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# The Effects of Instructor Immediacy in Online Learning Environments

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# THE EFFECTS OF INSTRUCTOR IMMEDIACY IN ONLINE LEARNING ENVIRONMENTS

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by

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# DEDICATION

To my loving husband Bill who always believes in me even when I don't see the light and to my amazing daughter Chloe who is my source of life.

# ABSTRACT OF THE DISSERTATION

The Effects of Instructor Immediacy in Online Learning Environments
by
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Doctor of Education
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The rising number of adult learners interested in online distance education, coupled with the increasing competition between educational institutions have forced universities to identify alternative options for course offerings, such as online or blended learning. Instructor immediacy (the measure of the psychological distance which an instructor puts between himself and his students) received significant attention in the communication literature and several studies reported that instructor verbal and nonverbal immediacy behaviors are associated with learning outcomes, satisfaction, and motivation. However, few researchers have examined instructor immediacy in distance learning settings. The purpose of this study was to examine the effects of instructor immediacy behaviors on student perception of instructor immediacy and social presence (the degree to which a person is perceived as "real" in mediated communication) in two online, computer conferencing environments: (a) video and audio with text chat and (b) audio with text chat. Further, this study sought to identify the relationship between perceived instructor immediacy and perceived social presence within the context of the different computer conferencing environments. An ancillary purpose was to determine the effect of immediacy behaviors on learning outcomes as indicated by posttest scores and identify the relationship between perceived instructor immediacy and posttest scores.

The study employed a randomized two-factor design to test the effects of instructor immediacy behaviors (high vs. low) and delivery modality (audio vs. video) on student perception of instructor immediacy, perception of social presence, and learning outcomes. Specifically, 433 students enrolled in two sections of an undergraduate psychology course at San Diego State University were randomly assigned to one of four groups. Each group viewed a different version of a scripted and recorded 20-minute online lesson on current perspectives in psychology.

Students who viewed the high-immediacy sessions indicated significantly higher perception of instructor immediacy and social presence than students who viewed the low-immediacy sessions. In addition, students who viewed the high-immediacy video session indicated the highest perception of instructor immediacy and social presence. The results also showed that there was a significant difference in learning outcomes as indicated by immediate posttest scores between students in the high-immediacy audio group and the low-immediacy video group. However, no significant difference was found between the four groups on the learning outcomes as indicated by their scores on the delayed posttest. The correlation analysis revealed a significant positive relationship between perceived instructor

immediacy and perceived instructor social presence. Further, a regression analysis revealed that instructor immediacy significantly predicted social presence. Finally, no significant relationship was found between perceived instructor immediacy and learning outcomes as indicated by the immediate or delayed posttest.

These findings have significant implications for institutions of higher education that are selecting computer conferencing tools and training faculty to deliver courses online. In addition, this study lays the groundwork for future research in this area and potentially creates a greater awareness regarding the effects of instructor immediacy in online learning environments.

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# CHAPTER 1

# INTRODUCTION

The use of distributed learning technologies increased steadily since the beginning of the 20th century. Until the dominance of the Internet, print, educational radio, and instructional television were the prominent media enabling the availability of distance learning opportunities (Saba, n.d.). New, more flexible media made possible by the Internet have created new opportunities for communication, teaching, and learning. Distance education is no longer on the periphery of education, serving marginalized audiences. Rather it is a multibillion-dollar business in the center of attention of many institutions and corporate organizations (Saba, 2003).

Currently, the number of students enrolling in courses offered online is increasing at a much faster rate of growth than the overall higher education population (Sloan Consortium, 2005). Based on responses from over 1,000 colleges and universities, a recent study released by the Sloan Consortium (2005) reports that the number of students taking one or more online courses grew from 1.98 million in 2003 to 2.35 million in 2004, indicating an overall enrollment growth rate of 18.2%. This increase also reflects a policy shift among higher education's academic leaders, as 56% of all institutions participating in the study identified online education as a critical long term strategy for their schools. Similarly, based on a survey of 151 senior corporate executives, the American Society for Training and Development (ASTD; 2005) reports that corporate learning executives believe that the role of online higher education will increase in their companies in the upcoming years. These ASTD

survey findings also suggest that the increased range of learning opportunities provided to employees and the increased employee satisfaction and retention are major forces driving the growth of interest in online learning among corporate executives.

While distance education courses have proliferated in higher education, there is a new interest in the role of distance education in K-12 schools. Recently, a nationally representative study examined distance education offerings at the elementary and secondary level. More specifically, the National Center for Education Statistics (NCES; 2005) collected data for the 2002-03 school year from a sample of 2,305 public school districts in the 50 states and the District of Columbia. According to their findings, during the 2002-03 school year about one third of public school districts (36%) had students in the district enrolled in distance education courses. In addition, half of the districts with students enrolled in distance education courses had students enrolled in advanced placement or college-level courses offered through distance education.

Taken together, the above trends indicate a growing popularity of online distance education courses across K-12, college, and noncollege adult learners. With this growth, a major question is: *What constitutes quality in higher education offered at a distance?* Arguably, achieving the desired learning outcomes and enhancing the learning experience for the students would constitute one key indicator of quality. However, the availability of a wide range of different media for distance teaching and learning raises the question of whether the choice of the tool impacts learning outcomes and the quality of the learning experience, thus justifying the increased expenditures imposed by newly available media options. The present study sought to investigate several aspects of these multifaceted questions.

## BACKGROUND TO THE STUDY

Distance education is defined as "planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as organizational and administrative arrangements" (Moore & Kearsley, 1996, p. 2). Despite the impressive growth of distance education, it has not always been embraced as an effective type of learning. For example, the lack of face-to-face interaction in distance education, has led to several comparative studies which have examined teaching and learning via distance versus conventional classroom instruction. This body of research has consistently found *no significant difference* in learning outcomes between face-to-face and distance education courses (Saba, 2003). In addition, the mediated interaction occurring in distance education led to an increased interest in the benefits of different available media used for instructional purposes. In the early 1980s, researchers were interested in identifying whether computers and television had an effect on learning. Clark (1983) launched a debate about the role of instructional technology and media in learning with an article arguing that existing research showed no learning benefits from employing any medium used for instructional purposes. Clark's famous "grocery truck" analogy claimed that "The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more that the truck that delivers our groceries causes changes in our nutrition" (Clark, 1983, p. 446). In response, Kozma (1991, 1994) argued that media can affect both learning and motivation and began what is now known as the *great media effects debate* (Hastings & Tracey, 2005). Kozma (1991) claimed that instructional methods can be used to take advantage of the capabilities of a particular medium, thus affecting the learning

outcome. Therefore, instead of asking whether media affect learning, we should be examining relationships between media and learning, as the role of a medium in learning is not solely defined by its capabilities or attributes, but also by the variability of its use (Kozma, 1994).

In reviewing the media effects arguments, Hastings and Tracey (2005) suggest that the unique capabilities of new media and the Internet support Kozma's position and that the technological advances of new media should be considered in discussions of media effects. Hastings and Tracey (2005) assert that a lack of empirical research has been the major block in resolving the original debate. The expansion of distance education programs offered through the Internet and the availability of a wide range of competitive media for facilitating this type of teaching and learning highlight the central question of the great media effects debate: *Do media affect learning?*

Currently, computers are the media most widely used for facilitating distance learning. Computer mediated communication (CMC) is social in nature and its ability to host collaborative environments creates the capability for intellectual discourse and social construction of knowledge (Harasim, 1990). Therefore, computer-based tools have been widely embraced for online learning. With the prevalence of computers in online distance education, instead of asking whether media affect learning, one could ask whether there are differences among the plethora of computer-based tools, such as synchronous and asynchronous text chat tools, discussion boards, computer audio and video conferencing, and so forth, regarding their impact on the mediated learning transaction and the learning outcomes.

The variety of new computer based tools facilitates two-way communication and allows for enhanced feedback and interplay between participants. However, whenever communication is achieved through media, physical signals such as body movement, eye gaze, facial expression, and so forth are constrained by the characteristics of the medium. Nevertheless, the quality of new, two way computer conferencing tools, which allow individuals to communicate through audio (microphone), video (e.g., with the use of a web camera) and text-based chats, can reduce these constraints. Computer conferencing tools that facilitate verbal and nonverbal communication allow users to share their computer screens, view PowerPoint slides and work on whiteboards. Participants can join a conference from different locations and receive visual and auditory feedback, creating opportunities for social interaction. In addition, there are several types of communication that can occur through such tools, such as two-person communication, small group interaction, presentation or lecture to a large audience, and public speaking. While technological advances are constantly progressing and interactive tools are becoming more accessible, researchers are trying to catch up with the scale of their impact on social interaction and learning.

A potential advantage of computer conferencing tools is that they may allow for greater intimacy and immediacy as it is in the case of face-to-face communication. While physical separation is the apparent factor in mediated communication, distance education is not solely determined by the physical, geographical distance but also by the *transactional distance*. The term transactional distance implies that the distance between the learner and the instructor is educational and psychological and is defined by the relationship of the two communicators (Moore, 1993). Research in conventional classroom settings has examined instructor immediacy, the measure of the psychological distance which a communicator puts

between himself and the object of his communication (Wiener & Mehrabian, 1968). The literature in this area of research has identified verbal and nonverbal communicative behaviors which may be employed by instructors to reduce student perceptions of psychological distance and enhance closeness and interaction. Relevant nonverbal behaviors include eye contact, body posture, gestures, facial expressions, and vocal qualities (Andersen, 1979; Richmond, Gorham, & McCroskey, 1987). Relevant verbal behaviors include using students' names, feedback, praise, and humor (Gorham, 1988), among other behaviors.

Research on instructor immediacy has shown that when instructors employ verbal and nonverbal immediacy behaviors students demonstrate increased learning outcomes, motivation, and satisfaction (Andersen, 1979; Christophel, 1990; Gorham, 1988; Gorham & Christophel, 1990; Gorham & Zakahi, 1990; Kearney, Plax, & Wendt-Wasco, 1985; Kelley & Gorham, 1988). While these findings received a lot of attention in the communication literature, most of the studies have been conducted in traditional face-to-face, non-mediated settings and very few studies have examined instructor immediacy in the context of distance education classroom, primarily in the televised classroom (Freitas, Myers, & Avtgis, 1998; Guerrero & Miller, 1998; Hackman & Walker, 1990). Consequently, some of the verbal and nonverbal behaviors that have been described to enhance instructor immediacy in face-to-face interaction might not be feasible or relevant in distance education settings. However, existing research has reported notable effects of instructor immediacy on student learning outcomes. Considering the increasing number of students enrolled in courses offered through the Internet, there is a noticeable gap when it comes to investigating how students perceive instructor immediacy when learning occurs online, through various computer conferencing tools.

Despite an apparent dearth of research on immediacy in the context of online computer conferencing, a body of research in distance education and communication is concerned with the concept of social presence, the degree of salience of the other person in a communication transaction (Short, Williams, & Christie, 1976) or as it has been widely interpreted, the degree to which a person is perceived as "real" in a mediated communication. Researchers investigating social presence suggest that the construct of social presence is closely related to the construct of immediacy. As Short et al. (1976) noted in their seminal work on social presence, the later is dependent on the characteristics of the medium, on the communicators, their perception of the medium and the other person in the communication, and their presence in a series of interactions. Student perception of social presence can increase student satisfaction and perceived learning outcomes (Gunawardena & Zittle, 1997; Picciano, 2002; Richardson & Swan, 2003). However, social presence is partially determined by the objective qualities of the medium used in the mediated interaction; thus selecting the appropriate communication medium for an instructional instance could affect the student learning outcomes of the mediated interaction (Tu & McIsaac, 2002).

## PROBLEM STATEMENT

Research has shown that instructor immediacy can reduce psychological distance and when instruction occurs in a mediated setting, the closely related construct of social presence is largely affected by the qualities of the medium used (Short et al., 1976; Walther, 1992). Educational researchers have examined social presence and its relationship to interaction, perceived learning, and student satisfaction from participating in distance education courses (Boverie, Nagel, McGee, & Garcia, 1997; Gunawardena & Zittle, 1997; Richardson & Swan,

2003; Tu & McIsaac, 2002). However, a review of the literature on social presence in education reveals that earlier researchers focused on students' perception of social presence as a result of their participation in online courses facilitated by asynchronous, text-based computer tools. Compared to other communication media, the use of video has the capability for greater intimacy because of "its ability to convey nonverbal cues such as eye contact and smiling" whereas "text-based CMC, devoid of nonverbal codes that are generally rich in relational information, occupies a relatively low position as a medium capable of generating intimacy" (Gunawardena & Zittle, 1997, p. 9). Despite this, very few researchers have attempted to study the role of synchronous audio and video presence on distance education students' perception of social presence and learning, and whether the use of different computer conferencing tools would affect students' perception of the instructor and the resultant learning outcomes.

Not only have researchers focused primarily on the perception of social presence when using text-based communication tools, but they have also focused almost exclusively on social presence as perceived by student to student interaction (Wise, Chang, Duffy, & Del Valle, 2004). While the centrality of the learner and the expectancy that the student takes the major responsibility for his or her learning are two distinguishing features of distance education, "learner accountability is not unilateral and finds its full expression in relation to the teacher's contribution to the process of education" (Saba, 2003, p. 4). To date, no study has examined the role of instructor verbal and nonverbal immediacy behaviors in different computer conferencing settings and their effects on social presence and learning outcomes. Researchers have examined instructor immediacy extensively in traditional classrooms and have found evidence associating instructor immediacy behaviors and student perception of

immediacy with increased student motivation and learning (Frymier, 1994; Gorham & Zakaki, 1990; Hackman & Walker, 1990). However, the effect of instructor immediacy using various computer conferencing tools has not been studied, nor has the relationship between perceived instructor immediacy, perceived instructor social presence, and learning outcomes in online learning.

## PURPOSE OF THE STUDY

The purpose of this study was to investigate how students perceive instructor immediacy and social presence in computer conferencing sessions. The study focused on two widely employed combinations of computer conferencing tools that allow synchronous computer communication: video and audio with text chat and audio with text chat. In addition, the study sought to determine whether the use of different computer conferencing environments would result in differences in learning outcomes when the instructor manipulates the level of immediacy behaviors. Finally, the study examined the relationship between perceived instructor immediacy, perceived social presence, and learning outcomes in each of the two combinations of computer conferencing environments and instructor immediacy behaviors.

To explore these issues, the researcher recorded four versions of an online synchronous session to reliably manipulate the level of instructor immediacy behaviors while using the two different computer conferencing environments (video and audio with text and audio with text). To experimentally compare students' perception of instructor immediacy and social presence in the two computer conferencing environments, the instructor engaged students in each of the two environments in a typical lecture discussion with identical content

and activities, while manipulating the level of verbal and nonverbal immediacy behaviors. The high- and low-immediacy conditions were established using existing immediacy behaviors derived from immediacy research and the sessions were recorded. Participants were randomly assigned to one of four groups and were asked to view a version of the lesson (see Table 1).

**Table 1. Subject Groupings**

| Conditions | Groups | |
|---|---|---|
| | Video-Audio-Text (VAT) | Audio-Text (AT) |
| High Immediacy (Hi) | Group 1: High Immediacy – Video-Audio-Text (Hi-VAT) | Group 2: High Immediacy – Audio-Text (Hi-AT) |
| Low Immediacy (Lo) | Group 3: Low Immediacy – Video-Audio-Text (Lo-VAT) | Group 4: Low Immediacy – Audio-Text (Lo-AT) |

## RESEARCH QUESTIONS AND HYPOTHESES

This study examined the following research questions and hypotheses:

### Research Question One

RQ1: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor immediacy?

Several studies have shown that the use of verbal and nonverbal immediacy behaviors in the traditional classroom is associated with cognitive learning, information recall, motivation, positive affective and behavioral learning, and favorable student ratings of the

overall quality of instruction (Andersen, Norton, & Nussbaum, 1981; Christophel, 1990; Gorham, 1988; Kelley & Gorham, 1988; Plax, Kearney, McCroskey, & Richmond, 1986; Richmond, Gorham et al., 1987; Richmond, McCroskey, Kearney, & Plax, 1987). To what extent do the same immediacy behaviors result in the reduction of the psychological distance between the instructor and the learner in the online distance education context?

While only a few researchers have examined instructor immediacy in online settings, instructor immediacy behaviors that enhance physical or psychological closeness consist of verbal and nonverbal behaviors. A few of the nonverbal behaviors that have been identified include the use of gestures, vocal expressiveness, smiling, and relaxed body posture (Richmond, Gorham, et al., 1987). Therefore, it was assumed that the affordances of video computer conferencing would allow for a more efficient projection of these behaviors and provide an advantage to those students assigned to the high-immediacy video and audio with text chat conferencing group (Group 1). The research hypothesis was that the students who received high-immediacy cues (Group 1 and Group 2) would indicate higher perception of instructor immediacy than students in the low-immediacy groups (Group 3 and Group 4), with students in Group 1 indicating the highest perception of instructor immediacy. The null hypothesis was that there is no significant difference between the groups.

## Research Question Two

RQ2: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor social presence?

Social presence is partially dependent on the objective qualities of the medium and the communicators' perception of the medium and the other person in the communication

(Gunawardena, 1995; Short et al., 1976; Tu & McIsaac, 2002). The use of video allows the projection of facial expressions and the use of audio allows the projection of the voice tone, making the communicator seem as real in the mediated interaction. The research hypothesis was that students who received high-immediacy cues (Group 1 and Group 2) would indicate a higher perception of instructor social presence than the students who received the low-immediacy cues (Group 3 and Group 4). In addition, it was hypothesized that students who received high-immediacy behaviors in the video and audio with text chat conferencing group (Group 1) would perceive the highest degree of instructor social presence. The null hypothesis was that there is no significant difference between the groups.

## Research Question Three

RQ3: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence learning outcomes?

Several studies have suggested that verbal and nonverbal immediacy behaviors increase cognitive and affective learning. Considering that the use of video and audio tools allow for the projection of several immediacy behaviors which have been significantly associated with student learning outcomes (e.g., instructor's vocal expressiveness, smile, relaxed body position, and gestures), it was hypothesized that the high-immediacy groups would achieve higher learning outcomes than the low-immediacy groups. Learning outcomes were measured using an immediate and a delayed posttest. The research hypothesis was that students who received high-immediacy behaviors (Group 1 and Group 2) would achieve higher learning outcomes than the students who received the low-immediacy behaviors (Group 3 and Group 4). In addition, it was hypothesized that students who received

high-immediacy behaviors in the video and audio with text chat conferencing group (Group 1) would achieve the highest learning outcomes. The null hypothesis was that there is no significant difference in learning outcomes between the groups.

## Research Question Four

RQ4: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and perceived instructor social presence?

The literature (Gunawardena, 1995; Gunawardena & Zittle, 1997; Short et al., 1976) suggests that the construct of social presence is closely related to the construct of immediacy. Short et al. (1976), who introduced the theory of social presence, suggest that depending on the medium and the situation, both immediacy and social presence may vary or immediacy may vary even when social presence does not. In other instances, based on the context of the communication, a person may be perceived as non-immediate but real. Short et al. (1976) suggest that both immediacy and social presence will be greater in a voice and video enabled medium than in a voice only enabled medium. Therefore, Short et al. (1976) suggest that the capabilities afforded by a particular medium affect both social presence and immediacy. Rifkind (1992) asserts that lack of immediacy results in a lack of social presence and leads to frustration, a more critical attitude of the instructor's effectiveness, and lower affective learning. The research hypothesis is that there is a positive relationship between perceived instructor immediacy and social presence. The null hypothesis is that there is no significant relationship between perceived instructor immediacy and social presence.

## Research Question Five

RQ5: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and learning outcomes?

Research on immediacy in the conventional classrooms has indicated that the latter relates positively to cognitive learning (Gorham, 1988; Richmond, Gorham, et al., 1987; Richmond, McCroskey, et al., 1987) and information recall (Kelley & Gorham, 1988). Therefore, it was hypothesized that similar findings would apply for online learning environments. The research hypothesis was that there is a positive relationship between perceived instructor immediacy and learning outcomes. The null hypothesis is that there is no significant relationship between perceived instructor immediacy and learning outcomes.

## SIGNIFICANCE

Understanding the relationship between immediacy, social presence, and learning in different computer conferencing environments could contribute to the theory and practice of distance education. The possible significance of this study from a social-practical and theoretical perspective is further explicated below.

## Social Significance

Computer-mediated learning enabled by web-based applications and offered through the Internet represents a new paradigm for distance education (Garrison, Anderson, & Archer, 2003). According to the National Center for Education Statistics (NCES; 2004) in 2000-01, 56% of all postsecondary institutions offered distance education courses, with course enrollments increasing from 1.7 million to 3.1 million between 1997-98 and 2000-01.

With additional institutions planning to offer distance education courses, the NCES projects a continuous growth of distance education as well as an increase in institutions offering programs designed to be completed entirely at a distance. However, the use of the Internet does not support solely the practice of distance education. Hanna (2003) identifies a dramatic departure from educational practices at institutions of higher education and a blurry distinction between on-campus and distance learning, as institutions of higher education are increasingly using the Internet to offer a variety of ways for learning for both on-campus and off-campus students. As a result, Hanna (2003) suggests that understanding the implications of teacher behaviors and instructional tools could elucidate future directions for both distance learners and on-campus learners.

With the expansion of the Internet as the medium of choice for course delivery, instructional designers and institutional leaders are faced with a growing responsibility to assess the effectiveness of the design principles that guide their course development efforts. The affordances made available by advanced technologies offer a wide range of options that could be employed as tools for course delivery. Despite the interactive capabilities of web-based tools, a significant number of online courses are designed to transmit information rather than to foster dialogue (Gunawardena & Duphorne, 2000). Furthermore, the basic structure and tools of CMC have not changed significantly in the past decade; asynchronous text-based tools serve as the predominant form of interaction, whereas synchronous audio and videoconferencing tools have not been widely used, mostly because of the cost and availability of necessary bandwidth (Garrison et al., 2003). This study suggests that the capabilities of new, synchronous computer conferencing tools could be utilized to decrease

psychological distance, increase perception of instructor immediacy, and consequently increase student interactivity, engagement, and learning.

Understanding the consequences of using different computer conferencing tools could provide valuable information for informed decision making when it comes to investing in communication tools that affect learning outcomes. These findings may have implications not only for higher education, but for corporate leaders as well since the value of using synchronous computer mediated tools for instructional purposes has recently become a focus of interest for corporate training. In examining trends in organizational practice, a report published by the eLearning Guild (2004) reveals that 73% of the survey respondents (including designers, developers, and managers of online learning) reported that their organizations are currently delivering synchronous web-based learning, an increase of 22% from a survey administered two years earlier.

However, the most important potential result from this study is a better understanding of instructor immediacy and social presence in the online classroom for those involved in designing and delivering online courses. If our goal is to enhance online learning through improved communication and interaction, then understanding the perception of instructor behaviors through different communication tools could help us translate theory into practice. Social presence is a crucial factor in increasing online interaction and satisfaction and this can be fostered partly by selecting the appropriate computer communicated medium (Tu & McIsaac, 2002). The unique features of an online environment have a strong, positive relationship with student satisfaction (Gunawardena & Duphorne, 2001) thus selecting the appropriate tool and ensuring that learners understand the features of the learning environment will result in more satisfied learners. While social presence can increase student

satisfaction, instructor immediacy has been shown to affect student cognitive, affective, and behavioral learning as well as motivation. Understanding how immediacy affects social presence in online learning environments may guide the design of more interactive and successful distance education courses (Tu & McIsaac, 2002).

## Theoretical Significance

In earlier studies, researchers claimed that social interactions in computer conferences were complex because of the necessity to mediate group activity in a text-based environment (Gunawardena, 1995). While video and audio provide more social presence cues than text alone, recent studies examining social presence are still centered on text based CMC. In addition, different researchers provide their own interpretation of the definition of social presence (e.g., Wise et al., 2004, use "community" and "social presence" interchangeably) and make efforts to validate scales to capture those definitions. As a result, the research on the concept of social presence appears to be fragmentary and inconsistent.

Computer conferencing can facilitate dialogue and interaction necessary for collaborative learning and knowledge construction (Gunawardena & Duphorne, 2001). Since CMC systems may affect the perception of social presence and because students perceive CMC systems differently, it is critically important to select the most appropriate communication form to increase online interaction (Tu, 2002). Studies in CMC have primarily addressed issues of asynchronous threaded discussions, real time text chats, and listserves but have not addressed the role of Internet real time videoconferencing on social presence and the construction of knowledge. In addition, studies in CMC have focused on the effect of social presence and excluded the multidimensional aspect of presence as it can be

perceived in relation to the content, the instructors, the instructional methodology, and other factors in the online classroom. Instructor immediacy can significantly affect learning outcomes and affective behaviors in the classroom, so research findings can point to behaviors which instructors could utilize to reduce psychological distance and enhance instructional effectiveness (Downs, Javidi, & Nussbaum, 1988). The strong, positive relationship between instructor immediacy and learning and the fact that immediacy is closely related to social presence, supports a need to examine the relationship among these factors in the distance education classroom.

## DEFINITION OF TERMS

**Asynchronous:** Communication that takes place at different times. In the context of online distance education, the instructor places the material on the web and the students can access them at any time and place.

**Instructor immediacy:** The measure of the psychological distance which an instructor puts between himself and his students.

**Online learning:** Computer-mediated learning experience which occurs through the Internet and students access content on the World Wide Web (WWW).

**Instructor social presence:** The degree of salience of an instructor in a mediated communication. The degree to which an instructor is perceived as "real" (caring, empathetic, disclosing personality, and expressing emotions) in a mediated communication.

**Synchronous:** Communication which occurs in real-time. In the context of this study the instructor and learners are online and interact at the same time.

# CHAPTER 2

# REVIEW OF THE LITERATURE

Distance education has been academically recognized as an available option for students in the United States since 1883, when the Chautauqua Institute of New York obtained authorization to grant degrees for students participating in correspondence education (Moore & Kearsley, 1996). Despite its long history, distance education has been progressing in a very slow fashion and it is still being partially restrained (Moore, 2003). Recently, the availability of new technologies and the capabilities of the Internet have established distance education as a common method for course delivery in institutions of higher education. The last few years in particular have witnessed an explosive interest in distance education among educators and professionals due to the potential interactive capabilities of computer-based tools (Moore, 2003).

The current interest in distance education will inevitably change organizational practices through the development of structural, pedagogical, and technological models. In the current educational environments, distance education has brought mostly procedural changes to the delivery of programs and services but not transformational changes (Hanna, 2003). Hanna (2003) asserts that the move towards distance education would require a structural and cultural (systemic) change in institutions of higher education. The aim of this literature review was to highlight research findings that could inform practice. Such findings could ultimately guide the development of pedagogical and technological models which could contribute to systemic changes at the organization level.

## CURRENT PRACTICE OF DISTANCE EDUCATION

Currently, computer conferencing tools have been established as the preferred technology for offering courses at a distance. Computer conferencing tools share such capacities as text, audio, and video to support many-to-many discussions, either in synchronous (real time) or asynchronous time. One of the advantages of asynchronous tools is that they do not bind students to specific discussion times. In contrast, the use of synchronous tools may allow for a greater degree of immediacy, interaction, and dialogue. In addition, the use of video-enabled tools gives students the opportunity to observe the instructor present the course content while simultaneously viewing and listening to the information that might be presented on the chat's whiteboard or other text tools (Franklin, 1999-2000). Synchronous communication is also more personable and allows students to take advantage of asking the instructor and peers questions and receiving immediate feedback. In addition, video-enabled tools allow students to observe the instructor, thus bringing instructor modeling and observation into the center of the instructional opportunity.

Whether choosing synchronous or asynchronous computer conferencing tools, as Moore (1998) points out, never has the technology available for distance learning been so powerful, but at the same time never has the gap between those who understand what constitutes quality in designing distance education and policy makers at the university and national level been wider than it is today. To make matters more complicated, technology is constantly evolving and Burge (1998) suggests that we should "boldly interrogate each technology" and "ask why and how may it be useful, which older technologies may do the job better or at a lesser cost, and what ongoing operational costs will be evident" (p. 39). Therefore, distance education scholars are charged with the formidable task of better

communicating the results of their research and practice (Moore, 1998): "It is the responsibility of our profession to study ways of maximizing the potential of our environments to support their learning and to minimize those elements in the environments that may impede it" (Moore, 1998, p. 4).

Congruent with Burg's and Moore's statements, this study attempted to reveal whether new, synchronous computer conferencing tools facilitate the projection of desired instructor behaviors (such as instructor immediacy) and impact students' perception of the instructor immediacy, the perception of instructor social presence, and the subsequent learning outcomes.

## SOCIAL PRESENCE

Social presence theory provides in part the theoretical background supporting this study. In their theory of social presence, Short et al. (1976) defined social presence as the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships. Social presence was defined as a quality of the medium itself so media vary in their degree of social presence. In addition to being a factor of the objective qualities of the medium, social presence is also dependent on the communicators, their perception of the medium, and their presence in a series of interactions. According to this theory, two-way interactive video and audio systems permit the transmission of facial expressions, gestures, tone of voice, and nonverbal cues so they contribute to an increased social presence. However, how they contribute varies from user to user as each individual may have a different attitude towards the medium or may have a different perception of the

communication interaction. Therefore, social presence is dependant upon the objective qualities of the medium and upon the subjective perception on the learners.

Social presence has been a topic of great interest in the area of media and human communication. Several researchers have provided their own operational definition of the construct. For example, Heeter (1992) suggested that social presence is the sense of "being with others" and Biocca and Nowak (2001) defined it as the "level of awareness of the copresence of another human being or intelligence." Lombard and Ditton (1997) conducted an extensive review of the literature and identified the six following interrelated but distinct conceptualizations of presence:

- Presence as social richness: The extent to which a medium is perceived as sociable, warm, sensitive, personal, or intimate when it is used to interact with other people. This conceptualization is related to the concepts of intimacy and immediacy and it's based on the interaction of the medium and the subjective judgment of the user.
- Presence as realism: The degree to which the medium accurately represents images of people, objects, and events which look and sound real.
- Presence as transportation: The degree, to which the user is "transported" to another place (telepresence), thus creating a feeling of togetherness and shared space.
- Presence as immersion: The degree to which the user is engaged and absorbed by the virtual reality environment (psychological immersion). The use of headphones and other props result in the sense of the user being emerged in the virtual world and making the real world invisible.
- Presence as social actor within the medium: The extent to which users attempt to interact with the mediated entity presented by a television or a computer as if they are interacting with "real" people (parasocial interaction).
- Presence as medium as social actor: The degree to which users respond to cues provided by the medium itself.

In educational research, social presence has been studied primarily in asynchronous text-based learning environments. Several researchers offered various definitions for the construct of social presence. For example, consistent with the definition provided by Short et

al. (1976), Gunawardena (1995) described social presence as the degree to which a person is perceived as real and her research findings supported that social presence can be cultivated in conference participants (1997). Tu and McIsaac (2002) examined social presence as a measure of the feeling of community that learners experience in an online environment and concluded that improved social presence increases interaction; this can be achieved by considering the characteristics of the learners, by selecting appropriated communication media, and by applying appropriate instructional elements to course design.

Garrison, Anderson, and Archer (2000) proposed a framework of community of inquiry in CMC environments and defined social presence as one of three essentials factors for evaluating student adjustment in the online community of inquiry. Garrison, Anderson, and Archer (2001) and Garrison et al. (2000, 2003) identified three essential elements in a community of inquiry that occur in a CMC: cognitive presence, social presence, and teaching presence. In their model, the three dimensions of presence are defined as follows:

- Social presence refers to the ability of learners to present themselves, meaning their personal characteristics, socially and emotionally so that they represent themselves as real people in the community of inquiry. This definition is consistent with the definition provided by Short et al. (1976).
- Cognitive presence refers to the extent to which learners are able to construct meaning and confirm their understanding through sustained reflection and discourse in a critical community of inquiry. Garrison et al. (2001) grounded and operationalized the construct in the practical inquiry model derived from the work of Dewey.
- Teaching presence is identified as a crucial element to realizing intended learning outcomes. The construct is defined as the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Anderson, Rourke, Garrison, & Archer, 2001).

While research in education has not provided a consistent definition of social presence, the consensus is that creating CMC education experiences that are rich in social presence result in increased student satisfaction and perceived learning outcomes.

Related to social presence are the concepts of intimacy, defined by Argyle and Dean in 1965, and the concept of immediacy, defined by Wiener and Mehrabian in 1968 (Short et al., 1976). Intimacy is considered to be a function of eye contact, proximity, conversation topic, and so forth. The social presence established through a communication medium contributes to the level of intimacy and consequently to the establishment of relationships among communicators. Immediacy is defined as the measure of the psychological distance which a communicator puts between himself and the object of his communication and can be conveyed verbally and nonverbally (e.g., physical proximity, formality of dress, and facial expression). This implies that the communication medium is a factor for immediacy and immediacy enhances social presence (Gunawardena, 1995).

## Measuring Social Presence

The level of social presence is considered to vary based on the characteristics of the medium and the perception of the users. In the fields of communication and education, several instruments have been proposed to capture the multiple aspects of social presence. Short et al. (1976) measured social presence using four items; personal–impersonal, sensitive–insensitive, warm–cold, and sociable– unsociable and applied a semantic differential technique. Many studies adopted these four items to measure social presence.

Gunawardena and Zittle (1997) focused on the immediacy aspect of social presence as defined by Short et al. (1976). Consistent with Short et al. (1976) social presence was

defined as the degree to which a person is perceived as real and bipolar scales were employed to provide construct validity to the social presence measure. Gunawardena and Zittle (1997) also examined the reliability of the social presence scale. The social presence scale includes 14 items measured on a five-point Likert scale.

Tu (2002) argued that existing instruments were unable to capture social presence. He opined that the items used by Short et al. (1976) were too general to measure social presence in CMC and do not consider the many different variables which contribute to the level of social presence. He also regarded the semantic differential technique faulty based on the possibility that respondents may assign different meanings to the words in the scale. Tu (2002) also argued that the instrument developed by Gunawardena and Zittle (1997) is unable to capture social presence because it does not consider the issues of privacy, recipients, and topics. Tu (2002) asserted that since social presence theory was originally designed to assess social presence in face-to-face, audio, and televised communication, it does not account for the ability of CMC to allow for anonymity and the use of multiple identities. While privacy is regarded as a critical component by Tu (2002) as he supports that less private environments may decrease online interaction, it appears to be a factor that could be easily controlled or not be as critical in a learning setting. First, when being part of a course, whether it takes place in face to face or CMC learning environments, one is expected to reveal his or her identity and share some information about themselves. In addition, the availability of secure and password protected learning management systems allow distance courses to protect online conversations from lurkers, thus maintaining the necessary level of privacy for the course participants.

Tu (2002) further argued that there was a need to develop an instrument to address CMC in educational settings, as many studies had been conducted in noneducation settings or laboratories and are not directly transferable to education. Consequently, Tu (2002) developed and validated the Social Presence and Privacy Questionnaire (SPPQ) based on two earlier developed instruments, one measuring attitudes towards CMC and one measuring perceived privacy. In conducting content validation, social presence was defined as the degree of salience of another person in an interaction as per Short et al. (1976). The questionnaire also validated the privacy, utility, ease of use, interactivity, language, CMC experience and competence, and demographics. Factor analysis revealed the emergence of three dimensions of social presence: social context, online communication, and interactivity. The final questionnaire evaluates e-mail, bulletin board, and real time discussion and contains 17 social presence, 13 privacy items (each with a five-point Likert scale), and 12 demographic responses.

Garrison, Cleveland-Innes, and Fung (2004) proposed an instrument to assess student adjustment in the community of inquiry in CMC environments. Social presence was defined as one of the three essentials factors for evaluating student adjustment in the online community of inquiry. Students participating in the study were part of a course utilizing asynchronous text-based communication. The students validated the instrument by completing the instrument twice; once comparing their experience of social presence to previous face-to-face experiences (Cronbach's alpha reliability for this factor was .9211) and once comparing their experience of social presence to previous experienced online users (Cronbach's alpha reliability for this factor was .9237). The social presence factor consists of ten items, measured on a five-point Likert scale.

The majority of studies in education have utilized one of the instruments described above to measure students' perception to social presence. In addition, telecommunications researchers have proposed several other instruments for capturing the different conceptualizations of social presence.

## The Role of the Media

Social presence is an important factor for understanding person-to-person telecommunications (Short et al., 1976). When communication occurs through the use of media, the characteristics of the medium affect the quality of the message and different communication media differ in the extent to which they can overcome various communication constraints of time, location, permanence, distribution, and distance (Rice, 1993). They also differ in the extent to which they can transmit the social, symbolic, and nonverbal cues of human communication (Rice, 1993).

Short et al. (1976) report on a series of experiments aimed at identifying how a medium's social presence may affect exchanging information, problem solving and decision making, exchanging opinions, generating ideas, argumentation, conflict resolution, maintaining friendly relations, and getting to know someone. Using scales that measured perceived satisfaction or appropriateness of different media, Short et al. (1976) consistently ranked the social presence of media in the following order: Face-to-face was ranked highest, followed by video (with close up images ranking higher than small images), audio (with multi-channel audio ranking higher than telephone or speakerphone), and written memos.

Using the social presence theory and a media appropriateness scale, Rice (1993) had participants at six different sites rate how appropriate various media are for 10

communication activities: exchanging information, negotiating, getting to know someone, asking questions, staying in touch, exchanging time-sensitive information, generating ideas, resolving disagreements, making decisions, and exchanging confidential information. The overall appropriateness ranking of media was face-to-face, telephone and meetings, voice mail, text, and electronic email.

The qualities of different media vary as to the degree to which they are able to bridge different frames of reference, clarify issues, or provide opportunities for learning. Different media also vary in their capacity for immediate feedback, the number of the cues and senses involved, personalization, and language variety (Daft & Lengel, 1986). These earlier studies reported by Short et al. (1976) and Rice (1993) appear to be in agreement as to the ranking of media; however no study has examined social presence as it can be conveyed through new computer conferencing tools.

Social presence is a construct with attributes that are reliant on both the media and on the user's perception of the communication enabled by the media. Despite the low social context cues of text-based mediums which are predominant in distance education courses, research on social presence and CMC has indicated users find ways to project themselves, feel the presence of others, and form online communities (Gunawardena & Zittle, 1997). Gunawardena and Zittle (1997) revealed that social presence can be cultured and users can successfully promote their levels of social presence. So while the attributes of the media affect the levels of social presence, student perception of social presence will largely depend on the social presence created by the instructors and the online community (Gunawardena, 1995; Gunawardena & Zittle, 1997). Therefore the role of the instructor or moderator

becomes a central key in determining the communication process, interaction, and student perception of social presence.

## The Role of Social Presence in Distance Education Courses

Research conducted in distance education courses has shown that social presence impacts learning, interaction, interpersonal relationships, and user satisfaction (Gunawardena & Zittle, 1997; Picciano, 2002; Richardson & Swan, 2003; Stacey, 2002; Tu, 2001; Tu & McIsaac, 2002). However, these studies generally used small sample sizes that do not yield generalizable results. A brief summary of major studies in this area is provided below.

Gunawardena and Zittle (1997) measured how effective social presence is as a predictor of learner satisfaction in a text-based computer conferencing environment. The participants of this study were 50 students from five universities who were participating in a text-based, asynchronous computer conference to discuss a research project in which they were involved. At the completion of the conference, participants completed a paper and pencil questionnaire, which included the items measuring social presence and student satisfaction with the conference. The items assessing student satisfaction, among other things, sought to measure student motivation to do additional research on the topics of the discussion and to participate in similar conferences in the future. To examine the hypothesis that social presence is a predictor of satisfaction Gunawardena and Zittle used a stepwise regression analysis and formulated an equation model that included social presence as one of the predictors of interest. Social presence contributed about 60% of this variance, suggesting that social presence is a strong predictor of satisfaction in a text-based computer conference. However, the sampling procedures and sample size limit the generalization of these findings.

The results also indicated that participants, who compensated for the lack of nonverbal cues by using emoticons, felt a higher level of social presence, suggesting that social presence can be "cultured" among conference participants. Gunawardena and Zittle (1997) conclude that "in spite of the characteristics of the medium, student perceptions of the social and human qualities of CMC will depend on the social presence created by the instructors or moderators and the online community" (p. 23).

Tu and McIsaac (2002) were interested in enhancing two primary components of social presence, intimacy and immediacy, based on the communication cues that occur in the electronic classroom. Based on earlier studies (Tu, 2002, 2001), these two components were broken down into three dimensions: social context (the characteristics of the CMC environment and students' perceptions of these characteristics), online communication (attributes of the language used online), and interactivity (CMC activities and communication styles). Tu and McIsaac (2002) hypothesized that using strategies to improve these components would increase interaction in the online classroom. The sample used in this study consisted of 51 graduate level students. The researchers used both quantitative and qualitative methods to study the students' perception of social presence. The computer conferencing tool used was FirstClass, which provided email, bulletin board, and real time chat functions. Quantitative data were collected using Tu's CMC Questionnaire (2002) which measured online social presence and privacy. The perceived social presence and privacy were high but the correlation between social presence and privacy was insignificant. In addition, a correlation between social presence and frequency of messages was insignificant. Qualitative data were collected using observations, interviews, and document analysis. Support for the three dimensions of social presence (social context, online communication,

and interactivity) emerged from both the quantitative and qualitative analysis. However, the analysis of the qualitative data identified additional variables related to the proposed dimensions of social presence and the researchers identified that the instruments they used need to be revised to include the identified variables. Based on their analysis, they redefined social presence as "the degree of feeling, perception, and reaction to another intellectual entity in the CMC environment" (Tu & McIsaac, 2002, p. 146). Tu and McIsaac (2002) concluded that the findings suggest that social presence positively influences the level of interaction and they suggest that this can be fostered by considering the characteristics of the learners, by choosing appropriate CMC media, and by choosing appropriate instructional design elements.

Picciano (2002) examined performance in an online course in terms of student interaction and sense of presence. Based on Lombard and Ditton (1997), presence was defined as an "illusion of nonmediation" which "occurs when a person fails to perceive or acknowledge the existence of a medium in his/her communication environment and responds as he/she would if the medium were not there." The course used in this study was completed asynchronously using the Blackboard course management system. Social presence was encouraged using techniques for fostering a sense of presence and sense of community as described by Rourke, Anderson, Garrison, and Archer (2001). These include: complimenting students, self disclosure, warmth, and activities to build and sustain a sense of group commitment. At the completion of the course, 23 students completed a questionnaire, which included questions related to social presence. These questions were based on the Inventory of Presence Questionnaire developed by the Presence Research Working Group in the Netherlands (http://presence-research.org) and on the questionnaire developed by Tu (2002).

There was no attempt to examine the construct's validity or the reliability of the study questionnaire. The statistical analysis included the calculation of means and correlations and the small sample does not yield generalizable results. However, the results indicated a strong, positive relationship between student perceptions of their interaction in the course and their perceptions of the quality and quantity of their learning. The correlation between perception of social presence and student perception of interaction was highly positive (.8477) and the correlation between social presence and perception of learning was also positive (.6714) at the 0.05 significance level. Overall, the findings suggested a strong relationship among student perceptions of interaction, social presence, and learning. In addition, it was found that while student perception of social presence did not have a statistically significant relationship to scores on the course exam, it did have a positive, statistically significant relationship to student performance on a written assignment.

In a different study, Richardson and Swan (2003) examined social presence in an online, computer conferencing environment and its relationship to students' perceived learning and satisfaction with the instructor. The participants of their study were 97 students who completed Empire State College's online courses in the spring 2000 and completed a survey at the completion of their courses. The survey instrument was based on a modified version of the social presence scale that was constructed by Gunawardena and Zittle (1997). Correlational analyses showed a relationship between perceived social presence, perceived learning and satisfaction with instructors. Using a regression analysis, they found that student perception of social presence is a predictor of perceived learning. Finally a significant correlation was found between gender and perception of social presence, while the

correlations between age and number of college credits, were not significantly correlated to social presence.

## INSTRUCTOR SOCIAL PRESENCE

Based on an extensive review of the literature on social presence, Gunawardena (1995) concluded that social presence is necessary for effective instruction in both traditional face-to-face and distance education classrooms. Gunawardena (1995) indicated that instructors need to develop interaction skills which create teacher immediacy and a sense of social presence, by asking participants to introduce themselves, coaching and encouraging participation, and by sending encouraging private messages. Nevertheless, as mentioned earlier, the research on social presence has focused almost exclusively on social presence exhibited by students and not on the social presence exhibited by the instructor. Two studies that examined social presence exhibited by the instructor were conducted by Wise et al. (2004) and Stacey (2002). Neither of these studies yields generalizable results due to the small sample size.

Wise et al. (2004) examined the sense of social presence or community established in the learning environment; however they used 'social presence' and 'community' interchangeably. The justification they provide is that both terms reference the same sense of relationship and caring that supports online learning; however they support that their focus is addressing social presence rather than community since their study was not concerned with the sustainability of community over time. The assumption of the research conducted by Wise et al. (2004) is that the instructor plays a crucial role in setting the social presence tone for the learning experience. This research experimentally manipulated social presence to

examine the causal impact on learning. The instructor provided the same amount of feedback and information in one-to-one mentoring in text communication but varied the quantity of social presence textual cues associated with feedback. It was hypothesized that the modeling of the high social presence cues on behalf of the instructor would result in higher social presence in the students' responses and would also lead to a greater sense of learning and higher satisfaction. It was also hypothesized that not all students would respond to the high presence conditions and chose to explore two variables: the goals of the learners and the trust they bring to the learning environment. The online course in this study was part of a series of one credit course offerings for teacher professional development and was designed to be supported by one-on-one mentoring. Every student was assigned to an instructor for support and feedback using text based communication. Twenty participants were randomly assigned to the high and low social presence conditions and two instructors were randomly assigned to five students in each condition. In the low social presence condition, instructors provided feedback in a formal manner whereas in the high social presence condition the instructors provided more personal and friendly feedback. The instructors were trained in manipulating social presence based on eight social presence cues derived from the research of Abdullah (1999) and Rourke et al. (2001). These are: humor-playful asides; emotions; self-disclosure; support or agreement for an idea; addressing people by name; greetings-phatics; complimenting another's ideas; and allusions of physical presence. Three subscales (message friendliness, instructor friendliness, and knowing the instructor) were used to measure the perceived social presence of the instructor. Three additional scales were used to measure student satisfaction, student engagement, and perceived learning. The high social presence group perceived the instructor's messages as being friendlier and showed a higher level of

social presence in their messages to the instructor. However, they did not find any significant effect on perceived learning, satisfaction, engagement or the quality of the course products. One thing noted is that due to the small sample this is an exploratory study and the findings are not generalizable.

In another study, Stacey (2002) examined the proactive role of the teacher in developing socially responsive discourse that "models a combination of social encouragement and content discussion" (p. 288). The study focused on a course using online, text-based conferencing and examined how social presence factors were established and focused primarily on the role of the teacher in modeling techniques of social interaction. Data were gathered using qualitative methods through analysis of archived discussions and students' reflections and perceptions. Quantitative methods focused on the frequency and type of messages posted in the conference. The criteria used to analyze social presence were the factors developed by Rourke et al. (2001). The three categories were interactive responses, affective responses, and cohesive responses. The course was designed so that the teacher modeled social presence factors in the first week based on the categories defined by Rourke et al. (2001). The course also required that students worked in small groups to complete collaborative work. The teacher played an active role in monitoring the social cohesion of the groups and by establishing multiple layers of communication (e.g. phone calls and synchronous chats) to foster effective social presence. The findings indicated that establishing social presence was an important aspect of online interaction and the teacher's role in modeling social presence and facilitating interaction was a major factor of establishing a successful interactive process in online learning.

## INSTRUCTOR IMMEDIACY

The earlier review of the literature on social presence indicated that social presence is fundamentally related to the concept of immediacy. Immediacy refers to the perceived physical and/or psychological closeness between people (Mehrabian, 1967). Mehrabian (1981) uses an approach metaphor to characterize the construct of immediacy. He argues that people move towards what they like and away form what they dislike. Instructor immediacy behaviors include verbal and nonverbal behaviors which reduce the physical and psychological distance between teachers and students (Christophel & Gorham, 1995). Verbal and nonverbal behaviors can decrease psychological distance and signal immediacy and among other things they include eye contact, reduced distance, touch, smiling, humor, and the use of inclusive language. Table 2 presents verbal and nonverbal instructor immediacy behaviors which have been used in numerous studies to measure instructor immediacy.

Existing research related to the impact of the instructor has taken place primarily in traditional face-to-face classrooms (Wise et al., 2004). Research in this area has focused on instructors' verbal and nonverbal communication and highly immediate behaviors have been associated with increased affective and cognitive learning, motivation, and satisfaction (Andersen, 1979; Christophel, 1990; Gorham, 1988; Gorham & Christophel, 1990; Gorham & Zakahi, 1990; Kearney et al., 1985; Kelley & Gorham, 1988). Andersen (1979) found that nonverbal teacher immediacy accounted for between 14 and 46 percent of the variance in measures of student attitude and behavioral commitment in college classes. In an effort to explain why teacher immediacy affects learning, Kelley and Gorham (1988) examined four assumptions identified in the literature: (a) cognitive learning is directly linked to memory and recall, (b) attention is a necessary precursor for recall: information needs to be attended

**Table 2. Instructor Verbal and Nonverbal Immediacy Behaviors**

| Verbal Behaviors (Gorham, 1988) | Nonverbal Behaviors (Richmond, Gorham, & McCroskey, 1987) |
|---|---|
| • Uses personal examples or talks about experiences she/he has had outside of class.<br>• Asks questions or encourages students to talk.<br>• Gets into discussions based on something a student brings up even when this doesn't seem to be part of his/her lecture plan.<br>• Uses humor in class.<br>• Addresses students by name and is addressed by his/her name by the students.<br>• Gets into conversations with individual students before, after or outside of class.<br>• Refers to class as "our" class or what "we" are doing.<br>• Provides feedback on individual student work through comments on papers, oral discussions, etc.<br>• Asks questions that solicit viewpoints or opinions. Only calls on students to answer questions if they have indicated that they want to talk. Asks how students feel about an assignment, due date, or discussion topic.<br>• Invites students to telephone or meet with him/her outside of class if they have questions or want to discuss something.<br>• Praises students' work, actions, or comments.<br>• Will have discussions about things unrelated to class with individual students or with the class as a whole. | • Does not sit behind a desk while teaching.<br>• Gestures while talking to class.<br>• Does not use monotone-dull voice while talking to class.<br>• Looks at the class while talking.<br>• Smiles at the class as a whole, not just individual students.<br>• Has a very relaxed body position while talking to the class.<br>• Touches students in the class.<br>• Moves around the classroom while teaching.<br>• Does not look at board or notes while talking to the class. |

to in order to be encoded for recall, (c) arousal affects attention, and (d) immediacy is related to arousal. Based on these assumptions, Kelley and Gorham (1988) proposed a four-step model to provide a theoretical rationale linking immediacy to cognitive learning: immediacy is related to arousal, which is related to attention, which is related to memory, recall, and ultimately learning. Kelley and Gorham (1988) manipulated nonverbal immediacy behaviors in a controlled setting and found that students' recall following a cognitive learning task was enhanced when teachers utilized nonverbal immediate behaviors to accompany information transfer.

In a study aiming at identifying immediacy behaviors that could be modified in the classroom to improve learning, Gorham (1988) found that there is substantial relationship between immediacy (verbal and nonverbal) and affective and cognitive learning. In addition, the correlation between perceived teacher talk-time and learning was low, suggesting that the observed relationship between immediacy and learning was not function of quantity of teacher talk time. Thus verbal immediacy is not necessarily related to quantity of teacher vs. student talk. Gorham (1988) also found that teacher's vocal expressiveness, smiling, relaxed body position, gestures, eye contact, movement around the classroom, and to some degree touch are important nonverbal behaviors significantly associated with students' perceptions of learning. An interesting finding reported by Gorham (1988) was the coliniarity of the verbal and nonverbal behaviors that loaded as a single factor on a factor analysis. This suggests that verbal and nonverbal behaviors are not orthogonal factors but that they function together to generate immediacy in the classroom. However, another interesting finding was that verbal and nonverbal behaviors were affected differently by class size. Some verbal and nonverbal behaviors become increasingly important as class size increases. The importance

of humor, teacher conversation outside of class, feedback invitations to consult outside the classroom, and praise were consistent regardless of the class size. However, teacher self-disclosure, asking questions or encouraging students to talk, and referring to class as "our class" or "we are doing" increased in value in relation to perceived learning and affective measures as the class size increased. In a similar pattern for nonverbal immediacy, eye contact, smiling, and vocal expressiveness are important regardless of class size, whereas gesturing, smiling at individual students, relaxed body position, and movement around the classroom, become more important as class size increases. Gorham (1988) suggests that it is possible that the physical closeness in small classes enhances perceptions of immediacy but as class size increases the psychological distance increases. Considering what we know about the importance of immediacy on learning outcomes, this finding indicates the increased responsibility of teachers in larger classrooms to utilize specific verbal and nonverbal behaviors to reduce psychological distance with their students. The same conclusion would apply to distance education classes where inherently students are separated by the instructor and the psychological distance is reduced as dialogue increases.

Additionally, Gorham (1988) identified that the use of humor in the classroom is an important aspect of teacher immediacy and is significantly related to student's perception of learning, positive feelings about the course content and instructors. Gorham and Christophel (1990) also sought to analyze the quality of humor associated with positive cognitive and affective learning outcomes. The results indicated that the amount and type of humor influenced learning. Male students were more affected by teachers' use of humor than were female students. Teachers' gender and use of humor did not influence teachers' evaluations.

Immediacy has also been examined in relation to student motivation. For example, Christophel (1990) examined immediacy's relationship to student motivation and the combined impact on learning (cognitive and affective) outcomes. Data analysis indicated that teacher immediacy behaviors were positively associated with student learning and that nonverbal immediacy was more predictive of learning than was verbal immediacy. In addition, student trait and state motivation were positively associated with student learning. The results supported that teacher immediacy behaviors first modify students' state motivation prior to immediacy becoming a predictor of learning. Trait motivation was found to impact learning only when it was combined with state motivation and the theory was supported that student state motivation can be modified within the classroom environment and by teacher immediacy behaviors.

In an experimental study, Witt and Wheeless (2001) manipulated combinations of higher and lower verbal and nonverbal immediacy behaviors in relation to affective and cognitive learning. Cognitive learning was measured through assessment of student recall of lecture content. Student self reports were used to assess both cognitive and affective learning. The findings support that higher teacher verbal immediacy produced higher affect than lower verbal immediacy. Despite the levels of verbal immediacy, results indicated that higher nonverbal immediacy by the teacher resulted in greater recall, less learning loss, and greater affect than did lower nonverbal immediacy behaviors. Similarly, Richmond, Gorham, et al. (1987) demonstrated that smiling, vocal expressiveness, and relaxed body position had a positive correlation with learning, while sitting or standing behind a desk, looking at the blackboard or notes, or having a tense body posture had moderately negative effects on learning.

Christensen and Menzel (1998) hypothesized and demonstrated that there is a positive, linear relationship between verbal and nonverbal teacher immediacy behaviors and perceived cognitive, affective, and behavioral learning. They also examined the relationship between verbal and nonverbal teacher immediacy and state motivation. The findings indicated a positive, linear relationship between both kinds of teacher immediacy and state motivation.

Instructor immediacy has also been examined across cultures. Powell and Harville (1990) examined the relationship between teacher immediacy and teacher clarity and the effects of immediacy in a multicultural context. The goal of the study was to examine the impact of teacher immediacy and teacher clarity on instructional outcomes for ethnically diverse students. Teacher clarity referred to the fidelity of instructional messages. The results indicated that nonverbal and verbal immediacy were significantly related to teacher clarity for each of the ethnic groups used for the study. In addition, immediacy and teacher clarity had significant correlations with the instructional outcomes for each group. In a different study McCroskey, Sallinen, Fayer, Richmond, and Barraclough (1996) examined whether the relationship between nonverbal immediacy and cognitive learning is consistent across cultures. Participants were college students from Australia, Puerto Rico, US, and Finland. The findings showed a consistent relationship across culture, with a very positive relationship between immediacy and perceived cognitive learning in all four cultures. However, there was a difference in the magnitude of the relationships suggesting that highly immediate cultures have higher expectations for teacher immediacy and the absence of those behaviors may be detrimental to cognitive learning (McCroskey et al., 1996). On the other hand, in less

immediate cultures, where students have lower expectations for immediacy, having a teacher with high immediate behaviors may have strong positive effects on cognitive learning.

While the above studies used the same instructor immediacy behaviors, an interesting question is whether these behaviors are perceived by students as they were intended by the instructors. On this note, Gorham and Zakahi (1990) investigated the congruence between teachers' and students' perceptions of immediacy and learning, arguing that this could provide insight into teachers' ability to monitor the instructional interaction. The findings supported a significant correlation between immediacy, cognitive, and affective learning at the .01 level. Several behaviors were significantly related to perceptions of both cognitive and affective learning: addressing students by name, initiating a conversation with the individual student, inclusive references, providing feedback, asking students how they feel about assignments, using praise, using gestures, using vocal variety, smiling at individual students, a relaxed body position, using personal examples, encouraging students to talk, addressing the individual student by name, conversing with students before or after class, being addressed by first name by students, looking at the class, smiling at the class, and not standing behind a podium or desk. The results also suggested that teachers' perceptions of their immediacy and their perceptions of learning are congruent with their students' perceptions and teachers are in a position to monitor their interaction process in the classroom. Gorham and Zakahi (1990) suggested that these findings have a prescriptive value, as teachers can monitor their immediacy behaviors based on information identified in the immediacy literature.

## Instructor Immediacy and Distance Education

Although there is a rich body of literature exploring instructor immediacy in the traditional classroom, fewer studies have examined instructor immediacy in distance education settings. Considering the large body of literature emphasizing the importance of nonverbal behavior in relation to teaching effectiveness, the absence of many nonverbal behaviors in the distance education classroom, such as close proximity, emphasizes the need to train distance education instructors to make maximum use of other nonverbal immediacy behaviors. In addition, the use of audio and video enabled computer tools allow distance education instructors to utilize many of the verbal immediacy behaviors that have been found to be positively correlated with cognitive and affective learning outcomes. While instructors using computer video conferencing tools cannot move around the classroom, they can convey immediacy through facial expressions and upper body movements and provide verbal feedback. In fact, because the students can only see the face of the instructor, facial expressions and gesturing assume a much more critical role than they would assume in the face-to-face classroom. Distance education instructors who are animated, fluent, composed, and warm are likely to convey immediacy despite the geographical distance separating them from their students (Guerrero & Miller, 1998).

One of the studies that examined instructor immediacy in the distance education setting was conducted by Guerrero and Miller (1998). In particular, Guerrero and Miller (1998) examined the associations between nonverbal behavior and initial judgments of instructor (i.e., as likeable, trustworthy, and sensitive) competence and course content (i.e., as interesting, enjoyable, and valuable) in the videotaped classroom. The findings support that behaviors reflecting nonverbal involvement and conversational skill associate positively with

students' impressions of the instructor and the course content. The measures that positively correlated with judgments of instructor competence included general involvement, expressiveness or warmth, composure or fluency, eye contact, and articulation or clarity. The same measures associated positively with students' impressions of the course content with the exception of eye contact. A regression analysis showed that expressiveness or warmth and general involvement are the best predictors of judgment of instructor competence.

In another study, Andersen and Withrow (1981) examined the role of the instructor nonverbal expressiveness in televised instruction and its impact on college student learning. To test the effect of nonverbal expressiveness, Andersen and Withrow (1981) created three classification levels (high, moderate, and low expressiveness), which varied in the amount of vocalic, facial, and gestural expressiveness. An analysis of variance suggested that a message delivered in a nonverbal expressive manner, significantly influenced students' perceptions of instructor sociability and positively affected attitudes towards the lecturer and the video-presentation.

Hackman and Walker (1990) conducted a study to identify conveyance system design factors and social presence in the form of teacher immediacy behaviors that are associated with perceived student learning and satisfaction in the televised classroom. Participants of this study were enrolled in courses which allowed for audio interaction between students in the classroom and students watching the session from a remote site. System design factors examined, included the clarity of audio and video transmission and the ease of participation. Instructor verbal and nonverbal immediacy were measured using the scales developed by Gorham (1988) and Richmond, Gorham, et al. (1987). A scale was also used to measure student satisfaction. Three hundred and twenty four students were surveyed and the results

indicated that system design factors had a strong influence on learning and were also closely related to student satisfaction and overall course and instructor ratings. Three immediacy behaviors were positively correlated with learning; these were instructor's feedback on individual work through comments on papers, oral discussion or other forms of feedback, and vocal expressiveness. Monotone voice was negatively correlated with learning. Several teacher immediacy behaviors were also correlated with student satisfaction with the course: using personal examples, encouraging students to participate, using humor, addressing students by name, providing individual feedback, inviting student contact, praising students, smiling, avoiding tense body posture, and using vocal variety. Instructor immediacy behaviors which were correlated with satisfaction with the instructor included: encouraging students to participate, using humor, addressing students by name, providing individual feedback, inviting student contact, praising students, avoiding tense body positions, and using vocal variety. Overall, instructors who reduced the psychological distance by employing immediacy behaviors were viewed as fair and effective and instructors' behavior impacted students' perceptions of the system effectiveness. Hackman and Walker (1990) concluded that instructors can enhance satisfaction of the distant students by providing individual attention, by maintaining a relaxed body position, and by using vocal variety.

More recently, Carrell and Menzel (2001) conducted two studies to investigate whether state motivation, perceived instructor immediacy, and student learning vary based on lecture delivery type (live, PowerPoint, and video). In study one, 120 undergraduate students were randomly assigned in three treatment groups and concurrently received a 15 minute lecture: group one attended a "live" lecture in a "traditional" classroom; group two watched a simulcast video of the "live" lecture; and group three watched a PowerPoint presentation

with a simulcast audio of the "live" lecture. State motivation did not vary across the three treatments but perceived instructor immediacy varied significantly. Immediacy was highest for the live lecture, followed by the video setting, and lowest for the PowerPoint setting. Student learning (actual and perceived) did not vary across treatments. Carrell and Menzel (2001) suggest that these findings indicate a preference for visual cues to an instructor's immediacy. Given the importance that has been given to immediacy in past studies, this finding is potentially important for further investigation in choosing delivery formats for distance education settings.

In a second study, Carrell and Menzel (2001) altered their methodology by providing a typical, 45 minute lecture to senior seminar students and added a short-term recall test. State motivation was highest in the live setting, followed by the PowerPoint setting, and the video setting. Instructor immediacy did not vary significantly across the three treatments but perceived cognitive learning and affect toward the instructor varied significantly across the three treatments being the highest in the live setting, followed by the PowerPoint setting, and the video setting. Short term recall was highest in the PowerPoint setting, followed by the live setting, and the video setting. While these two studies do not provide conclusive and consistent findings, they raise interesting questions about the choice of technologies used in distance education settings.

## SUMMARY

Social presence and instructor immediacy are both pieces of the puzzle one should consider when designing online learning experiences. Social presence has been associated with student satisfaction and perceived learning. Instructor behaviors can significantly affect

both learning outcomes and affective behaviors. Research studying these constructs could ultimately point to behaviors which instructors could utilize to reduce psychological distance and enhance instructional effectiveness.

Many studies have suggested that several verbal and nonverbal immediacy behaviors increase cognitive and affective learning. Among those behaviors which have been significantly associated with student learning outcomes are: teachers' vocal expressiveness, smile, relaxed body position, gestures, moving around the classroom, maintaining eye contact, using humor, praise, indicating willingness to engage in conversations outside the classroom, encouraging students to talk, and providing and asking for feedback. The goal for instructors is to translate theoretical prescriptions into practice; however an instructor's ability to do so is related to their ability to operationalize the theoretical conclusions and prescriptions (Gorham & Christophel, 1990).

While instructor immediacy received significant attention in the instructional communication literature, these studies have been conducted in traditional classroom settings and only a few researchers have examined instructor immediacy in the distance learning classroom. The distance learning classroom differs from the face-to-face classroom in the sense that the instructor not only needs to overcome the psychological distance but also the physical distance separating them from the students. Currently, a gap exists in the literature. Specifically, no researchers to date have empirically studied the relationship between immediacy and social presence in the online classroom environment.

# CHAPTER 3

# METHODOLOGY

The aim of this study was to examine the effects of instructor immediacy behaviors and online lecture environment on student perception of instructor immediacy, perception of social presence, and learning outcomes.

Social presence describes the degree to which a person is perceived as real in a mediated communication and instructor immediacy includes verbal and nonverbal behaviors which can reduce psychological distance. In conventional classroom settings, use of instructor immediacy behaviors have resulted in increased satisfaction, motivation, and learning. To experimentally assess the effect of instructor immediacy behaviors in online settings, the researcher manipulated the level of immediacy behaviors (high vs. low) using two synchronous computer conferencing environments (video and audio with text chat and audio with text chat) and each session was recorded. The audio with text chat groups were presented with a static picture of the instructor in the place of the video window. Two sections of an undergraduate course in psychology at San Diego State University were invited to view the recorded sessions. Participating students were randomly assigned to the high- and low-immediacy groups. Instructor immediacy behaviors were constructed based on the verbal immediacy behaviors proposed by Gorham (1988) and the nonverbal immediacy behaviors proposed by Richmond, Gorham, et al. (1987; see Table 2).

The study sought to reveal differences between the high- and low-immediacy conditions groups as to the level of student perception of instructor immediacy, perception of

social presence, and learning outcomes. Furthermore, the study examined whether the use of the two different online learning environments affects student perception of instructor immediacy, perception of social presence, and learning outcomes. The overall hypothesis underlying this study was that high-immediacy behaviors and the use of the video and audio with text chat on behalf of the instructor would result in high perception of instructor immediacy, perception of social presence, and learning outcomes.

The following sections of this chapter will describe the research design, the study participants, the data collection procedures, and the research questions that guided this study.

## RESEARCH DESIGN

A randomized two-factor design was employed to examine the research questions and hypotheses that guided this study. Participants were randomly assigned to four groups to examine the effects of two experimenter-manipulated variables (instructor immediacy behaviors and learning environment). The four groups for this study are presented in Table 3.

**Table 3. Experimental Groups**

| Random Assignment | Group | Treatments |
|---|---|---|
| | Group 1 (Hi-VAT) | High Immediacy (Hi) – Video, Audio, & Text (VAT) |
| | Group 2 (Hi-AT) | High Immediacy (Hi) – Audio & Text (AT) |
| | Group 3 (Lo-VAT) | Low Immediacy (Lo) – Video, Audio, & Text (VAT) |
| | Group 4 (Lo-AT) | Low Immediacy (Lo) – Audio & Text (AT) |

### Stimulus Materials

The materials used for this experiment include four versions of a scripted and recorded 20-minute online lesson, measures assessing students' perceptions of instructor

immediacy and social presence, and tests assessing the learning outcome. The lesson consisted of a short lecture on current psychological perspectives, which was part of the regular course content and was also included in chapter one of the textbook used for the psychology course. The lesson included a presentation from an instructor using PowerPoint slides and a short discussion between the instructor and the participants. Two versions of the lecture were scripted and recorded to reliably manipulate the instructor verbal and nonverbal immediacy. The four experimental conditions were created by first writing the basic script for the lesson, then systematically increasing and decreasing specific verbal and nonverbal immediacy cues to create the high- and low-immediacy conditions. Each session introduced the same content and the instructor performed each of the two scripts manipulating the immediacy behaviors in order to achieve the following four experimental conditions: (a) high-immediacy script using video and audio with text chat, (b) high-immediacy script using audio with text chat, (c) low-immediacy script using video and audio with text chat, and (d) low-immediacy script using audio with text chat. In the two audio with text chat sessions the students were presented with a static image of the instructor in the place of the video window. All students were presented with the same PowerPoint slides. Screenshots of the interface of these lessons and the links to the URLs where they are hosted are available in Appendix A.

Several criteria were considered for determining the 20-minute content for the recorded sessions. First, the lesson content contained basic introductory, not overly technical material in psychology, similar to the level of content for the target participating students. Considering that the study participants, who were invited to view recordings of the sessions, were undergraduate students taking an introductory course in psychology, confusing material

could suppress the effects of the verbal and nonverbal behaviors and the students could become frustrated and stop processing the content. Second, the instructor was affiliated with the university where the study took place and was chosen for his performance skills and ability to "exaggerate" the use of facial expressions, gestures, and tone of voice. This allowed the researcher to maximize the difference in behaviors in the high- and low-immediacy conditions. Third, the instructor was trained to project high- and low-immediacy behaviors in accordance to the established verbal immediacy behaviors (Gorham, 1988) and the nonverbal immediacy behaviors (Richmond, Gorham, et al., 1987). A summary of the overall instructor behaviors in the high and low conditions is presented in Table 4.

## Population and Sample

The population for this study included students who have participated, participate, or will participate in coursework or other instructional opportunities delivered online. Students enrolled in two 500-seat sections of an introductory, undergraduate psychology course at San Diego State University were invited to participate in the study. More specific, a total of 989 students received an email invitation to complete a course related assignment and participate in the study. Students were offered extra credit to view the online lessons in preparation of their midterm exam but were able to elect not to participate in the study, ensuring that their participation was voluntary.

### Selection Criteria and Relationship to the Population

Students participating in this study were selected because of their enrollment in a typical, large classroom at the undergraduate level. While this is not an online course, it is

**Table 4. Instructor Immediacy Behaviors in Four Sessions**

| Hi - VAT | Hi - AT | Lo-VAT | Lo-AT |
|---|---|---|---|
| Video – upper body relaxed posture | Static image of instructor | Video – upper body | Static image of instructor |
| Moved upper body and head while teaching (animated) | | Did not move upper body or head while teaching (not animated) | |
| Inclusive language ("our" "we") | Inclusive language ("our" "we") | No inclusive language– used "your" "you" | No inclusive language – used "your" "you" |
| Smiled in response to individual students' comments and to class | | Did not smile | |
| Used gestures | | No gestures | |
| Used humor | Used humor | No humor | No Humor |
| Asked students to address him by his first name | Asked students to address him by his first name | Introduced himself to the students as Dr. Allen | Introduced himself to the students as Dr. Allen |
| Enthusiastic voice while talking to class-varied vocal expressions | Enthusiastic voice while talking to class-varied vocal expressions | Monotone-dull voice | Monotone-dull voice |
| Used personal examples and talked about experiences he has had outside of class | Used personal examples and talked about experiences he has had outside of class | No personal examples | No personal examples |

**Table 4. (continued)**

| Hi - VAT | Hi - AT | Lo-VAT | Lo-AT |
|---|---|---|---|
| Addressed students by first name | Addressed students by first name | Did not address students by name | Did not address students by name |
| Asked how students felt about topic | Asked how students felt about topic | Did not ask how students felt about topic | Did not ask how students felt about topic |
| Asked questions and encouraged students to talk | Asked questions and encouraged students to talk | Did not ask questions or encourage students to talk | Did not ask questions or encourage students to talk |
| Solicited viewpoints or opinions | Solicited viewpoints or opinions | Did not solicit viewpoints or opinions | Did not solicit viewpoints or opinions |
| Praised students' comments | Praised students' comments | Did not praise students | Did not praise students |
| Did not appear to read notes | Did not appear to read notes | Appeared to read notes | Appeared to read notes |
| Showed emotion | Showed emotion | Showed no emotion | Showed no emotion |
| Got into discussions based on student questions which were not part of his plan | Got into discussions based on student questions which were not part of his plan | Did not get into discussions about questions that were not part of his lecture plan | Did not get into discussions about questions that were not part of his lecture plan |

representative of a large classroom, for which universities are investigating ways of alternative effective lectures modes such as blended learning. In addition, most of the online classes include small numbers of students, which would provide a sufficient sample to address the questions raised in this study and obtain significant results.

## Data Collection Procedures

Participating students were told by their instructor that they could complete an online assignment to prepare for their upcoming midterm exam and that their participation would earn them extra credit towards their course grade. The students were also told that the assignment consisted of a short, recorded, online lecture by a guest instructor on current perspectives in psychology, a pre- and post-quiz and a short questionnaire. Finally, students were told that after completing the assignment they would be asked whether they would give their consent for their responses and midterm scores to be used for research purposes. The informed consent statement is available in Appendix B. Students were randomly assigned to one of the four groups. The recorded sessions were posted on YouTube, a website hosting user-generated videos. The questionnaires were posted on surveymonkey.com, a tool for creating and hosting surveys online. Four versions of a website, corresponding to the four groups, were created to hold the online lessons and questionnaires and participants received an email by their instructor with a link to the URL address for one of the four websites. The websites were identical with the exception of the link which led to one of the four prerecorded sessions. The email included directions on how to access and view the sessions on their own time on their personal computers. Students were given one week to complete the assignment. Before viewing the recorded sessions, they were asked to complete a short questionnaire which included demographic items, questions assessing their prior knowledge

on the content of the lesson (pretest), and questions about their prior experience with the computer conferencing tools. After completing the questionnaire, the respondents viewed one version of the lesson and then completed a questionnaire consisting of three parts, each designed to measure instructor immediacy, social presence, and learning outcomes (posttest). In addition, a few open-ended questions asked students to describe the aspects of the lesson which made them perceive the instructor as real. Finally, four items of the pretest and posttest were also included in the midterm exam, which took place the week following the completion of the data collection. The data collection procedures are summarized in Table 5.

## Instrumentation

"Rigorous and systematic research into online learning is predicated upon the availability of validated instruments" (Garrison et al., 2004, p. 71). Therefore, the questionnaires developed for this study were based on validated instruments. Prior to viewing a session, participants completed a short survey and a pretest. After viewing the recorded lesson, students were presented with a questionnaire consisting of three parts: The first part measured instructor immediacy, the second part measured instructor social presence, and the third part measured learning outcomes (posttest). The week following the experiment, the students completed a midterm exam; four of the seven pretest and posttest items were included in the midterm, serving as a delayed posttest.

### Pretest and Survey

A self-report questionnaire was developed to gather demographic information and assess student prior knowledge on the lesson content (see Appendix C). This pretest consisted of multiple-choice questions. The instructor of this course reviewed the questions to assess their content validity.

**Table 5. Data Collection Procedures**

| Random Assignment | Week 1 | Week 2 |
|---|---|---|
| Group 1: High Immediacy (Hi-VAT) | Received email with URL to website #1<br>Completed pretest-demographics questionnaire<br>Viewed video and audio with text chat session<br>Completed immediate posttest, instructor immediacy and social presence scales | Completed delayed posttest (Items embedded in midterm exam) |
| Group 2: High Immediacy (Hi-AT) | Received email with URL to website #2<br>Completed pretest-demographics questionnaire<br>Viewed audio with text chat session<br>Completed immediate posttest, instructor immediacy and social presence scales | Completed delayed posttest (Items embedded in midterm exam) |
| Group 3: Low Immediacy (Lo-VAT) | Received email with URL to website #3<br>Completed pretest-demographics questionnaire<br>Viewed video and audio with text chat session<br>Completed immediate posttest, instructor immediacy and social presence scales | Completed delayed posttest (Items embedded in midterm exam) |
| Group 4: Low Immediacy (Lo-AT) | Received email with URL to website #4<br>Completed pretest-demographics questionnaire<br>Viewed audio with text chat session<br>Completed immediate posttest, instructor immediacy and social presence scales | Completed delayed posttest (Items embedded in midterm exam) |

## INSTRUCTOR IMMEDIACY

Instructor immediacy was measured using a questionnaire based on the Verbal Immediacy Behavior Scale developed by Gorham (1988) and the Nonverbal Immediacy Behavior Scale developed by Richmond, Gorham, et al. (1987; see Appendix D). The Verbal Immediacy Behavior Scale consists of 20 items and the Nonverbal Immediacy Behavior Scale consists of 14 items. Both instruments use a five-point Likert scale, ranging from 0 (*never*) to 4 (*often*). Verbal immediacy can be calculated by summing the numerical scores

across all verbal items and nonverbal immediacy can be calculated by summing the numerical scores across all nonverbal items. Combined, the scores on the verbal and nonverbal scales provide an overall immediacy score with a lowest possible immediacy score of 0 and a highest possible score of 136 (Moore, Masterson, Christophel, & Shea, 1996). Reliability coefficients have ranged from .77 to .94 for the verbal immediacy scale and from .76 to .82 for the nonverbal immediacy scale (Freitas, et al., 1998). These scales have been used repeatedly in traditional classrooms but the wording of a few items was revised and others were omitted to reflect the distance education nature of the lecture delivery tools used in this study (see Appendix E).

## SOCIAL PRESENCE

This part of the questionnaire measuring social presence was based on an instrument developed and validated by Garrison et al. (2004) for assessing student role adjustment in online community of inquiry. This instrument was used to measure students' anticipated adjustment to online learning (comprised of social, cognitive, and teaching presence). Moreover, this instrument compares students' online experience to their previous face-to-face experiences, so the wording of the original scale (Much Better, Better, Same, Worse, Much Worse) was modified to meet the needs of this study. The social presence scale consists of 10 items with a reported alpha reliability ranging from .9211 to .9237 (Garrison et al., 2004). The scale used to measure social presence is available in Appendix F.

## POSTTEST AND SURVEY

The posttest included the same multiple-choice questions as the pretest and assessed student learning as a result of viewing the recorded sessions. In addition, a few open-ended

items asked students to provide additional comments on issues related to their perception of the instructor.

### DELAYED POSTTEST

Four pretest and posttest items were also included in the midterm exam which was administered the week following the viewing of the recorded sessions and the data collection. These items served as a delayed posttest, assessing retention of content and performance differences between the four groups of students who viewed the different recorded sessions.

## Analysis of Data

The study employed an experimental research design. Using quantitative data the researcher sought to identify evidence regarding students' perception of immediacy and social presence, and their learning as indicated by posttest achievement when viewing a lesson delivered through the different online communication environments. The independent variables were the level of instructor immediacy behaviors and the communication tool. The dependent variables were perception of instructor immediacy, perception of social presence, and learning outcomes. In addition, a few open-ended questions sought to gather qualitative data about student perceptions that could illuminate the quantitative data findings. Raw quantitative data were entered into the SPSS version 12 program for statistical analysis. The questionnaires were scored and the data were inspected for outliers and missing data. Twenty-seven subjects did not participate in the delayed posttest; the mean for the entire sample substituted for the missing observations. Selected questions on the immediacy scale were reverse coded. Specifically, items 9, 16, 18, 21, and 23 are presumed to be nonimmediate and were reverse coded (see Appendix E for complete questionnaire). To maintain confidentiality, all questionnaires were coded, removing the names of the

participants. The survey responses were secured on a computer only accessible by the researcher.

Descriptive statistics provided the overall demographic description of the participants (average age, gender, ethnicity, prior knowledge, and experience with online tools). Measures of central tendency and frequency distributions were used to summarize and describe student responses. An alpha level of .05 was set for all statistical tests. Table 6 provides an overview of the research questions and the hypotheses that were tested in this study.

The open ended items included on the posttest asked students to report whether they perceived the instructor as a "real" person. Real was defined in accordance to the instrument used in this study to measure social presence; thus students were told that real meant that the instructor was caring, empathetic, disclosing personality, and expressing emotions. Students were also asked to provide additional comments as to the factors that affected their perceptions of the instructor as real. Frequency distributions provided a summary of the number of students in each group who perceived the instructor as a real person. Student responses to the open-ended questions were reviewed and classified into categories of factors in order to reduce the data and develop codes (Creswell, 1998). The goal was to identify general codes descriptive of the students' perceptions that might illuminate the findings of the quantitative data analysis.

To examine questions one, two, and three analysis of variance (ANOVA) was used to compare perceived instructor immediacy, perceived social presence, and learning outcomes in the four groups. In calculating the sample size for the ANOVA, Cohen's (1988) recommendations were considered based on power and effect size determinations. "The

**Table 6. Summary of Research Questions and Methods**

| Research Question | Hypotheses | Summary of Methods |
|---|---|---|
| RQ1: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor immediacy? | $H_{1i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher perception of instructor immediacy than the students who view the low-immediacy sessions (Group 3 and Group 4).<br>$H_{1ii}$: Students who view the high-immediacy, video and audio with text chat session will indicate the highest perception of instructor immediacy.<br>$H_o$: There is no significant difference in perception of instructor immediacy across groups. | ANOVA |
| RQ2: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor social presence? | $H_{2i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher perception of instructor social presence than the students who view the low-immediacy sessions (Group 3 and Group 4).<br>$H_{2ii}$: Students who view the high-immediacy video and audio with text chat session will indicate the highest perception of instructor social presence.<br>$H_o$: There is no significant difference in perception of instructor social presence across groups. | ANOVA |
| RQ3: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence learning outcomes? | $H_{3i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher learning outcomes than the students who view the low-immediacy sessions (Group 3 and Group 4).<br>$H_{3ii}$: Students who view the high-immediacy, video and audio with text chat session will indicate the highest learning outcomes.<br>$H_o$: There is no significant difference in learning outcomes across groups. | ANOVA |

**Table 6. (continued)**

| Research Question | Hypotheses | Summary of Methods |
|---|---|---|
| RQ4: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and perceived instructor social presence? | $H_4$: There is a positive relationship between perceived instructor immediacy and perceived instructor social presence.<br>$H_o$: There is no relationship between perceived instructor immediacy and perceived social presence. | Correlation<br>Regression |
| RQ5: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and learning outcomes? | $H_5$: There is a positive relationship between perceived instructor immediacy and learning outcomes.<br>$H_o$: There is no relationship between perceived instructor immediacy and learning outcomes. | Correlation |

power of a statistical test of a null hypothesis is the probability that it will lead the rejection of the null hypothesis" (Cohen, 1988, p. 4). If there is no other basis for selecting the power level, Cohen (1988) suggests that a power of .80, or in other words 80% chance of rejecting the null hypothesis, is reasonable for behavioral sciences. The effect size should be based on previous work if it exists (Munro, 2005). Previous research in this area has not reported power and effect considerations. Cohen suggests setting the moderate effect at .25 (1988). When alpha is set at .05 and the degrees of freedom equal three (one less than the number of groups), for a power of .80 and an effect size of .25, the analysis for questions one, two, and three require 45 subjects in each group and a total of 180 subjects.

To address questions four and five, correlation analyses were used to identify whether relationships exist between the independent and dependent variables. The data were inspected for the extent to which they meet the assumptions of normal distribution, homoscedasticity, and linear relationship. A correlation matrix was constructed to identify which variables were significantly correlated at the .05 level. Variables that were significantly correlated were included in a regression analysis to examine if there was predictive relationship.

# CHAPTER 4

# RESULTS

This study was conducted to investigate the effects of instructor immediacy behaviors (high vs. low) in two different online learning environments (video vs. audio) on student perception of instructor immediacy and perception of social presence. In addition, the study examined the effects of instructor immediacy on student learning outcomes. Participants were randomly assigned to four groups. Each group viewed a different version of a 20-minute lesson on current perspectives in psychology. The research questions examined in this study were:

RQ1: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor immediacy?

RQ2: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor social presence?

RQ3: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence learning outcomes?

RQ4: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and perceived instructor social presence?

RQ5: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and learning outcomes?

This chapter describes the participants for this study, explains the data analysis procedures, and presents the findings.

## PARTICIPANTS

The participants for this study were sampled from two sections of an undergraduate course in psychology at San Diego State University. One of the two sections was scheduled to receive part of their instruction using online computer conferencing; however the data were collected at the beginning of the semester when both sections received instruction on campus. Combined, the two sections provided a sample of 989 subjects which were randomly assigned to four groups. Of those students, 433 gave their consent for their data to be used in the analysis. The distribution of the sample in the four groups is shown in Table 7.

**Table 7. Sample Distribution in Experimental Groups**

| Group | Group 1: Hi-VAT | Group 2: Hi-AT | Group 3: Lo-VAT | Group 4: Lo-AT |
|---|---|---|---|---|
| *n* | 110 | 100 | 113 | 110 |

The sample consisted primarily of female students; 73.2% of the participants were female and 26.8% were male. The average age (*M*) of the participants was 19 with 79% of the students being 18 and 19 years old. Only two students (0.5%) were 17 years old and only three students (0.3%) were above 30 years old. The remaining 19.8% were between 20 and 28 years old (see Table 8). This suggests that the sample is representative of undergraduate students with an average age of 19. While the majority of the students were white (53.3%) the remaining of the respondents were from a broad range of backgrounds as shown in Table 9.

**Table 8. Participant Age**

| Age | Number of Students | Percentage of Students |
|---|---|---|
| 17 | 2 | 0.5 |
| 18 | 194 | 44.8 |
| 19 | 148 | 34.2 |
| 20 | 49 | 11.3 |
| 21 | 25 | 5.8 |
| 22 | 6 | 1.4 |
| 23 | 3 | 0.7 |
| 25 | 1 | 0.2 |
| 27 | 1 | 0.2 |
| 28 | 1 | 0.2 |
| 34 | 1 | 0.2 |
| 38 | 1 | 0.2 |
| 41 | 1 | 0.2 |
| Total | 433 | 100.0 |

**Table 9. Participant Ethnicity**

| Ethnicity | Frequency | Percentage |
|---|---|---|
| White | 231 | 53.3 |
| Mexican American | 59 | 13.6 |
| Asian | 38 | 8.8 |
| Filipino | 37 | 8.5 |
| Other/Not Stated | 27 | 6.2 |
| Other Hispanic | 16 | 3.7 |
| African American | 11 | 2.5 |
| SE Asian | 6 | 1.4 |
| International | 4 | 0.9 |
| Pacific Islander | 3 | 0.7 |
| American Indian | 1 | 0.2 |
| Total | 433 | 100.0 |

It should also be noted that only four respondents identified themselves as international students.

## DATA ANALYSIS PROCEDURES AND FINDINGS

During the first day of data collection a technical glitch caused the version of the lesson viewed by Group 1 to cut off at the last minute of the lesson, while the instructor was closing the session. Forty-one students viewed the lesson before this problem was fixed and 69 students viewed the lesson following the fix. Thus, before analyzing the data to answer the research questions, it was necessary to compare the Group 1 data before and after the fix to see if there were significant differences in the student responses. The following question was examined: *Do the two Hi-VAT (Group 1) subgroups (before and after the fix) differ in their responses to the social presence, immediacy, and posttest items?* To answer this question several independent samples *t* tests were performed:

- The first independent *t* test compared student responses to the social presence items. No significant mean difference was found between the two groups in their perception on instructor social presence ($t(433) = .247$, $p = .805$ (two-tailed); $df = 108$).
- The second independent *t* test compared student responses to the immediacy items. No significant mean difference was found between the two groups in their perception on instructor immediacy ($t(433) = -.911$, $p = .364$ (two-tailed); $df = 109$).
- The third independent *t* test compared student responses to the pretest items. No significant mean difference was found between the two groups in their pretest scores ($t(433) = -.719$, $p = .474$ (two-tailed); $df = 108$).
- The fourth independent *t* test compared student responses to the immediate posttest items. No significant mean difference was found between the two groups in their immediate posttest scores ($t(433) = 694$, $p = .489$ (two-tailed); $df = 107$).

Based on these findings, the researcher concluded that students who viewed the lesson before and after the fix in Group 1 did not vary significantly in their responses and as result all responses were included in the data analysis.

## Instrument Reliability

A reliability analysis for the immediacy scale was calculated to identify if there is good internal consistency of the items in the modified scale. George and Mallery (2003) report that an alpha size greater than .9 ($\alpha > .9$) indicates excellent reliability and an alpha size greater than .8 ($\alpha > .8$) indicates good reliability. The reliability analysis yielded a Cronbach's alpha of .904, thus confirming the reliability of the modified version of the scale used for this study. The reliability coefficient for the verbal immediacy items was .864 and for the nonverbal immediacy items was .850. A reliability analysis for the 10-item social presence scale yielded a higher alpha ($\alpha = .937$) than it was reported earlier by Garrison et al. (2004).

## Determining the Utility of Covariates

Question number seven on the pretest survey asked: "Have you previously taken courses where the instructor used online conferencing tools to have chats with the course participants?" Sixty-six students (15.25%) responded "yes" and 367 students (84.75%) responded "no." To determine whether it was useful to employ students' previous experience with courses using online conferencing tools as a covariate, the researcher performed the following independent *t* tests:

- The first independent *t* test compared student responses to the instructor immediacy items. No significant mean difference was found between students who had previous experience with courses using online conferencing tools and those who did not have prior experience in their perception of instructor immediacy ($t(433) = .273$, $p = .058$ (two-tailed); $df = 431$).
- The second independent *t* test compared student responses to the social presence items. No significant mean difference was found between students who had previous experience with courses using online conferencing tools and those who did not have prior experience in their perception of instructor social presence ($t(433) = 1.566$, $p = .118$ (two-tailed); $df = 431$).

- The third independent *t* test compared student responses to pretest items. No significant mean difference was found between students who had previous experience with courses using online conferencing tools and those who did not have prior experience in their pretest scores ($t(433) = .650$, $p = .516$ (two-tailed); $df = 431$).

- The fourth independent *t* test compared student responses to the immediate posttest items. No significant mean difference was found between students who had previous experience with courses using online conferencing tools and those who did not have prior experience in their posttest scores ($t(433) = .084$, $p = .933$ (two-tailed); $df = 431$).

Based on these findings, the researcher concluded that students who had previous experience with online conferencing tools for course delivery did not vary significantly in their responses from students who did not have previous experience with online conferencing tools. Therefore, students' responses to whether they had previously taken courses where the instructor used online conferencing tools was not used as a covariate in determining if there are differences between the four groups in their perception of instructor immediacy, perception of social presence, and posttest scores.

## Research Question One

*RQ1: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor immediacy?*

Research question one asked if there were any significant differences in students' perceptions of instructor immediacy in the four groups. The following two hypotheses were tested using inferential statistics:

$H_{1i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher perception of instructor immediacy than the students who view the low-immediacy sessions (Group 3 Group 4).

$H_{1ii}$: Students who view the high-immediacy, video and audio with text chat session will indicate the highest perception of instructor immediacy.

$H_0$: There is no significant difference in perception of instructor immediacy across groups.

To answer research question one, the data were submitted to one-way ANOVA analysis using the program SPSS for Windows. Before calculating the ANOVA the data were checked to determine if they met the ANOVA assumptions.

Figure 1 shows that the dependent variable (instructor immediacy) is a continuous variable that is normally distributed. The groups are mutually exclusive (independent from each other) and the analysis shows that Group 1 indicated the highest perception of instructor immediacy ($M$ = 60.25, $SD$ = 11.809), followed by Group 2 ($M$ = 50.87, $SD$ = 12.789), Group 3 ($M$ = 34.30, $SD$ = 15.016), and Group 4 ($M$ = 32.02, $SD$ = 16.910) (see Figure 2, p. 71). The Levene test was used to test the requirement of homogeneity of variance (see Table 10).

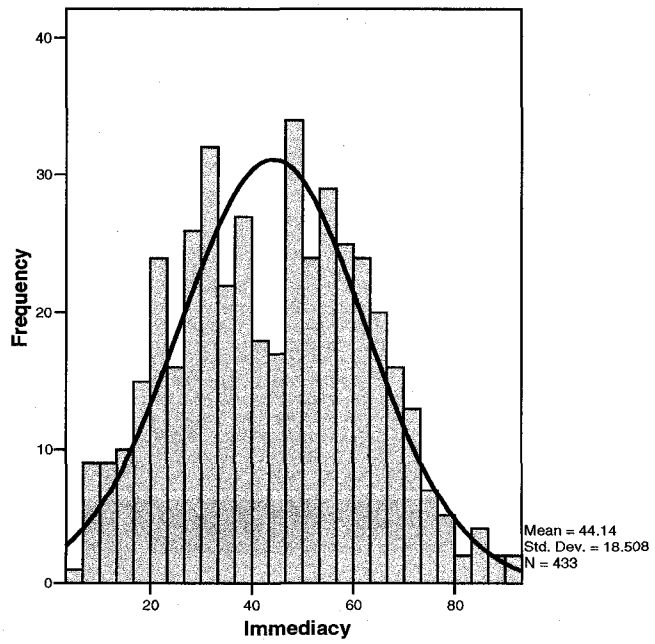


**Figure 1. Distribution for instructor immediacy.**

**Table 10. Test of Homogeneity of Variances for Social Presence**

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 4.053 | 3 | 429 | .007 |

The Levene test was significant ($p = .007$) so the groups were not assumed to have equal variances. This was considered further in the data analysis. In addition, the $F$ statistic is robust to unequal variances when sample sizes are equal or nearly equal as is the case here. Table 11 shows that the overall $F(3, 433) = 97.972$ was significant ($p = .000$).

**Table 11. One-way ANOVA of Perceived Instructor Immediacy**

| | Sum of Squares | *df* | Mean Square | *F* | *p* |
|---|---|---|---|---|---|
| Between Groups | 60164.270 | 3 | 20054.757 | 97.972 | .000 |
| Within Groups | 87815.416 | 429 | 204.698 | | |
| Total | 147979.686 | 432 | | | |

As shown in Figure 2, students who viewed the high-immediacy sessions (Group 1 and Group 2) indicated higher perception of instructor immediacy than students who viewed the low-immediacy sessions (Group 3 and Group 4). Specifically, students assigned to Group 1 (Hi-VAT) indicated the highest perception of instructor immediacy, followed by Group 2 (Hi-AT), Group 3 (Lo-VAT) and Group 4 (Lo-AT).

Contrast tests were conducted in accordance to the a priori hypotheses to identify which simple main effects were statistically significant. Consistent with the a priori hypotheses, the first contrast compared Group 1 with Group 3 and Group 4, the second

contrast compared Group2 with Group 3 and Group 4, and the third contrast compared Group 1 with Group 2 (see Table 12).

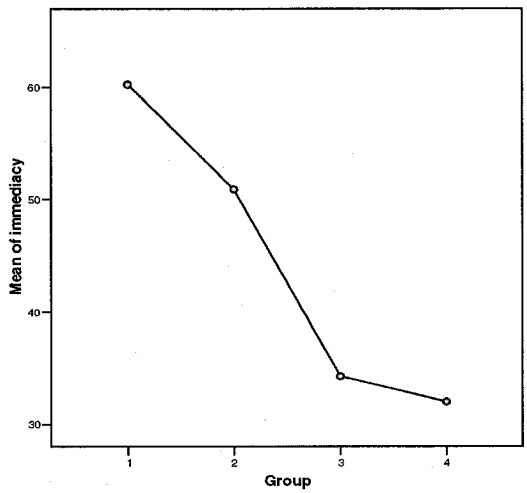


**Figure 2. Means plot for instructor immediacy.**

**Table 12. Contrast Coefficients for RQ1**

| | Group | | | |
|---|---|---|---|---|
| Contrast | 1 | 2 | 3 | 4 |
| 1 | 1 | 0 | -.5 | -.5 |
| 2 | 0 | 1 | -.5 | -.5 |
| 3 | 1 | -1 | 0 | 0 |

Since Levene's test was significant and the variances of the groups are not assumed equal, the researcher considered the second panel in Table 13. There is significance in the findings supporting the research hypotheses; therefore, the null hypothesis was rejected. More specifically, there is significant difference ($p = .000$) in perception of instructor immediacy between Group 1 (Hi-VAT) and Groups 3 and 4 (Lo-VAT and Lo-AT). Similarly, there is significant difference ($p = .000$) in perception of instructor immediacy between students in Group 2 (Hi-AT) and Groups 3 and 4 (Lo-VAT and Lo-AT). Finally

there is a significant difference ($p = .000$) in perception of instructor immediacy between Group 1 and Group 2.

**Table 13. Contrast Tests for RQ1**

| | | Contrast | Value of Contrast | *SE* | *t* | *df* | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Immediacy | Assume equal variances | 1 | 27.09 | 1.667 | 16.248 | 429 | .000 |
| | | 2 | 17.71 | 1.722 | 10.285 | 429 | .000 |
| | | 3 | 9.38 | 1.977 | 4.743 | 429 | .000 |
| | Does not assume equal variances | 1 | 27.09 | 1.555 | 17.424 | 280.180 | .000 |
| | | 2 | 17.71 | 1.669 | 10.614 | 234.076 | .000 |
| | | 3 | 9.38 | 1.704 | 5.502 | 201.819 | .000 |

Lastly, a posthoc analysis was used to determine the significance of differences between all groups (see Table 14). A Tamhane's T2 posthoc test for multiple comparisons was chosen for a posthoc analysis because the Levene test was significant.

Perception of instructor immediacy in Group 1 is significantly different ($p = .000$) than perception in the other three groups. Students in Group 1 indicated significantly higher perception of instructor immediacy than Group 2 (mean difference = 9.375), Group 3 (mean difference = 25.945) and Group 4 (mean difference = 28.227).

Perception of instructor immediacy in Group 2 is also significantly different than perception in the other three groups ($p = .000$). Students in Group 2 indicated significantly higher perception of instructor immediacy than Group 3 (mean difference = 16.569) and

Group 4 (mean difference =18.852). However, students in Group 2 indicated significantly lower perception of instructor immediacy than Group 1 (mean difference = 9.375).

**Table 14. RQ1 Tamhane Posthoc Analysis**

| | | Mean | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | Difference | | | Lower | Upper |
| (I) Group | (J) Group | (I-J) | *SE* | *p* | Bound | Bound |
| 1 | 2 | 9.375(*) | 1.704 | .000 | 4.85 | 13.90 |
| | 3 | 25.945(*) | 1.806 | .000 | 21.15 | 30.74 |
| | 4 | 28.227(*) | 1.967 | .000 | 23.00 | 33.45 |
| 2 | 1 | -9.375(*) | 1.704 | .000 | -13.90 | -4.85 |
| | 3 | 16.569(*) | 1.906 | .000 | 11.51 | 21.63 |
| | 4 | 18.852(*) | 2.058 | .000 | 13.38 | 24.32 |
| 3 | 1 | -25.945(*) | 1.806 | .000 | -30.74 | -21.15 |
| | 2 | -16.569(*) | 1.906 | .000 | -21.63 | -11.51 |
| | 4 | 2.283 | 2.144 | .870 | -3.41 | 7.97 |
| 4 | 1 | -28.227(*) | 1.967 | .000 | -33.45 | -23.00 |
| | 2 | -18.852(*) | 2.058 | .000 | -24.32 | -13.38 |
| | 3 | -2.283 | 2.144 | .870 | -7.97 | 3.41 |

* The mean difference is significant at the .05 level

Perception of instructor immediacy in Group 3 is significantly different ($p = .000$) than perception in the two high-immediacy groups. Students in Group 3 indicated significantly lower perception of immediacy than Group 1 (mean difference = 25.945) and Group 2 (mean difference = 16.569). However, student perception of instructor immediacy in Group 3 did not significantly differ ($p = .870$) than student perception in Group 4 (mean difference = 2.283).

Perception of instructor immediacy in Group 4 is significantly different ($p = .000$) than perception in Group 1 and Group 2. Students in Group 4 indicated significantly lower

perception of instructor immediacy than Group 1 (mean difference = 28.227) and Group 2 (mean difference = 18.852). However, student perception of instructor immediacy in Group 4 did not significantly differ ($p$ = .870) than student perception in Group 3 (mean difference = 2.283).

## Research Question Two

*RQ2: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor social presence?*

Research question two asked if there were any significant differences in students' perceptions of instructor social presence in the four groups. The following two hypotheses were tested using inferential statistics:

$H_{2i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher perception of instructor social presence than the students who view the low-immediacy sessions (Group 3 and Group 4).

$H_{2ii}$: Students who view the high-immediacy video and audio with text chat session will indicate the highest perception of instructor social presence.

$H_o$: There is no significant difference in perception of instructor social presence across groups.

To answer research question two, the data were submitted to one-way ANOVA analysis using the program SPSS for Windows. Before calculating the ANOVA, the data were checked to determine if they met the ANOVA assumptions. The dependent variable is a continuous variable that is normally distributed (see Figure 3).

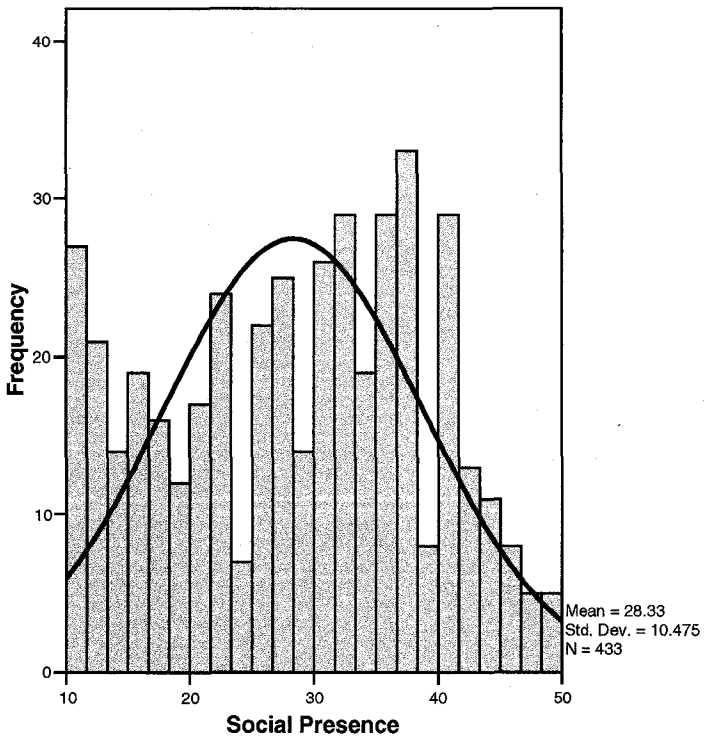


**Figure 3. Distribution for social presence.**

The groups are mutually exclusive (independent from each other) and the findings show that Group 1 indicated the highest perception of instructor social presence ($M = 36.33$, $SD = 6.018$), followed by Group 2 ($M = 35.81$, $SD = 7.006$), Group 3 ($M = 21.56$, $SD = 7.945$), and Group 4 ($M = 20.47$, $SD = 7.967$) (see Figure 4, p. 77). The groups were also examined for the requirement of equal variances (homogeneity of variance requirement). Levene's test was significant ($p = .001$) so the variances of the groups are not assumed equal (see Table 15).

**Table 15. Test of Homogeneity of Variances for Social Presence**

| Levene Statistic | df1 | df2 | *p* |
|---|---|---|---|
| 5.621 | 3 | 429 | .001 |

However the $F$ statistic is robust to unequal variances when sample sizes are equal or nearly equal so it was decided to proceed with the ANOVA and select the contrast test accordingly. Table 16 shows that the overall $F(3, 433) = 154.337$ is significant ($p = .000$). Thus, the null hypothesis that perceived instructor social presence is equal across groups was rejected.

**Table 16. ANOVA for Social Presence**

| | Sum of Squares | *df* | Mean Square | *F* | *p* |
|---|---|---|---|---|---|
| Between Groups | 24604.183 | 3 | 8201.394 | 154.337 | .000 |
| Within Groups | 22796.902 | 429 | 53.140 | | |
| Total | 47401.085 | 432 | | | |

The means plot in Figure 4 shows that consistent with the research hypotheses, students who viewed the high-immediacy sessions (Group 1 and Group 2) indicated higher perception of instructor social presence than the students who viewed the low-immediacy sessions (Group 3 and Group 4). Specifically, students who viewed the Hi-VAT session (Group 1) indicated the highest perception of instructor social presence, followed by Group 2, Group 3, and Group 4.

Tables 17 and 18 show the contrast tests conducted according to the a priori hypotheses to identify which simple main effects were statistically significant. The first contrast compared Group 1 with Group 3 and Group 4; the second contrast compared Group 2 with Group 3 and Group 4; the third contrast compared Group 1 and Group 2. The second panel in Table 18 was considered because Levene's test was significant and the variances of the groups are not assumed equal.

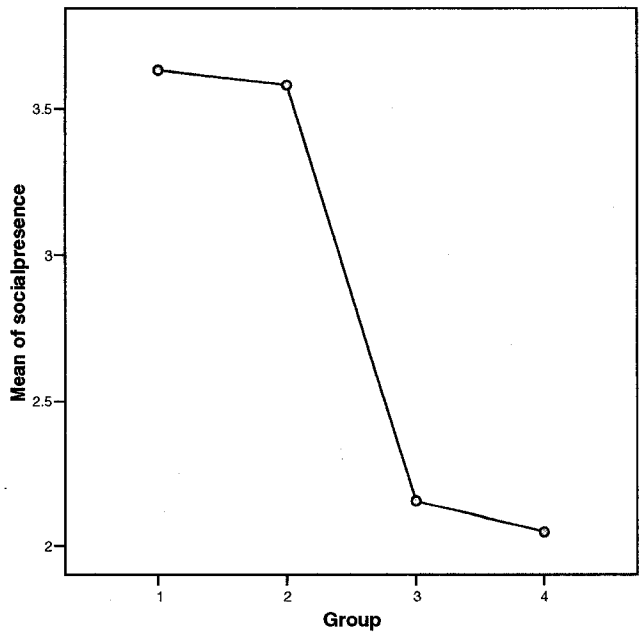


**Figure 4. Means plot for instructor social presence.**

**Table 17. Contrast Coefficients for RQ2**

| | Group | | | |
|---|---|---|---|---|
| Contrast | 1 | 2 | 3 | 4 |
| 1 | 1 | 0 | -.5 | -.5 |
| 2 | 0 | 1 | -.5 | -.5 |
| 3 | 1 | -1 | 0 | 0 |

There is no significant difference ($p$ = .569) in perception of instructor social presence between students in Group 1 (Hi-VAT) and Group 2 (Hi-VAT). However, there is significant difference ($p$ = .000) in perception of instructor social presence between students in Group 1 (Hi-VAT), and the two low-immediacy groups (Group 3 and Group 4). Similarly, there is a significant difference ($p$ = .000) in perception of instructor social presence between students in Group 2 (Hi-AT) and the two low-immediacy groups (Group 3 and Group 4).

**Table 18. Contrast Tests for RQ2**

| | | Contrast | Value of Contrast | *SE* | *t* | *df* | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Social presence | Assume equal variances | 1 | 15.31 | .849 | 18.028 | 429 | .000 |
| | | 2 | 14.79 | .877 | 16.863 | 429 | .000 |
| | | 3 | .52 | 1.007 | .514 | 429 | .608 |
| | Does not assume equal variances | 1 | 15. 13 | .783 | 19.554 | 276.520 | .000 |
| | | 2 | 14.79 | . 880 | 16.808 | 214.481 | .000 |
| | | 3 | .52 | . 906 | .571 | 196.190 | .569 |

Finally, a posthoc analysis is displayed in Table 19. Because the Levene test showed that the variances across groups are significantly different, a Tamhane's T2 posthoc test was used for multiple comparisons. Student perception of instructor social presence in Group 1 (Hi-VAT) does not significantly differ ($p$ = .994) from student perception in Group 2 (mean difference = 0.517). However, perception of instructor social presence in Group 1 is significantly different ($p$ = .000) than perception in Group 3 (mean difference = 14.770) and Group 4 (mean difference = 15.855). Perception of instructor social presence in Group 2 (Hi-AT) is significantly different ($p$ = .000) than perception in Group3 and Group 4. Students in Group 2 indicated significantly higher perception of instructor social presence than students in Group 3 (mean difference = 14.252) and Group 4 (mean difference = 15.337).

Perception of instructor social presence in Group 3 (Lo-VAT) is significantly different ($p$ = .000) than perception in Group 1 and Group 2. Students in Group 3 indicated significantly lower perception of instructor social presence than students in Group 1 (mean difference = 14.770) and Group 2 (mean difference = 14.252). However, student perception

of instructor social presence in Group 3 is not significantly different ($p$ = .892) than student perception in Group 4 (mean difference = 1.085). Finally, perception of instructor social presence in Group 4 (Lo-AT) is significantly different ($p$ = .000) than perception in the two high-immediacy groups. Students in Group 4 indicated significantly lower perception of instructor social presence than Group 1 (mean difference = 15.855) and Group 2 (mean difference = 15.337).

**Table 19. RQ2 Tamhane Posthoc Analysis**

| | | Mean | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | Difference | | | Lower | Upper |
| (I) Group | (J) Group | (I-J) | *SE* | *p* | Bound | Bound |
| 1 | 2 | .517 | .906 | .994 | -1.89 | 2. 92 |
| | 3 | 14.770* | .942 | .000 | 12.27 | 17.27 |
| | 4 | 15.855* | .952 | .000 | 13.32 | 18.38 |
| 2 | 1 | -.517 | .906 | .994 | -2.92 | 1.89 |
| | 3 | 14.252* | 1.024 | .000 | 11.53 | 16.97 |
| | 4 | 15.337* | 1.033 | .000 | 12.59 | 18.08 |
| 3 | 1 | -14.770* | .942 | .000 | -17.27 | -12.27 |
| | 2 | -14.252* | 1.024 | .000 | -16.97 | -11.53 |
| | 4 | 1.085 | 1.066 | .892 | -1.74 | 3.91 |
| 4 | 1 | -15.855* | .952 | .000 | -18.38 | -13.32 |
| | 2 | -15.337* | 1.033 | .000 | -18.08 | -12.59 |
| | 3 | -1.085 | 1.066 | .892 | -3.91 | 1.74 |

* The mean difference is significant at the .05 level.

## Research Question Three

*RQ3: How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence learning outcomes?*

Research question three asked if the combination of immediacy behaviors projected by the instructor and the learning environment resulted in differences in the learning outcomes in the four groups. The following hypotheses were examined:

$H_{3i}$: Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher learning outcomes than the students who view the low-immediacy sessions (Group 3 and Group 4).

$H_{3ii}$: Students who view the high-immediacy video and audio with text chat session will indicate the highest learning outcomes.

$H_{o:}$ There is no significant difference in the learning outcomes across groups.

Learning outcomes were measured using an immediate posttest and a delayed posttest. The immediate posttest consisted of the same questions presented in the pretest and the delayed posttest, administered the week following the data collection, consisted of four of the seven pretest questions.

Item number eight on the pretest asked: "Have you read the Current Psychological Perspectives section in the first chapter of your textbook?" Out of 433 respondents, 273 (63%) reported that they had read that section in their textbook and 160 respondents (37%) reported that they had not previously read that section. An independent *t* test was performed to determine whether the response to this question should be used as a covariate. The independent *t* test compared students' responses to the posttest items. Levene's test showed that the *p* value is .971 ($p > .05$) thus not significant, indicating that equal variances can be assumed. No significant mean difference was found between students who had previously read the section and those who had not read the section in their textbook in their responses to posttest items ($t(433) = .450$, $p = .653$ (two-tailed); $df = 428$). Therefore, their response to

whether they had previously read the relevant chapter in their textbook was not used as a covariate in calculating group differences in their posttest scores.

Finally, a one-way ANOVA was calculated to determine if students' pretest scores should be used as a covariate in calculating group differences on their posttest scores. The mean scores for the pretest in the four groups are displayed in Table 20.

**Table 20. Pretest Scores**

| Group | *n* | *M* | *SD* | *SE* |
|---|---|---|---|---|
| 1 | 110 | 4.01 | 1.662 | .158 |
| 2 | 100 | 4.18 | 1.635 | .164 |
| 3 | 113 | 4.06 | 1.676 | .158 |
| 4 | 110 | 4.12 | 1.669 | .159 |
| Total | 433 | 4.09 | 1.657 | .080 |

Levene's test for equality of variances is not significant ($p = .892$) so the variances of the groups are assumed equal. The overall $F(3, 433) = 0.206$ is not significant ($p = .892, p > .05$) showing that there is no significant difference in the pretest scores between the four groups. Therefore achievement on the pretest scores was not used as a covariate in calculating group differences on the posttest scores.

## LEARNING OUTCOMES MEASURED BY IMMEDIATE POSTTEST

To answer the research question of whether the four groups differed in the learning outcomes as measured by the immediate posttest, the data were submitted to one-way ANOVA analysis. Before calculating the ANOVA the data were examined for meeting the ANOVA assumptions. The dependent variable is a continuous variable that is normally distributed (see Figure 5). The groups are mutually exclusive (independent from each other)

and the Levene test was not significant ($p = .097$) showing that the data also met the homogeneity of variance requirement (the variances of the groups are assumed equal).

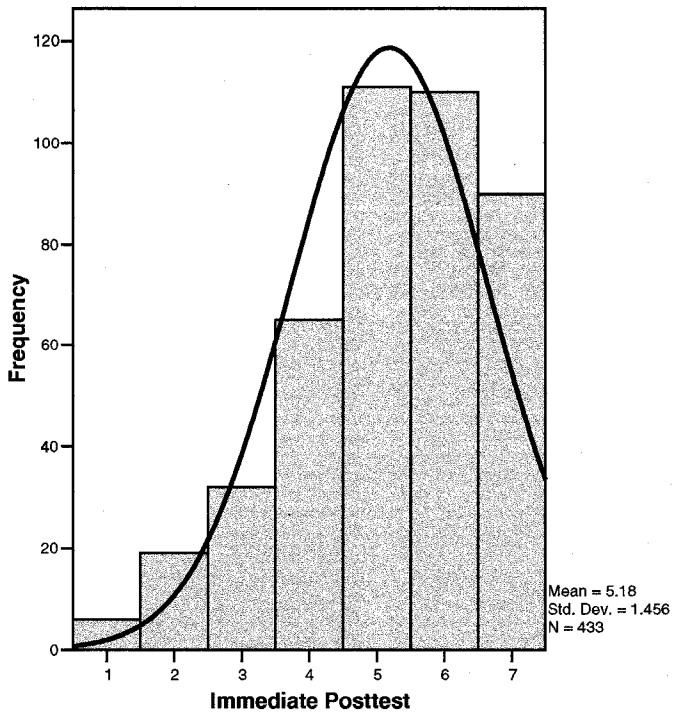


**Figure 5. Distribution of immediate posttest scores.**

The ANOVA showed that the overall $F(3, 433) = 2.737$ is significant ($p = .043$, $p < .05$) thus, the researcher rejected the null hypothesis that learning outcomes (as indicated by the immediate posttest scores) are equal across groups. However, the research hypotheses were only partially supported by the findings. The research hypotheses predicted that students who viewed the high-immediacy sessions (Group 1 and Group 2) would indicate higher learning outcomes than the students who viewed the low-immediacy sessions (Group 3 and Group 4), with students in Group 1 achieving the highest scores. As shown in the means plot in Figure 6, students who viewed the high-immediacy sessions (Group 1 and

Group 2) and the low-immediacy audio session (Group 4) achieved higher scores on the posttest than the students who viewed the low-immediacy video session (Groups 3).

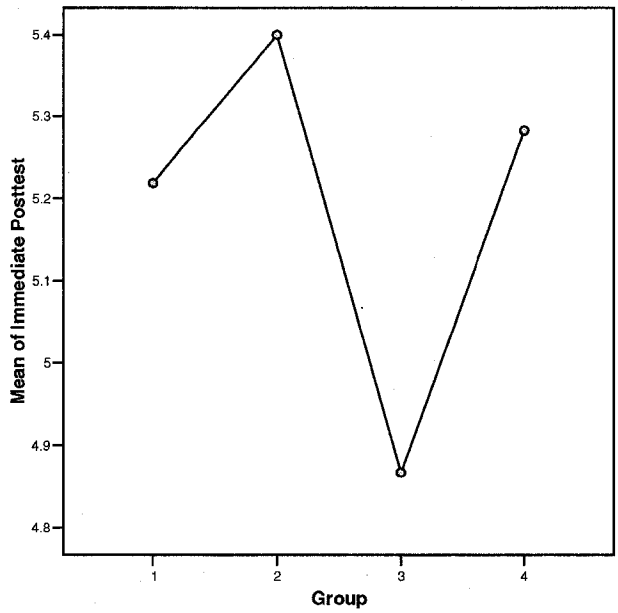


**Figure 6. Means plot for scores on immediate posttest.**

Specifically, students in Group 2 achieved the highest scores ($M = 5.40$, $SD = 1.206$), followed by students in Group 4 ($M = 5.28$, $SD = 1.409$), Group 1 ($M = 5.22$, $SD = 1.499$), and Group 3 ($M = 4.87$, $SD = 1.617$). The contrast tests presented in Table 21 were performed to identify which groups differed significantly in their scores.

**Table 20. Contrast Coefficients for Immediate Posttest**

| | Group | | | |
|---|---|---|---|---|
| Contrast | 1 | 2 | 3 | 4 |
| 1 | 1 | 0 | -1 | 0 |
| 2 | 1 | 0 | 0 | -1 |
| 3 | 0 | 1 | -1 | 0 |
| 4 | 0 | 1 | 0 | -1 |

The findings show that there is significant difference ($p$ = .008) in learning outcomes as indicated on posttest scores between students in Group 2 (Hi-AT) and Group 3 (Lo-VAT) (see Table 22).

**Table 22. Contrast Tests for Immediate Posttest**

| | | Contrast | Value of Contrast | *SE* | *t* | *df* | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Posttest | Assume equal variances | 1 | .35 | .194 | 1.811 | 429 | .071 |
| | | 2 | -.06 | .195 | -.326 | 429 | .744 |
| | | 3 | .53 | .199 | 2.682 | 429 | .008 |
| | | 4 | .12 | .200 | .591 | 429 | .555 |

## LEARNING OUTCOMES MEASURED BY DELAYED POSTTEST

To determine whether the four groups differed in the learning outcomes as measured by the delayed posttest, the data were submitted to a one-way ANOVA analysis. Before calculating the ANOVA the data were examined for meeting the ANOVA assumptions. The dependent variable is a continuous variable that is normally distributed (see Figure 7).

The groups are mutually exclusive (independent from each other) and the Levene test was not significant ($p$ = .853) showing that the data also met the homogeneity of variance requirement (the variances of the groups are assumed equal). As shown in Table 23, no significant difference was found between the four groups on the learning outcomes as indicated by their scores on the delayed posttest ($F(3, 433) = .964$, $p$ = .410, $df = 3$).

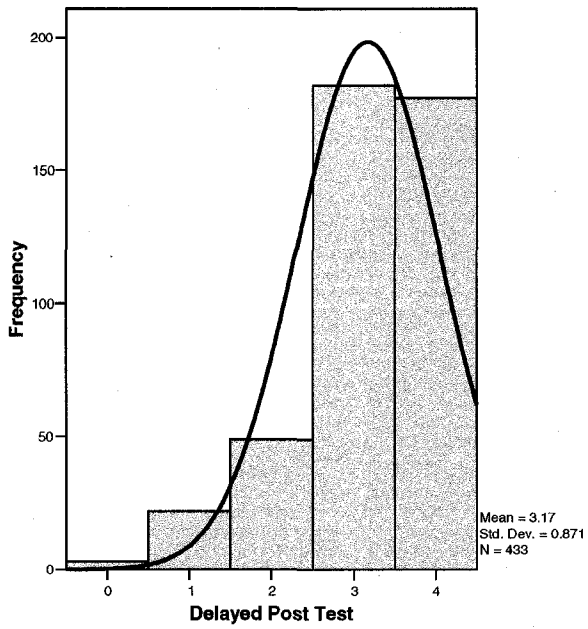


**Figure 7. Distribution of delayed posttest scores.**

**Table 23. Group Difference in Learning Outcomes Indicated by Delayed Posttest**

| Variable | Group 1 | Group 2 | Group 3 | Group 4 | *F* | *p* | *df* |
|---|---|---|---|---|---|---|---|
| Score on delayed posttest | *M* = 3.22 *SD* = .817 | *M* = 3.17 *SD* = .877 | *M* = 3.06 *SD* = .948 | *M* = 3.25 *SD* = .837 | .964 | .410 | 3 |

## Research Question Four

*RQ4: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and perceived instructor social presence?*

Research question four asked if there is a relationship between perceived instructor immediacy and perceived instructor social presence and the following hypothesis was tested:

$H_4$: There is a positive relationship between perceived instructor immediacy and perceived instructor social presence.

$H_0$: There is no relationship between perceived instructor immediacy and perceived social presence.

Before submitting the data to a correlation to answer the research question, the data were examined for meeting the correlation assumptions. Perceived instructor immediacy ($M = 44.14$, $SD = 18.508$) and perceived instructor social presence ($M = 28.33$, $SD = 10.475$) have normal distributions (see Figures 1 and 3 respectively). In addition, the correlation between the two variables is linear (see Figure 8). The correlation analysis showed a significant relationship between perceived instructor immediacy and perceived instructor social presence ($r(433) = .844$, $p = .000$). The correlation reported in Table 24 is positive indicating that when perception of instructor immediacy increases, perception of social presence increases.

**Table 24. Correlation Among Instructor Immediacy and Social Presence**

| | | Immediacy | Social Presence |
|---|---|---|---|
| Immediacy | Pearson Correlation | 1 | .844(**) |
| | Sig. (2-tailed) | . | .000 |
| | N | 433 | 433 |
| Social Presence | Pearson Correlation | .844(**) | 1 |
| | Sig. (2-tailed) | .000 | . |
| | N | 433 | 433 |

** Correlation is significant at the 0.01 level (2-tailed).

In addition, a regression equation was developed to see if immediacy is a predictor of social presence. Instructor immediacy significantly predicted social presence

($F(1, 433) = 1067.567, p = .000$). Table 25 shows that the adjusted $R$ squared value was .712. This indicates that 71.2% of the variance in social presence can be predicted by perception of instructor immediacy.

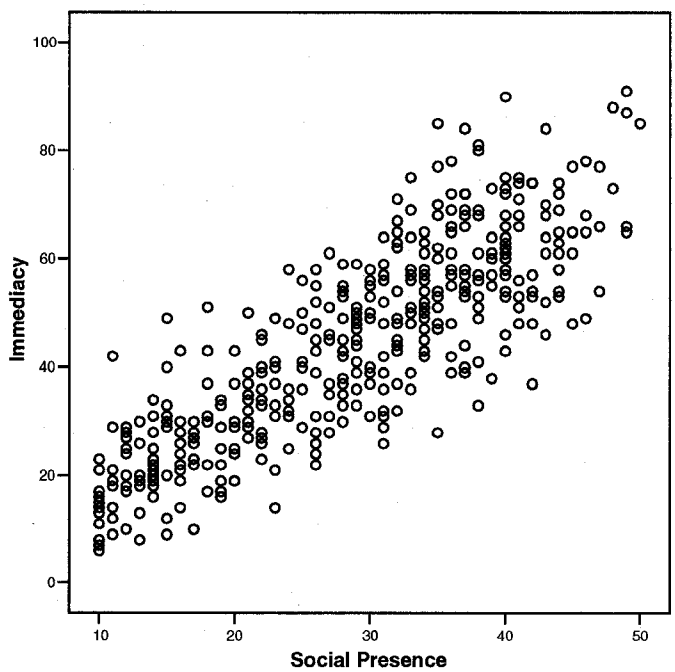


**Figure 8. Correlation of social presence and immediacy.**

**Table 25. Model Summary for Immediacy**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .844(a) | .712 | .712 | 5.624 |

a Predictors: (Constant), Immediacy

Finally, a Pearson Correlation was calculated for perceived instructor immediacy and perceived instructor social presence in each group (see Table 26). Highly significant relationships were found between perceived instructor immediacy and perceived instructor

social presence for Group 1 ($r(110) = .700, p = .000$), Group 3 ($r(100) = .773, p = .000$), and Group 4 ($r(110) = .847, p = .000$) and a moderate correlation for Group 2 ($r(113) = .597, p = .001$).

**Table 26. Correlations Between Instructor Immediacy and Social Presence in Four Groups**

| Group | Pearson Correlation | Sig. (2-tailed) |
|---|---|---|
| Group 1 ($n = 110$) | .700(**) | .000 |
| Group 2 ($n = 100$) | .597(**) | .000 |
| Group 3 ($n = 113$) | .773(**) | .000 |
| Group 4 ($n = 110$) | .847(**) | .000 |

** Correlations are significant at the 0.01 level (2-tailed).

## Research Question Five

*RQ5: Within the context of the different computer conferencing environments—(a) audio with text chat and (b) video with audio and text chat—what is the relationship between perceived instructor immediacy and learning outcomes?*

Research question five asked if there is a relationship between perceived instructor immediacy and learning outcomes and the following hypothesis was tested:

$H_5$: There is a positive relationship between perceived instructor immediacy and learning outcomes.

$H_0$: There is no relationship between perceived instructor immediacy and learning outcomes.

To examine the hypothesis posed by research question five, the data were examined for meeting the correlation assumptions and they were submitted to a correlation analysis. Table 27 shows that no significant relationship was found between perceived instructor immediacy and learning outcome as indicated by the immediate or delayed posttest scores.

**Table 27. Correlations Between Instructor Immediacy and Learning Outcomes**

| Correlation | Pearson Correlation | Sig. (2-tailed) |
|---|---|---|
| Immediacy & Immediate Posttest | -.003 | .945 |
| Immediacy & Delayed Posttest | -.014 | .774 |

## Open-Ended Items

The last part of the survey asked students to indicate whether they perceived the instructor as a real person (caring, empathetic, disclosing personality, and expressing emotions). Table 28 provides a summary of the number of students who answered this question and their responses in the four groups. The majority of the students provided a *yes* or *no* answer but some students provided other responses such as "somewhat," "to an extent," "yes and no" and so forth. Most students (98 out of 107 students) in Group 1 (Hi-VAT) and about two thirds of the students (66 out of 100) in Group 2 (Hi-AT) indicated that they perceived the instructor as a real person. Significantly fewer students reported perceiving the instructor as a real person in Group 3 (Lo-VAT) (64 out of 115 students) and Group 4 (Lo-AT) (56 out of 122 students).

The responses provided by students in Group 1 to the question, *What aspects of the online lesson made you feel like the instructor was a real person?* are very revealing.

Students reported that some of the factors that influenced their perception of the instructor as a real person included the instructor encouraging students to ask questions, answering questions and providing feedback, using gestures, using examples, calling students by their first name, not using monotone voice, and so forth (see Table 29). These factors identified by the students reflect, to a great extent, the same factors that are described in the literature as high-immediacy behaviors. The review of the answers to this question from students in all four groups resulted in identifying 22 number of categories presented in Table 30. Some students described more than one aspects of the course that made them feel the instructor was real and their responses are reflected in more than one category. Thus, the total number of factors yielded a greater total than the number of responses provided by the students. Of note, is that across groups the behaviors that were reported most frequently as having influenced student perception of the instructor as real include the ability to see and hear the instructor, the instructor responding to student questions and the instructor interacting with students.

Some of the students offered an explanation as to reason why they answered "no" to the question of whether they perceived the instructor as real. A summary of these responses is presented in Table 31.

**Table 28. Number of Students Who Perceived the Instructor as Real**

| Perceived instructor as "real" | Group 1 (n = 107) | Group 2 (n = 100) | Group 3 (n = 115 ) | Group 4 (n = 112) |
|---|---|---|---|---|
| Yes | 98 | 66 | 64 | 56 |
| No | 6 | 21 | 45 | 48 |
| Other | 3 | 13 | 6 | 8 |

**Table 29. Aspects of Lesson That Made Students Perceive Instructor as Real in Group 1**

| |
|---|
| Video-I could see and hear him |
| Encouraged students to ask questions |
| Answered questions-Provided feedback |
| Used gestures-moved head-body when he was talking |
| Responded to student comments and questions |
| Did not seem like he was reading |
| He was calm-personable |
| Asked questions-Interacted with students-Made sure the students were involved |
| Used examples |
| Called students by their first name |
| Allowed students to call him by his first name |
| Used visuals-power point slides |
| Showed personality-Expressed how he felt |
| Caring-Seemed to care about students' understanding |
| Spoke about his family and shared personal information |
| Used humor-Told jokes |
| Body language |
| Changing voice pitches |
| Didn't use monotone voice |
| Laughed when a student would ask a funny question |
| Offered office hours-Asked students to come and see him-talk to him |

**Table 30. Overall Aspects That Made Instructor Seem Real**

| Aspect of the Lesson | Number of Responses |
|---|---|
| I could see him-Video | 100 |
| Responded to student comments and questions | 86 |
| I could hear him | 76 |
| Interacted with students | 52 |
| Asked questions | 33 |
| Changing voice pitches-tone of voice-no monotone | 32 |
| Spoke about his family and shared personal information | 31 |
| Called students by their first name | 30 |
| Encouraged students to ask questions | 26 |
| Used gestures-moved head-body when he was talking | 27 |
| I could see his picture | 22 |
| Seemed knowledgeable | 21 |
| Showed personality-Expressed how he felt | 20 |
| Used examples | 18 |
| Caring-Seemed to care about students' understanding | 16 |
| Offered office hours-Asked students to come and see him-talk to him | 14 |
| Conversational tone with students | 14 |
| Used visuals-power point slides | 13 |
| Used humor-Told jokes | 8 |
| Made sure the students were involved | 6 |
| Did not seem like he was reading | 3 |
| Allowed students to call him by his first name | 2 |

**Table 31. Aspects of Lesson That Made Students Feel Like Instructor Was not Real**

| Group 1 | Group 2 | Group 3 | Group 4 |
|---|---|---|---|
| Boring | Did not move-No | Monotone Voice- | Did not move-No |
| Seemed rehearsed | video | Boring | video |
| | Robotic | Showed no emotion | Monotone Voice- |
| | | Seemed like he was | Boring |
| | | reading notes | Showed no emotion |
| | | Seemed like a 'robot' | Seemed like he was |
| | | Not involved | reading notes |
| | | | Seemed like a 'robot' |

# CHAPTER 5

# DISCUSSION

The purpose of this study was to determine whether there is significant difference in student perception of instructor immediacy, perception of social presence, and learning outcomes based on the online learning environment (video vs. audio) and the level of immediacy behaviors projected by the instructor (high vs. low). Further, this study was designed to assess the relationship between instructor immediacy, social presence, and learning outcomes in two online computer conferencing environments. The main hypothesis was that the use of computer video conferencing in combination with high-immediacy behaviors on behalf of the instructor would result in higher perception of instructor immediacy, higher perception of social presence, and higher learning outcomes. This chapter will discuss the findings related to each research question. In addition, this chapter will discuss implications for teaching and learning online, the limitations of this study and will offer recommendations for future research.

## STUDENTS' PERCEPTIONS OF INSTRUCTOR IMMEDIACY

Research question one asked: *How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor immediacy?* It was hypothesized that students who viewed the high-immediacy sessions would indicate higher perception of instructor immediacy than the students who viewed the low-immediacy sessions, with the students in the high-immediacy video group indicating the highest perception of instructor immediacy. The data support the research hypotheses. The

ANOVA comparing the four groups demonstrated significance ($F(3, 433) = 97.972$, $p = .000$). Significant differences ($p = .000$) were found between students' perception of instructor immediacy in the high- and low-immediacy groups, with the students in the Hi-VAT group (Group 1: $M = 60.25$, $SD = 11.809$), indicating significantly higher perception of instructor immediacy than the other groups (Group 2: $M = 50.87$, $SD = 12.789$; Group 3: $M = 34.30$, $SD = 15.016$; Group 4: $M = 32.02$, $SD = 16.910$).

These findings are consistent with earlier research. For example, Gorham and Zakahi (1990) found that instructors' perceptions of their immediacy and their perceptions of learning are congruent with their students' perceptions. Based on the findings of their study, Gorham and Zakahi (1990) suggested that instructors can monitor their behaviors based on the immediacy literature. Similarly, the findings of the present study have prescriptive value for training faculty to utilize the information identified in the immediacy literature not only for teaching face-to-face but also for teaching students at a distance. For example, relevant immediacy behaviors such as encouraging students to ask questions, using humor, calling students by their first name, answering questions and providing feedback, sharing personal information, and so forth, could be utilized by instructors regardless of the learning environment. Instructors could be trained to monitor and adjust such high-immediacy behaviors in traditional, face-to-face and online learning settings. The results of this study suggest that students will identify these behaviors and perceive the instructor as highly immediate. According to the literature the latter can reduce psychological distance and increase instructional effectiveness and student satisfaction.

Furthermore, the findings suggest that video-enabled computer conferencing tools can facilitate the projection of more immediacy behaviors; however instructors can project

immediacy behaviors with the use of audio alone. The two high-immediacy groups (Hi-VAT and Hi-AT) had significantly higher perceptions of instructor immediacy than the two low-immediacy groups (Lo-VAT and Lo-AT). In addition, students' perceptions of instructor immediacy in Group 1 (Hi-VAT) were significantly higher ($p$ = .000) than those in Group 2 (Hi-AT). This finding suggests that the use of video, which allowed the instructor to project more immediacy behaviors (i.e., gesturing, body position, smiling, etc.), had an impact on how students perceived the instructor. Therefore, the fact that the students were able to see the instructor move his upper body, use gestures, smile, and so forth, significantly increased their perception of instructor immediacy. However, Group 2 (Hi-AT) showed significantly higher perception of instructor immediacy ($p$ = .000) than Group 3 (Lo-VAT) and Group 4 (Lo-AT). In addition, the two low-immediacy groups (Lo-VAT and Lo-AT) did not differ significantly. Therefore, we can conclude that the ability to see the instructor in the Lo-VAT group did not make students perceive the instructor as more immediate than the students in the Lo-AT group. From a practical perspective, these findings suggest that the use of video may reduce the psychological distance between the instructor and the online learners if the instructor is proficient in the use of immediacy behaviors. However, if an instructor is projecting nonimmediacy, it is likely that students will perceive him/her as nonimmediate regardless of whether the communication environment is video- and audio-enabled or only audio-enabled. Further, if an instructor is trained to project relevant immediacy behaviors, it is very likely that students will perceive him/her as highly immediate even if the communication environment is only audio-enabled, like in the case of Group 2 (Hi-AT).

## STUDENTS' PERCEPTIONS OF INSTRUCTOR SOCIAL PRESENCE

Research question two asked: *How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence perceived instructor social presence?*

The two hypotheses examined were:

- Students who view the high-immediacy sessions (Group 1 and Group 2) will indicate higher perception of instructor social presence than the students who view the low-immediacy sessions (Group 3 and Group 4).
- Students who view the high-immediacy, video and audio with text chat session will indicate the highest perception of instructor social presence.

The mean scores show that Group 1 (Hi-VAT) indicated the highest perception of instructor social presence ($M = 36.33$, $SD = 6.018$), followed by Group 2 (Hi-AT) ($M = 35.81$, $SD = 7.006$), Group 3 (Lo-VAT) ($M = 21.56$, $SD = 7.945$), and Group 4 (Lo-AT) ($M = 20.47$, $SD = 7.967$). These findings are also supported by an open-ended question which asked students to indicate if they perceived the instructor as a real person. Real person was defined as a person who is caring, empathetic, disclosing personality, and expressing emotions, in accordance to the social presence scale used in this study. More students in Group 1 (98 out of 107 students) perceived the instructor's social presence, followed by Group 2 (66 out of 100 students), Group 3 (64 out of 115 students), and Group 4 (56 out of 112 students).

The ANOVA detected a significant overall $F(3, 433) = 154.337$, $p = .000$. Therefore, the null hypothesis that perceived instructor social presence is equal across groups was rejected. The findings of the contrast tests, conducted to examine the a priori hypotheses, support the first hypothesis but not the second. In short, students who viewed the

high-immediacy sessions indicated significantly higher perception of instructor social presence than the students who viewed the low-immediacy sessions ($p = .000$). However, there was no significant difference in perception of instructor social presence between students in the two high-immediacy groups (Hi-VAT and Hi-AT). Similarly, there was no significant difference in perception of instructor social presence between students in the two low-immediacy groups (Lo-VAT and Lo-AT). These findings suggest that the level of instructor immediacy projected by the instructor influenced students' perceptions of instructor social presence; however, the use of video or not did not significantly affect whether students perceived the instructor as a real person. Interestingly and somewhat contradictory though, were the responses that students reported when they were asked to describe the aspects of the lesson which made them think that the instructor was not real. Students in both Group 2 (Hi-AT) and Group 4 (Lo-AT) reported the fact that they could not see the instructor (no video) negatively affected their perception of the instructor. Other reasons reported by students in the low-immediacy groups included the use of monotone voice, showing no emotion, and seeming like he was reading notes. Further, when students reported the overall aspects that made the instructor seem real, they provided descriptions of factors which have been associated with high immediacy behaviors. Specifically, students reported that the instructor seemed like a real person because, among other reasons, he encouraged students to talk, he answered questions, he used gestures, he answered questions and they could also see him and hear his voice. In particular, students in Group 1 described many factors that are described in the literature as high immediacy factors (e.g. encouraged students to ask questions, answered questions, provided feedback, used gestures, moved head

and upper body when he was talking, responded to student comments and questions, did not like he was reading, he was calm-personable, etc.).

While no recent studies have compared the social presence of different online conferencing learning environments, earlier experiments conducted by Short et al. (1976) and Rice (1993) ranked the social presence of video higher than audio. The findings of this study are consistent with the claims of researchers who argue that even though the characteristics of the media affect the levels of social presence, student perception of social presence will depend on the social presence created by the instructor (Gunawardena, 1995; Gunawardena & Zittle, 1997). These findings emphasize the prescriptive value of the present research as the instructor holds a central role in determining student perceptions in the online classroom. The availability of video-enabled tools could enhance student perception of instructor immediacy, which according to the current study will also increase perception of social presence. However, in the absence of video, instructors can still project several immediacy behaviors and increase perception of social presence.

Research has shown that social presence is a strong predictor of satisfaction in computer conferencing settings (Gunawardena & Zittle, 1997). Findings in this current study suggest that regardless of the computer conferencing learning environment, training instructors to use the use high-immediacy behaviors, could impact students' perceptions of the instructor and their satisfaction with the online course. The relationship between instructor immediacy and social presence is further discussed below.

## RELATIONSHIP BETWEEN INSTRUCTOR IMMEDIACY AND SOCIAL PRESENCE

Previous research has suggested that immediacy is related to social presence (Gunawardena, 1995; Short et al., 1976). Research question four sought to determine whether there is a relationship between perceived instructor immediacy and perceived instructor social presence. As hypothesized, the results demonstrated a positive relationship between perceived instructor immediacy and perceived instructor social presence. The correlation analysis showed a strong, positive relationship between perceived instructor immediacy and perceived instructor social presence ($r(433) = .844, p = .000$).

This correlation tells us that when perception of instructor immediacy increases, perception of social presence increases. These findings are also aligned with the findings related to research question two, which demonstrated that when the instructor projected high-immediacy behaviors (Group 1 and Group 2), students perceived high levels of instructor social presence. Moreover, when asked to describe the aspects of the online lesson that made them feel the instructor was a real person, students identified factors previously identified in the literature as associated with high-immediacy behaviors. The behaviors which were reported most frequently include responding to students' comments and questions, interacting with students, asking questions, changing voice tones, sharing personal information, calling students by their first name, encouraging students to ask questions, using gestures, and moving upper body.

The regression equation showed that 71.2% of the variance in social presence can be predicted by perception of instructor immediacy. In terms of practical implications, these findings suggest that instructors who monitor and project high-immediacy behaviors can enhance closeness and by doing that hey will also increase social presence and students'

perceptions of the instructors as caring, empathetic, disclosing personality and expressing emotions. Richardson and Swan (2003) showed a relationship between perceived social presence, perceived learning, and satisfaction with instructors and interaction. Similarly, Picciano (2002) found a relationship among student perceptions of interaction, social presence, and learning. Taken together, the above findings suggest that regardless of the conferencing tool, increasing immediacy in online learning environments increases social presence, which can affect students' perceptions of interaction, satisfaction, and perceived learning.

## LEARNING OUTCOMES AND INSTRUCTOR IMMEDIACY

Research question three asked: *How does the level of immediacy behaviors projected by the instructor and the computer conferencing environment influence learning outcomes?* It was hypothesized that students who viewed the high-immediacy sessions (Group 1 and Group 2) would indicate higher learning outcomes than the low-immediacy groups, with Group 1 (Hi-VAT) indicating the highest learning outcomes. Furthermore, research question five asked: Within the context of the different computer conferencing environments—(a) video and audio with text chat and (b) audio with text chat—what is the relationship between perceived instructor immediacy and learning outcomes? The hypothesis was that there is a positive relationship between perceived instructor immediacy and learning outcomes.

Learning outcomes were measured with an immediate and a delayed posttest. Two one-way ANOVAs were used to identify whether the four groups differed in the learning outcomes as measured by the immediate and delayed posttest. The first ANOVA demonstrated a significant difference between the groups on the learning outcomes as

measured by the immediate posttest scores ($F(3, 433) = 2.736, p = .043$). However, more detailed analysis does not support the research hypotheses. Students assigned to Group 2 (Hi-AT) achieved the highest test scores ($M = 5.40$, $SD = 1.206$), followed by students in Group 4 (Lo-AT) ($M = 5.28$, $SD = 1.409$), Group 1 (Hi-VAT) ($M = 5.22$, $SD = 1.499$), and Group 3 (Lo-VAT) ($M = 4.87$, $SD = 1.617$). Further, the mean scores in Group1, Group 2 and Group 4 do not vary significantly. Contrast tests showed that the only significant difference in learning outcomes as measured by posttest scores was between Group 2 (Hi-AT) and Group 3 (Lo-VAT) ($p = .008$).

In contrast no significant difference was found between the four groups on the learning outcomes as indicated by their scores on the delayed posttest ($F(3, 433) = .964$, $p = .410$). Similarly, the correlation analyses used to examine research question five did not reveal a relationship between perceived instructor immediacy and learning outcomes as indicated by the immediate ($r(433) = - .003, p = .945$) or delayed posttest ($r(433) = - .014$, $p = .774$).

The interpretation of these findings is complex. As Gorham and Zakahi (1990) point out, the relationship between cognitive learning and instructor immediacy is difficult to explain; they suggest that the relationship is non-linear. More specifically, in studies where cognitive learning was assessed as a test or course grade the relationship between immediacy and cognitive learning was not supported (Gorham & Zakahi, 1990); however the relationship has been supported when cognitive learning was measured as students' perceptions of their own learning (Gorham, 1988; Richmond, Gorham, et al., 1987) or short-term recall (Kelly & Gorham, 1988). The latter was partially supported by the findings. Using a short-term recall measure (immediate posttest) students in Group 2 (Hi-AT) achieved

the highest scores and even though it was not significant, Group 4 (Lo-AT) scored slightly higher scores than Group 1 (Hi-VAT). These findings regarding the impact of video and high immediacy on student learning should be interpreted with caution, due to the limitations of the student learning outcomes measures. While no other study could be found that compared student's learning in different computer conferencing environments, Carrell and Menzel (2001) compared student perceived and actual learning following a 15-minute lecture in three lecture environments: live, PowerPoint, and video. Students' learning (actual and perceived) did not vary across treatments, which is consistent with the findings of this study comparing learning outcomes on the delayed posttest. In a second study, Carrell and Menzel (2001) compared perceived and actual learning following a 45-minute lecture in three settings. Perceived learning varied significantly across the three treatments with the highest in the live setting, followed by the PowerPoint setting, and the video setting. Short-term recall was highest in the PowerPoint setting, followed by the live setting, and the video setting.

Many factors such as the characteristics and attitudes of the students, the length of the lecture, and the topic of the lecture might have affected the variance in the findings of this and previous studies examining learning outcomes in different learning environments. For example, Rodriguez, Plax, and Kearney (1996) found that the effect of the immediacy behaviors projected by the instructor on cognitive learning was mediated by affective learning which in turn depended on students' attitudes about the subject of the lesson or presentation. On the other hand, Frymier (1994) suggested that student motivation affects how students perceive immediacy and how immediacy affects affective and cognitive learning. Regardless of the explanation, several studies showed instructor immediacy to be related to student perceived and actual learning. Consequently, further studies should

examine the relationship of instructor immediacy and learning as it relates to the lecture delivery tool. Such findings can support informed decision making in choosing delivery tools for distance teaching and learning.

## DELIMITATIONS AND LIMITATIONS

This study is limited in its nature because it was conducted as a "one shot" experiment. The study took place in the Spring semester of 2007 at San Diego State University. The sample of the study was composed of 433 undergraduate students. The average age of the students was 19 and they were enrolled in two sections of a large classroom in psychology, one of which was scheduled to receive part of their instruction using online computer conferencing. Conditions for participation included the consent of the instructor and the students. Therefore this study addresses only the perceptions of the particular undergraduate level students and does not represent the views of all the students who are engaging on online learning. Furthermore, 201 students completed the online assignment but did not give their consent to use their responses in the research study. This may introduce a thread to the external validity of the study. Even though students were randomly assigned into the four groups, it is possible that the students who did not participate were significantly different than the students who participated and thus their responses could have changed the outcome of the study.

The lecture delivery tools used for this study were limited to synchronous computer text chat, computer audio conferencing, and computer video conferencing. It is possible that other technologies may have characteristics that would cause a different reaction from the study participants. Furthermore, the study participants were exposed to these tools on a single occasion. Different reactions, could possibly be obtained if these tools were used over a

longer period of time. Participating students only observed a simulated lesson and observed the instructor interacting (or not interacting) with the students attending the session. It is very likely that their perceptions of the instructor would be different if they were in a setting that would allow them to interact directly with the instructor presenting the content. Furthermore, the instructor in the stimulated lessons was a white, middle-aged male and the majority of the study participants (73.2%) were female students. The reported perceptions described in this study might have been different if the instructor was female or if the participants were not primarily female.

Students were asked to describe the aspects of the lesson that made them perceive the instructor as real after they had completed the immediacy and social presence Likert-type items. Therefore, it is possible that the descriptors they provided for the instructor (i.e., asked questions, encouraged students to talk, etc.) were influenced by the questions they had already read in the previous section of the instrument. Different results might have been obtained if they were first asked the open-ended questions and then completed the immediacy and social presence scale items.

One of the goals of this study was to assess learning outcomes. However, many confounding variables might have impacted the learning outcomes findings; thus care must be taken in generalizing these findings. The quality of learning outcomes can be conceptualized as the level of understanding, integration, and application attained by the students (Olgren, 1998). The timeframe of this study allowed the researcher to only assess learning outcomes following a brief 20-minute lesson on current perspectives in psychology. Learning outcomes were assessed as the level of understanding and retention, measured by two posttests, one immediately following the instructional session and one administered one

week later. The immediate posttest consisted of seven multiple choice items whereas the delayed posttest consisted of four of those items. Furthermore, while this study focused primarily on presentation of content and instructor effects, it does not assume that learning is a direct result of teaching. Students were presented with a short lesson on an introductory topic included in their textbook and a week prior to their midterm. Many students were studying for their midterm and had been exposed to the topic before the presentation they watched in the online lesson. In addition, other tacit factors such as the learner's goals and motivations, cognitive strategies, attitude towards the subject matter, and the delivery method might have influenced how learners responded to the instructional sessions and these factors are beyond the scope of this study.

Finally, when investigating the relationship of instructor immediacy and cognitive learning, researchers have been confronted with the problem of operationalizing the construct of cognitive learning for measuring (McCroskey et al., 1996). Final grades and standardized testing were related to many measurement problems and self-report measurements are the most widely accepted method (McCroskey et al., 1996). The current study used immediate recall measured on a posttest and delayed recall measured on a midterm exam a week after the experiment, as the measurement methods for cognitive learning.

## FUTURE RESEARCH

There are several possibilities for future research. In addition to replicating this study to confirm the findings, similar studies can be conducted varying the length of presentation and the subject matter presented to the students. Such studies would allow researchers to investigate whether the impact of instructor immediacy is consistent across taxonomic classification of content and regardless of the length of exposure. For example, future studies

could examine the effects of instructor immediacy following a lesson on a more intriguing topic in psychology or on a completely different subject matter (e.g., biology, history, etc.). In addition, one could examine whether there are differences in the effects of instructor immediacy following a brief 20-minute lesson and a longer lesson, for example a 40-minute lesson. Further, more studies should be conducted with varied subjects. Older subjects or subjects equally distributed in the two genders could provide different insights as to their perceptions of the characteristics of the instructor than the primarily female, undergraduate students used in this study.

Different perceptions could also be obtained with the use of different communication environments or with studies where the subjects are exposed to the treatments over a period of time rather than on a single occasion. For example, what would be the effect of instructor immediacy behaviors (high vs. low) in a lesson distributed via podcasting? Would students perceive the instructor differently following a one-time presentation versus a series of presentations?

Finally, studies where the subjects interact directly with the instructor could provide a wealth of information as to how students perceive behaviors projected by the instructor. The few open-ended items in this study provided great insights as to how students perceived the instructor; therefore, a mixed method or qualitative approach would allow the researcher to capture rich information and produce comprehensive descriptions of the behaviors that affect the student-instructor interaction. The use of a button on the screen, which students could press every time they perceive the instructor as real, would be very revealing as to the exact behaviors that impact student perceptions.

## CONCLUSIONS

Until a few years ago, distance education was conceptualized as an asynchronous interaction between an instructor and a student mediated by some kind of technology; however recently, the dominant type of distance education seems to involve online synchronous communication between the instructor and a group of students via computer conferencing (Hanna, 2003). As different types of computer conferencing tools for delivering online courses continue to evolve, further research must be conducted to explore the impact of these tools on factors related to student achievement and satisfaction. Whether the computer conferencing tool of choice entails audio, video, text, or a combination of all three, the technology we choose "influences to a great extent what can and cannot be done in the learning environment" (Hanna, 2003, p. 74). The choice of the communication tool may have potentially wide implications for leaders of educational institutions concerned with the various pedagogical and financial issues associated with the selection of a particular course delivery option. Some researchers have argued that web courses are deficient in student interaction (LaRose & Whitten, 2000). The current study has practical utility. Based on the findings we can conclude that instructors should be trained to use high-immediacy behaviors identified in research regardless of the availability of video and that using immediacy behaviors influences students' perceptions of instructor social presence. Gorham and Zakahi (1990) found that instructor experience was not related to monitoring ability, suggesting that instructors are able to monitor both the process and product components of the instructional opportunity.

This study showed a strong correlation between instructor immediacy and social presence and earlier research showed a strong, positive correlation between perception of

social presence and student perception of interaction (Picciano, 2002). Further research is recommended to examine the role of computer conferencing tools in differences in students' perception of instructor immediacy, perception of social presence, and learning outcomes. Understanding the relationship between different computer conferencing tools, teacher immediacy, social presence, and learning could contribute to the theory and research on computer conferencing media uses in distance education.

To conclude, this study has practical implications. A better understanding of the relationships examined in this study should be of great interest to instructional designers, distance education instructors, and policy makers investing in distance education technologies. Recently, Congress has lifted a restriction requiring colleges to deliver at least half of their courses on campus- instead of online- in order to qualify for federal student aid (Dillon, 2006). This change is expected to result in a tremendous growth of commercial, online education. Through research replication and ongoing evaluation of available course delivery options we can gain confidence in preparing faculty and choosing lecture delivery environments that can enhance the learning experience of the online student.

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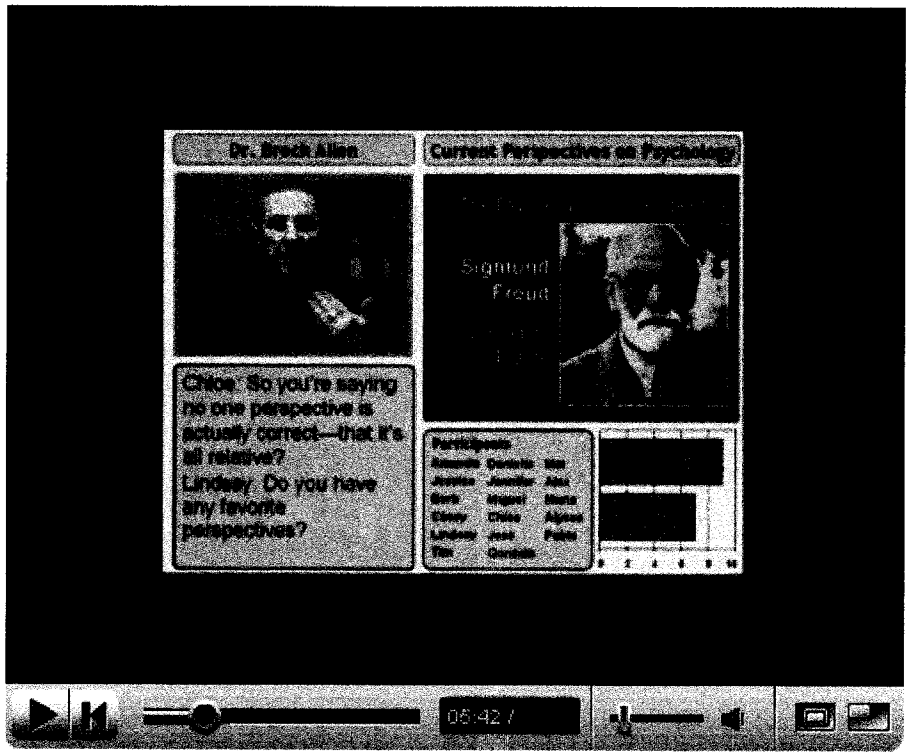
# APPENDIX A

# SCREEN SHOTS OF ONLINE SESSIONS

# GROUP 1: HI-VAT

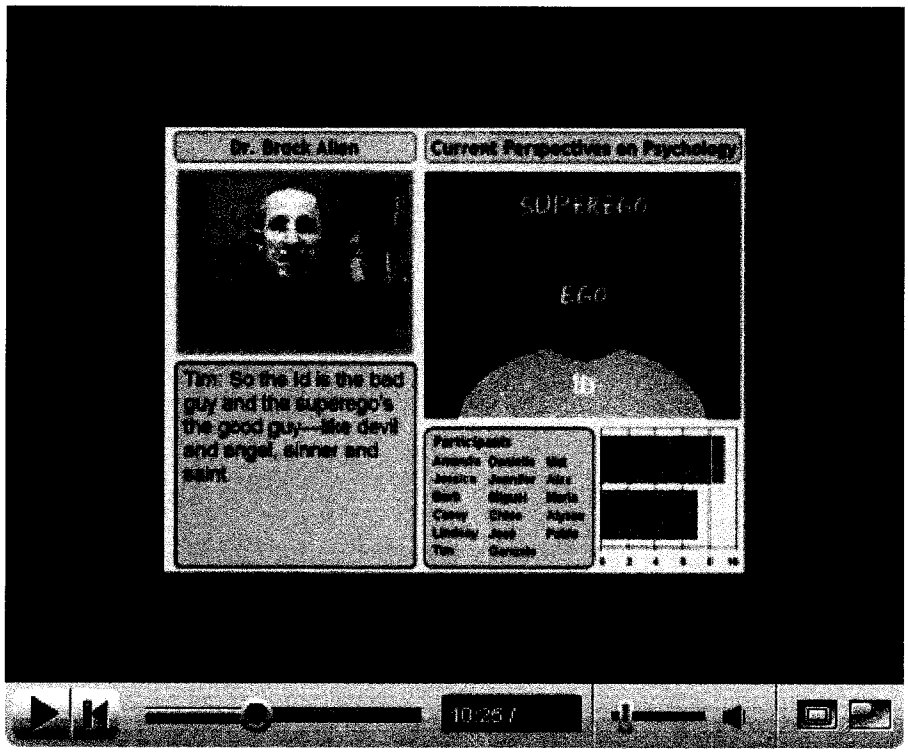
# (MOTION VIDEO OF INSTRUCTOR)




Available at: http://www.youtube.com/watch?v=7ovBSNXRRJo

# GROUP 2: HI-AT

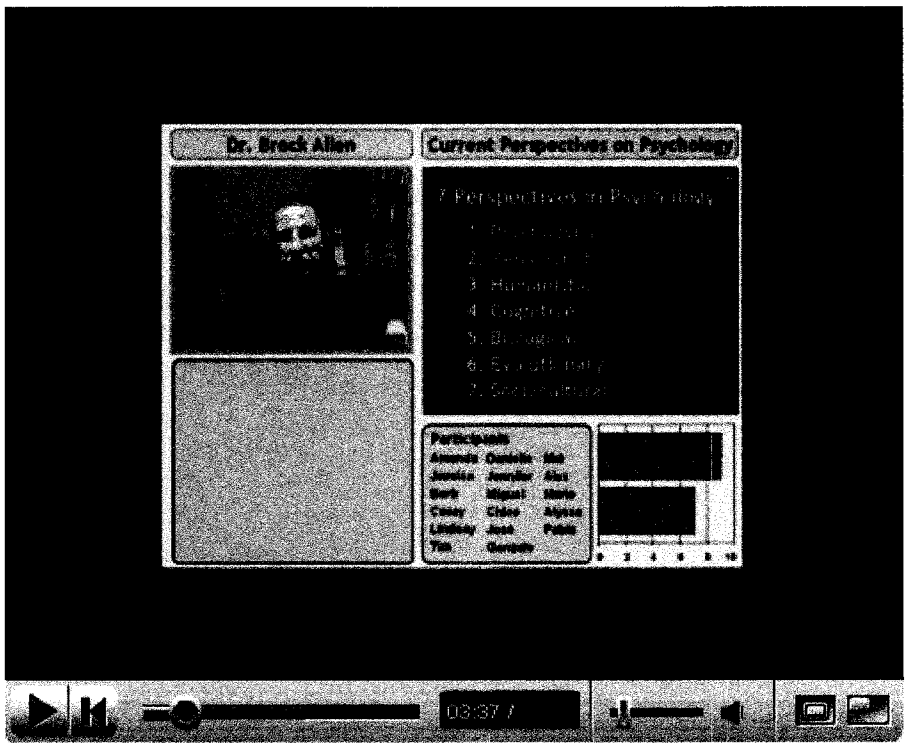
## (STATIC IMAGE OF INSTRUCTOR)




Available at: http://www.youtube.com/watch?v=mWr3JzyC-RQ

# GROUP 3: LO-VAT

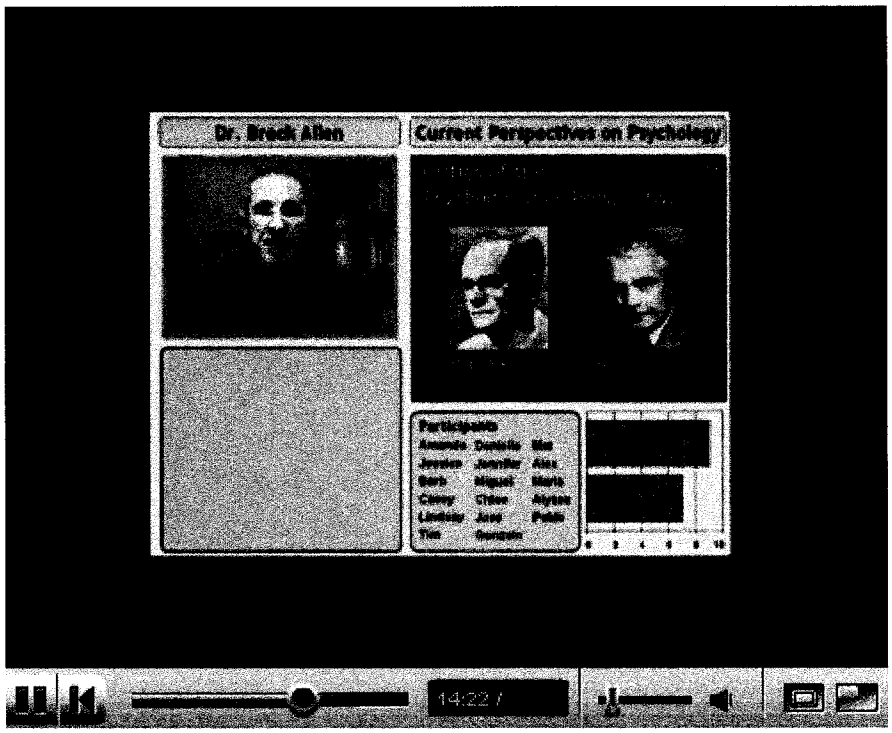
# (MOTION VIDEO OF INSTRUCTOR)




Available at: http://www.youtube.com/watch?v=bifi88_p8f8

# GROUP 4: LO-AT

# (STATIC IMAGE OF INSTRUCTOR)




Available at: http://www.youtube.com/watch?v=gdNq78E_QOY

# APPENDIX B

# CONSENT MESSAGE

Dear Course Participant,

My name is Maria Schutt and I am a doctoral candidate at San Diego State University. Under the supervision of Dr. Allen (professor in the Department of Educational Technology at San Diego State University) I am investigating ways to improve distance education courses. The results will be reported in a dissertation that I will complete as a requirement of my graduate program. I am contacting you with the permission of your instructor to invite you to participate in this study. In order to participate in this study all you have to do is give us your consent to use your responses to the online survey and in class exams for research purposes. Your responses will be used to evaluate the instructional effectiveness of the online activities. Participation is Voluntary. Your decision to participate will not affect your grade or influence your standing with San Diego State University. If you decide to participate, your responses will be confidential: meaning that your name and Red ID will be stored in a secure location separately from your survey and exam responses. I will use a code to link your name and Red ID to your survey and exam responses. This code will be destroyed once the data has been analyzed. Your course instructor will not know how you responded to the online surveys and your identity will not be revealed in any publications or presentations.

If you are interested in seeing the results of the research, I will be happy to share them with you—just let me know by emailing mariaschutt@earthlink.net. If you have any questions regarding this questionnaire or the research that it is part of, please contact me at mariaschutt@earthlink.net. You may also contact the Institutional Review Board at SDSU 619-594-6622, irb@mail.sdsu.edu, or the IRB at USD at, Office of the Vice President and

Provost, University of San Diego, 5998 Alcala Park, San Diego, CA 92110, 619-260-4553 to report problems or concerns related to this study.

Thank you very much for your participation!

# APPENDIX C

# PRETEST AND DEMOGRAPHICS SURVEY

1. Last name

2. First name

3. Red ID

4. Age

5. Gender:

- Female
- Male

6. Ethnicity:

- American Indian
- African American
- Mexican American
- Other Hispanic
- Asian
- SE Asian
- Pacific Islander
- Filipino
- White
- Other/Not Stated
- International

7. Have you previously taken courses where the instructor used online conferencing tools to have chats with the course participants?

- Yes
- No

8. Have you read the Current Psychological Perspectives section in the first chapter of your textbook?

- Yes
- No

The following items measure your prior knowledge of current perspectives in psychology. There is often some overlap in the views of psychologists representing different perspectives. In responding to these items, select the person or ideas most associated with the particular perspectives.

9. Which perspective views behavior as influenced by instinctive forces, inner conflicts, and conscious and unconscious motivations?

- Psychodynamic
- Behaviorist
- Humanistic
- Biological

10. Which perspective is most associated with the view that behavior is shaped by external stimulus conditions?

- Psychodynamic
- Behaviorist
- Humanistic
- All of the above

11. _____ is considered the founder of the psychodynamic perspective.

- B. F. Skinner
- John Watson
- Carl Rogers
- Sigmund Freud

12. The term psychoanalysis refers to:

- A method for treating patients by training them to avoid negative reactions to disturbing stimuli and by emphasizing positive rewards.
- "Talk therapy" in which patients share their thoughts and feelings and analyze them with the therapist.
- An approach to psychology which emphasizes the logical analysis of past associations between stimuli and consequences.
- None of the above.

13. During a recent plane trip you met a psychologist who says her current project involves analyzing the way killer whales at Sea World respond to fish fed to them after they perform acrobatic maneuvers. Her perspective is mostly likely to emphasize methods associated with the:

- Psychodynamic perspective
- Evolutionary perspective
- Behaviorist perspective
- Biological perspective
- None of the above

14. "Operant conditioning" is most often associated with theories that emphasize that behavior is influenced by:

- Consequences of past actions and behaviors.
- Childhood conditions and relationships with parents or family members.
- Innate tendency of humans to search for ways to realize their full potential whatever their conditions.
- Inherited psychological traits operating in fixed conditions.
- None of the above.

15. According to the psychodynamic perspective, behavior is:

- Guided by rational analysis of stimulus or environmental dynamics.
- Dependent on abilities to consciously recognize how consequences are related to environmental conditions or stimuli.
- Influenced by unconscious wishes and desires.
- Shaped by the dynamics of natural selection.
  None of the above

# APPENDIX D

# VERBAL AND NONVERBAL IMMEDIACY BEHAVIOR SCALES

**Verbal items (Gorham, 1988)**

1. Uses personal examples or talks about experiences she-he has had outside of class
2. Asks questions or encourages students to talk
3. Gets into discussions based on something a student brings up even when this doesn't seem to be part of his-her lecture plan
4. Uses humor in class
5. Addresses students by name
6. Addresses me by name
7. Gets into conversations with individual students before or after class
8. Has initiated conversations with me before, after, or outside of class
9. Refers to class as "our" class or what "we" are doing
10. Provides feedback on my individual work through comments on papers, oral discussions, etc.
11. Calls on students to answer questions even if they have not indicated that they want to talk*
12. Asks how students feel about an assignment, due date, or discussion topic
13. Invites students to telephone or meet with him/her outside of class if they have questions or want to discuss something
14. Asks questions that solicit viewpoints or opinions
15. Praises students' work, actions, or comments
16. Will have discussions about things unrelated to class with individual students or with the class as a whole

17. Is addressed by his/her name by the students

**Nonverbal items (Richmond, Gorham, & McCroskey, 1987)**

18. Sits behind a desk while teaching*
19. Gestures while talking to class
20. Uses monotone-dull voice while talking to class*
21. Looks at the class while talking
22. Smiles at the class as a whole, not just individual students
23. Has a very tense body position while talking to the class*
24. Touches students in the class
25. Moves around the classroom while teaching
26. Looks at board or notes while talking to the class*
27. Stands behind podium or desk while teaching
28. Has a very relaxed body position while talking to the class
29. Smiles at individual students in the class
30. Uses a variety of vocal expressions while talking to the class

---

*Presumed to be nonimmediate. Items reverse coded for analysis.

# APPENDIX E

# IMMEDIACY INSTRUMENT

# INSTRUCTOR IMMEDIACY

For each of the following statements please select the response, which best represents your experience with the lesson you watched. The instructor in this lesson…

0 = never 1 2 3 4 = often

1. Uses personal examples or talks about experiences he has had outside of class.
2. Asks questions or encourages students to talk.
3. Gets into discussions based on something a student brings up even when this doesn't seem to be part of his lecture plan.
4. Uses humor in class.
5. Addresses students by name.
6. Invites students to have conversations before or after class.
7. Refers to class as "our" class or what "we" are doing.
8. Provides feedback on student work, comments, discussions, etc.
9. Calls on students to answer questions even if they have not indicated that they want to talk.*
10. Asks how students feel about an assignment, due date, or discussion topic.
11. Invites students to telephone or meet with him outside of class if they have questions or want to discuss something.
12. Asks questions that solicit viewpoints or opinions.
13. Praises students' work, actions, or comments.
14. Has discussions about things unrelated to class with students.

15. Is addressed by his name by the students.

16. Sits motionless-still while teaching.*

17. Gestures while talking to class.

18. Uses monotone-dull voice while talking to class.*

19. Looks at the class while talking.

20. Smiles at the class as a whole, not just individual students.

21. Has a very tense body position while talking to the class.*

22. Moves upper body while teaching.

23. Appears to read notes while talking to the class.*

24. Has a very relaxed body position while talking to the class.

25. Smiles at individual students' comments in the class.

26. Uses a variety of vocal expressions while talking to the class.

---

*Presumed to be nonimmediate. Items reverse coded for analysis.

# APPENDIX F

# SOCIAL PRESENCE INSTRUMENT

# INSTRUCTOR SOCIAL PRESENCE

For each of the following statements please select the response which best represents your experience with the lesson you just watched. The instructor in this lesson…

1 = strongly disagree 2 3 4 5 = strongly agree

1. Engaged in exchange of ideas.
2. Confirmed students' understanding of concepts.
3. Expressed his emotions.
4. Was open and disclosed personality.
5. Asked questions.
6. Responded to others' comments.
7. Sustained discussion.
8. Created the feeling that students were part of a class community.
9. Referred to others by name.
10. Made students feel comfortable engaging in discussion.