motivated to communicate for participation reasons than on-site students. It is not clear whether or not off-site students actually do communicate more than on-site students as a means to participate. Thus, it may be valuable to measure student communication differences in the specific context of participation.

Similarly, in a more holistic approach, it would be valuable to determine what various media are used to communicate in videoconference-based courses other than interactive video. Specifically, do students tend to use instant messaging, email or other Internet related technologies to communicate outside of class?

Likewise it would be valuable to create an instrument to measure similar communication motives for web-based learners.

It may also be valuable to research instructor's attitudes toward on-site and off-site students. Specifically it may be valuable to know if instructors consider off-site students more "at-risk" than on-site students.

Instructional and learning styles were not addressed in this study, yet it is possible that student communication motives may be in some way related to learning styles. This offers another opportunity for future research.

The Martin et al. (1999) instrument appears to be robust and valuable as a research tool. While any instrument could benefit from further refinement, no attempt was made to accomplish that goal in this study. Rather the attempt was to maximize the

potential for comparability of results. However, due to the fact that differences were found between on-site and off-site students related to participation motivation, and due to the fact that there were differences in individual items related to the functional dimension, it seems appropriate to recommend further refinement of an instrument that more specifically breaks these dimensions down into sub-dimensions. Such an instrument could potentially allow for better testing between the on-site/off-site conditions that should allow for a better understanding of instructional design issues related to mediated instruction.

APPENDIX A

IRB APPROVAL LETTER

UNIVERSITY of NORTH TEXAS

Office of Research Services

April 5, 2001

K.B. Massingill
650 College Drive
Abilene, TX 79601

RE: Human Subjects Application No. 01-070

Dear Mr. Massingill,

Your proposal titled "A Comparison of Communication Motives of On and Off Site Video Conference Students " has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101.

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

The UNT IRB must review any modification you make in the approved project. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,

Reata Busby
Chair
Institutional Review Board

RB:sb

P.O. Box 305250 ♦ Denton, Texas 76203-5250 ♦ (940) 565-3940
Fax (940) 565-4277 ♦ TDD (800) 735-2989 ♦ www.unt.edu

APPENDIX B

RESEARCH INFORMATION LETTER

UNIVERSITY OF NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS

RESEARCH INFORMATION LETTER

Subject Name: Date:

Title of Study: The Stability of Student Communication Motives Across Pedagogical Environments

Principal Investigator: K.B. Massingill (915) 673-8555

Co-investigators: Faculty Sponsor, Dr. Philip Turner (940) 565-2731

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes the alternative treatments that are available to you and your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Purpose of the study and how long it will last: This study is intended to determine why students communicate with their instructors. While the research may be conducted over several semesters, individual involvement is limited to the completion of a single survey-questionnaire which should require less than ten minutes to complete.

Your Involvement: Participation in this study is completely voluntary. You may refuse to participate , or withdraw from participation at any time up to the moment of handing in the survey, without penalty of any kind.

Description of the study including the procedures to be used: Survey-questionnaires will be administered to students in several classes at the University of North Texas to obtain self-reported motives that students have for communicating with their instructors. The results of these individual surveys will be studied, both collectively, and in certain specific demographic groupings.

Description of procedures/elements that may result in discomfort or inconvenience: Participants will not be subjected to any procedure that results in discomfort or inconvenience.

Description of the procedures/elements that are associated with foreseeable risks: Participants should not be subjected to any risk associated with the completion of this survey-questionnaire.

Benefits to the subjects or others: An understanding of student communication motives potentially could improve future instructional methods and lead to a better educational environment.

Confidentiality of research records: There will be no attempt to obtain the identity of any individual participant in the study. The results of any individual survey-instrument will not be attributable to an individual and individual student's results will not be shared with the instructor of this class.

Review for protection of participants: This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940) 565-3940.

APPROVED BY THE UNT IRB
FROM 04/05/01 TO 04/04/02

APPENDIX C

STUDENT QUESTIONNAIRE

v. 1.00

STUDENT QUESTIONNAIRE

Please read and fill out all of the first section of this questionnaire prior to beginning the second section.

Classroom location_____

Age_____ Sex ___Male ___Female

Where does this class fall in your overall class-work? ___First Third ___Middle Third ___Last Third

Have you filled out a copy of this survey in another classes? ___Yes ___No

Please circle the number to rate how each of the statements reflects your own reasons for talking to the instructor for THIS class.

1 means "not at all like me," 2 means "not much like me," 3 means "somewhat like me," 4 means "a lot like me," and 5 means "exactly like me."

not at all like me	not much like me	somewhat like me	a lot like me	exactly like me	
1	2	3	4	5	to ask questions about the material
1	2	3	4	5	because I find him/her interesting
1	2	3	4	5	to get assistance on the assignments/exams
1	2	3	4	5	to appear involved in class
1	2	3	4	5	to explain why work is late
1	2	3	4	5	to pretend I'm interested in the course
1	2	3	4	5	to give the impression that I'm learning a lot from the instructor
1	2	3	4	5	to explain the quality of my work
1	2	3	4	5	because my input is vital for class discussion
1	2	3	4	5	because we share common interests

STUDENT QUESTIONNAIRE

not at all like me	not much like me	somewhat like me	a lot like me	exactly like me	
1	2	3	4	5	so we can develop a friendship
1	2	3	4	5	to give the instructor the impression that I like him/her
1	2	3	4	5	to give the impression that I'm interested in the course content
1	2	3	4	5	to give the impression that I think the instructor is an effective teacher
1	2	3	4	5	to get more information on the requirements of the course
1	2	3	4	5	to challenge a grade I received
1	2	3	4	5	to get academic advice
1	2	3	4	5	to learn more about the teacher personally
1	2	3	4	5	to demonstrate that I understand the material
1	2	3	4	5	to learn about him/her personally
1	2	3	4	5	because my instructor values class participation
1	2	3	4	5	to explain absences
1	2	3	4	5	to clarify the material
1	2	3	4	5	to explain why I do not have my work done
1	2	3	4	5	because my classmates value my contribution to class discussions
1	2	3	4	5	to explain why my work does not meet the instructor's expectations
1	2	3	4	5	to get special permission/privileges not granted to all students
1	2	3	4	5	to demonstrate my intelligence
1	2	3	4	5	to build a personal relationship
1	2	3	4	5	to learn how I can improve in the class

APPENDIX D

PERCENTAGE DISTRIBUTION OF RESPONSES TO EACH ITEM ON THE INSTRUMENT

The figures that follow depict the percentage distributions of responses to each item on the instrument. In each case there were five possible responses:

1) “not at all like me”

2) “not much like me”

3) “somewhat like me”

4) “a lot like me”

5) “exactly like me”

The letter that appears after the question number (i.e., Q1F) signifies to which MMM dimension the question belongs.

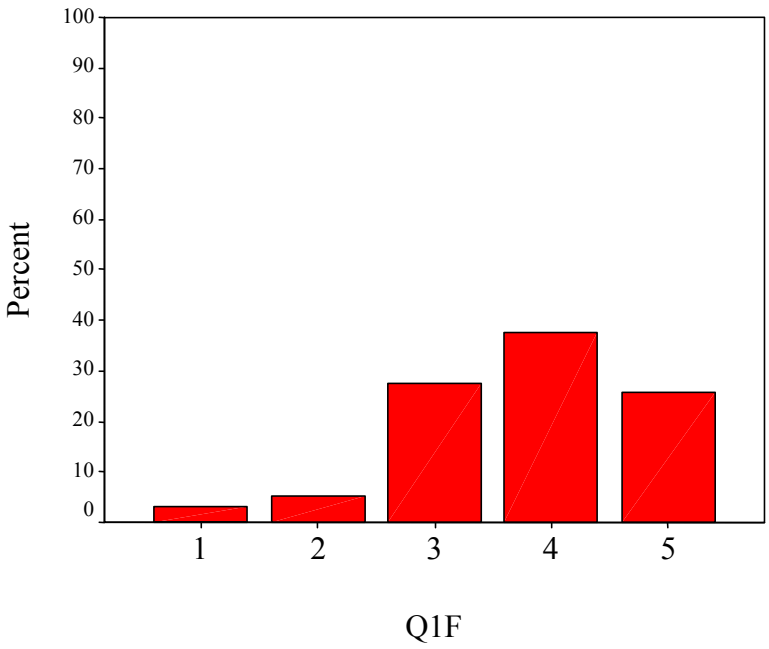

Figure 11. Percentage distributions of responses to question 1F, all responses combined

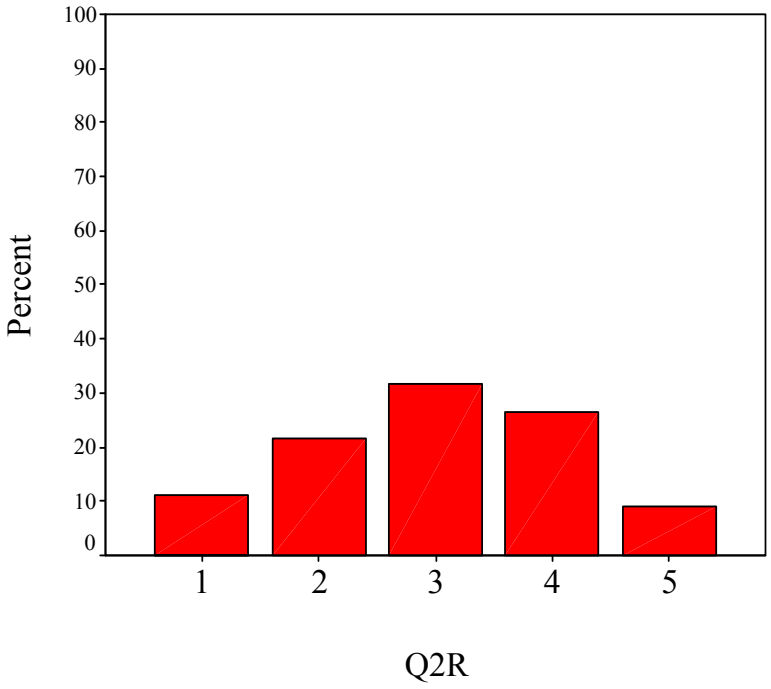

Figure 12. Percentage distributions of responses to question 2R, all responses combined

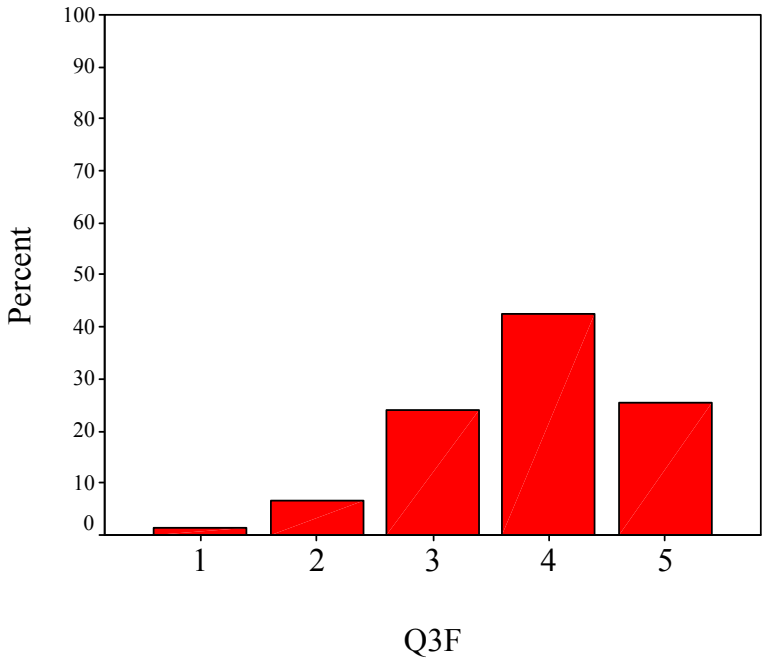

Figure 13. Percentage distributions of responses to question 3F, all responses combined

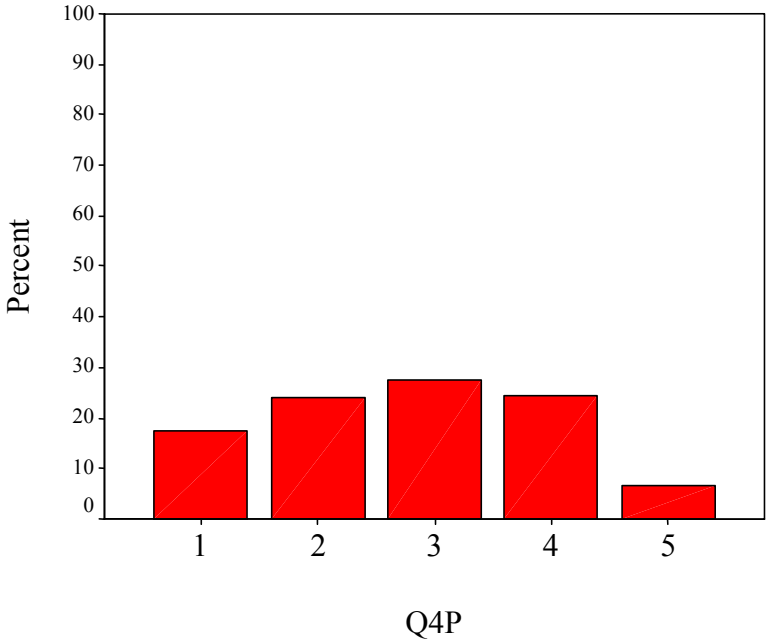

Figure 14. Percentage distributions of responses to question 4P, all responses combined

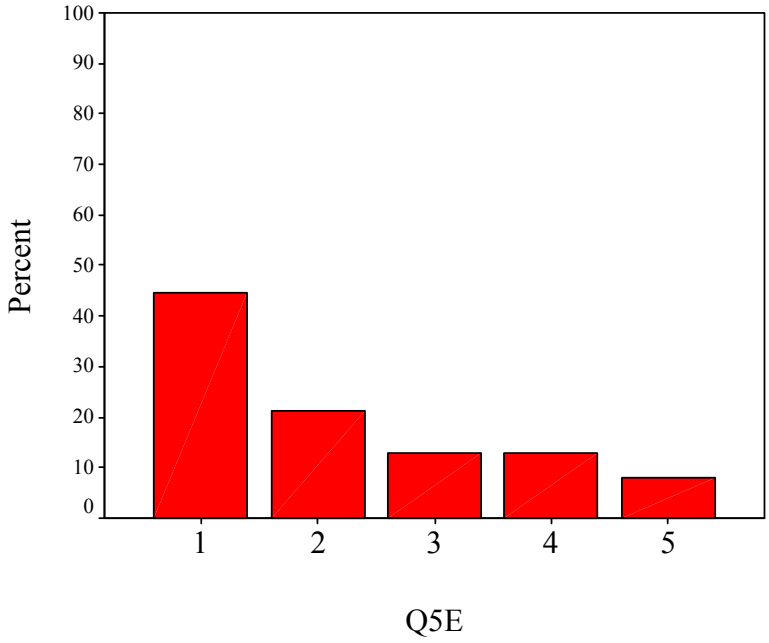

Figure 15. Percentage distributions of responses to question 5E, all responses combined

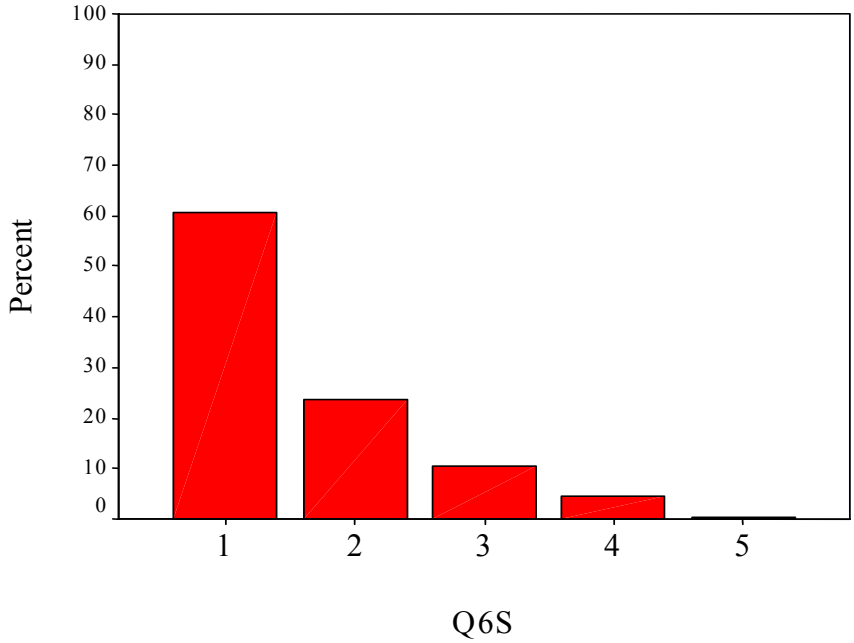

Figure 16. Percentage distributions of responses to question 6S, all responses combined

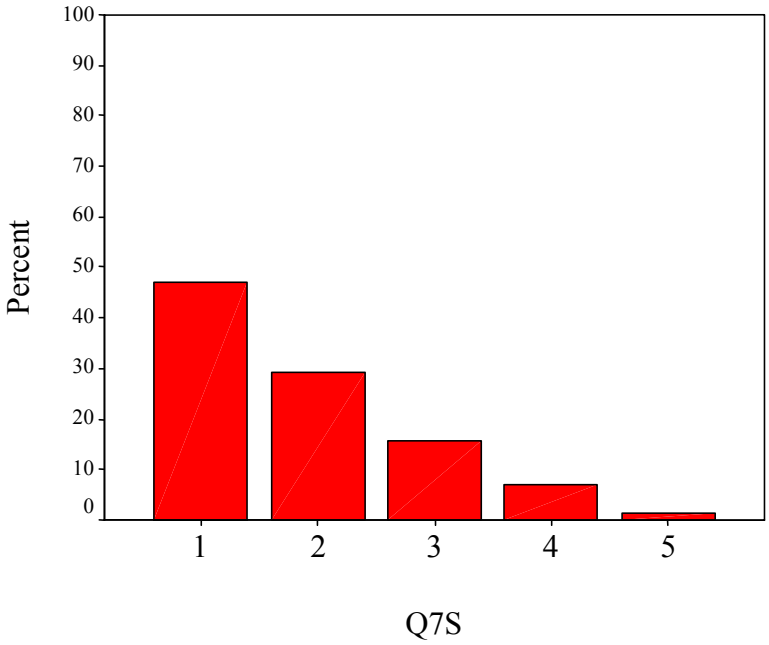

Figure 17. Percentage distributions of responses to question 7S all responses combined

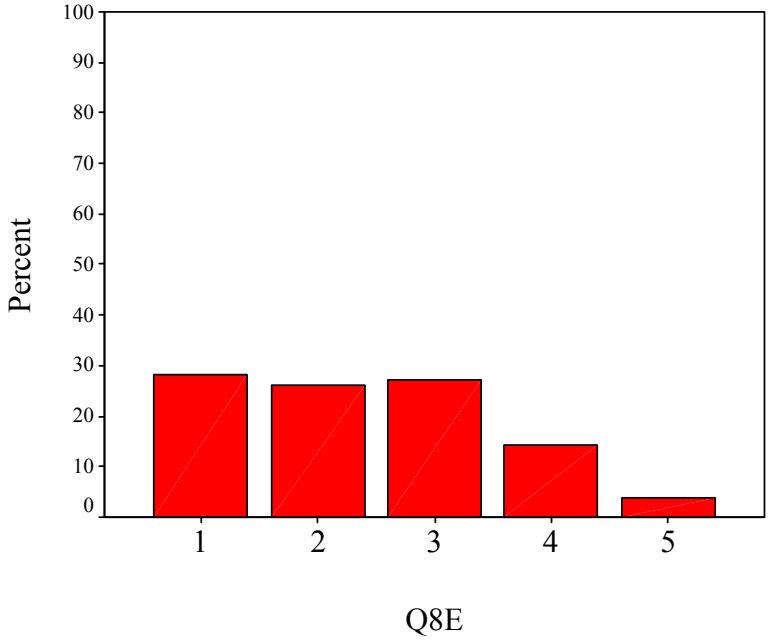

Figure 18. Percentage distributions of responses to question 8E, all responses combined

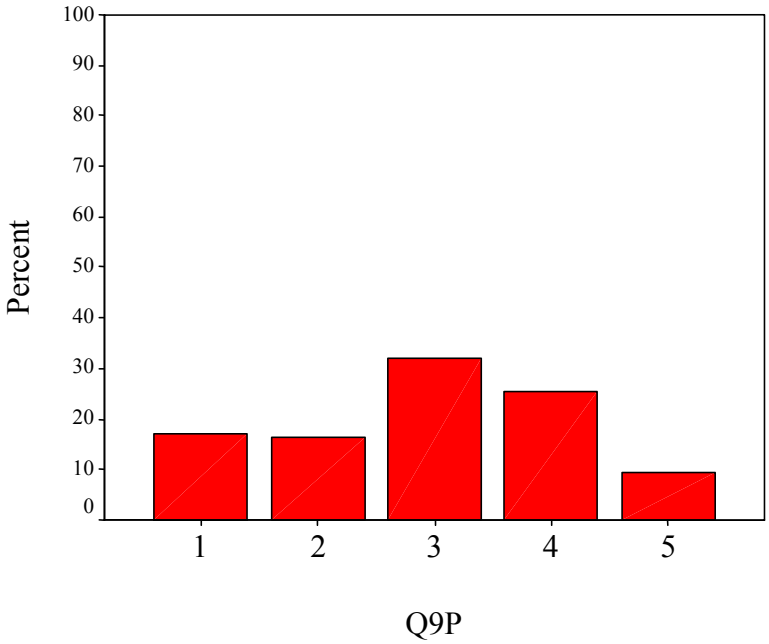

Figure 19. Percentage distributions of responses to question 9P, all responses combined

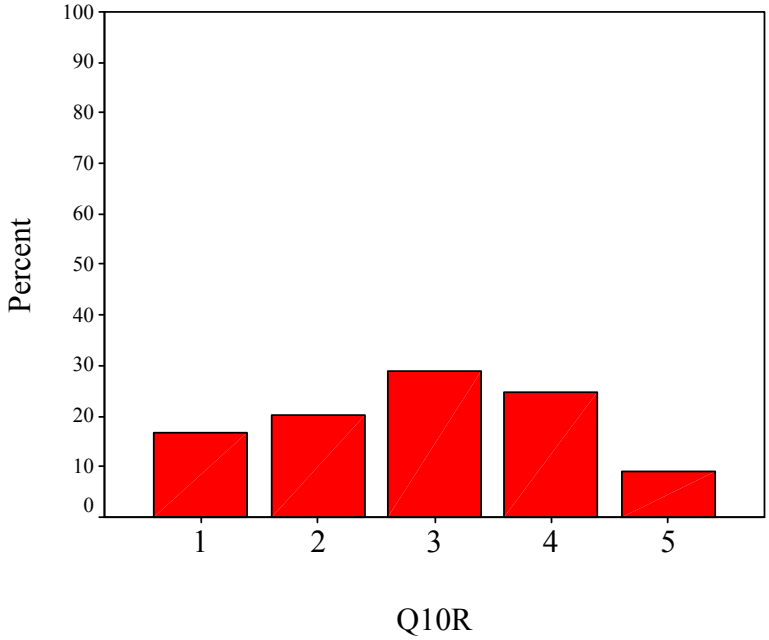

Figure 20. Percentage distributions of responses to question 10R, all responses combined

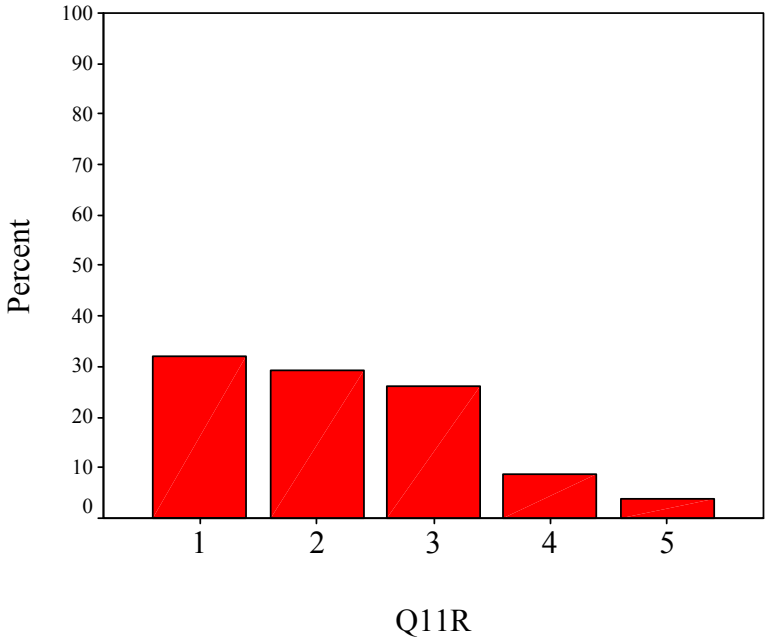

Figure 21. Percentage distributions of responses to question 11R, all responses combined

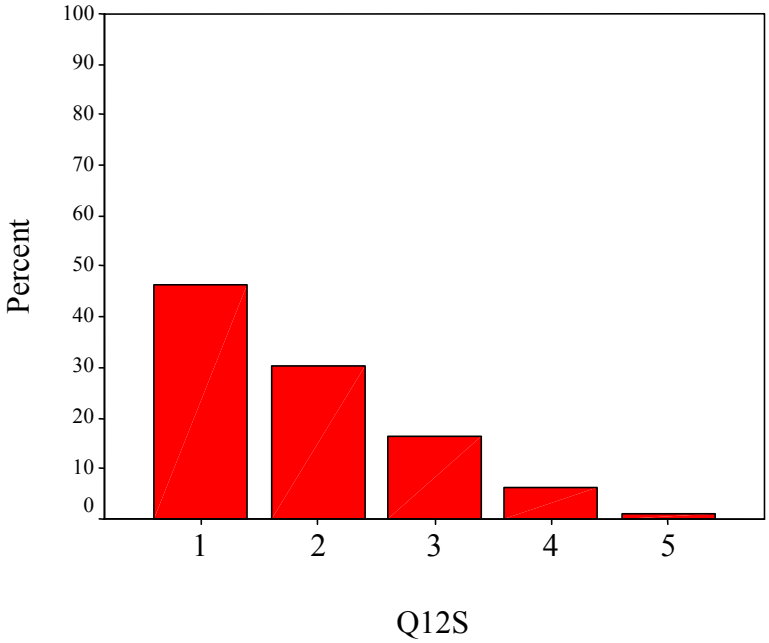

Figure 22. Percentage distributions of responses to question 12S, all responses combined

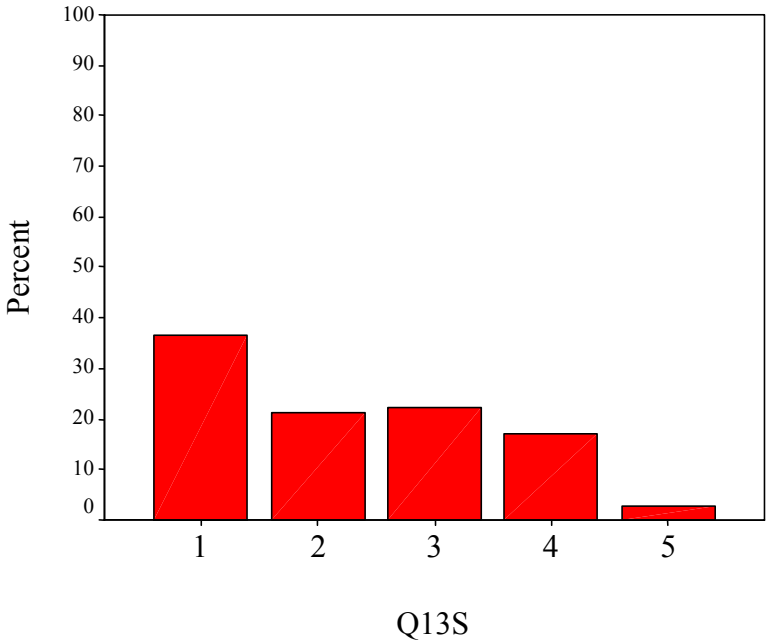

Figure 23.Percentage distributions of responses to question 13S, all responses combined

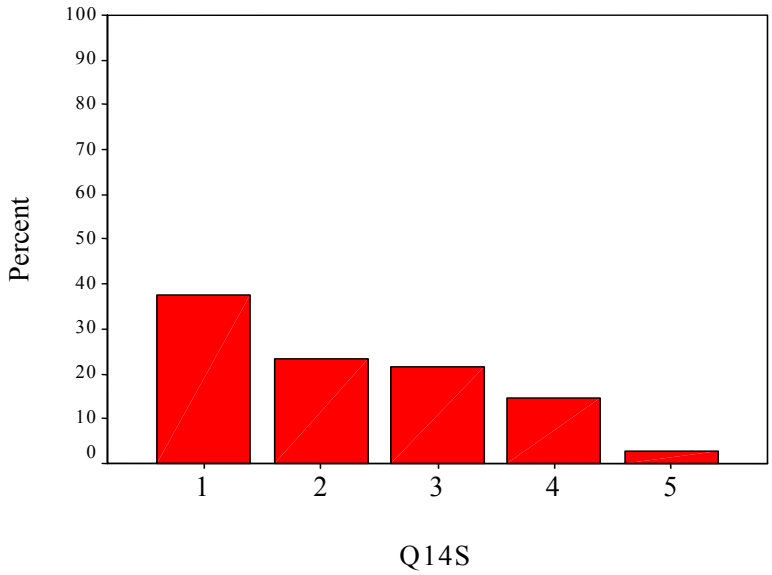

Figure 24. Percentage distributions of responses to question 14S, all responses combined

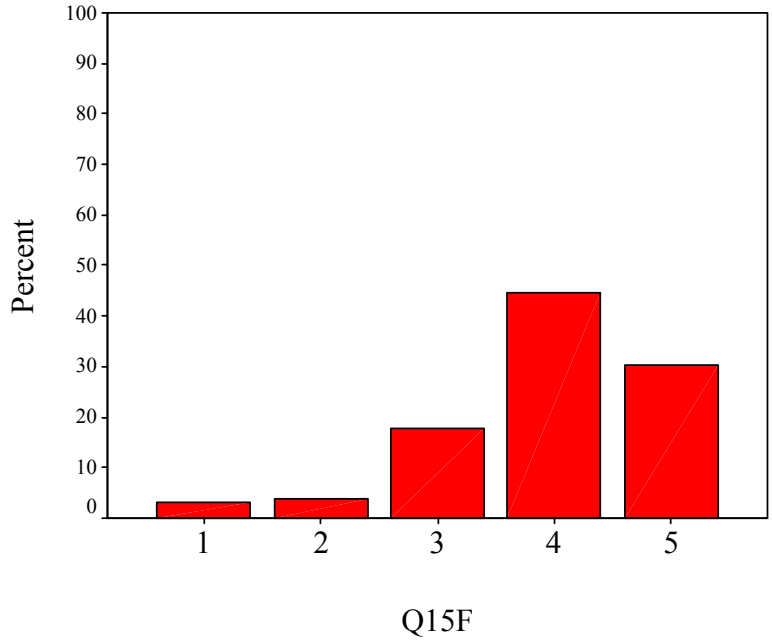

Figure 25. Percentage distributions of responses to question 15F, all responses combined

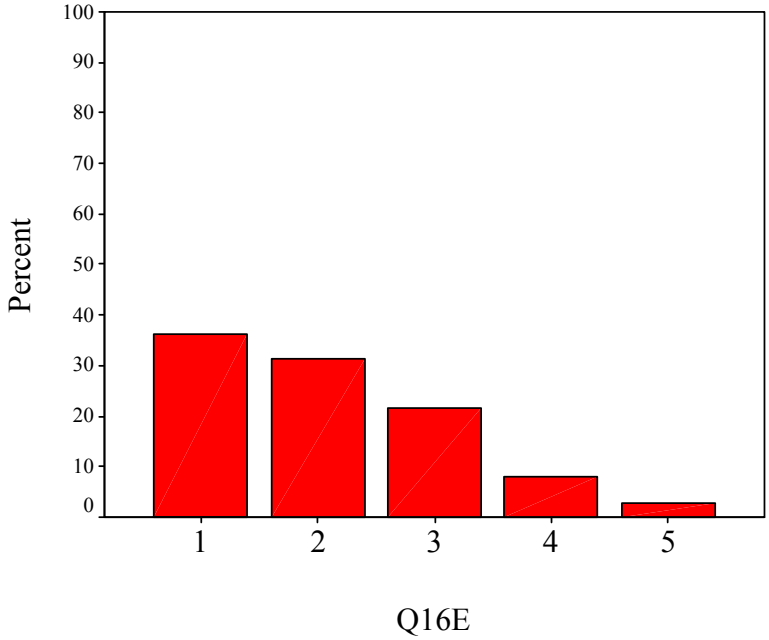

Figure 26. Percentage distributions of responses to question 16E, all responses combined

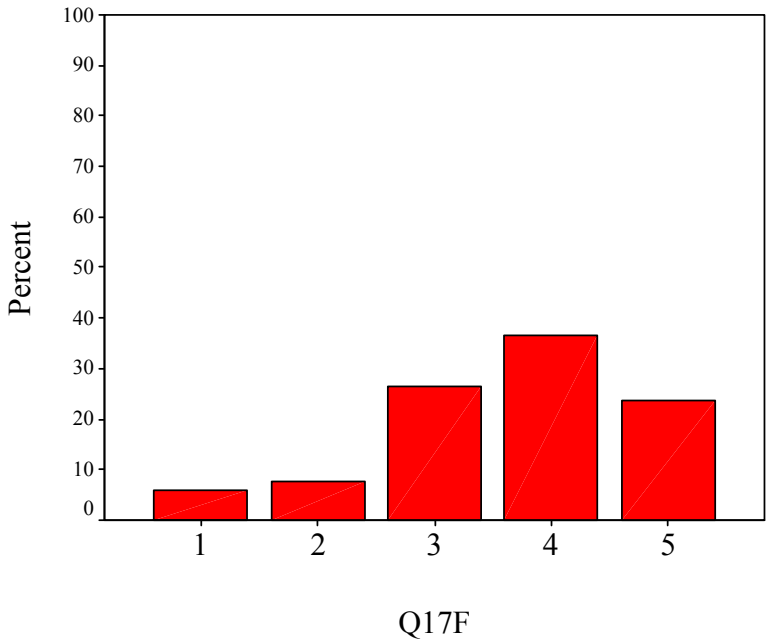

Figure 27. Percentage distributions of responses to question 17F, all responses combined

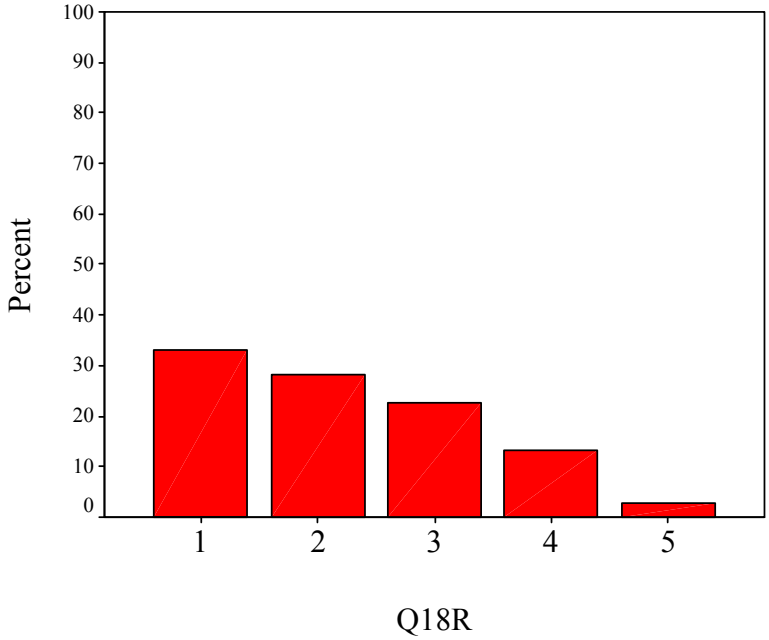

Figure 28. Percentage distributions of responses to question 18R, all responses combined

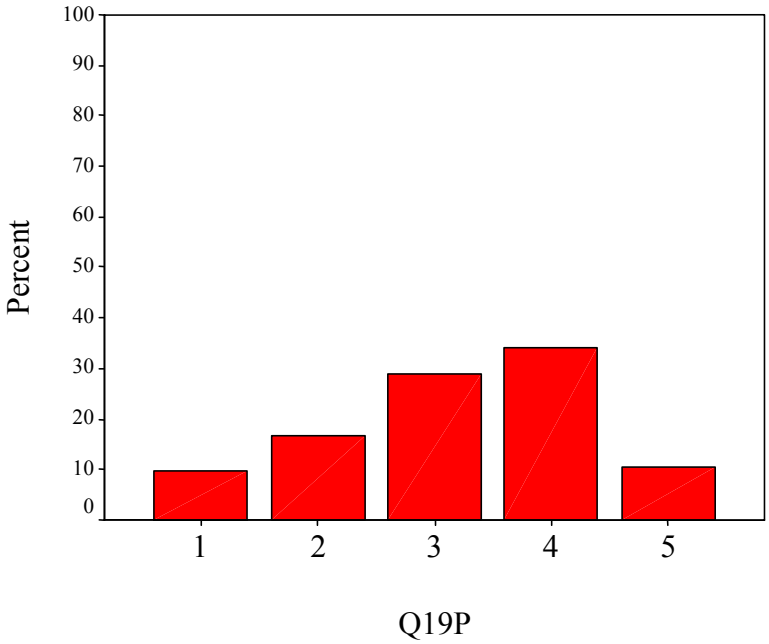

Figure 29. Percentage distributions of responses to question 19P, all responses combined

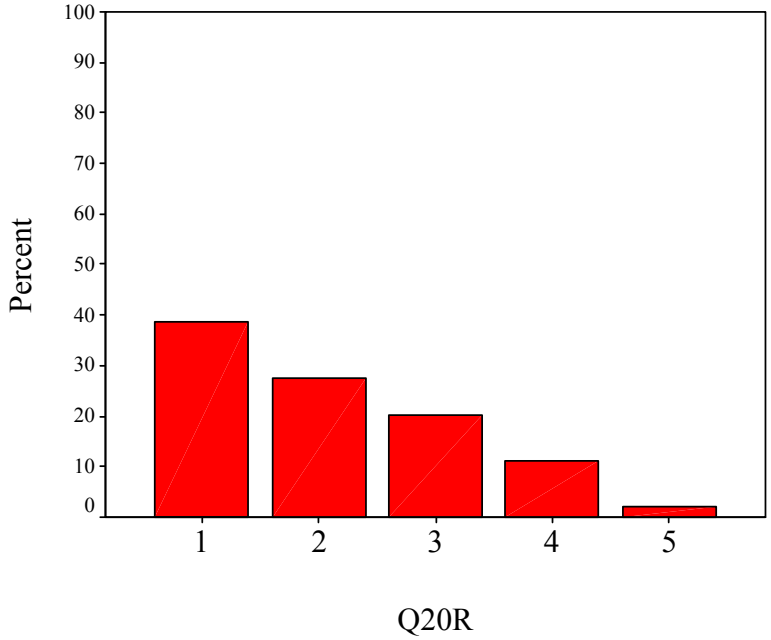

Figure 30. Percentage distributions of responses to question 20R, all responses combined

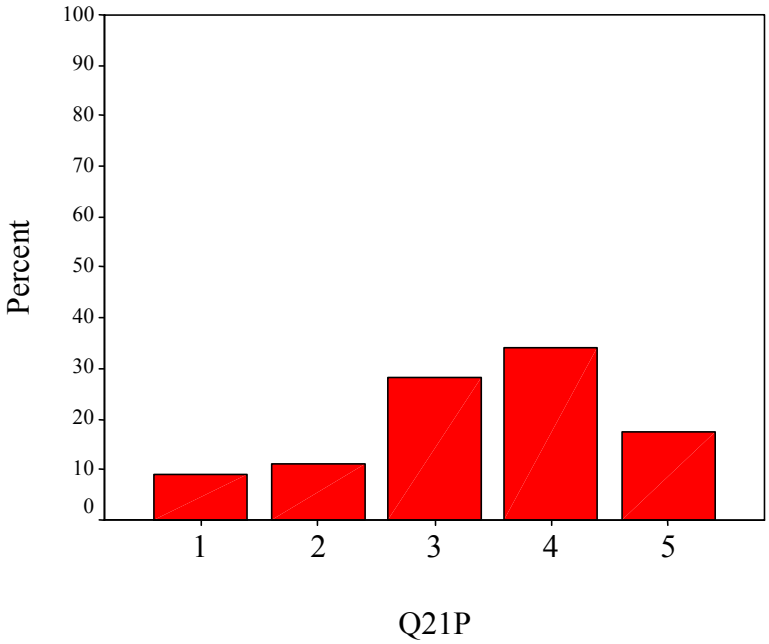

Figure 31. Percentage distributions of responses to question 21P, all responses combined

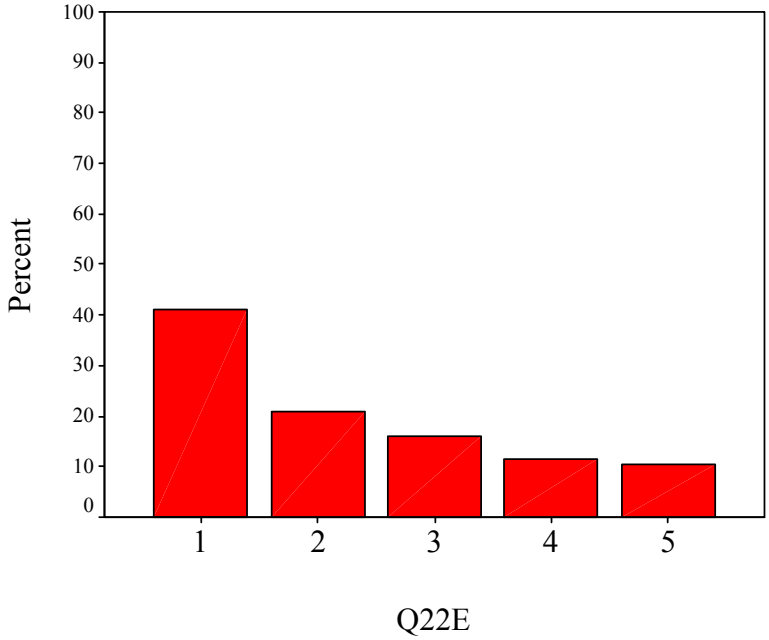

Figure 32. Percentage distributions of responses to question 22E, all responses combined

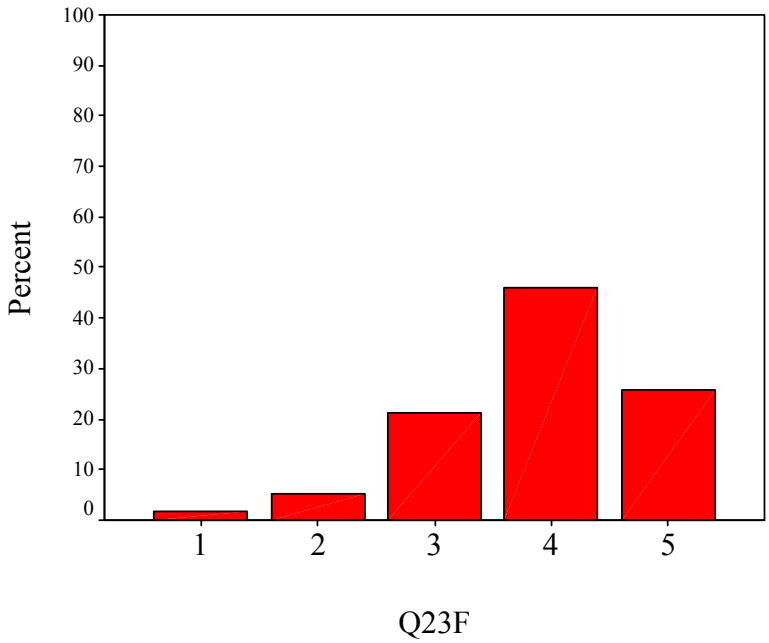

Figure 33. Percentage distributions of responses to question 23F, all responses combined

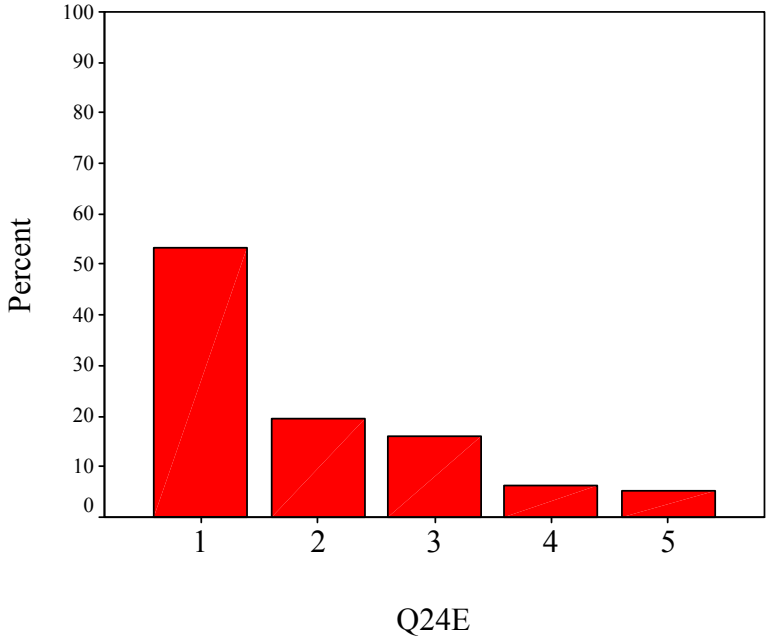

Figure 34. Percentage distributions of responses to question 24E, all responses combined

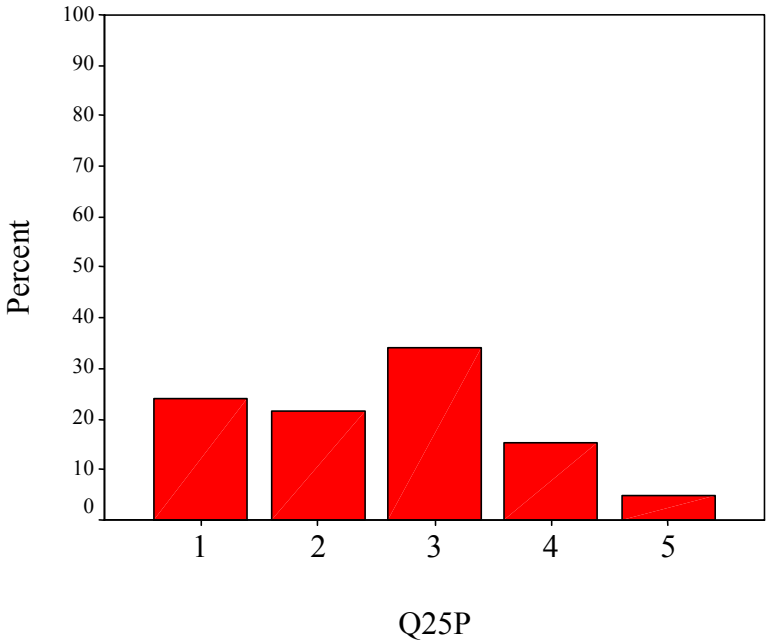

Figure 35. Percentage distributions of responses to question 25P, all responses combined

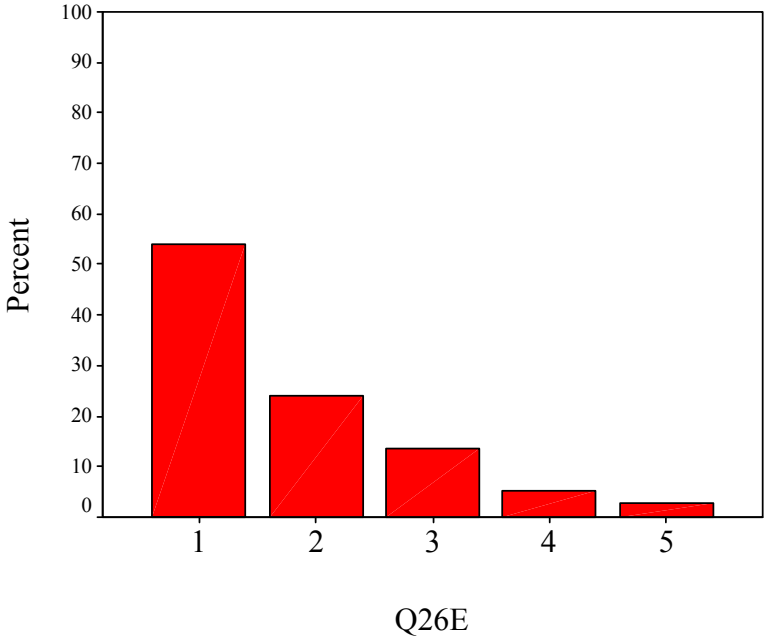

Figure 36. Percentage distributions of responses to question 26E, all responses combined

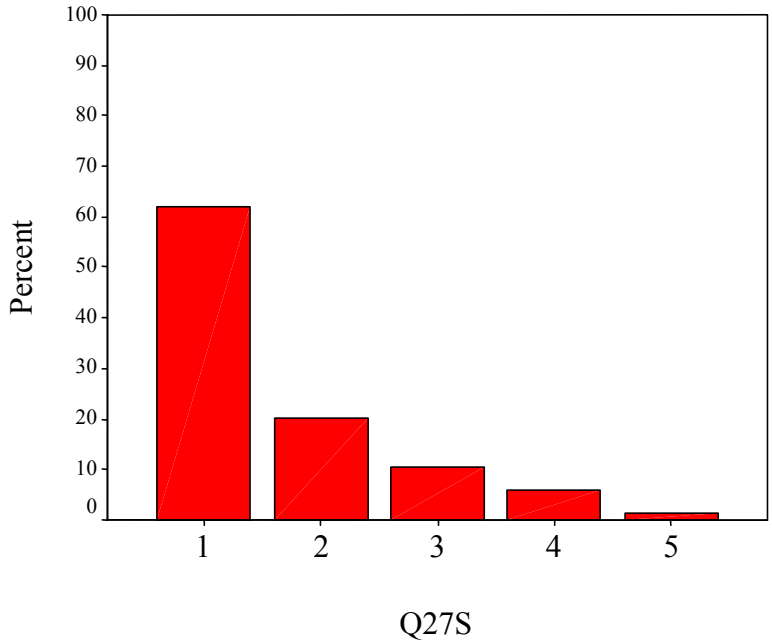

Figure 37. Percentage distributions of responses to question 27S, all responses combined

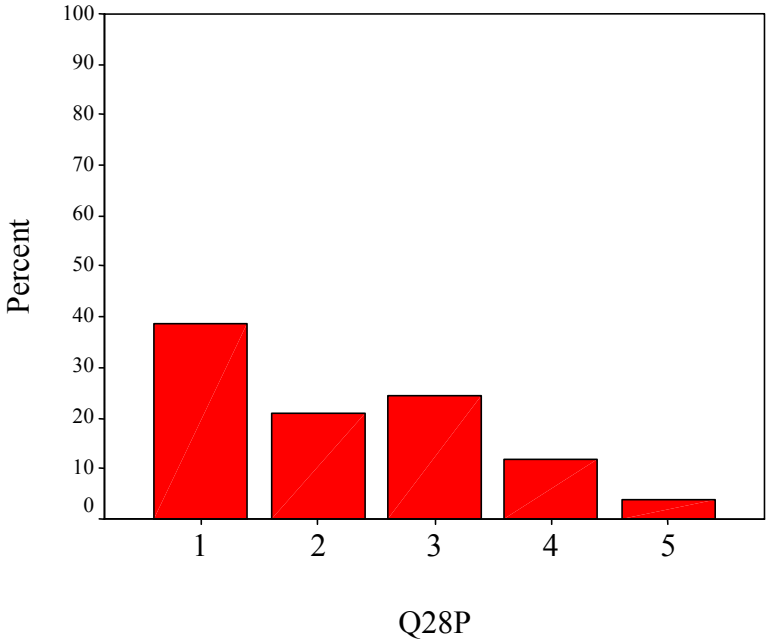

Figure 38. Percentage distributions of responses to question 28P, all responses combined

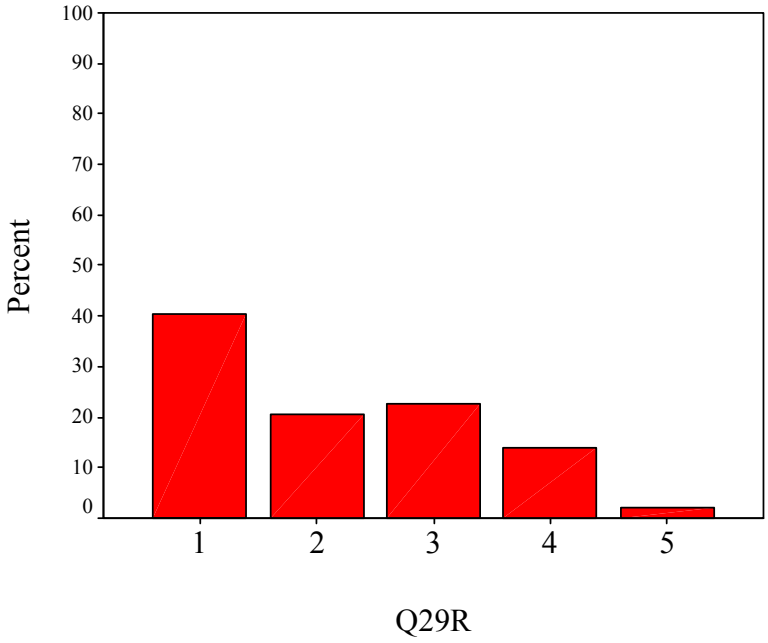

Figure 39. Percentage distributions of responses to question 29R, all responses combined

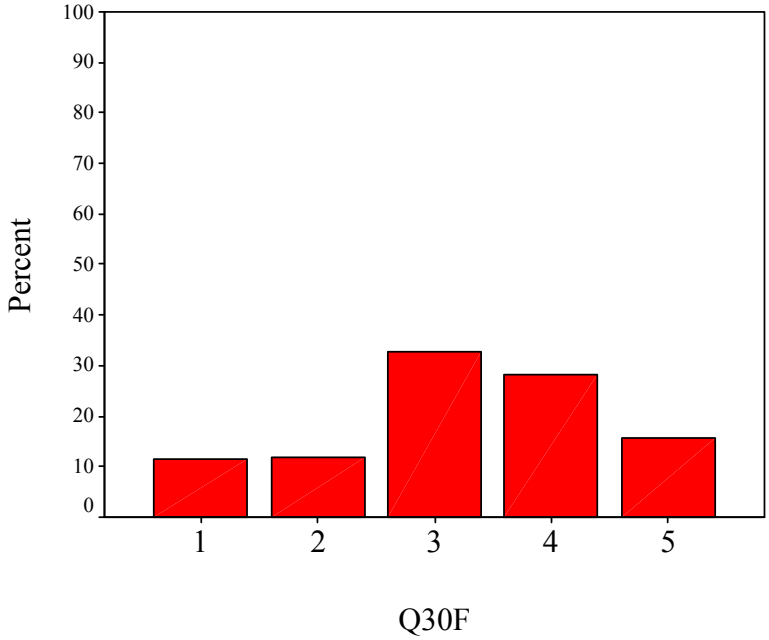

Figure 40. Percentage distributions of responses to question 30F, all responses combined

APPENDIX E

MEAN SCORES FOR THE ITEMS COMPRISING EACH FACTOR

Tables 19-24 present descriptive statistics, for individual questions associated with the MMM relational, functional, excuse, participation and sycophantic dimensions respectively.

Table 19

Descriptive Statistics for the Six Items that comprise the MMM Relational Dimension

ONOFF		Q2R	Q10R	Q11R	Q18R	Q20R	Q29R
1 On-site	Mean	3.00	2.84	2.23	2.30	2.08	2.17
	Median	3	3	2	2	2	2
	N	114	115	115	115	115	115
	Std. Deviation	1.18	1.25	1.12	1.14	1.10	1.18
2 Off-site	Mean	3.01	2.93	2.23	2.21	2.12	2.17
	Median	3	3	2	2	2	2
	N	161	160	162	160	161	162
	Std. Deviation	1.11	1.20	1.11	1.13	1.12	1.17
Total	Mean	3.01	2.89	2.23	2.24	2.11	2.17
	Median	3	3	2	2	2	2
	N	275	275	277	275	276	277
	Std. Deviation	1.14	1.22	1.11	1.13	1.11	1.17

a ONOFF condition:1 = on-site; 2 = off-site.

Table 20

Descriptive Statistics for the Six Items that comprise the MMM Functional Dimension

ONOFF		Q1F	Q3F	Q15F	Q17F	Q23F	Q30F
1 On-site	Mean	3.92	3.81	3.80	3.55	3.73	3.16
	Median	4	4	4	4	4	3
	N	116	112	116	115	115	115
	Std. Deviation	.93	.94	1.02	1.10	.96	1.14
2 Off-site	Mean	3.67	3.86	4.06	3.71	4.00	3.30
	Median	4	4	4	4	4	3
	N	162	163	161	161	161	162
	Std. Deviation	1.03	.93	.91	1.09	.86	1.23
Total	Mean	3.78	3.84	3.95	3.64	3.89	3.24
	Median	4	4	4	4	4	3
	N	278	275	277	276	276	277
	Std. Deviation	1.00	.93	.97	1.10	.91	1.20

a ONOFF condition:1 = on-site; 2 = off-site.

Table 21

Descriptive Statistics for the Six Items that comprise the MMM Excuse Dimension

ONOFF		Q5E	Q8E	Q16E	Q22E	Q24E	Q26E
1 On-site	Mean	2.08	2.35	2.15	2.19	1.86	1.71
	Median	1	2	2	2	1	1
	N	114	114	116	114	115	115
	Std. Deviation	1.38	1.14	1.05	1.42	1.21	1.07
2 Off-site	Mean	2.25	2.42	2.06	2.37	1.93	1.83
	Median	2	2	2	2	1	1
	N	163	161	162	162	161	162
	Std. Deviation	1.31	1.17	1.09	1.35	1.16	1.04
Total	Mean	2.18	2.39	2.10	2.30	1.90	1.78
	Median	2	2	2	2	1	1
	N	277	275	278	276	276	277
	Std. Deviation	1.34	1.16	1.07	1.38	1.18	1.05

a ONOFF condition:1 = on-site; 2 = off-site.

Table 22

Descriptive Statistics for the Six Items that comprise the MMM Sycophantic Dimension

ONOFF		Q6S	Q7S	Q12S	Q13S	Q14S	Q27S
1 On-site	Mean	1.63	1.87	1.78	2.17	2.09	1.70
	Median	1	2	1	2	2	1
	N	115	115	115	115	115	115
	Std. Deviation	.90	1.07	1.02	1.22	1.18	1.06
2 Off-site	Mean	1.59	1.86	1.91	2.37	2.31	1.61
	Median	1	2	2	2	2	1
	N	162	162	162	159	161	161
	Std. Deviation	.87	.96	.94	1.20	1.17	.92
Total	Mean	1.60	1.87	1.86	2.29	2.22	1.64
	Median	1	2	2	2	2	1
	N	277	277	277	274	276	276
	Std. Deviation	.88	1.01	.97	1.21	1.18	.98

a ONOFF condition:1 = on-site; 2 = off-site.

Table 23

Means for the Five Items that Comprise the Original Participation Factor

ONOFF		Q4P	Q9P	Q19P	Q21P	Q25P	Q28P
1 On-Site	Mean	2.7217	2.79	3.03	3.25	2.34	2.13
	Median	3	3	3	3	2	2
	N	115	115	116	115	115	114
	Std. Deviation	1.2251	1.19	1.18	1.18	1.04	1.22
2 Off-site	Mean	2.8344	3.04	3.30	3.50	2.70	2.27
	Median	3	3	3	4	3	2
	N	163	161	161	161	159	162
	Std. Deviation	1.1508	1.23	1.09	1.15	1.20	1.18
Total	Mean	2.7878	2.94	3.19	3.39	2.55	2.21
	Median	3	3	3	4	3	2
	N	278	276	277	276	274	276
	Std. Deviation	1.1812	1.21	1.13	1.17	1.15	1.19

a ONOFF condition:1 = on-site; 2 = off-site.

APPENDIX F

RESULTS OF ADDITIONAL EXPLORATORY FACTOR ANALYSIS LIMITING THE NUMBER OF FACTORS TO FIVE

In this additional factor analysis in which the number of factors was limited to five, only two of the thirty individual items converged in a factor grouping different from that anticipated by Martin et al. (1999). Question Q4S (sycophantic) converged into the participation factor, and question Q27P (participation) converged into the excuse factor. All six relational items converged together and all six functional items converged together, though one of the functional factors did not load above the threshold of .50. Only five of the sycophantic items converged into the sycophantic factor, but there were no extraneous items in that factor grouping.

Table 24

Rotated[a] Component Matrix

	1	2	3	4	5
Q20R	.839				
Q18R	.839				
Q11R	.784				
Q29R	.734				
Q10R	.647				
Q2R	.599				
Q13P		.792			
Q14P		.756			
Q7P		.751			
Q12P		.683			
Q4S*		.629			
Q6P		.578			

Table 24 cont.

	1	2	3	4	5
Q8E					
Q24E			.874		
Q26E			.801		
Q22E			.788		
Q5E			.788		
Q27P*			.627		
Q16E			.522		
Q25S				.770	
Q9S				.722	
Q21S				.707	
Q28S				.552	
Q19S				.527	
Q3F					.748
Q15F					.747
Q1F					.666
Q23F					.621
Q17F					.578
Q30F					*

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 6 iterations.
* Factor loading below .50 threshold.

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