

**An Examination of the Relationship between Cognitive Learning Style Preference
and Nonverbal Immediacy Behaviors in Undergraduate Students**

by

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Abstract

Identification of learning styles is a major consideration in classroom instruction. With the identification of students' learning styles comes the potential to increase academic achievement through the focus on how students learn best. The focus of this study is cognitive learning style. Cognitive style includes the way one encodes/decodes, processes, stores, or retrieves information. In addition to learning styles, student communication through nonverbal immediacy behaviors is significant in the classroom setting. According to Cole (2000) generally nonverbal immediacy behaviors are derived at the subconscious level. If a relationship exists between cognitive learning styles and nonverbal immediacy behaviors, then the observable nonverbal immediacy behaviors could serve as a means of learning style identification.

This study examined the relationship between undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy Scale-Self Report and cognitive learning style preferences - Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR) - as measured by the Gregorc Style Delineator (GSD). The study was guided by the following research questions: (1) What is the relationship between gender and nonverbal immediacy and cognitive learning styles?; (2) What is the relationship between age and nonverbal immediacy and cognitive learning styles?; (3) What is the relationship between major/college and nonverbal

immediacy and cognitive learning styles?; and (4) What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

The data were analyzed using a multiple regression with stepwise procedure. Results from the analysis indicated a significant relationship between the NIS-S scores and AS. The interaction of NIS-S scores and age was a predictor of CS, AR, and CR. Gender predicted AS and AR at a statistically significant level. College was a predictor for CS. A significant relationship was found between AR and CR and the interaction between NIS-S scores and college.

The findings of this study indicate that as teachers observe the level of students' nonverbal immediacy in the classroom, nonverbal immediacy behaviors can aid in the identification of cognitive learning style. The inclusion of immediacy instruction in teacher education programs is recommended. Implications for future research are included.

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Chapter 1

Introduction

“The central objective of educational systems in U.S. cultures is student recognition, recall, and short- and long-term learning. The role of the teacher in educational systems is to create learning environments in which the probability of the desired achievements is enhanced” (Richmond, 2002, p. 65). Student learning is a primary function in classroom education. To be effective, teachers should be student centered. Thweatt and McCroskey (1998) agree that “a major goal of teaching is to spark understanding in the minds of students” (p. 348).

Knowles (1990) concluded that “learners are highly diverse in their experiential backgrounds, pace of learning, readiness to learn, and styles of learning; therefore, learning programs need to be highly individualized” (p. 172). Sims and Sims (1995) emphasize that most teaching designs focus on the classroom level while learning takes place at the individual student level. Therefore, teachers should learn to bridge this gap in instructional design (Sims & Sims, 1995).

“Verbal messages function to convey the content of the message whereas nonverbal messages function to establish the relationship” (Mottet, Beebe, Raffeld, Paulsel, 2004, p. 29). Research during the last 30 years has revealed that affective and cognitive learning increases with students whose teachers display nonverbal immediacy (Daniel, 2000). In addition, understanding students’ learning styles is a fundamental tool for teachers to aid in designing instruction to fit the style (Hall, 2005). However, often

teachers do not know each student's learning style. Although significant research has focused on teachers' nonverbal immediacy, there is little research in the area of students' nonverbal immediacy. There is a lack of research that examines the relationship between students' nonverbal immediacy behaviors and cognitive learning styles in a learning environment. If a relationship exists between a student's nonverbal immediacy and their learning style, the observable nonverbal immediacy could serve as a means of learning style identification.

Individuals can control their nonverbal behaviors to signal immediacy, but generally nonverbal immediacy behaviors are derived at the subconscious level (Cole, 2000). During the past twenty five years, immediacy, primarily nonverbal immediacy behaviors, has been a leading topic of research among communication professionals (Richmond, McCroskey, & Johnson, 2003). Albert Mehrabian (1971) developed the immediacy principle stating that "people are drawn toward persons and things they like, evaluate highly, and prefer; and they avoid or move away from things they dislike, evaluate negatively, or do not prefer" (p. 1). Mehrabian referenced this principle in relation to nonverbal behavior patterns used in communication interactions (1969). Immediacy behaviors in communication "involve an increase in the sensory stimulation between two persons" (Mehrabian, 1971, p. 3). Mehrabian (1969) defined immediacy behaviors as behaviors that "enhance closeness and nonverbal interaction with another" (p. 302). Mehrabian also indicated that immediacy behaviors reveal how individuals feel about each other and behaviors such as standing close to a person, leaning toward another, touching, and eye contact are just a few of indicators of liking (1971).

Anderson (1979) built upon the Mehrabian concept and advanced the concept of teacher nonverbal immediacy. Numerous nonverbal behaviors are associated with the immediacy principal. Among those behaviors are: reduction in proxemic distance, increases in touch, increases in eye contact, positive facial expressions, increases in gestures, bodily relaxation, purposeful body movements, positioning of head and body toward others, head nodding, and vocal expressiveness (Anderson, Anderson, & Jenson, 1979). Burgoon, Buller, Hale, and deTurch (1984) found that the nonverbal behaviors of increased eye contact, close distance, positive facial expressions, and leaning toward others can convey intimacy, immediacy, and dominance.

Researchers have sought to determine the relationship between immediacy behaviors and affective, cognitive, and behavioral learning. Immediacy research has consistently established a relationship between immediacy and affective learning (Witt, Wheelless, & Allen, 2004; Pogue & AhYun, 2006). According to Daniel (2000) “teacher’s nonverbal immediacy and cognitive and affective learning are related” (p. 64). Teacher nonverbal immediacy and cognitive, affective, and behavioral learning relate in a curvilinear manner (Comstock, Rowell, & Bowers, 1995).

In addition to understanding the significance of nonverbal immediacy in an instructional setting, the relevance of learning styles to academic achievement is the subject of numerous studies. Teachers have increased students’ academic performance by relating to their various learning styles in instruction (Reiff, 1992). Valentine (1997) reports a teacher’s knowledge of students’ learning styles is beneficial in accommodating their unique approaches to learning. Hall (2005) revealed that teachers should focus on students’ learning styles and should design teaching and learning activities around them.

Ross, Drysdale, and Schulz (2001) concluded that the effect of learning style on academic performance is significant.

Dunn and Dunn (1993) stipulated that learning style is the manner in which students concentrate on, process, and remember academic information. “Learning style consists of distinctive behaviors which serve as indicators of how a person learns from and adapts to his environment. It also gives clues as to how a person’s mind operates” (Gregorc, 1979, p. 234). According to Gregorc (1982), individuals learn through concrete or abstract experiences in either a random or a sequential way which leads to the four styles of learning: Concrete Sequential, Concrete Random, Abstract Sequential, and Abstract Random.

Cognitive styles relate to individuals preferred methods of ordering and converting information (Messick, 1976). In addition, cognitive styles “are conceptualized as stable attitudes, preferences, or habitual strategies determining a person’s typical modes of perceiving, remembering, thinking, and problem solving” (Messick, 1976, p. 5). The cognitive elements of learning style are inner controls of information processing (Keefe, 1988). Keefe states that “each learner has preferred ways of perception, organization, and retention that are distinctive and consistent. These characteristic differences are called cognitive style” (Keefe, 1987, p. 7).

The relationship between teacher immediacy and student learning has been established (Christophel, 1990; Pogue & AhYun, 2006; Witt, et al., 2004). In addition, the adaptation of instruction to students’ learning style has indicated an increased level of academic performance (Keefe, 1987; Ross, et al., 2001; Stevenson & Dunn, 2001). What remains to be determined is the relationship between student immediacy and cognitive

learning styles. According to Baringer and McCroskey (2000), research about the communication behaviors of students has basically been ignored. Therefore, if it is determined that a relationship exists between students' immediacy behaviors and their cognitive learning style, immediacy behaviors can be a signal to teachers about students' cognitive learning styles.

Purpose of the Study

The purpose of this study was to investigate the relationship among undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy Scale-Self Report (NIS-S) and their cognitive learning styles as measured by the Gregorc Style Delineator (GSD). The study also examined the relationship between the immediacy behaviors and cognitive learning style and the demographic information of age, gender and major. There is no known supporting literature that addresses the relationship between student nonverbal immediacy and cognitive learning style. There is also no known supporting literature that accesses the relationship between student nonverbal immediacy, cognitive learning style, and the demographic information of age, gender, and major.

Statement of the Problem

Research was lacking comparing nonverbal immediacy behaviors and cognitive learning styles using the Nonverbal Immediacy Scale and the Gregorc Style Delineator in relation to age, gender, and college. No research has indicated if a student's level of nonverbal immediacy is related to Concrete Sequential, Concrete Random, Abstract Sequential, and Abstract Random cognitive learning styles preferences. Some studies have researched teachers' nonverbal immediacy and others have addressed student

cognitive learning styles. The focus of this study is to expand the research and information related to student's nonverbal immediacy behaviors, their cognitive learning style, and the demographics of age, gender, and college.

Instruments

The Nonverbal Immediacy Scale Self-Report (NIS-S), the Gregorc Style Delineator (GSD), and a demographic questionnaire were used in the study. The NIS-S was developed by Virginia Richmond, James McCroskey and Aaron Johnson (2003) to measure nonverbal immediacy. This measure of immediacy contains 13 different nonverbal components that are rated by researchers to be the essential components (Richmond, McCroskey, & Johnson, 2003). The GSD was designed by Anthony F. Gregorc (1982) as a self-report instrument based on mediation ability theory and used to identify cognitive learning styles. The GSD was developed for mediation channels: Concrete Sequential (CS), Abstract Sequential (AS), Concrete Random (CR), and Abstract Random (AR). The demographic questionnaire (Appendix D) was prepared by the researcher to describe the sample.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between gender and nonverbal immediacy and cognitive learning styles?
2. What is the relationship between age and nonverbal immediacy and cognitive learning styles?
3. What is the relationship between major/college and nonverbal immediacy and cognitive learning styles?

4. What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

Significance of the Study

The relevance of learning style to academic achievement is the subject of numerous studies (Dunn, 1998; Lemire, 2002; McCroskey, 2002; Reiff, 1992; Ross, Drysdale, & Schultz, 2001; Sims & Sims, 1995; Witkin, 1976). "Institutions of higher education are always looking for ways to make their educational initiative more effective. Higher education administrators and instructors at all levels are constantly under pressure to provide more effective and efficient services" (Sims & Sims, 1995, p. 1). Sims and Sims (1995) further stated that educators need knowledge and understanding of how individuals learn to aid in instructional design that will enhance student learning. Teachers have increased students' academic performance by relating to their various learning styles in instruction (Reiff, 1992). Valentine (1997) reports that a teacher's knowledge of student learning styles is beneficial in accommodating their unique approaches to learning. Understanding students' learning styles is a fundamental tool for teachers to aid in designing instruction to fit the style (Hall, 2005). According to Curry (1990) the main purpose for evaluating and studying learning styles is to improve teaching and learning in both the present and long term.

Student nonverbal communication is significant because it is primarily unintentional and uncontrolled. Individuals tend to trust the message that is communicated nonverbally because of the tendency for it to be outside our conscious control and thus labeling this message as the true message (Mottet & Richmond, 2002). Teachers rely on the nonverbal communication of students to determine if their

instruction is being adequately interpreted. Immediacy is “the degree of perceived physical or psychological closeness between people” (Richmond, 2002, p. 68). Although immediacy is communicated through verbal and nonverbal messages, generally the nonverbal element is more important. Richmond (2002) also noted that nonverbal messages may be sent without verbal messages. Thus, teacher observation of the nonverbal immediacy of students can occur in a classroom setting.

O’Brien (1991) stated that more research is needed to determine potential relationships among the four cognitive learning style identified by the Gregorc Style Delineator and other characteristics of individuals. If a relationship exists between a student’s nonverbal immediacy and their cognitive learning style, the observable nonverbal behaviors could serve as a means of learning style identification. The results of this study could enable teachers, instructors, administrators, and course developers to design more effective learning environments for the cognitive learning component of the educational setting.

Assumptions of the Study

The following assumptions were made for the purpose of this study:

1. The Nonverbal Immediacy Scale-Self Report is a valid instrument to measure undergraduate students’ level of nonverbal immediacy.
2. The Gregorc Style Delineator is a valid instrument to determine undergraduate students’ cognitive learning style.
3. The volunteer participants responded honestly and consistently to the survey questions.

Limitations of the Study

This study contains the following limitation:

1. The sample was limited to 188 undergraduate students enrolled in a public speaking course.
2. The generalization of the results of this study is limited due to the sample being taken from a single institution.
3. The population of this study was a convenience sample.
4. Both instruments used in the study are self-reported measures.

Definition of Terms

For the purpose of this study, the following definitions were used:

1. Affective learning style - utilizes the elements of personality that include attention, emotion, and valuing (Keefe, 2001).
2. Chronemics – is how individuals interpret, use, study, arrange, and react to messages based on time (Richmond & McCroskey, 2004).
3. Cognitive Learning Style – includes the way an individual encodes or decodes, processes, stores or retrieves information (Keefe, 1987).
4. Gregorc Style Delineator – is a self-analysis instrument designed evaluate adults' cognitive learning style based on the two mediation abilities of perception and ordering (Gregorc, 1984).
5. Haptics – is the study of communication through the use of touching behaviors (Smeltzer, Waltman, & Leonard, 1999).
6. Immediacy –this construct was developed by Mehrabian (1971) stating that

humans move toward people and things they like and move away from people and things they view negatively. Immediacy is “the degree of perceived physical or psychological closeness between people” (Richmond, 2002, p. 68).

7. Immediacy Behaviors – communicate level of liking and interest and include communication channels such as distance, touch, eye contact, facial expressions, gestures, bodily orientation and movements, and tone of voice (Anderson, Anderson, & Jensen, 1979; Baringer & McCroskey, 2000).

8. Nonverbal Communication – is the process that involves creating meaning in the minds of others through messages that are nonlinguistic or not part of the spoken or written language of communication (Richmond & McCroskey, 2000).

9. Nonverbal Immediacy Scale – is a self-report 26 item instrument used to determine the level of nonverbal immediacy (Richmond, McCroskey, & Johnson, 2003).

10. Oculesics – is the study of the communicative aspects of eye behavior which include eye contact, eye movement, and the functions of eye behavior (Richmond & McCroskey, 2004).

11. Ordering – abilities that are the means by which an individual processes information which include sequential and random ways (Gregorc, 1982).

12. Perception – abilities that are the ways in which an individual learns information which include an abstract and concrete form (Gregorc, 1982).

13. Proxemics – is the study of how space is used by individuals to communicate (Leathers & Eaves, 2008). Personal space and territory are the two primary areas in the space around communicators (Moore, Hickson, & Stacks, 2010). Proxemics

includes the space around us and how we use it (Smeltzer, Waltman, & Leonard, 1999).

14. Vocalics – includes vocal cues such as pitch, tempo, volume, inflections, pauses, vocalizations, and silence (Argyle, 1999).

Organization of the Study

Chapter 1 provides an introduction to this research study. This chapter includes a statement of the problem, the purpose of the research, description of the instruments, research questions, significance of the study, assumptions of the study, limitations of the study, and definition of terms used in this study. Chapter 2 includes a review of the relevant literature for this study including: immediacy behaviors, nonverbal immediacy in communication, teacher immediacy behaviors, student immediacy behaviors, the Nonverbal Immediacy Scale, learning styles, cognitive learning, and the Gregorc Style Delineator.

Chapter 3 presents the methods used for this study. It includes the design of the study, research questions, the Nonverbal Immediacy Scale and Gregorc Style Delineator instruments, reliability, validity, population sample, data collection, and data analysis. Chapter 4 provides the findings of the study and interpretation of the data. The demographic characteristics of the participants are described and the analytical and statistical procedures are presented. Chapter 5 summarizes the findings and conclusions of the study. In addition, recommendations for practice and future research are provided.

Chapter 2

Literature Review

“In some respects, the importance of nonverbal communication should be patently obvious. After all, not only are nonverbal signals ubiquitous in interpersonal exchanges, they have always laid claim to communicative primacy” (Burgoon & Hoobler, 2002, p. 240). Hashway (1998) emphasizes the importance of instructors focusing not only on the context of the textbook but on how students learn. This chapter discusses nonverbal communication, nonverbal immediacy, teacher nonverbal immediacy, student nonverbal immediacy, the Nonverbal Immediacy Scale, learning styles, cognitive learning style, and the Gregorc Style Delineator. The chapter defines and reviews the development of the immediacy effect concept, provides an overview of nonverbal behaviors significant to immediacy, reviews the research relating to teacher immediacy and student immediacy, and presents a description of the nonverbal immediacy measurement instrument, the Nonverbal Immediacy Scale. The chapter also includes an overview of learning styles including Concrete Sequential, Concrete Random, Abstract Sequential, and Abstract Random; a review of cognitive learning research; and a description of the learning style measurement device, the Gregorc Style Delineator.

Purpose of the Study

The purpose of this study was to investigate the relationship among undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy

Scale-Self Report (NIS-S) and their cognitive learning styles as measured by the Gregorc Style Delineator (GSD). The study also examined the relationship between nonverbal immediacy and cognitive learning style and the demographic information of age, gender and major/college.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between gender and nonverbal immediacy and cognitive learning styles?
2. What is the relationship between age and nonverbal immediacy and cognitive learning styles?
3. What is the relationship between major/college and nonverbal immediacy and cognitive learning styles?
4. What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

Nonverbal Communication

Nonverbal communication is defined by Burgoon and Saine (1978) as “those attributes or actions of humans, other than the use of words themselves, which have socially shared meaning, are intentionally sent or interpreted as intentional, are consciously sent or consciously received, and have the potential for feedback from the receiver” (p. 9). Burgoon and Hoobler (2002) state that nonverbal communication includes “those behaviors other than words themselves that form a socially shared coding system” (p. 244). Moore, Hickson, and Stacks (2010) conclude that nonverbal communication is the portion of the communication process that involves the sending and

receiving of messages that are not words or part of our language system. Nonverbal communication is further defined as the action of one person conveying meaning to another person or persons through nonverbal messages (Richmond & McCroskey, 2004). Nonverbal behavior “refers to actions as distinct from speech. It thus includes facial expressions, hand and arm gestures, postures, positions, and various movements of the body or the legs and feet” (Mehrabian, 1972). Nonverbal messages are generally unintentional and uncontrollable and “remain outside of our conscious awareness” (Mottet & Richmond, 2002, p. 49).

Some researchers believe that successful communication relies on the ability of individuals to use and interpret nonverbal messages (Burgoon, Buller, & Woodall, 1996). Burgoon, et al., 1996) convey numerous reasons why nonverbal communication plays a significant role in daily interaction. First of all, nonverbal communication is always present because all communication includes nonverbal elements. They also have many functions such as creating first impressions, persuasion, regulating conversation, and clarifying meaning. Even the lack of use of nonverbal messages such as no greeting carries a message. Nonverbal communication such as laughing, crying, smiling, etc. may also provide a universal language system because all cultures understand these behaviors. In addition, Burgoon, et al. (1996) declare that nonverbal communication can cause understanding and misunderstanding. Sometimes our nonverbal behaviors are not read accurately by the receiver causing misunderstanding. Nonverbal communication developed before language developed and is the first form of communication between human beings. Nonverbal communication is considered less risky or rude than verbal communication in some situations. Finally, Burgoon, et al. (1996) explain that nonverbal

behaviors are considered to generally be more truthful. Thus, nonverbal behaviors are a significant aspect of communication (Afifi, 2007).

Nonverbal messages fulfill several purposes according to Guerrero, DeVito, and Hecht (1990). Among these functions or purposes are to create impressions, manage interaction, express emotions, send relational messages, deceive and detect deception, and send messages of power and persuasion (Guerrero, et al.). Similarly, Leathers and Eaves (2008) report that nonverbal cues focus on six primary functions which include providing information that cannot be obtained from the verbal message including how senders feel about themselves and those they are communicating with. In addition, nonverbal cues regulate interaction between communicators and aid in the following cultural rules of interaction. Nonverbal communication is the most effective means of communicating emotions. Nonverbal cues provide social control which is the attempt by one individual to alter the behavior of another. And the last function presented by Leathers and Eaves (2008) is the importance of nonverbal behaviors in impression management and formation.

Burgoon and Hoobler (2002) report the following findings about the importance of nonverbal encoding and decoding skills in interpersonal relationships:

1. Nonverbal encoding and decoding skills are strong predictors of popularity, attraction, and psychosocial well-being.
2. Nonverbally skilled senders are more successful in deceiving and influencing others.
3. Encoding and decoding skills are related to sex and gender.
4. Race, education, and intelligence do not appear to be related to encoding and decoding skills, but age, occupation, and training do.
5. Encoding and decoding abilities are correlated. Those who are better senders tend to be better receivers and vice versa, but the relationship is a modest one (pp. 241).

Numerous nonverbal behaviors exist including facial expressions, eye behaviors, bodily communication, proxemic communication, tactile communication, personal appearance, vocalic communication, and chronemics. Researchers emphasize that nonverbal messages created by each of these categories do not exist alone but in combination with verbal messages and with people as the receivers of the message (Afifi, 2007; Burgoon & Hoobler, 2002; Knapp & Hall, 2010; Richmond & McCroskey, 2004).

The face is the primary source of emotional information (Burgoon, 1978; Knapp & Hall, 2010; Leathers & Eaves, 2008; Richmond & McCroskey, 2004). Our search for meaning in interpersonal relationships begins and ends with facial expression (Leathers and Eaves). Ekman and Friesen (1975) determined that the face provides three types of signals: static, slow, and rapid. Static signals include the permanent features of the face including skin color; face shape; bone structure; and size, shape, and location of facial features. Slow signals refer to the changes in facial appearance in relation to time and including wrinkles, changes in skin texture, and changes in muscle tone. Rapid signals are based on movements of the facial muscles which only cause temporary changes in facial appearance (Ekman & Friesen, 1975).

“Eye behaviors clearly stand out as one of the primary nonverbal features in our human interaction” (Leathers & Eaves, 2008, p. 53) Eyes demonstrate intensity of emotion. Oculesics is the study of how eyes send messages (Anderson, 1999). Eyes scan to collect information, establish relationships, express emotions, and control and regulate interactions (Richmond & McCroskey, 2004).

Bodily movements do create meaning and lasting impressions (Leathers & Eaves, 2008). The definitive research on kinesic behavior was conducted by Ekman and Friesen

(1969) in which they classified body movements and gestures into five categories based on type of usage, origin and form of coding. The five categories are emblems, illustrators, affect displays, regulators, and adaptors. Emblems are the “nonverbal acts which have a direct verbal translation” (Ekman & Friesen, 1969, p. 63). They are the most easily understood nonverbal behaviors because of their specific nature. Illustrators are movements that are directly related to verbal communication and depict what is being said verbally. They are used to help clarify the verbal communication. Affect displays demonstrate emotion through nonverbal movements primarily facial expressions. Regulators control the flow of communication between two interactants. Typically, regulators control the turn-taking behaviors of individuals engaged in communication. Adaptors are nonverbal behaviors that provide information about the psychological state of the communicator. Generally, individuals are not aware that they are using adaptors.

Proxemics is the way individuals communicate through the use of space and distance (Anderson, 1999; DeFleur, Kearney, & Plax, 1998; Richmond & McCroskey, 2004). Space, distance, territory, crowding and privacy all compose the proxemic environment (Leathers & Eaves, 2008). The way we use, control, and share space influences the nonverbal messages that we send (Richmond & McCroskey, 2004). Increased proximity is associated with increased liking and friendship and corresponds to the psychological associations of those communicating (Burgoon, Buller, Hale, & deTurck, 1984).

Tactile communication or touching is closely related to proxemics because of the need to have a minimum amount of space between individuals when communicating through touch. The study of the communication through touch is haptics. DeFleur,

Kearney, and Plax (1998) explain that touch is an important source of showing comfort and reassurance. Generally, touch communicates positive emotions showing attraction; but, touch can be used negatively to communicate hostility or aggression.

Personal appearance is a significant element in the formation of a first impression. Physical appearance includes body type, body image, level of physical attractiveness, type of clothing, use of cosmetics, hair style, and other accessories (Moore, Hickson, & Stacks, 2010). “Our sex, clothing style, race, age, ethnicity, stature, body type, and mood all reveal our physical persona. Right or wrong, receivers of this initial physical information make attributions about our attractiveness, competence, moral character, personality, social status, and warmth and friendliness” (Andersen, 1999, p. 31). Nonverbal communication is influenced by our body cathexis or the level of satisfaction or dissatisfaction with our body and personal appearance (Leathers & Eaves, 2008)

Vocalics or the study of vocal sound that are not language includes accents, emphasis, pitch, rate of speech, pauses or other vocalizations that add meaning to verbal communication (Moore, Hickson, & Stacks, 2010). Vocalics also includes nonverbal characteristics such as laughing, sighing, yawning, crying, and vocal segregates such as “ah,” “uh-huh,” and “um.” (Andersen, 1999). Andersen also claims that vocalics is important to the accurate interpretation of verbal communication.

Chronemics is defined as “how we perceive, use, study, structure, interpret, and react to messages of time” (Richmond & McCroskey, 2004). It is a nonverbal behavior which includes guidelines, ethical beliefs, and personality differences relating to time as well as the study of how people schedule and use time (DeFleur, Kearney, & Plax, 1998). Time serves many nonverbal communicative functions including to communicate an

individual's status to others, to express liking, to communicate cultural orientations, and to display our personality and background (Richmond & McCroskey, 2004). Spending time with another person signals immediacy because of the closeness and availability that is communicated (Andersen, 1999).

Nonverbal Immediacy

The concept of immediacy was drafted in the late 1960's by Mehrabian. He based the immediacy principle on the belief that "people are drawn toward persons and things they like, evaluate highly, and prefer; and they avoid or move away from things they dislike, evaluate negatively, or do not prefer" (Mehrabian, 1971, p. 1). Immediacy is defined as "the degree of directness and intensity of interaction between communicator and referent" (Mehrabian, 1966, p. 28). Nonverbal immediacy includes behaviors such as making eye contact, smiling, gesturing in a positive manner, and forward leaning of body (Frymier, 1993). The presence of close physical distance, leaning forward, head nodding, and increased eye contact are classified as high immediacy conditions and the absence of these behaviors is low immediacy conditions (Kelley & Gorham, 1988).

According to Mehrabian (1971), immediacy is presented in approach or avoidance behaviors. Examples of approach behaviors are leaning toward another individual, touching, turning body position toward another, and eye contact. Avoidance behaviors are the opposite of approach including leaning away, lack of touch, turning body position away, and little eye contact during communication. Generally, individuals "select positions that increase stimulation from those objects that we prefer or like and try to shut off stimulation from others that do not interest us" (Mehrabian, 1971, p. 4).

Individual attitude toward the use of nonverbal immediacy behaviors is related to temperament (Cole, 2000). Two hundred and two participants who participated in a study at a mid-Atlantic university completed the Self-Report of Immediacy Behaviors (SRIB) (Richmond & McCroskey, 1995), an extraversion and neuroticism scale (Eysenck & Eysenck, 1985) and a psychoticism scale (Eysenck, Eysenck, & Barrett, 1985). The purpose of the study was to determine the relationship between temperament and nonverbal immediacy. The results of the study indicated a positive relationship between extraversion and immediate behaviors and a negative relationship between neuroticism and psychoticism and immediacy behaviors. It does seem logical that individuals who rate themselves as outgoing and having a high level of sociability would also perceive themselves to display a higher level of nonverbal immediacy than those in the other two categories of neuroticism and psychoticism. The results of Cole's study (2000) indicate that personality may be a significant factor in determining the level of nonverbal immediacy displayed by each individual.

Teacher Nonverbal Immediacy

An immediate teacher is one "who seems relaxed, animated and vocally expressive during class lectures and discussion, moreover, this teacher smiles frequently, engages in a lot of eye contact and is generally perceived as friendly and approachable" (Burroughs, 2007, p. 456). Immediate teachers have control over their classrooms but they are approachable (Richmond, 2002). A nonimmediate teacher is one "who seems tense, reserved, and vocally unexpressive during class lectures and discussions. Moreover, the teacher seldom smiles, avoids looking directly at students and is generally perceived as remote, aloof and unapproachable" (Burroughs, 2007, p. 456). Over the past

thirty years a significant number of studies have addressed the issue of teacher immediacy (Anderson, 1979; Gorham, 1988; Thweatt & McCroskey, 1998; Sanders & Wisemann, 1990; Witt, et al., 2004; Witt & Schrodt, 2006). Teacher immediacy is one factor that seems to be relevant to teacher effectiveness and student learning (Mehrabian, 1969). If a teacher uses appropriate nonverbal and verbal behaviors with students to increase the level of immediacy, then students generally feel closer to the teacher (Richmond, 2002).

Numerous nonverbal behaviors aid in teacher immediacy including bodily movement, facial expression, eye contact, proxemics, and vocalic. According to Richmond and McCroskey (2004), teachers' gestures and movements are extremely useful in adding interest and enthusiasm to their lectures. Teachers who use illustrators and affect displays with their verbal messages generally keep the classroom exciting and interesting. A delivery style that is animated and dynamic engages student's attention for a longer time thus leading to more effective learning. Open body position is also very important to demonstrate to students that the teacher is receptive and approachable (Richmond & McCroskey, 2004). Vocal expressiveness, smiling, and a relaxed posture provide the most positive effect on student learning (Richmond, Gorham & McCroskey, 1987). Students report more liking of immediate teachers than nonimmediate teachers (McCroskey & Richmond, 1992).

The use of facial expressions also influences how students feel about their teacher and the classroom environment. Teachers' feelings are communicated through their face and often they unintentionally express their feeling about a student through their facial expressions (Frymier, 1993). Teachers' facial expressions also affect how students feel

about the classroom environment. Teachers who display pleasing, animated facial expressions show interest in both the subject they are teaching and in the students. Using positive facial expressions demonstrates to the students that the teacher is friendly and interested in their communication. Positive head nods encourage classroom interaction; whereas, negative head movements tend to stifle student participation. Smiling is “associated with liking, affiliation, and immediacy” (Knapp & Hall, 2006, p. 461). Therefore, students perceive the teacher who smiles as more likable, approachable, and open to communication.

Teachers who establish eye contact with their students are viewed as interested and immediate. A teacher who seldom makes eye contact with students is considered as unapproachable and uninterested. Lack of teacher eye contact discourages interaction with students (Richmond, 1990).

How teachers use interpersonal space with students influences the student’s perception of the teacher. A teacher who always communicates with students from behind a podium or desk is not viewed as friendly, receptive, and immediate. To be considered approachable, a teacher should be willing to remove the physical barrier or separation of a desk or podium at times when communicating with students (Leathers, 1997).

Much research has indicated that the increased use of immediacy behaviors by teachers are associated with higher levels of affective and cognitive learning by students (Anderson, Norton, & Nussbaum, 1981; Christophel, 1990; King & Witt, 2009; Plaz, Kearney, McCroskey, & Richmond, 1986, Richmond, Gorham, & McCroskey, 1987; Sanders & Wiseman, 1990). Gorham’s study (1988) indicated a significant relationship

between verbal and nonverbal immediacy and affective and cognitive learning.

According to Rodriguez, Plax, and Kearney (1996) no other component of teacher communication has been so clearly associated with the affective and cognitive classroom learning of students. Burroughs (2007) concluded that teacher's nonverbal immediacy and students' willingness to comply both positively related to cognitive and affective learning.

One of the first studies determining the relationship between teacher nonverbal immediacy and effective classroom teaching was conducted by Anderson (1979). In this study, teacher immediacy was defined as the nonverbal behaviors that lessen the physical and/or psychological distance between teachers and students. Teacher effectiveness was identified in relationship to the teacher's ability to produce affective, behavioral, and cognitive learning by the students. Participants in the study were 205 undergraduate students enrolled in 13 different interpersonal communication courses and the 13 instructors of these courses. The students completed two instruments that measured teacher immediacy which were the Behavioral Indicators of Immediacy Scale (BII) and the General Immediacy Scale (GI). Three trained evaluators measured the instructor's immediacy on two observation days. The results of this study indicated that a significant relationship existed between teacher nonverbal immediacy and teacher effectiveness. In addition, teacher nonverbal immediacy is a good predictor of student affective and behavioral learning. No relationship was found in this study between teacher immediacy and cognitive learning. However, according to Anderson (1979), the possible explanation for this lack of relationship may have been the type of course in which the study was conducted and that the test was conducted too early in the semester.

A study by Gorham and Zahahi (1990) was conducted to evaluate the relationship between teacher immediacy and student affective learning and to serve as a follow up to other studies that had found a direct, linear relationship between immediacy and affective learning. Five hundred and twenty six students and 35 teachers in Business, Education, and Liberal Arts classes were the participants in this research project. Participants completed an immediacy behaviors questionnaire. The results of this study supported previous findings that a positive relationship existed between student perceptions of teacher immediacy and learning. Also noted in this study was the implication that teachers were aware of their use of nonverbal immediacy behaviors.

Folwell (2000) concluded that teachers' immediacy behaviors do influence affective learning. Participants in Folwell's study included seventeen undergraduate classes from a midsize western university. Classes from the following 12 departments participated: Communication Studies, Computer Science, Economics, Education, English, Foreign Language, Geology, Health and Human Performance, Physical Therapy, Radio and Television, and Social Work. The class size ranged from 6 to 52 students with the average size being 23. Students rated the professor on 14 nonverbal immediacy behaviors. The affective measures developed by Scott and Wheelless (1975) and revised by Anderson (1979) and McCroskey (1985) were used to evaluate affective learning. Areas evaluated were the students' attitudes toward the course, its content, instructor, and the chance of taking future courses with the evaluated instructor. A research assistant placed a video camera in the back of the classroom and focused it on the instructor. Students in the class voluntarily completed a questionnaire about the professor's nonverbal immediacy behaviors. Movement, gestures, eye gaze, smile, body posture, and

vocal expression were the six nonverbal behaviors evaluated. Another portion of the analysis examined the relationship between affective learning and the professor's nonverbal immediacy. There was a significant positive correlation between student perception of nonverbal immediacy and affective learning. According to Folwell (2000), five nonverbal immediacy behaviors were determined to be predictors of affective learning. Those behaviors included the use of gestures during lecture, vocal variety in voice, monotone vocal quality, eye contact, and smiling. Specifically this study found that if a teacher's immediacy behaviors "can motivate a student and influence a student's liking of a discipline, then the professor has accomplished a difficult task" (Folwell, 2000, p. 56).

Another study focusing on the effect of teacher immediacy on affective learning was conducted by Chesebro (2003). This study reviewed the effects of teacher clarity and nonverbal immediacy on student learning and stated that fundamental to teaching is the ability to teach clearly so that students can understand the material. He further affirmed that nonverbal immediacy is significant to clarity. One hundred and ninety six students selected from large lecture classes in a large mid-Atlantic university. The manipulations of nonverbal behaviors included variations in eye contact, vocal quality, gesturing, and facial expression. The instructor displaying higher immediacy behaviors made sustained eye contact, spoke with enthusiasm and vocal variety, gestured moderately and appropriately, and used facial expressions. The less immediate instructor made little eye contact, used notes extensively, and displayed a monotone voice. The instructor's gestures were limited and facial expressiveness was low. The students viewed videotaped teaching performances which allowed for control and consistency. The lessons taught

argumentation, a concept that the students had not previously studied. The results of this study supported the relationship between nonverbal immediacy and affective learning. However, the results did not support a significant relationship between teacher nonverbal immediacy and student cognitive learning. Chesbro (2003) concluded that the students of the clear and immediate teachers had significantly higher levels of positive affect for their instructor and lecture content than the students with low immediacy teachers.

Pogue and AhYun (2006) conducted a study to determine if teacher nonverbal immediacy and credibility affect student motivation and affective learning. Undergraduate students ($N = 586$) from a large western university enrolled in general education classes participated in the study. The participants completed the student state motivation measure (Christophel, 1990) and an affective learning instrument. Results of this study indicated that students whose teachers have high immediacy and high credibility showed the greatest amount of affective learning and motivation in a learning situation. Also concluded was that neither immediacy nor credibility is more important to the development of student motivation. However, this study did reveal that the respondents experience higher levels of affective learning when exposed to a “highly credible and less immediate teachers than those teacher who are highly immediate and less credible” (Pogue & AhYun, 2006, p. 340).

Many studies have revealed the relationship between teacher immediacy, motivation, and learning. Based on a study by Christophel (1990), teacher immediacy behaviors lead to motivation and combined they influence learning outcomes. This study concluded that the primary teacher behaviors shaping student learning were vocal qualities, smiling, and posture. The results of the study supported the belief that

immediacy has a positive influence on all levels of learning. Christophel (1990) concluded that immediacy influences motivation which then improves learning. Results of her study revealed that students' who rated their teachers' as more nonverbally immediate, also reported having higher class motivation and positive association with learning. More specifically, this study confirmed that student state motivation was directly influenced by the level of teacher immediacy behaviors which led to increased learning at the college level.

Richmond (1990) conducted a study to determine which bases of power and Behavior Alteration Techniques (BAT) have a relationship to student motivation to study. This study was also designed to determine if teacher immediacy and use of affinity-seeking techniques have any potential to offset negative amounts of student motivation. Three hundred and sixty six undergraduate students enrolled in communication courses participated in the study. Results of this study indicate a link between teachers' immediacy behaviors, motivation, and learning. Motivation by immediacy was more than twice the motivation provided by power or BAT. Immediacy "may be the primary means by which motivation can be increased and, as a result, learning enhanced" (Richmond, 1990, p. 195).

A study conducted by Frymier in 1993 tested the Motivation Model which claims that teacher nonverbal immediacy leads to student motivation which leads to student affective and cognitive learning. Participants in the study were 178 undergraduate students at a mid-sized eastern university. Researchers measured the students' trait and state motivation on the first day of class prior to any encounter with the instructor. This research did support the idea that the level of motivation with which at a student begins

the semester does influence the student throughout the semester. In this study it was concluded that students who started the semester with low or moderate motivation had higher motivation at the end of the semester if they had a teacher with high immediacy. However, also noted in Frymier's (1993) study was the fact that students who started the semester with high motivation to study were not impacted by the teacher's level of immediacy. Based on this study, a highly immediate teacher is significant to the motivation of students in a classroom (Frymier, 1993).

Research has consistently revealed an association between nonverbal immediacy and affective learning but some questions about the relationship between nonverbal immediacy and cognitive learning do exist. Some researchers believe that there is an inconclusive connection between teachers' nonverbal immediacy and students' cognitive learning because of the methodology used in early research and inconsistent results (Comstock, Rowell, Bowers, 1995). Typically research in cognitive learning and immediacy is measured based on students' perceptions of how much they think they learned. Thus, Comstock et al. believe that reliance on students' perceptions and memories in studies of teacher nonverbal immediacy should not be the primary basis for determining the relationship between teacher immediacy and cognitive learning.

However, other research has shown a definite relationship between nonverbal immediacy and cognitive learning. Richmond, Gorham and McCroskey (1987) provided support for the immediacy and cognitive learning relationship by using student reports of teacher immediacy to identify high learners and low learners. Two studies were included in this research project with 361 undergraduate students participating in the first study and 358 participating in the second study. The purpose of the first study was to provide

an estimate of the effect of the teacher nonverbal immediacy variable on learning. The purpose of the second study was to provide a more precise estimate of teacher nonverbal immediacy on student learning. Both studies revealed that teacher vocal expressiveness, smiling at the class, and relaxed posture has the highest positive association with learning. Therefore, this study provided the following conclusions:

Teachers with low immediacy will generate lower cognitive and affective learning. Teachers with moderate immediacy will generate higher cognitive learning and moderate affective learning. Teachers with high immediacy will generate similar (to moderately immediate teachers) cognitive learning, but higher affective learning. (p. 588)

Kelley and Gorham (1988) designed a study to evaluate the effects of nonverbal immediacy on cognitive learning in situations where affect effects were removed.

Immediacy was demonstrated through eye contact and physical positioning in their study (1988). Four experimental conditions were utilized:

1) High physical immediacy with eye contact; 2) high physical immediacy with no eye contact; 3) low physical immediacy with eye contact; and 4) low physical immediacy with no eye contact. High physical immediacy was operationalized as being a condition in which the experimenter would sit on the edge of the chair, lean forward, place nothing between himself and the subject, and utilize head nods while administering the test. Low physical immediacy was operationalized as being a condition in which the experimenter would recline back in his chair, cross his legs, use a notebook to create a barrier between himself and the subject, and utilize no head nods. Each of these conditions was coupled with both the use of eye contact and the absence of eye contact. In the conditions utilizing eye contact the experimenter would focus his eyes on the eye area of the subject while administering all six items. During the two conditions which did not utilize eye contact, the experimenter would stare at a notebook which he was holding while giving all items. (p. 203)

When the condition of high physical immediacy and eye contact was displayed, all participants recalled at least two out of the six items and had the least items placed out of sequence of the four experimental conditions and a mean score of 4.9 out of a possible

low of 0 and a high of 6. The results revealed a significantly higher score during the high immediacy and eye contact condition than in any other condition. Their findings provided significant support for the relationship between immediacy and cognitive learning at the short-term recall level. In addition, based on the brevity of the experiment and the controls, it is unlikely that the respondents would develop an affective response to the facilitator or the exercise. Kelley and Gorham (1988) concluded that the teacher's use of nonverbal immediacy behaviors is "likely to be as directly related to cognitive learning as it is to affective learning" (p. 206).

Rodriguez, Plax, and Kearney (1996) presented another explanation for the relationship between teacher nonverbal immediacy and student cognitive learning. This study argues that affective learning is the central causal mediator between teacher immediacy and students' cognitive learning. The survey questionnaires included measures of teachers' immediacy, affective learning, and cognitive learning. Two hundred and twenty four undergraduates enrolled in speech communication courses at a large western United States university evaluated their instructors immediately after completing the course. Students evaluated on a 0-9 scale how much they had learned in the class. Based on the assessment of the surveys, the results indicated that immediate teachers cause students to value learning, which therefore causes students to learn cognitively. The authors believe that teacher communication variables such as immediacy, assertiveness, and responsiveness will most likely create an affectively based relationship with students. Therefore, affect is the connector between a teacher's immediacy in communication and student's cognitive learning (Rodriguez, 1996, et. al.).

The significance of student cognitive learning and teacher nonverbal immediacy was demonstrated in a study by Mottett, Parker-Raley, Cunningham, and Beebe (2005). The purpose of this study was to identify student expectations for course workload and to determine whether teacher nonverbal immediacy influences these student expectations. One hundred and ninety eight students enrolled in a large public university general communication course participated in the study. The results of the study revealed a positive relationship between teacher nonverbal immediacy and students' willingness to increase the workload for the course. The study suggests that even a small increase in the student workload for the class will increase student cognitive learning.

Many studies have supported the relationship between teacher immediacy and both cognitive and affective learning. Comstock, Rowell, and Bowers (1995) designed a study in which three levels of teacher immediacy were manipulated. Three large lecture core curriculum classes with a total of 259 undergraduate students were randomly assigned a teacher with high, moderate, or low nonverbal immediacy. A training and professional development evaluator acted as the teacher for a ten minute workshop displaying to each class one of the three levels of immediacy. Proxemics, haptics, vocalic, kinesics, eye contact, chronemics, and physical appearance were a portion of the teacher nonverbal immediacy displayed. Based on this study it was determined that moderately high teacher immediacy leads to greater student learning in the classroom than extremely high or low nonverbal immediacy. In addition, the results of this study concluded that cognitive, affective, and behavioral learning of students and teacher nonverbal immediacy has a curvilinear relationship (Comstock, et al., 1995).

A study by Christensen and Menzel (1998) indicated that there is a positive linear relationship between teacher verbal and nonverbal immediacy; student motivation; and cognitive, affective, and behavioral learning. One hundred and fifteen undergraduate students at a small Midwestern university participated in the study. The students completed a four-part survey which measured state motivation, perceptions of nonverbal and verbal immediacy, and some cognitive, affective, and behavioral learning. Both moderate and high immediacy proved sufficient to establish a relationship. “Verbal and nonverbal immediacy in the classroom may contribute to motivating, stimulating, and increasing student learning” (Christensen & Menzel, 1998, p. 90).

Daniel (2000) outlines the relationship between teachers’ nonverbal immediacy and cognitive and affective learning. This study surveyed four groups of college students enrolled in required Cornerstone classes. The groups were randomly assigned to a teacher with moderate immediacy or excessively high immediacy. The data revealed that both levels of immediacy positively influence student learning; however, the moderate levels produced greater learning than excessively high immediacy. Daniel (2000) also concluded that faculty members need a clear understanding of the impact of nonverbal communication immediacy behaviors.

Allen, Witt, and Wheelless (2006) focused a study on the validity of past research on the significance of teacher immediacy on learning outcomes by students in a classroom. The foundation of this research was the belief that if teacher immediacy does improve student learning and instructors can be trained to raise the level of immediacy behaviors, then the teacher has the ability to positively increase the outcome of student learning by increasing the instructional behavior. The purpose of this study was to

examine the effect of the instructor's immediacy behavior on the students' motivation, affective learning and cognitive learning (2006). The proposed model included the development of three correlations between "(a) measures of immediacy and cognitive learning, (b) measures of immediacy and affective learning, and (c) cognitive learning and affective learning" (Allen, et al., 2006, p. 24). The results of the study convey that higher levels of teacher immediacy do result in higher levels of affective learning which then leads to higher cognitive learning (Allen, et al., 2006).

Burroughs (2007) argues that teacher immediacy relates to increased learning and thus emphasizes the importance of including the concept of immediacy in teacher preparation. Burroughs conducted a study in which 564 undergraduate students enrolled in general curriculum courses at a mid-Atlantic university completed the Immediacy Behavior Scale (Andersen, 1987; Richmond, Gorham, & McCroskey, 1987) McCroskey's (1994) Affective Learning measure, and a two question cognitive learning assessment. The results of this study indicated that both teacher's nonverbal immediacy and students' willingness to comply were both positively related to cognitive and affective learning.

Comadena, Hunt, and Simonds (2007) designed a study to evaluate the effects of teacher clarity, teacher immediacy, and teacher caring on student motivation, affective learning, and cognitive learning. Participants in this study were 233 undergraduate students enrolled in an introductory level communication course at a large Midwestern university. The three-way interaction that included teacher clarity, teacher immediacy, and teacher caring was not statistically significant in this study. However, teacher immediacy and caring did reveal significant influence on the participants' motivation

scores. Also, teacher clarity, immediacy, and caring influenced affective learning scores. The results of this study indicate that teacher immediacy has the potential to increase student motivation, affective learning, and cognitive learning. Two methodological limitations (hypothetical scenarios used in the surveys and the use of only students enrolled in a freshman level class which might not be representative of older students) possibly hindered the significance of the findings.

Problems do exist relevant to cognitive learning assessment and concerns do exist concerning the validity of student perceived learning as a measure of cognitive learning. King and Witt (2009) indicated that communication researchers should make use of multiple measures of cognitive learning. As a result, King and Witt (2009) designed a study to compare the instruments used to assess perceived learning and performed learning with cognitive learning assessment. Seventy-two undergraduate students enrolled in communication courses at a southwestern university. In addition, they introduced a confidence testing measure as another means of determining cognitive learning in their study. Confidence testing requires that students recall specific information from their learning setting and apply that information to the confidence measure. This study also found a positive relationship between teacher immediacy and students' perceived learning. King and Witt (2009) recommended that future studies of the relationship between teacher immediacy and student cognitive learning combine confidence testing, course grades, and student perceived learning.

In addition, studies have focused on the relationship between teacher nonverbal immediacy, student classroom compliance-resistance, and learning. Teachers' nonverbal immediacy seems to significantly influence students' compliance behaviors (Burroughs,

2007). Results of Burroughs' study also indicated that students with an immediate teacher more willingly complied and believed that they learned more. According to Richmond and McCroskey (1992), students generally comply more often with teachers they like and teachers who display more nonverbal immediacy behaviors are generally liked more by students. Golish and Olson (2000) determined in a study that students are more likely to use power with teachers who display a higher level of nonverbal immediacy than those who display lower levels. Therefore, this study supports compliance-gaining models by evaluating the opposite end of the power spectrum. Mottet, Parker-Raley, Beebe, and Cunningham (2007) hypothesized that the level of instructor immediacy is more significant to student affective learning than violations of student expectations for course-workload demands.

McCroskey, Richmond, and McCroskey (2002) provided a summary of teacher nonverbal immediacy. They emphasized the research that has noted the importance of teachers' communication behavior and determined that

teachers who are more nonverbally immediate are seen by their students as more caring, clearer, and overall better teachers than less immediate teachers. Similarly, students who have more immediate teachers are more motivated and develop more positive affect for both the content taught and the teacher than do students with less immediate teachers (p. 387-388).

McCroskey, et al. (2002) supported the concept that students of immediate teachers demonstrate a higher level of cognitive learning than students of less immediate teachers.

Student Nonverbal Immediacy

“Unfortunately, research has been directed almost entirely toward the immediacy of teachers while ignoring the communication behaviors of students” (Baringer & McCroskey, 2000, p. 179). Understanding of what comprises student immediacy and its

effect on teachers is needed. In 1992, Nussbaum conducted an extensive review of literature concerning the relationship of teacher behaviors to teaching effectiveness. In this review Nussbaum (1992) confirmed the need for research concerning student communication behaviors. According to Daniel (2000) research is needed to determine if a relationship exists between nonverbal immediacy and learning styles and to determine the effect of immediacy on cognitive learning.

For teachers to aid in student learning, they have to constantly determine if the message that is being sent is the message that is received (Baringer & McCroskey, 2000). Teachers rely on the nonverbal communication of students to determine if their instruction is being adequately interpreted. Immediate behaviors are defined by Baringer and McCroskey (2000) as “sitting closer to teachers, establishing eye contact with teachers, smiling at teachers, leaning forward toward teachers, engaging in positive head nods toward the teacher, and being vocally expressive when talking to teachers” (p. 184).

Baringer and McCroskey (2000) conducted a study to determine the impact of student nonverbal immediacy on teacher perceptions and motivation. One hundred and twenty nine professors and graduate teaching assistants at a large mid-Atlantic university voluntarily participated in the study. Two hypotheses related to perceptions of credibility and attraction. The next two related to teacher liking of the student and motivation to teach the student and the last hypothesis related to teacher perceptions of the student’s potential achievement. The results of Baringer and McCroskey’s (2000) study indicated that students who are perceived as more immediate by their teacher are also viewed more positively in other ways by their teacher. In addition, it was reported that teachers are more motivated to teach immediate students.

Mottet (2000) designed a study to evaluate the relationship between interactive television instructors' concept of students' nonverbal response in distance teaching. Based on the growing demand for distance learning courses, an understanding of the effect of student nonverbal immediacy behaviors in this interactive television instructional setting is relevant to this discussion. Three conclusions were drawn from this study. First of all, a decrease in the ability of the interactive television instructors' ability to evaluate distance students' nonverbal behaviors was recorded. Next, the vocal cues communicated by the students were more important to the interactive television instructors than the visual nonverbal responsive cues. Finally, the instructors' perceptions and evaluations of their teaching effectiveness, satisfaction, and interpersonal relationships were higher in the traditional face-to-face classroom than in the interactive television classroom (Mottet, 2000).

According to Mottet and Richmond (2002), students send various nonverbal messages in a classroom setting including interest and attention or lack of interest and boredom. To convey interest, students make eye contact with the instructor while sitting upright in their chair, leaning forward, and nodding their head. To convey lack of interest and boredom, students slump in their chairs, close their eyes, and show no facial expression.

In a study by Mottet, Beebe, Raffeld, and Paulsel (2004), it was concluded that 66% of the variance in teachers' liking of students was dependent on the nonverbal responsiveness of students'. Teachers' liking of students was not significantly influenced by students' verbal responsiveness. The results of this study also concluded that students' nonverbal responsiveness was responsible for 31% of the variance in the teachers'

willingness to accommodate students' requests. Based on this study, the verbal responsiveness did not show significant affect. Students can help reach their instructional and interpersonal goals by using nonverbal immediacy behaviors such as smiling, eye contact, head nodding, and forward leaning. Therefore, the results of this study indicate that teachers do prefer nonverbally responsive students (Mottet, et al., 2004).

Nonverbal Immediacy Scale

The Nonverbal Immediacy Scale is a self-report or other-report instrument for measuring the level of nonverbal immediacy. The scale was developed by Virginia Richmond, James McCroskey and Aaron Johnson in 2003. The instrument can be used in a variety of settings with high reliability and validity (Richmond, et al., 2003). The Self-Report version is designed for the participant to evaluate how immediate his or her communication behavior is. The Other-Report version is used for an observer to evaluate designated subjects level of immediacy in communication behavior.

Allen, Long, O'Mara, and Judd (2008) administered the Nonverbal Immediacy Scale Self-Report (NIS-S) and Nonverbal Immediacy Other-Report (NIS-O), the Personal Report of Communication Apprehension (PRCA), and the Socio-Communicative Style to 265 students enrolled in basic communication classes at three medium sized northeastern universities. The purpose of this study was to determine if college students' communicative avoidance and socio-communicative orientation had a relationship to their perceptions of instructors' immediacy, socio-communication style and satisfaction with their instructors and learning. Results indicated that students who were high in communication avoidance viewed instructors as less nonverbally immediate, less assertive, and less responsive. Correlations also indicated that students who view

themselves as higher in nonverbal immediacy view teachers as higher in nonverbal immediacy, assertiveness, and responsiveness. Students' level of assertiveness and responsiveness had a positive correlation to their perceptions of their instructors' immediacy, assertiveness, and responsiveness. Also, students' immediacy, assertiveness, and responsiveness were significantly correlated with cognitive learning and liking of the course and instructor.

Mottet, Parker-Raley, Cunningham, and Beebe (2005) investigated student perceptions of teacher nonverbal immediacy of 198 undergraduate students enrolled in an introductory communication course using the Nonverbal Immediacy Scale (NIS-O). The purpose of the study was to determine student expectations for class workload and teacher accessibility and to determine if the level of teacher nonverbal immediacy influenced the student expectations. Results of the one-tailed Pearson correlation revealed that as student perception of teacher nonverbal immediacy increased so did students' willingness to complete higher course workload demands (Mottet, et al., 2005).

Wanzer and Frymier (1999) assessed the relationship between perceived teacher humor orientation and learning. Three hundred and fourteen students enrolled in an introductory communication course at a mid-sized Midwestern university participated in the study. The Humor Orientation Scale, the Nonverbal Immediacy Scale, the Socio-Communicative Style measure, the Affective Learning Scale, and the Learning Indicators Scale were administered. The results of the study indicated that there was a significant relationship between student perceptions of instructors' humor orientation and student learning and immediacy. There was also a significant relationship between instructor' socio-communicative style and immediacy.

Learning Styles

Learning styles are characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment (NASSP, 1979). Gregorc states that “learning style consists of distinctive behaviors which serve as indicators of how a person learns and adapts to his environment. It also gives clues as to how a person’s mind operates” (1979, p. 234). Learning style is comprised of the manner in which each person focuses on, processes, and remembers information (Dunn, 1998). According to Keefe (2001), a student’s learning style is determined by observation of a student’s visible behavior. In addition, Keefe defines learning style as “how a student learns best” (p. 138). Pashler, McDaniel, Rohrer, and Bjork (2009) define learning styles as the concept that students vary in the type of instruction of information that is most effective for them.

Drysdale, Ross, and Schulz (2001) stated that learning involves “remembering material and skillful performance based on studying information” (p. 273). Style is a “set of individual qualities, activities, and behavior that are maintained over a long period of time” (Ouellett, 2000, p.2). Some believe that the way students respond to and use stimuli in a learning situation are what make up an individual’s learning style (Drysdale, et al., 2001). Although learning is an internal process, it can be evaluated by measuring the change of behavior (Ware, 2003).

Teachers have increased students’ academic performance by relating to their various learning styles in instruction (Reiff, 1992). Valentine (1997) reported that teachers’ knowledge of students’ learning styles is beneficial in accommodating their unique approaches to learning. Hall (2005) claimed that teachers should focus on

students' learning styles and design the teaching and learning activities around them. Learning styles of students are identified through observation of an individual student's obvious behavior (Keefe, 1987). Identification of learning styles is significant according to Dunn (1998) because of the need to aid in concentration, processing, and long-term memory of individual learners. According to Wirz (2004), students generally are able to remember, apply, and have a better attitude toward subject matter when the student's learning style is compatible with the teacher's instruction style. Based on his research in learning styles and cognitive learning styles, Lemire (2002) determined that understanding teachers and students learning styles enables teachers to teach more effectively and students to learn more effectively. Because concentration is different for each individual based on the time of day, Dunn (1998) stated that it is significant to "identify individuals' styles to trigger their concentration, energize their processing, and increase their long-term memory" (p. 4).

According to Keefe (2001), most learning styles relate to cognitive, affective, or physiological style preferences. Cognitive style includes the way one encodes/decodes, processes, stores or retrieves information. Affective style utilizes the elements of personality that include attention, emotion, and valuing. Physiological style relates to behaviors such as gender, health, physical, and environmental conditions (Keefe, 1987).

In 1975 Dunn and Dunn determined that the following elements affect learning style: environmental elements (sound, light, temperature, and design), emotional elements (motivation, persistence, responsibility, and structure), sociological elements (peers, self, pair, team, adult, and varied), and physical elements (perceptual, intake, time,

and mobility) (p.77). Therefore, for students to benefit from their learning style, Dunn (2000) states they need to be conscious of their:

- reactions to the immediate instructional environment – sound versus silence, bright versus soft lighting, warm versus cool temperatures, and formal versus informal seating;
- own emotionality – motivation, persistence, responsibility (conformity versus non-conformity), and preference for structure versus choices;
- sociological preferences for learning – alone, with peers, with either a collegial or authoritative adult, and/or in a variety of ways as opposed to patterns or routines;
- physiological characteristics – perceptual strengths (auditory, visual, tactual, and/or kinesthetic strengths), time-of-day energy levels, intake (snacking while concentrating), and/or mobility needs
- global versus analytic processing as determined through correlations among sound, light, design, persistence, sociological preference, and intake (p. 9).

Ross, Drysdale, and Schultz (2001) conducted a study to determine the effects of learning style on academic performance in computer application courses at a large urban university. This study determined a significant effect of learning style on academic performance. Recommendations of this study include the need for flexibility by educators in their teaching style. Variety in teaching approaches includes group discussions, use of presentation aids, case studies, and lecture. Grading procedure should include multiple choice and essay tests, projects, and classroom performance evaluation. Ross, et al. concluded that it is “imperative that educators develop strategies for effectively accommodating all students to ensure that all learners attain success commensurate with their academic ability level, not their learning style” (p. 411).

Sims and Sims (1995) determined that understanding and applying learning styles can be used to help students identify how they learn best and how to use this basic

approach to learning, to help instructors and advisors guide students to learning opportunities that fit with their learning styles, to guide instructors to group students in appropriate learning groups, and to help students improve their learning skills. In addition, Sims and Sims presented three facts about learning styles:

1. By the time we reach adulthood, each of us has developed our own methods of learning. That is, adult learners each have a unique and well-established style.
2. Higher education instructors as well as trainers have developed methods of delivering materials, putting together sessions, and transferring content to their participants. That is, instructors and trainers also have a fairly well-established teaching or training style.
3. The more compatible the style of learning is with the style of instructing or training, the more likely it is that there will be a positive learning or teaching experience. (p. 203-204)

Cognitive Style

According to Keefe (1987) cognitive style is one element of the broader category of learning styles. “Learning style is a consistent way of functioning that reflects the underlying causes of learning behavior” (Keefe, p. 5). The distinct and consistent characteristics of perception, organization, and retention that are employed by each learner are known as their cognitive style (Keefe). Rayner and Riding (1997) claim that cognitive style is both the way in which individuals process information as a whole or in parts and represents thinking in words or pictures. Hashway (1998) affirms that cognitive styles are both the way individuals organize and process information. Cognitive style is “a fairly fixed characteristic of an individual, in contrast to strategies which are the ways that may be used to cope with situations and tasks. Strategies may vary from time to time and may be learned and developed. Styles, by contrast, are static and are relatively in-built features of the individual” (Riding, Glass, & Douglas, 1993, p. 268).

According to Messick (1976) cognitive learning is a habitual means of information processing; however, “they are not simple habits in the technical sense of learning theory for they are not directly responsive to principles of acquisition and extinction” (p. 6). Research indicates that cognitive style affects numerous aspects of education including student’s academic choices, student’s academic development, the manner in which students learn and teachers teach, and how students and teachers interact in a learning environment (Witkin, 1976). Sims and Sims (1995) define cognitive learning as knowledge learning.

According to McCroskey (2002), the cognitive domain of learning can be divided into three levels. In the lowest level, learning focuses on gaining knowledge on a specific element of information such as definitions or historical dates. McCroskey (2002) further specifies that learning at the middle level refers to methods of learning principles and more expansive principles. Cognitive learning at the highest level focuses on “the ability to interpret, analyze, and synthesize the knowledge acquired at the lower levels with new information that the learner will confront in later life” (McCroskey, 2002, p. 4). Student learning in the basic college courses begins at the lower level and only progresses to the higher levels as the student engages in upper level course participation and instruction in a specific subject area.

Gregorc Style Delineator

The Gregorc Style Delineator (Gregorc, 1984a) is a self-analysis tool. It is based on the Mediation Ability Theory and was designed to help individuals determine which channels are most efficient and effective for processing information (Gregorc, 1984b). The mediation abilities are perception and ordering and their outward appearance is

termed style (Gregorc, 1984b). Perception refers to the way in which information is grasped which can be abstract or concrete (Gregorc, 1984a). Ordering references the arranging of information in a sequential (linear) or random (nonlinear) manner (Gregorc, 1984a). Anthony Gregorc (1984a) established that perceptual ability and ordering ability influence learning. There is general agreement that everyone uses all four qualities; however, some use one more than the other in their perception of the world and in their ordering of information (Drysedale, Ross, & Schulz (2001). According to Gregorc (1984a), “although each and every one of us is equipped, so to speak, with all four qualities, most individuals are predisposed strongly toward one, two, or even three channels. Few individuals are equally strong in all four channels” (p. 6).

In *An Adult's Guide to Style*, Gregorc (1982) describes the characteristics of individuals dominant in each of the four cognitive styles of learning which are Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR). The Concrete Sequential learner prefers hands-on experiences. Well organized presentations with visual aids are important to this learner. The Concrete Sequential learner defers to authority and guidance in an academic setting. This learner is hardworking, habitual, dependable, well-organized, objective, and conventional. The Concrete Sequential learner views events as being consecutive and divides time into past, present, and future. Individuals who are dominant Concrete Sequential do not like change and find it difficult to break a habit. The Concrete Sequential is task oriented and prefers a quiet, structured environment (Gregorc, 1982).

The Abstract Sequential learner is an excellent decoder of written, verbal, and image symbols. This learner prefers presentations that are substantive, sequential, and

rational and learns well through lectures. Quiet controlled environments are significant to the Abstract Sequential learner who has little tolerance for distractions. The Abstract Sequential learner views time as present, highly significant past, and long-term projected future and sees today as a result of the past. The dominant Abstract Sequential learner is very logical and has an academic type mind. The Abstract Sequential is typically very verbal and functions well independently (Gregorc, 1982).

The Abstract Random learner focuses on feelings and emotions. This learner prefers unstructured presentation of information and likes group discussions. This learner is imaginative, flexible, sensitive, and spontaneous. The dominant Abstract Random learner believes that the past and present are one and that the future is not a concern. The Abstract Random focuses on others and building relationships. These students tend to communicate through stories and metaphoric language. In general, routine and order are considered unimportant to the Abstract Random (Gregorc, 1982).

The Concrete Random learner prefers a trial and error approach to learning. A stimulating environment filled with short lectures, problem-solving activities, and exploration activities are significant to this learner. The Concrete Random learner is creative, innovative, out-going, and adventurous. The dominant Concrete Random focuses on the present and is influenced by personal intuition and instinct. The thinking process of a Concrete Random is quick, discriminating, independent, and perceptive (Gregorc, 1982).

The Gregorc Style Delineator was developed for the purpose of determining cognitive learning style preferences. Gregorc (1982) indicated that this instrument was designed to provide the individual “with a ‘key’ or matrix to better understand and

appreciate the subtle and potent qualities of his mind, his personal behavior, the behavior of others, and the demands placed upon individuals by their environment(s)” (p. 41). The purpose was not originally for diagnosis or prescription; however, the emphasis and use has moved to an application mode (O’Brien, 1991). Based on the understanding of students’ various cognitive learning styles, recommendations have been made to encourage educators to use a flexible teaching style to meet the diversity among students including variety in teaching approaches including lecture, class discussion, variety of audiovisual equipment and assessment tools to include objective and essay tests, projects, and in class performance activities (Ross, Drysdale, & Schulz, 2001).

Relevant studies including post-secondary students and the Gregorc Style Delineator include O’Brien (1991); Stewart and Felicetti (1992); Wakefield (1993); Ross and Schulz (1999); Drysdale, Ross, and Schulz (2001); Ross, Drysdale, and Schultz (2001); Miller (2004); Gould and Caswell (2006); and D’Arcy, Eastburn, and Bruce (2009).

O’Brien (1991) administered the Gregorc Style Delineator to 263 undergraduate students enrolled in educational foundation classes at a major university in southeastern part of the United States. A MANOVA was used to determine the possible relationship between the characteristics of the students which included gender, major, level of academic achievement, and educational level and the scores on the four cognitive styles profiles. Cognitive style differences were noted between the genders, majors, academic level, and educational level. Based on this study, males possess more of the Abstract Sequential and Concrete Random cognitive learning style characteristics and females exhibit more Abstract Random style characteristics.

A study of 265 Business Administration majors was conducted by Stewart and Felicetti (1992) to determine the preferred learning style of these students. The potential areas of specialization are accounting, economics, finance, management, real estate, and marketing. The focus of this study was a comparison of learning styles between marketing majors and all of the other business administration majors combined. The primary learning styles for junior and senior marketing students were Concrete Sequential and Abstract Random. The marketing students with an interest in sales and advertising tended to be the Abstract Random learners. The marketing students with an interest in management tended to be the Concrete Sequential learners. Juniors and seniors specializing in all of the other business administration areas showed a preference for the Concrete Sequential and Concrete Random learning styles. Based on these results, the preferred method of instruction for maximum academic performance was determined and recommended (Stewart & Felicetti).

Wakefield (1993) evaluated the learning styles of 196 undergraduate and graduate education majors and 104 public school teachers. The Gregorc Style Delineator was administered to the individuals in both groups to determine their cognitive learning style preference. The style preference for almost three fourths of the students was Abstract Random and for approximately three fourths of the teachers it was Concrete Sequential. One major implication of this study is the obvious change in cognitive learning style preference from the time a college student is preparing to become a teacher and when an individual is actually teaching in the public schools.

Ross and Schulz (1999) administered the Gregorc Style Delineator to seventy students enrolled in a large urban post-secondary institution. The purpose of the study

was to determine the impact of learning styles on students in classrooms with computer-aided instruction (CAI). Results of the study found that the Abstract Random learners enrolled in computer application university courses demonstrated significantly lower levels of achievement than did the Concrete Sequential, Concrete Random, and the Abstract Sequential learners. Thus, Ross and Schulz concluded from this study that all learners do not benefit from computer-aided instruction.

Eighty adults participated in a study designed by Witte (1999) to examine the relationship between sensory modality characteristics and mediation abilities as measured by the Multi-Modal Paired Associates Learning Test III (MMPALT III) and the Gregorc Style Delineator (GSD). The participants were selected based on age, educational level, and gender. Results of the study indicated that the two instruments measured separate, but minimally related constructs. No two students scored the same on the subtests of the MMPALT III and the GSD. Other findings in this study relevant to the Gregorc Style Delineator included correlations between GSD subscores and age, educational level, and gender. Based on the correlation of age and subtest scores on the GSD, as age increased the scores on Concrete Random and Abstract Random decreased. Also, the older age group of students scored higher on Concrete Sequential and Concrete Random. As educational level increased, scores in Abstract Random, Concrete Random, and Abstract Sequential increased also. However, as the educational level increased, the Concrete Sequential score decreased. Finally, males mean score on the Concrete Random subtest was higher than the females.

Drysdale, Ross, and Schulz (2001) investigated the relationship between the academic performance of first year university students and their cognitive learning style.

University students ($N = 4,546$) enrolled in at least one of nineteen courses were surveyed. Results of this study indicate that learners dominant in the Abstract Sequential and Concrete Sequential learning style are better suited to the science and math courses. Concrete Random and Abstract Random learners scored higher in the fine arts classes. In the liberal arts and nursing courses performance by all learning style groups was relatively equal. Overall, dominant Abstract Sequential learners were more academically successful in first year university courses and therefore may find it easier to acclimate into the university academic setting.

Ross, Drysdale, and Schultz (2001) examined the relationship between student cognitive learning styles and academic performance in two introductory computer applications courses. The Gregorc Style Delineator was administered to 974 students during the four years from 1993 to 1997. Results of this study determined that Abstract Sequential and Concrete Sequential learners performed the best in both courses. Both Abstract Sequential and Concrete Sequential learners scored higher in these courses because of the linear processing and logical reasoning skills that they possess. Abstract Random learners scored the lowest in both courses. In addition, Ross, et al., determined that Abstract Sequential learners were more likely to continue in university studies past their freshman year than the other three groups of cognitive learners.

Miller (2004) evaluated the effects of learning style on achievement during use of computer-based instruction (CBI). In addition, Miller compared two learning style assessment instruments. Students in an introductory Probability and Statistics class were administered a short survey, the Gregorc Style Delineator, and the Kolb Learning Style Inventory. The results of this study determined that learning style did have an effect on

course performance in a non-linear CBI introductory probability and statistics course. Students with the Concrete Sequential learning style learned significantly less than students with the Abstract Random, Concrete Random styles or Abstract Sequential learning preference. The reason for the lack of correlation between the CBI system and the Concrete Sequential students is probably based on the preference of Concrete Sequential students for traditional methods of instruction with due dates and predetermined assignments. The Gregorc Style Delineator showed significant relationship between learning style and performance but the Learning Style Inventory did not have an effect on the amount of material learned.

Gould and Caswell (2006) assessed the learning style of 201 undergraduate athletic training students and 43 program directors enrolled in accredited Allied Health education Programs at various universities in the United States. The results of this study revealed that 44.5% of the students and programs directors preferred a Concrete Sequential cognitive learning style, 27% were Abstract Random, 18% were Concrete Random, and 10.5% were Abstract Sequential. However, the tested mean differences between the undergraduate students and the program directors concluded that the students preferred the Abstract Random style and the program directors preferred the Concrete Sequential style. Therefore, athletic training educators might provide a more effective learning environment if they realize that their self-preferred style of Concrete Sequential is different from their Abstract Random learners and adjust their teaching style to compliment the learners' style.

One hundred and fifty nine students in a prerequisite math class at a large southeastern university participated in a study conducted by Tomes (2008). The Gregorc

Style Delineator was administered to the students to determine the participant's cognitive style. The purpose of the study was to determine the relationship between ethnicity and cognitive styles. The results of the study indicated that ethnicity and cognitive styles do not significantly interact. In addition, it was noted that cognitive styles may be equally different among all ethnic groups and may be the result of other variables. Also, because of the lack of significant differences in cognitive styles between European Americans and African Americans, one person or one group does not learn just like the next.

D'Arcy, Eastburn, and Bruce (2009) investigated the relationship between learning styles, majors, genders and instructional media. Two hundred and seventy two students enrolled in Plant Pathology 200 at a large Midwestern university for five semesters from 2003 to 2005. The Gregorc Style Delineator was used to determine cognitive learning style. Scoring ≥ 26 on a learning style classified the student's preferential learning style. Each student could prefer one to three styles. The students were classified by dominant learning style, major (science or non-science majors), and gender. The participants also completed a survey to determine their perceived degree of usefulness of each media style. Fourteen styles of media were used each semester including: "lecture, handouts, chalkboard, videotapes, small group discussion, whole class discussion, in class writing, outside of class writing, a textbook, a supplemental Web site with text, images, and interactive exercises, and quizzes and PowerPoint notes that were accessed on-line" (D'Arcy, et al., p. 57). Focus groups were also used at the end of each semester to ascertain qualitative data. Eight types of media were evaluated as effective by each of the four learning style groups in two or more semesters. The eight media include: lecture, chalkboard notes, overhead, PowerPoint slides, i>clicker, review

grids, online quizzes, and PowerPoint notes. The results of this study concluded that all students found a mixture of types of media useful in classroom instruction and preferable over the use of only one or two types of media.

Summary

The goal of all academic institutions should be to promote student success. “Student success is one of the primary concerns to educators” (Pogue & AhYun, 2006, p. 331). In addition, experts in the field encourage educators understanding of students’ learning styles to enhance academic performance (Drysdale, Ross, & Schultz, 2001; Reiff, 1992). Research by Wooldridge (1995) indicated that there is sufficient evidence to support the idea that there is enough diversity among the learning styles of college students to justify increased attention to learning styles in classroom instruction. Research has shown that coordinating a teacher’s instructional style and students learning styles does enhance student performance in the classroom (Miller, 2005). Students’ nonverbal immediacy behaviors should be recognized by teachers at least as a means of determining if the intended message is the message that is received (Barenger & McCroskey, 2000). Teachers indicated that they are more motivated to teach students who are the most immediate and the more motivated teachers are the more learning occurs (Barenger & McCroskey, 2000).

To be effective teachers we need to understand how students learn and how our lectures can improve their learning experience (Maher, 2008). Dunn (2000) supports this concept by explaining that problems exist related to teaching post-secondary students and concludes that one problem is the fact that many students in higher education come from situations where the students are use to rote learning compared to the college level where

students must take responsibility for their own learning. Learning in college is typically a combination or blended learning environment. The blended learning may include independent learning, lecture, Socratic instruction, experiential learning, and/or group exercises.

The review of literature addressed nonverbal communication, nonverbal immediacy, teacher nonverbal immediacy, student nonverbal immediacy, Nonverbal Immediacy Scale, learning styles, cognitive learning style, and Gregorc Style Delineator. In addition, this review defined and explained the development of the immediacy effect concept, provided an overview of nonverbal behaviors significant to immediacy, summarized the research relating to teacher immediacy and student immediacy, and presented a description of the nonverbal immediacy measurement instrument, the Nonverbal Immediacy Scale. The chapter also included an overview of learning styles including Concrete Sequential, Concrete Random, Abstract Sequential, and Abstract Random; a review of cognitive learning research; and a description of the cognitive learning style measurement device, the Gregorc Style Delineator.

Chapter 3

Methods

Introduction

The purpose of this study was to investigate the relationship among undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy Scale-Self Report (NIS-S) and their cognitive learning styles as measured by the Gregorc Style Delineator (GSD). The study also examined the relationship between the immediacy behaviors and cognitive learning style and the demographic information of age, gender and major. This chapter contains five sections. The first section describes the design of the study. The second section discusses the population and sample selection. The third section explains the instrumentation used in the study. The fourth section describes the data collection. The final section discusses the analysis of the data.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between gender and nonverbal immediacy and cognitive learning styles?
2. What is the relationship between age and nonverbal immediacy and cognitive learning styles?
3. What is the relationship between major/college and nonverbal immediacy and cognitive learning styles?

4. What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

Design of Study

For this study, a multiple regression with stepwise procedure was used to analyze the data. The relationship between the four cognitive learning style preferences of Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR) and seven predictor variables were analyzed. The seven predictors or independent variables were Nonverbal Immediacy Scale-Self Report scores, age, gender, college, the interaction between Nonverbal Immediacy Scale- Self Report scores and age, the interaction between Nonverbal Immediacy Scale-Self Report scores and gender, and the interaction between Nonverbal Immediacy Scale-Self Report scores and college. The cognitive learning style preference was the dependent variable.

A multiple regression is an appropriate statistical method for this study because of the ability of the measure to predict the relationship between two or more independent variables and a dependent variable (Cohen, Manion, & Morrison, 2007). Also, useful is the ability for multiple regression to use a range of variables to determine their influence on a dependent variable. Multiple regression allows for understanding the covariation among the independent variables as well as that of the dependent variable with the independent variable. With this measure the ability exists to account for the variance in scores. Multiple regression with stepwise procedure allows each variable to be entered in sequence and have its value assessed (Brace, Kemp, & Snelgar, 2003). This procedure also detects which combination of independent variables will best predict the outcome.

Therefore, multiple regressions is applicable when determining if a relationship exists between a linear combination of the predictors and the dependent variable.

Sample

The participants in this study included 188 students enrolled in a public university in the southeastern United States. The participants were enrolled in an undergraduate public speaking course. The study was conducted during the spring semester, 2010. Participation in the study was voluntary and the participants received extra credit in their public speaking course for participation in the study. Institutional Review Board approval was received before the study was conducted (Appendix A).

The demographic information for this study was obtained by using a demographic questionnaire designed by the researcher (Appendix D). The group was comprised of 115 (61%) females and 73 (39%) males. The age of the participants ranged from 19 to 32. The mean age was 20.75 ($N = 188$). Based on the academic major of each participant, the participants were categorized by the college to which their major is assigned. The following are the number of students per college: 6 in the College of Agriculture; 11 in the College Architecture, Design, and Construction; 16, in the College of Business; 9 in the College of Education; 1 in the College of Engineering; 7 in the School of Forestry; 6 in the College of Human Sciences; 104 students in the College of Liberal Arts; and 32 in the College of Science and Mathematics. Due to the low density outside of the College of Liberal Arts, participants were placed in two categories, Liberal Arts and Non-Liberal Arts. One hundred and four students were Liberal Arts students (55%) and 84 (45%) were Non-Liberal Arts students.

Instrumentation

A demographic questionnaire and two instruments were used in this study. The demographic questionnaire was designed by the researcher to describe the sample. The demographic questionnaire collected the following information from each participant: age, gender, and major. The Nonverbal Immediacy Scale-Self Report (NIS-S) developed by Richmond, McCroskey, and Johnson (2003) was used to measure nonverbal immediacy. The Gregoric Style Delineator (GSD) developed by Anthony F. Gregorc (2009) was used to identify cognitive learning style preferences.

Nonverbal Immediacy Scale

The Nonverbal Immediacy Scale (NIS-S) is a self-report instrument designed by Richmond, McCroskey, and Johnson (2003) to measure the level of nonverbal immediacy in communication behavior. The NIS-S contains 13 different nonverbal components that are rated by researchers to be the essential components (Richmond, et al., 2003) (Appendix E). The survey consists of 26 statements related to nonverbal immediacy that are answered according to the level the respondent believes most accurately reflects his or her nonverbal communication behaviors. The responses to each statement are based on a five-point Likert scale: 1=Never; 2=Rarely; 3=Occasionally; 4=Often; 5=Very Often. The respondents selected only one response for each statement. Immediacy can be categorized as high or low. High immediacy for females is determined by a summed score of greater than 112 and low immediacy by a score of less than 92. High immediacy for males is a score of greater than 104 and low immediacy is a score of less than 83.

According to Richmond, et al. (2003), two simple instruments were developed as a test for predictive validity. Two-item instruments using scales as predictors of warmth and approachability were developed for initial validity tests. Scores on the two instruments were added together to form a four-item measure of warmth and approachability. The raw validity correlations ranged from .58 to .82 which was considered acceptable for initial predictive validity test. Because of the inclusion of 13 different nonverbal components with two items per component, the content validity of the NIS-S is very strong. Richmond, et al. (2003) state that the Nonverbal Immediacy Scale Self-Report seems to include the necessary elements of nonverbal immediacy. The range of validity estimates was moderate to high (Richmond, et al., 2003). According to Richmond, et al. (2003), the reliability estimates of the Nonverbal Immediacy Scale – Self Report (NIS-S) was 0.90. For all of the data sets reliability was 0.90 or higher. The researcher conducted a reliability measure on the NIS-S to determine internal consistency. The Cronbach's alpha for nonverbal immediacy was 0.838 which was slightly lower than the reliability found by Richmond, et al. (2003).

Gregorc Style Delineator

The Gregorc Style Delineator (GSD) is a self-report instrument based on mediation ability theory and used to measure cognitive learning style preferences (Gregorc, 1982). Respondents rank ten sets of four words to indicate the best descriptor of their thinking and learning. Each instrument is summed and a score of 27-40 indicates high learning style, a score of 16-26 indicates average learning style, and a score of 10-15 indicates low learning style (Gregorc, 1984a). The Gregorc Style Delineator, used frequently with college students to determine their learning style preference, focuses on

two types of mediation ability preferences: perception and ordering. Gregorc developed the four learning style preferences: Concrete Sequential (CS) (instinctive, methodical, and deliberate); Abstract Sequential (AS) (intellectual, logical, analytical, and correlative); Abstract Random (AR) (emotional, psychic, perceptive, and critical); and Concrete Random (CR) (intuitive, instinctive, impulsive, and independent) (Gregorc, 1982).

According to Gregorc (1984), two areas of validity were assessed, predictive and construct. For the predictive validity, 110 adults were administered the Gregorc Style Delineator and responded to a list of selected characteristics of Gregorc's attributes. Correlation was measured between Gregorc Style Delineator scores and attribute scores which included .70 for Concrete Sequential, .76 for Abstract Sequential, .61 for Abstract Random, and .68 for Concrete Random. Correlations were significant at the 0.001 level. For the construct validity, 123 subjects were asked to rate descriptions of themselves on a scale from 1 (strongly disagree) to 5 (strongly agree). 89% agreed or strongly agreed with their respective descriptions according to the Style Delineator (Gregorc, 1984).

To determine reliability, 110 adult participants were used in a test-retest ranging from six hours to approximately eight weeks (Gregorc (1984a)). The standardized alpha coefficient calculated for each of the four scales (CS, AS, CR, and AR) ranged from 0.89 to 0.93. Gregorc (1984a) reported that the test-retest correlation coefficients were significant at the 0.001 level or less ranging from 0.85 to 0.88.

Concerns for Internal/External Validity

Validity denotes the accuracy of the instrument or that it measures what it claims to measure (Lodico, Spaulding, & Voegtle, 2006). Validity also relates to both the qualities and the uses of the tests (Best & Kahn, 2006). Validity of the test refers to the degree to which the test actually measures what it claims to measure and is required for quantitative research. Internal validity is “an estimate of the degree to which a design controls for variables that might account for the changes in the dependent variable that are not attributable to the experimental treatment” (Langenbach, Vaughn, & Aagaard, 1994, p. 371). The purpose of internal validity is to confirm that the explanation of a specific set of data provided by the research can actually be supported by the data (Cohen, Manion, & Morrison, 2007). External validity is “an estimate of the degree to which results demonstrated in a research project are generalizable to the population” (Langenbach, et al., p. 369). Research would have little value if the reported variable relationships were valid only in a specific experimental setting (Best & Kahn). Threats to internal and external validity should be identified by the researcher. According to Campbell and Stanley (1971) threats to internal validity include maturation, history, testing, unstable instrumentation, statistical regression, differential selection of participants, mortality, and selection-maturation interaction. In addition, threats to external validity include pre-test-treatment interaction, selection-treatment interaction, multiple treatment interference, specificity of variables, treatment diffusion, experimenter effects, and reactive effects (Campbell & Stanley).

Concerns of validity exist for the Nonverbal Immediacy Scale-Self Report based on McCroskey’s mention of need for additional validity tests (Richmond, et al.).

Evidence of construct validity was not given by the data. Also, based on a study by Reio and Wiswell (2006), some concerns of validity exist for Gregorc Style Delineator. The Gregorc Style Delineator was administered to 467 undergraduate and graduate students from two colleges in the mid-Atlantic region of the United States. This study used factor analysis techniques to investigate Gregorc's channel theory which resulted in the Cronbach's alpha coefficients ranging from .54 to .68. These results were significantly lower than those reported originally by Gregorc. According to this study, support was low for the Gregorc Style Delineator theoretical design and the accurate display of one's cognitive learning style.

Concerns for Reliability

Reliability focuses on the ability of an instrument to produce basically the same score for an individual through repetitive testing (Lodico, Spaulding, & Voegtle, 2006). Best and Kahn (2006) define reliability as the degree of consistency provided by the instrument. The extent to which scores from past use of the selected instrument demonstrate reliability should be discussed by the researcher (Creswell, 2003). Reliability is generally expressed as a reliability coefficient obtained by using correlation. Values from zero to +1.00 can be assumed by the reliability coefficient and the closer to +1.00 the more reliable the instrument (Lodico, et al.). High reliability is noted by a high reliability coefficient (Gay & Airasian, 2000). According to Ross and Shannon (2008), internal consistency estimates of reliability are typically appropriate for most researchers because only one evaluation instrument is needed and it must only be given to one group at a time. According to Cohen, Manion, and Morrison (2007), in quantitative research when determining reliability there are two forms which both measure internal

consistency. The first is the split-half which determines reliability coefficient between the two halves of the instrument. The other form which provides a calculation of reliability as internal consistency is found in Cronbach's alpha and is often referred to as the alpha coefficient of reliability (Cohen, et al.).

Limitations of the Study

There are several limitations to this study. The instruments used in this study were self-reporting which could have influenced the participants toward the responses that were perceived to be more positive responses. The use of students within the public speaking course only was a threat to external validity. Students from a variety of courses would represent more diverse experiences and knowledge. In addition, the results may not be representative of students enrolled in other universities since the sample was composed of students from only one southeastern university.

Data Collection and Procedure

Three instruments were administered to students enrolled in an undergraduate public speaking course. The demographic survey and two self-report instruments were completed by each participant during spring semester 2010. The data collection sessions were conducted outside of the normal classroom. Participation was voluntary and extra credit was awarded by the instructor for participation. Instructors were contacted in writing by the researcher to explain the study and to schedule a time for the researcher to attend the class to announce and explain the study to the students. The researcher attended each class and explained the study and announced the times that the surveys would be administered.

At the beginning of each data collection session, those students who voluntarily attended the session were given an overview of the study. Students electing to participate after the overview were given a packet which included a consent form approved by the Institutional Review Board (Appendix A), a demographic questionnaire (Appendix D), the Nonverbal Immediacy Scale-Self Report (NIS-S) (Appendix E), and the Gregorc Style Delineator (GSD). Each instrument was coded to ensure that each survey from each participant remained together. Directions were read to the participants prior to testing as part of their orientation. Each session lasted approximately 20 minutes. The surveys were scored by the researcher. The Predictive Analysis Software 18.0 (PASW, 2010) was used to analyze the data.

Summary

This chapter presented the design of the study, the population and sample selection, the instrumentation, and the procedure for data collection. The validity and reliability of the Nonverbal Immediacy Scale-Self Report (NIS-S) and the Gregorc Style Delineator (GSD) were discussed. Data were collected in compliance with the research guidelines set by the Auburn University Institutional Review Board.

Chapter 4

Findings

Introduction

The purpose of this study was to examine the relationship between undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy Scale Self-Report (NIS-S) and cognitive learning styles as measured by the Gregorc Style Delineator (GSD). The study also examined the relationship between nonverbal immediacy and cognitive learning style preference and the demographic variables of age, gender, and college. This chapter presents an analysis of the data gathered from the demographic profile of the sample population, the Gregorc Style Delineator (GSD), and Nonverbal Immediacy Scale Self-Report (NIS-S). This chapter is organized in the following sections: research questions, demographic results, GSD results, NIS-S results, multiple regression analysis results, research question results, and a summary of the findings. To analyze the data associated with each of the research questions, the Predictive Analysis Software 18.0 (PASW, 2010) was used.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between gender and nonverbal immediacy and cognitive learning styles?
2. What is the relationship between age and nonverbal immediacy and cognitive learning styles?

3. What is the relationship between major/college and nonverbal immediacy and cognitive learning styles?
4. What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

Demographic Results

The sample population for this study included 188 students enrolled in a public university in the southeastern United States during spring semester, 2010. The participants were students in an undergraduate public speaking course. Participation in the study was voluntary and the participants received extra credit in their public speaking course for participation in the study. Each participant completed a Gregorc Style Delineator and a Nonverbal Immediacy Scale-Self Report. In addition to completing the two validated instruments, the participants completed a demographic questionnaire (Appendix D) which provided information about gender, age, and college.

Gender

The participant group was comprised of 115 females and 73 males. The higher percentage of participants in this study were female (61%) with males composing 39% of the population (Table 1). This is consistent with the higher percentage of females enrolled in the college which had the highest percentage of participants. Table 2 represents the distribution of participants by level of nonverbal immediacy and gender.

Table 1

Distribution and Percentages of Participants by Gender

Gender	<i>n</i>	%
Male	73	39
Female	115	61

N = 188

Table 2

Distribution and Percentages of Participants by Level of Nonverbal Immediacy and Gender

	Male		Female	
	<i>n</i>	%	<i>n</i>	%
Low	9	12%	22	19%
Intermediate	45	62%	76	66%
High	19	26%	17	15%

N = 188

Age

The age of the participants ranged from 19 to 32 years (Table 2). The mean age was 20.75. Due to the low number of students in the age range of 23 to 32, participants age 22 to 32 were grouped in a 22 years and above category. The participants' level of nonverbal immediacy by age is presented in Table 4.

Table 3

Distribution and Percentage of Participants by Age

Age	<i>n</i>	%
19 years	34	18%
20 years	55	29%
21 years	59	31%
22 years	25	13%
23 years	8	4%
24 years	2	1%
25 years	3	1.5%
27 years	1	.5%
32 years	1	.5%

N = 188

Table 4

Distribution and Percentage of Participants by Level of Nonverbal Immediacy and Age

	Age							
	19		20		21		22 and above	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Low	0	0%	9	16%	12	20%	10	25%
Intermediate	24	71%	32	58%	37	63%	28	70%
High	10	29%	14	26%	10	17%	2	5%

N = 188

College

Participants indicated their academic major and college on the demographic questionnaire. Table 5 provides a summary of participants by college. Due to the diversity of academic majors and low density outside of the College of Liberal Arts, students were placed in two categories, Liberal Arts and Non-Liberal Arts. One hundred and four students were Liberal Arts majors (55%) and 84 (45%) were Non-Liberal Arts majors.

Table 5

Distribution and Percentage of Participants by College

College	<i>n</i>	%
Agriculture	6	3%
Architecture, Design, & Construction	11	6%
Business	16	9%
Education	9	5%
Engineering	1	.5%
Forestry	7	4%
Human Sciences	6	3%
Liberal Arts	104	55%
Science & Mathematics	32	17%

N = 188

Table 6

Distribution and Percentage of Participants by Level of Nonverbal Immediacy and College

	Liberal Arts		Non-Liberal Arts	
	<i>n</i>	%	<i>n</i>	%
Low	14	14%	17	20%
Intermediate	71	68%	50	60%
High	19	18%	17	20%

N = 188

Gregorc Style Delineator Results

The Gregorc Style Delineator (GSD) is a self-report instrument based on mediation theory and used to measure cognitive learning style preference (Gregorc, 1982). Respondents rank ten sets of four words to indicate the best descriptor of their thinking and learning. Perception and ordering are the two types of mediation ability preferences revealed. The four learning styles preferences are: Concrete Sequential (instinctive, methodical, and deliberate); Abstract Sequential (intellectual, logical, analytical, and correlative); Abstract Random (emotional, psychic, perceptive, and critical); and Concrete Random (intuitive, instinctive, impulsive, and independent) (Gregorc, 1982). Gregorc (2009) explained that human beings all have a basic amount of Concrete Sequential, Abstract Sequential, Abstract Random, and Concrete Random mediation ability; however, most function best in one or two channels.

The Gregorc Style Delineator mean scores and standard deviation of the 188 participants in this study are presented in Table 7. The mean score of the female participants indicated high preference for Abstract Random and Cognitive Random. The mean score of the male participants did not indicate a high preference in any of the learning styles; however, their highest scores were Concrete Sequential (Table 7). Table 8 represents the Gregorc Style Delineator scores mean and standard deviation by participant's age. With 104 participants in the College of Liberal Arts and 84 in Non-Liberal Arts colleges, the mean and standard deviation Gregorc Style Delineator scores of participants by college are reported in Table 9.

Table 7

Means and Standard Deviations for Gregorc Style Delineator Scores by Gender

	Female (n=115)		Male (n=73)		Total (N=188)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Concrete Sequential	25.29	6.027	26.78	6.051	25.87	6.065
Abstract Sequential	21.70	4.082	23.86	3.928	22.54	4.149
Abstract Random	27.20	4.711	23.70	5.082	25.84	5.138
Concrete Random	27.23	5.181	25.66	4.448	25.75	4.897

N = 188

Table 8

Means and Standard Deviations for Gregorc Style Delineator Scores by Age

	19 yrs. (n=34)		20 yrs. (n=55)		21 yrs. (n=59)		22+ yrs. (n=40)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Cognitive Sequential	26.35	6.04	25.25	5.80	26.46	6.66	25.43	5.61
Abstract Sequential	22.88	3.88	21.87	4.34	22.68	4.00	22.98	4.35
Abstract Random	26.32	5.29	25.90	4.74	25.64	5.57	25.63	5.03
Cognitive Random	27.37	4.90	26.96	4.61	25.64	5.27	25.98	4.67
<i>N</i> = 188								

Table 9

Means and Standard Deviations for Gregorc Style Delineator Scores by College

	Liberal Arts <i>n</i> = 104		Non-Liberal Arts <i>n</i> = 84	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Concrete Sequential	24.39	6.121	27.69	5.504
Abstract Sequential	21.92	4.163	23.31	4.024
Abstract Random	27.19	4.626	24.17	5.273
Concrete Random	26.49	4.942	24.83	4.710
<i>N</i> = 188				

Nonverbal Immediacy Scale-Self Report Results

The Nonverbal Immediacy Scale (NIS-S) is a self-report instrument designed by Richmond, McCroskey, and Johnson (2003) to measure the level of nonverbal immediacy in communication behavior. It consists of 26 statements related to nonverbal immediacy that are answered according to the level the respondent believes most accurately reflects his or her nonverbal communication behaviors. The responses to each statement are based on a five-point scale: 1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Often; and 5 = Very Often. The respondents selected only one response for each statement.

The scores of the 188 participants indicated that 31 were low in nonverbal immediacy, 121 were intermediate in nonverbal immediacy, and 36 were high in nonverbal immediacy (see Table 10). The NIS-S scores of the 188 participants ranged from 61-125. The mean score was 100.33 for females and 97.26 for males with a standard deviation of 11.62 for females and 10.42 for males. The mean and standard deviation Gregorc Style Delineator scores of participants by NIS-S level are reported in Table 11.

Table 10

Mean and Standard Deviation for Nonverbal Immediacy Scale Scores

Nonverbal Immediacy	<i>n</i>	%	<i>M</i>	<i>SD</i>
Low	31	17	82.32	8.428
Intermediate	121	64	99.27	6.105
High	36	19	113.17	5.779

N = 188

Table 11

Mean and Standard Deviations for Gregorc Style Delineator Scores by NIS scores

	NIS Low <i>n</i> = 31		NIS Intermediate <i>n</i> = 121		NIS High <i>n</i> = 36	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CS	29.35	5.701	25.27	5.710	24.86	6.621
AS	23.06	3.820	22.64	4.231	21.78	4.148
AR	24.13	4.559	25.88	5.047	27.17	5.614
CR	23.45	4.560	26.21	4.768	26.19	5.176

N = 188

Multiple Regression Analysis Results

A multiple regression with stepwise procedure was completed to investigate the relationship between the four cognitive learning style preferences of Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR) and seven predictors: Nonverbal Immediacy Scale Self-Report (NIS-S) scores, age, gender, college, the interaction between NIS-S scores and age, the interaction between NIS-S scores and gender, and the interaction between NIS-S scores and college.

Concrete Sequential Learning Style Preference and Predictors

The first results were between the Concrete Sequential (CS) learning style preference, the dependent variable, and the seven predictors, the independent variables. No relationship was found between Concrete Sequential learning style preference and Nonverbal Immediacy Scale-Self Report (NIS-S) scores, age, gender, the interaction

between NIS-S and gender, or the interaction between NIS-S and college. A relationship was found between the Concrete Sequential learning style, the college, and the interaction between the Nonverbal Immediacy Scale-Self Report (NIS-S) scores and age $F_{(2, 185)} = 15.632, p < 0.001$. The R^2 indicates that approximately 14.5% of the total variance of Concrete Sequential is accounted for by the two predictors of college and the interaction of NIS-S scores and age. The multiple regression model follows: $CS = 40.751 + (-0.006)(NIS_age) + (-3.043)(college)$. NIS_age represents the interaction between Nonverbal Immediacy Scale Self-Report scores and the age of all participants. The Non-Liberal Arts participants were coded as 0 and the Liberal Arts participants were coded as 1.

College predicted Concrete Sequential learning style preference at a statistically significant level, $t = -3.667, p < 0.001$. The standardized beta value for college is -0.250. Due to the low density outside of the College of Liberal Arts, participants were placed in two categories: Liberal Arts and Non-Liberal Arts. Based on the multiple regression model, the Concrete Sequential mean score of students in the College of Liberal Arts was lower than the mean Concrete Sequential score of Non-Liberal Arts students by 3.043 points.

The interaction effect of NIS-S score and age predicted Concrete Sequential learning style preference at a statistically significant level, $t = -3.923, p < 0.001$. The standardized beta value for the interaction effect of NIS-S score and age was -0.268. The interaction effect was a combination of the participants' scores on the NIS-S and their age. Based on the magnitude of the t-statistics and the standardized beta values, the interaction effect of the NIS-S score and age had slightly more impact on the Concrete Sequential learning style preference than the college.

The interaction effect of NIS-S scores and age is displayed in Figure 1. As the immediacy level of nineteen year old students increased, the preference for Concrete Sequential cognitive learning style preference decreased. Nineteen year old participants with low nonverbal immediacy behaviors demonstrated a high preference for Concrete Sequential learning style. Nineteen year old students with intermediate and high nonverbal immediacy behaviors indicated average Concrete Sequential learning style preference. Twenty year old students with low nonverbal immediacy had higher Concrete Sequential scores than those with intermediate or high levels of immediacy. A slight increase in Concrete Sequential preference occurred in twenty year olds as their level of immediacy moved from intermediate to high. Low immediacy twenty one year old students indicated a high preference for Concrete Sequential learning style. Twenty one year old students with intermediate and high nonverbal immediacy behaviors demonstrated an average preference for Concrete Sequential learning. As the level of immediacy increased, the preference for Concrete Sequential learning decreased for twenty one year olds. The twenty two year old and above students with low nonverbal immediacy demonstrated higher Concrete Sequential scores than those students with intermediate or high nonverbal immediacy. A steady decline in preference for the Concrete Sequential learning style was found as the twenty two year olds level of nonverbal immediacy increased. Twenty two year old and above participants with low nonverbal immediacy behaviors indicated a high preference for Concrete Sequential learning. The 22 years old or above students with intermediate and high nonverbal immediacy demonstrated an average preference for Concrete Sequential learning style.

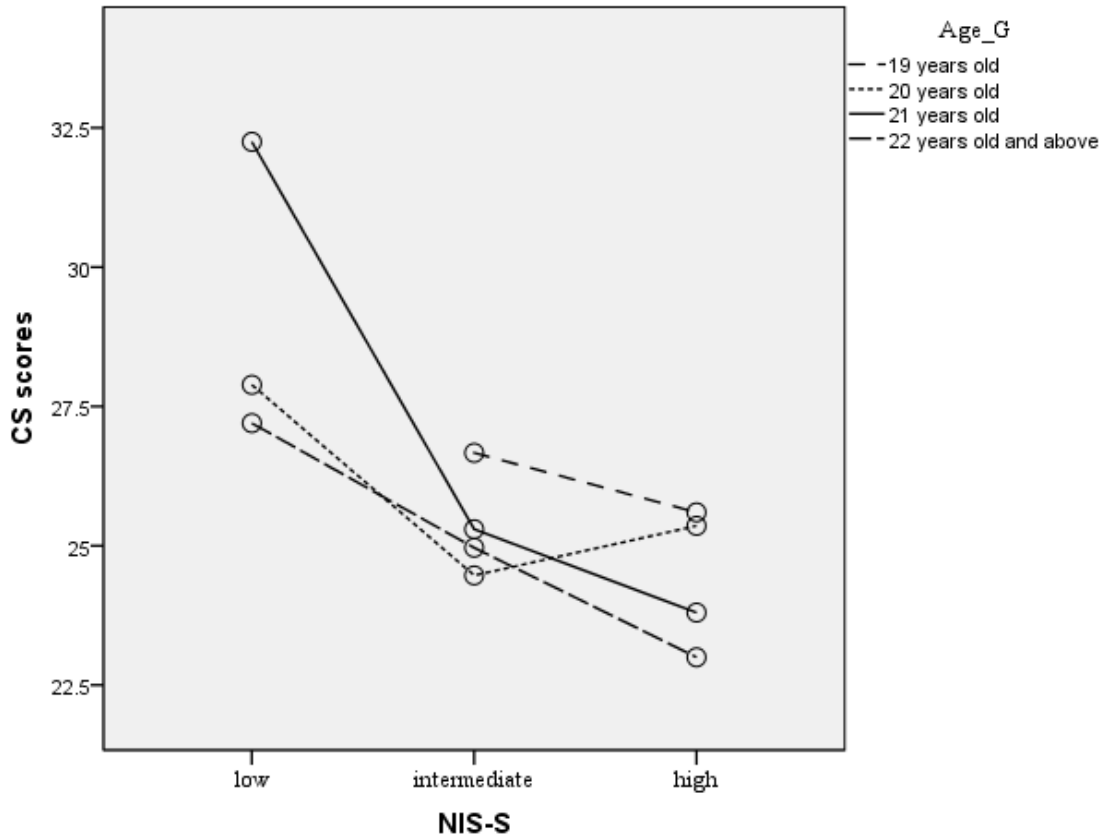


Figure 1. CS and Interaction Effect of Level of Nonverbal Immediacy and Age

Abstract Sequential Learning Style Preference and Predictors

The second results were between the Abstract Sequential (AS) learning style preference, the dependent variable, and the seven predictors, the independent variables. No relationship was found between age, college, the interaction between Nonverbal Immediacy Scale-Self Report (NIS-S) scores and age, the interaction between NIS-S scores and gender, and the interaction between NIS-S scores and college. A linear relationship was found between the Abstract Sequential learning style preference, NIS-S score, and gender ($F_{(2, 185)} = 9.595, p < 0.001$). The R^2 indicates that approximately 9.4% of the total variance of Abstract Sequential is accounted for by the two predictors of NIS

score and gender. The multiple regression model follows: $AS = 28.104 + (1.963)$ (gender) + $(-.064)$ (NIS). The gender of the participants was coded as 1 for males and 2 for females. NIS-S represents the score on the Nonverbal Immediacy Scale Self-Report.

Gender predicted Abstract Sequential learning style preference at a statistically significant level, $t = 3.274$, $p < 0.001$. The Abstract Sequential learning style mean score of males was higher than the mean Abstract Sequential score of females by 1.963 points. NIS-S scores also predicted Abstract Sequential learning style preference at a statistically significant level, $t = -2.447$, $p < 0.001$. The Abstract Sequential learning style preference mean score for low immediacy participants was 0.064 points higher than intermediate or high immediacy participants. Based on the magnitude of the t-statistics, gender had slightly more impact on the Abstract Sequential learning style preference than the NIS-S scores. The standardized beta value for gender is 0.231, and for NIS-S scores is -0.173. This also indicates that gender has slightly more impact in this model.

Abstract Random Learning Style Preference and Predictors

The next results were between Abstract Random (AR) learning style preference, the dependent variable, and the seven predictors, the independent variables. No relationship was found between Abstract Random learning style preference and Nonverbal Immediacy Scale-Self Report (NIS-S) scores, age, college, and the interaction between NIS-S scores and gender. A relationship was found between the Abstract Random learning style, gender, the interaction between the Nonverbal Immediacy Scale-Self Report (NIS-S) scores and college, and the interaction between the NIS-S scores and age ($F_{(3, 184)} = 17.450$, $p < 0.001$). The R^2 indicates that approximately 22% of the total variance of Abstract Random learning style is accounted for by the three predictors of

gender, the interaction between the NIS-S scores and college, and the interaction between NIS scores and age. The multiple regression model follows:

$$AR = 17.104 + (-3.036) (\text{gender}) + (.024) (\text{NIS_college}) + (.004) (\text{NIS_age}).$$

Gender of participants was coded as 1 for males and 2 for females. NIS_college was the interaction between Nonverbal Immediacy Scale Self-Report scores and students in the College of Liberal Arts and Non-Liberal Arts students. NIS_age represented the interaction between Nonverbal Immediacy Scale scores and the age of all participants.

Gender predicted Abstract Random learning style preference at a statistically significant level, $t = -4.384$, $p < 0.001$. The standardized beta value for gender was -0.289 . The Abstract Random learning style preference score of males was lower than females by 3.036 points.

The interaction effect of NIS-S scores and college also predicted Abstract Random learning style preference at a statistically significant level, $t = 3.523$, $p = 0.001$. The standardized beta value for the interaction effect of NIS-S scores and college was 0.235 . The interaction effect of NIS-S scores and age statistically significantly predicted Abstract Random learning style preference, $t = 3.120$, $p = 0.002$. The standardized beta value for the interaction effect of NIS-S scores and age was 0.206 . Based on the magnitude of the t-statistics and the standardized beta values, gender had the most impact of the Abstract Random learning style preference, followed next by the interaction effect of the NIS-S scores and college, and then the interaction effect of the NIS-S scores and age.

The interaction effect of NIS-S scores and college is displayed in Figure 2. The Liberal Arts students with high nonverbal immediacy behaviors demonstrated a high

preference for Abstract Random cognitive learning style. The Liberal Arts students with intermediate and low nonverbal immediacy behaviors indicated an average preference for Abstract Random learning style. The Liberal Arts students with intermediate nonverbal immediacy were only slightly higher than the students with low nonverbal immediacy. The non-Liberal Arts students all demonstrated an average preference for Abstract Random learning. Those with low immediacy revealed the lowest preference within the average range. The intermediate immediacy students had the highest of the three groups however it is was still in the average range of preference for Abstract Random learning. The students with high immediacy were only slightly lower in Abstract Random preference than the students with intermediate immediacy.

Figure 3 presents the interaction effect of NIS-S scores and age. Nineteen year old participants demonstrated intermediate to high nonverbal immediacy and as their level of immediacy increased their preference for the Abstract Random learning style preference also increased. The 19 years old students with intermediate nonverbal immediacy behaviors had an average preference for Abstract Random learning. The 19 years old students with high nonverbal immediacy behaviors also had a high preference for Abstract Random learning style. The 20 years old showed little change in their average preference for Abstract Random learning with the low and high nonverbal immediacy students having a similar preference for Abstract Random and the intermediate immediacy was only slightly lower. The 21 years old participants with low and intermediate levels of nonverbal immediacy demonstrated an average preference for Abstract Random learning. However, within the average preference, as their level of immediacy increased so did their preference for Abstract Random. The 21 years old

participants with a high level of nonverbal immediacy behaviors also demonstrated a high preference for Abstract Random learning style. The 22 years old and above participants had an average preference for the Abstract Random learning style preference; however the students with low immediacy behaviors scored lower in the average range of Abstract Random learning style than did those students with intermediate to high nonverbal immediacy behaviors.

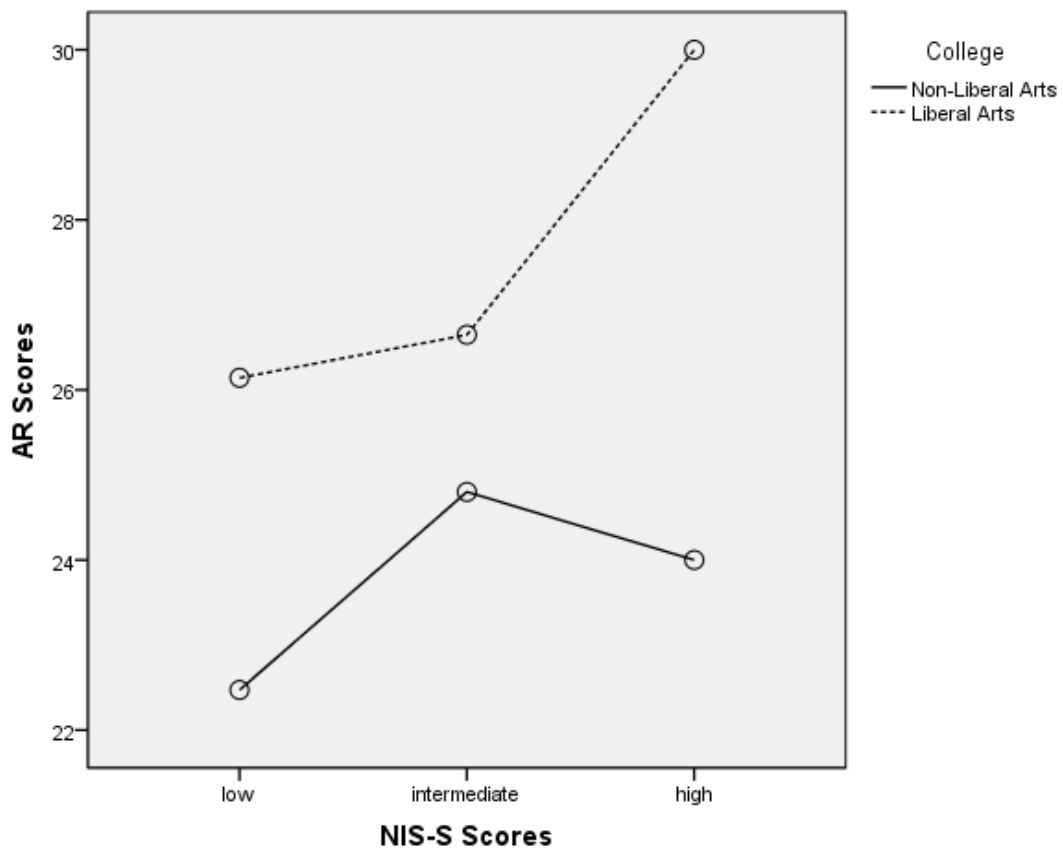


Figure 2. AR and Interaction Effect of Level of Nonverbal Immediacy and College

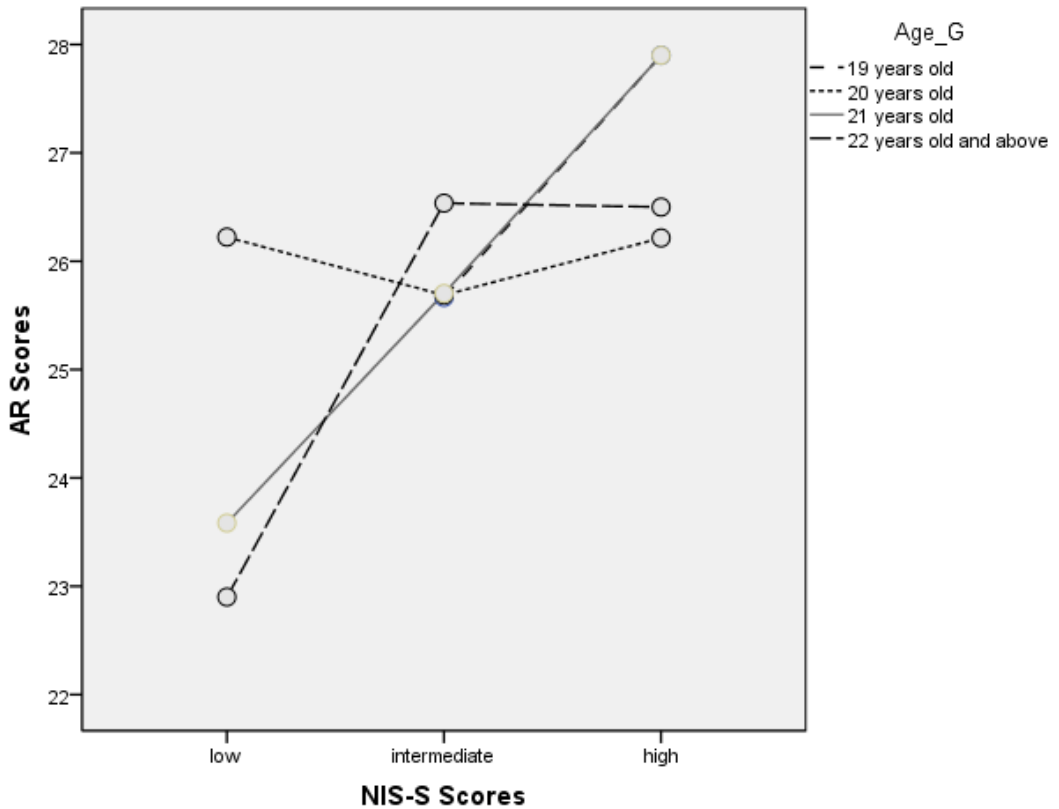


Figure 3. AR and Interaction Effect of Level of Nonverbal Immediacy and Age Concrete Random Learning Style Preference and Predictors

The final results were between the Concrete Random (CR) learning style preference, the dependent variable, and the seven predictors, the independent variables. No relationship was found in this study between Concrete Random learning style preference and Nonverbal Immediacy Scale-Self Report (NIS-S) scores, age, gender, college, and the interaction between NIS-S scores and gender. A linear relationship was found between the Concrete Random learning style preference, the interaction between the NIS-S scores and age and the interaction between the NIS-S scores and college $F_{(2, 185)} = 7.572, p = 0.001$. The R^2 indicates that approximately 7.6% of the total variance of Concrete Random is accounted for by the two predictors of the interaction of NIS-S

scores and age and the interaction of NIS-S scores and college. The multiple regression model follows: $CR = 16.792 + (0.004) (NIS_age) + (0.015) (NIS_college)$. NIS_age represents the interaction between Nonverbal Immediacy Scale-Self Report scores and the age of all participants. NIS_college stands for the interaction between Nonverbal Immediacy Scale-Self Report score and participants in the College of Liberal Arts and Non-Liberal Arts students.

The interaction effect of NIS-S scores and age predicted the Concrete Random learning style preference at a statistically significant level, $t = 2.849, p < 0.005$. The standardized beta value for the interaction effect of NIS-S scores and age was 0.204. The interaction effect was the combination of the participants' scores on the NIS-S and their age.

The interaction effect of NIS-S scores and college also predicted Concrete Random learning style preference at a statistically significant level, $t = 2.170, p < 0.031$. The standardized beta value for the interaction effect of NIS-S scores and college was 0.155. The interaction effect was the combination of the scores of the participants on the NIS-S scale and their college which was divided into Liberal Arts and Non-Liberal Arts. Based on the size of the t statistics, interaction of NIS-S scores and age had more impact on the Concrete Random learning style preference than the interaction of NIS-S scores and college. Also, based on the standardized beta value, the interaction of NIS-S scores and age had greater influence on the model than the interaction of NIS-S scores and college.

The interaction effect of NIS-S scores and age is displayed in Figure 4. The nineteen year old participants demonstrated an average preference for Concrete Random

learning style preference and no change in preference based on level of nonverbal immediacy behaviors. The twenty year old participants with a low level of nonverbal immediacy behaviors demonstrated an average preference for Concrete Random cognitive learning style. The twenty year old participants with an intermediate and high level of nonverbal immediacy behaviors also indicated high preference for the Concrete Random learning style. The twenty-one year old participants all demonstrated an average preference for the Concrete Random learning style; however, as their level of nonverbal immediacy increased, their preference for Concrete Random learning style increased even though all levels remained in the average range of preference. The participants age twenty-two years old and above indicated an average preference for Concrete Random cognitive learning style. However, in this age group, the students with low and those with high nonverbal immediacy behaviors indicated a lower preference for Concrete Random learning style than the students with intermediate nonverbal immediacy behaviors.

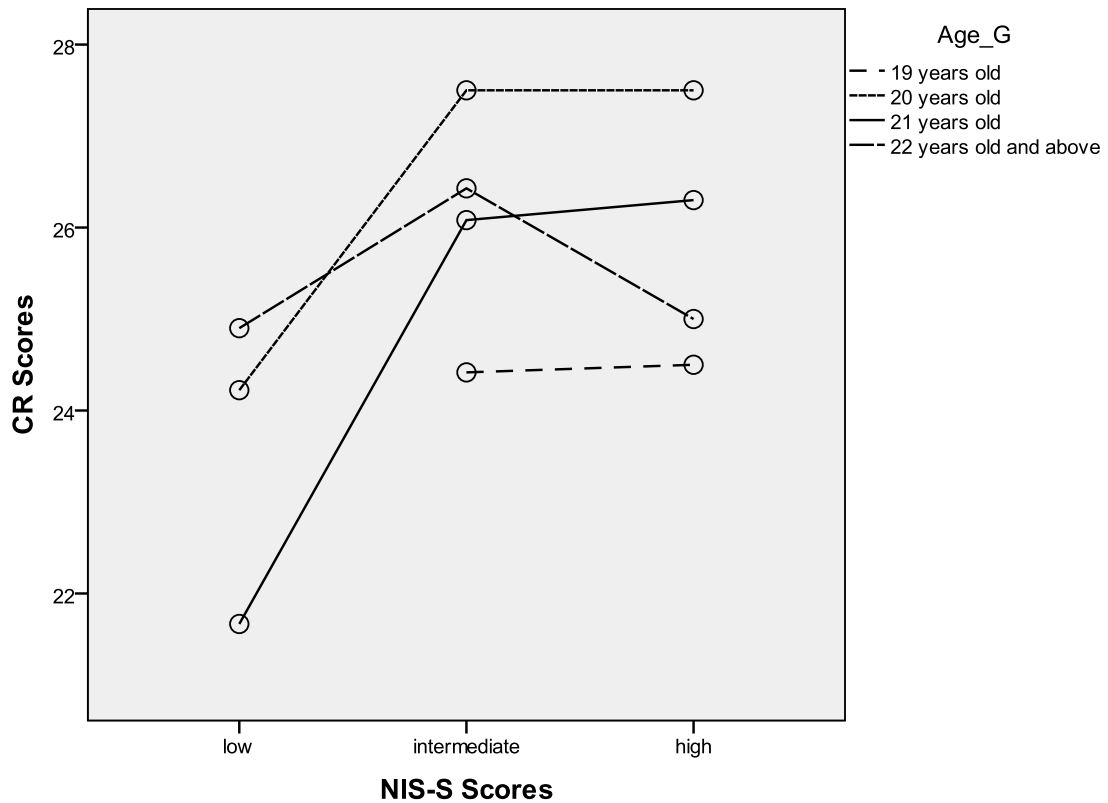


Figure 4. CR and Interaction Effect of Level of Nonverbal Immediacy and Age

Figure 5 reveals the interaction effect of NIS-S scores and college. The Liberal Arts students who demonstrated a low and intermediate level of nonverbal immediacy behaviors also demonstrated an average preference for Concrete Random cognitive learning style preference. As the Liberal Arts student level of nonverbal immediacy behaviors increased, their preference for the Concrete Random learning style also increased. The Liberal Arts students with a high level of nonverbal immediacy also indicated a high preference for Concrete Random learning. The Non-Liberal Arts students demonstrated an average preference for Concrete Random learning. The Non-Liberal Arts students with low nonverbal immediacy behaviors also demonstrated a lower

preference for Concrete Random learning style. As the level of nonverbal immediacy behaviors increased up to the average level, the preference for Concrete Random learning styles increased. After the intermediate level of nonverbal immediacy behaviors was reached for the Non-Liberal Arts students, the preference for Concrete Random learning decreased. The Non-Liberal Arts students with high nonverbal immediacy behaviors demonstrated less preference for the Concrete Random learning style than the students with intermediate nonverbal immediacy behaviors, but higher than the students with low nonverbal immediacy behaviors.

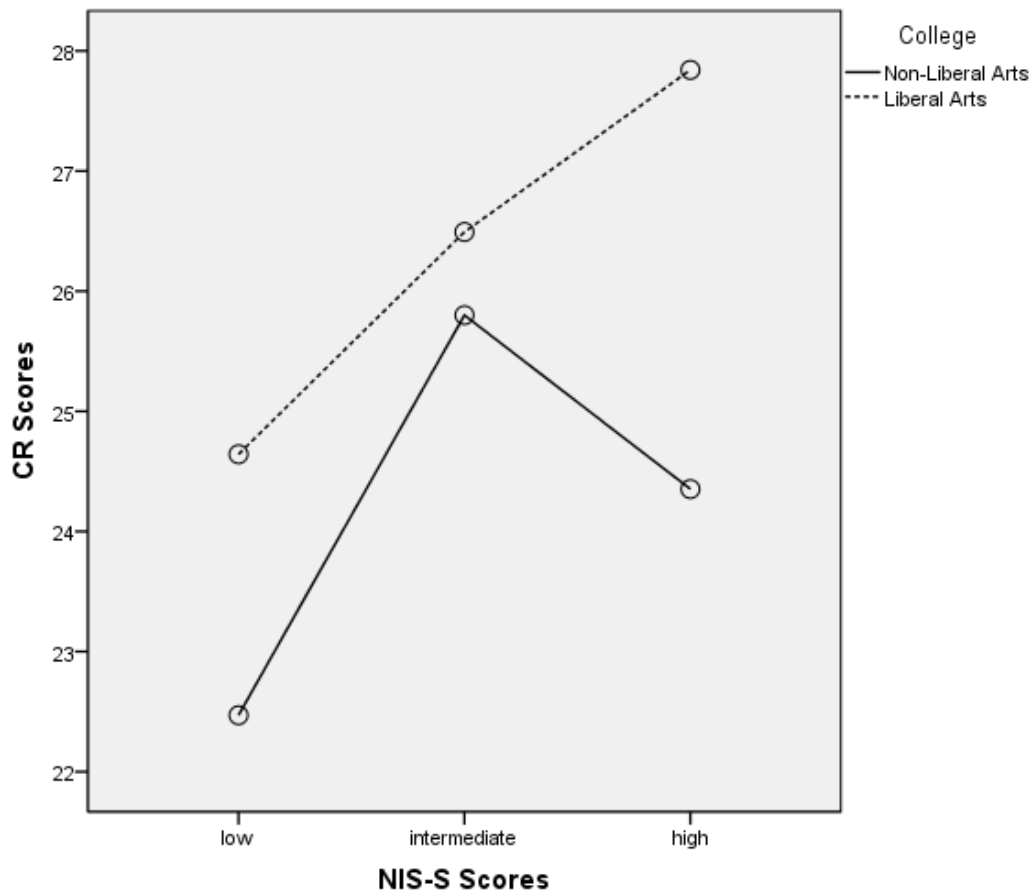


Figure 5. CR and Interaction Effect of Level of Nonverbal Immediacy and College

Research Question Findings

Research Question One

1. What is the relationship between gender and level of nonverbal immediacy and cognitive learning styles?

A statistically significant relationship was found between gender and Abstract Sequential (AS) and Abstract Random (AR) learning style preference. The Abstract Sequential mean score of males was higher than the mean score of females. The Abstract Random mean score of females was higher than the mean score of males. No significance was found between gender and Concrete Sequential (CS) or Concrete Random (CR) learning style preferences. The interaction between Nonverbal Immediacy Scale-Self Report scores and gender did not significantly predict Abstract Random, Abstract Sequential, Concrete Sequential, or Concrete Random learning style preferences.

Research Question Two

2. What is the relationship between age and level of nonverbal immediacy and cognitive learning styles?

A statistically significant relationship was indicated in this study between the interaction of NIS-S scores and age and the Concrete Sequential (CS), Abstract Random (AR), and Concrete Random (CR) learning style preference (Figure 1). In the three age groups of 20, 21, and 22 year old and above students, the students with low nonverbal immediacy had higher Concrete Sequential preference than did the students with high nonverbal immediacy. All 19 year old participants in this study were in the intermediate and high level of nonverbal immediacy. The 19 year old students with intermediate nonverbal immediacy had a higher preference for the Concrete Sequential learning style

than the students with high nonverbal immediacy. Therefore, among all four age groups, the lower the level of nonverbal immediacy the higher the preference for Concrete Sequential learning style

The interaction effect of NIS-S scores and age was also a predictor of Abstract Random learning style preference (Figures 3 & 4). Nineteen and twenty one year old participants' preference for Abstract Random learning style increased as their level of nonverbal immediacy increased. Nineteen and twenty one year old students with high nonverbal immediacy also indicated a high preference for the Abstract Random learning style. Twenty year old students had an average preference for the Abstract Random learning style. However, an increase was noted in Abstract Random preference as their level of immediacy increased from low to intermediate. The twenty two year old and above students demonstrated an average preference for the Abstract Random learning style with only a moderate change between levels of immediacy.

Based on this study, the interaction effect of NIS-S scores and age was also a predictor of Concrete Random learning style preference. No change in 19 year old students was indicated between the intermediate and high nonverbal immediacy and the students' average preference for Concrete Random learning style. In the three groups of 20, 21, and 22 year old and above students, as the students level of nonverbal immediacy increased from low to intermediate, their preference for Concrete Random learning style also increased. Twenty and twenty one year old students maintained approximately the same preference for Concrete Random learning style as their nonverbal immediacy increased from intermediate to high. Twenty two year old students' preference for Concrete Random learning style decreased as their nonverbal immediacy level increased.

The 22 year old students with low and high nonverbal immediacy behaviors demonstrated the same lower preference for Concrete Random learning style. Among the four age groups, only the 20 year old participants with intermediate and high levels of nonverbal immediacy indicated a high preference for Concrete Random learning style.

The interaction between NIS-S scores and age did not significantly predict Abstract Sequential. Also, a significant relationship was not found between the predictor of age and Abstract Random, Abstract Sequential, Concrete Sequential, and Concrete Random.

Research Question Three

3. What is the relationship between academic college and level of nonverbal immediacy and cognitive learning styles?

College predicted Concrete Sequential learning style preference at a statistically level. The Concrete Sequential mean score for Non-Liberal Arts students was higher than Liberal Arts students. College did not significantly predict Concrete Random, Abstract Sequential, or Abstract Random learning style preference.

A significant relationship was found between Abstract Random and Concrete Random learning style preference and the interaction between NIS-S scores and college (Figures 3 & 5). As the Liberal Arts students' level of immediacy increased so did their preference for Abstract Random and Concrete Random learning style. However, only the Liberal Arts students with high nonverbal immediacy had a high preference for Abstract Random and Concrete Random learning style. The Non-Liberal Arts students had an average preference for Abstract Random and Concrete Random learning style. Within the average range, the Non-Liberal Arts students with low nonverbal immediacy had the

lowest preference for Abstract Random and Concrete Random learning style. The students with high nonverbal immediacy demonstrated a slight increase in Abstract Random and Concrete Random preference. The students with intermediate nonverbal immediacy indicated the highest preference for Abstract Random and Concrete Random learning style although their preference was still within the average range. The interaction between NIS-S scores and college was not a predictor of Abstract Sequential or Abstract Random learning style preference.

Research Question Four

4. What is the relationship between the participant's level of nonverbal immediacy and their cognitive learning style preference?

Nonverbal Immediacy Scale-Self Report (NIS-S) scores predicted the Abstract Sequential learning style preference at a statistically significant level. The Abstract Sequential mean score of low immediacy participants was higher than the Abstract Sequential mean score of high immediacy participants.

The interaction of Nonverbal Immediacy Scale-Self Report (NIS-S) scores and age was a predictor of Concrete Sequential, Abstract Random, and Concrete Random learning style preferences. For the Concrete Sequential learning style preference in all four age groups, the lower NIS-S scores or level of nonverbal immediacy the higher the Concrete Sequential learning style preference. For the Abstract Random learning style preference, 19 year olds with intermediate level of nonverbal immediacy indicated an average preference for Abstract Random. The 20 year olds at all levels of nonverbal immediacy had an average preference for Abstract Random. Twenty one year olds with a low level of nonverbal immediacy demonstrated an average preference for Abstract

Random and those with a high level of nonverbal immediacy indicated a high preference for Abstract Random. The 22 years old and above at all levels of nonverbal immediacy noted an average preference for Abstract Random; however the preference did increase as the nonverbal immediacy increase from low to intermediate.

For the Concrete Random learning style preference, 19 year olds average preference displayed an average preference for Concrete Random and no change was indicated as the level of nonverbal immediacy changed. For the 20 year olds had an average preference for Concrete Random learning style with a low level of nonverbal immediacy and a high preference for Concrete Random with intermediate and high nonverbal immediacy. An average preference for Concrete Random was indicated by 21 year olds at all levels of nonverbal immediacy. However, a small increase in Concrete Random preference was noted from the low level of nonverbal immediacy to intermediate and from intermediate to high nonverbal immediacy.

The interaction of Nonverbal Immediacy Scale-Self Report (NIS-S) scores and college was a predictor of Abstract Random and Concrete Random learning style preferences. As the Liberal Arts students' level of immediacy increased so did their preference for Abstract Random and Concrete Random learning style. However, only the Liberal Arts students with high nonverbal immediacy had a high preference for Abstract Random and Concrete Random learning style. The Non-Liberal Arts students had an average preference for Abstract Random and Concrete Random learning style. The interaction of Nonverbal Immediacy Scale-Self Report (NIS-S) scores and gender was not a predictor of the four cognitive learning style preferences.

Summary of Findings

This chapter presented results of the study investigating the relationship between nonverbal immediacy behaviors and cognitive learning style preferences. One hundred and eighty-eight students participated in the study. Collected data included the participant's scores on the Nonverbal Immediacy Self-Report Scale, the Gregorc Style Delineator, and the demographic information of age, gender, and college.

Based on the analysis of the results, a significant relationship was indicated only between Nonverbal Immediacy Scale Self-Report (NIS-S) scores and Abstract Sequential learning style preference. For the remaining three cognitive learning styles, the level of nonverbal immediacy only influenced cognitive learning style preference with a moderator like age, gender, or college. The interaction of NIS-S scores and age was a predictor of Concrete Sequential, Abstract Random, and Concrete Random learning style preferences. Gender predicted Abstract Sequential and Abstract Random learning style preference at a statistically significant level.

College was a predictor for Concrete Sequential learning style preference. A significant relationship was found between Abstract Random and Concrete Random learning style preferences and the interaction between NIS-S scores and college. College was not a predictor of Abstract Sequential cognitive learning style preference. The next chapter will include a summary and conclusions of the study and recommendations for future research.

Chapter 5

Summary, Conclusions, Implications, and Recommendations

Introduction

The purpose of this study was to investigate the relationship among undergraduate students' nonverbal immediacy behaviors as measured by the Nonverbal Immediacy Scale-Self Report (NIS-S) and their cognitive learning styles as measured by the Gregorc Style Delineator (GSD). The study also examined the relationship between the immediacy behaviors and cognitive learning style and the demographic information of age, gender and college. The first chapter introduced the purpose, statement of the problem, research questions, significance, assumptions, limitations, definition of terms, and organization of the study. The second chapter discussed the literature review of nonverbal communication, nonverbal immediacy, teacher nonverbal immediacy, student nonverbal immediacy, Nonverbal Immediacy Scale-Self Report, learning styles, cognitive learning style, and Gregorc Style Delineator. The third chapter described the design of the study, the population and sample selection, the instrumentation, data collection, and an analysis of the data. The fourth chapter presented an analysis of the data gathered from the demographic profile of the sample population, the Gregorc Style Delineator (GSD), and the Nonverbal Immediacy Scale-Self Report (NIS-S). This chapter provides a summary of this study, conclusions, implications, and recommendations.

Research Questions

This study was guided by the following research questions:

1. What is the relationship between gender and nonverbal immediacy and cognitive learning styles?
2. What is the relationship between age and nonverbal immediacy and cognitive learning styles?
3. What is the relationship between academic college and nonverbal immediacy and cognitive learning styles?
4. What is the relationship between participant's level of nonverbal immediacy and their cognitive learning style preference?

Summary

This study examined the relationship between undergraduate students' nonverbal immediacy behaviors and cognitive learning style preferences and the demographic variables of gender, age, and college. The sample population for this study was 188 students enrolled in a public university in the southeastern United States during the spring semester, 2010. The participants completed the Nonverbal Immediacy Scale-Self Report (NIS-S) to measure the level of nonverbal immediacy, the Gregorc Style Delineator (GSD) to determine cognitive learning style preference, and a brief demographic questionnaire. Participation in the study was voluntary.

A demographic questionnaire was administered to obtain gender, age, and major/college of the participants. One hundred and fifteen (61%) of the participants were female and 73 (39%) were males. The age of the participants ranged from 19 to 32 with a

mean age of 20.75. One hundred and four students (55%) were Liberal Arts students and 84 (45%) were Non-Liberal Arts students.

The dependent variables in this study were the four cognitive learning style preferences of Concrete Sequential, Abstract Sequential, Abstract Random, and Concrete Random. The independent variables were Nonverbal Immediacy Scale-Self Report (NIS-S) scores, gender, age, and college, the interaction between NIS-S scores and gender, the interaction between NIS-S scores and age, and the interaction between NIS-S scores and college. A multiple regression with stepwise procedure was completed to investigate the relationship between the dependent variables and the independent variables.

A statistically significant relationship was found between gender and Abstract Sequential learning style preference and Abstract Random learning style preference. This study also indicated that the interaction of NIS-S scores and age were a significant predictor of the Concrete Sequential, Abstract Random, and Concrete Random learning style preferences. College predicted Concrete Sequential learning style preference at a statistically level. And NIS-S scores predicted the Abstract Sequential learning style preference at a statistically significant level.

Conclusions

Analysis of the data resulted in the following conclusions:

1. Students with a low level of nonverbal immediacy demonstrate a high preference for the Abstract Sequential learning style preference. The Abstract Sequential mean score of low immediacy participants was higher than the Abstract Sequential mean score of high immediacy participants. According to Kelley and Gorham (1988) a high level of nonverbal immediacy includes close physical

distance, leaning forward, head nodding, and increased eye contact. Frymier (1993) adds that smiling and positive gesturing are also equated with high nonverbal immediacy. Low immediacy is the opposite. The students with a low level of nonverbal immediacy showed the highest preference for Abstract Sequential learning style. The Abstract Sequential learner prefers presentations that are substantive and sequential and learns well through lectures. This learner has little tolerance for distractions. Being very logical and functioning well independently are characteristics of an Abstract Sequential learner (Gregorc, 1982a). Low level immediacy behaviors are more similar to the characteristics of an Abstract Sequential learner.

2. Among all four age groups of traditional college students, the lower the level of nonverbal immediacy the higher the preference for Concrete Sequential learning style. With age as the moderator, Nonverbal Immediacy Scale Self-Report scores predicted Concrete Sequential, Concrete Random, and Abstract Random learning style preferences. However, only with the Concrete Sequential learning style preference did a consistent relationship exist.
3. Based on this study, students with a low level of nonverbal immediacy have a higher preference for sequential ordering. The Gregorc Style Delineator was designed to report the two types of mediation abilities or styles: perception and ordering (Gregorc, 1984). Perception can be abstract or concrete and ordering is sequential or random (Gregorc, 1982b).
4. This study also indicated that as the age of the participants increased the mean scores in the Concrete Random and Abstract Random learning style preference

decreased. Witte (1999) also found that as age increased the scores on the Concrete Random and Abstract Random subtests decreased.

5. The findings of this study indicate that gender has some relationship to ordering when the perception is abstract. Males indicated a higher preference for the Abstract Sequential learning style and females for Abstract Random. Studies by O'Brien (1991) and Ware (2003) both found that females scored higher in Abstract Random style and males higher in the Abstract Sequential style.
6. Non-Liberal Arts students scored higher than Liberal Arts students on the Concrete Sequential subtest of the Gregorc Style Delineator. Research by Drysdale, Ross, and Schultz (2001) found a similar relationship between Concrete Sequential learners and performance in science and math related classes. The Concrete Sequential learner organizes logically and excels in linear thinking (Gregorc, 1982a). The structured, predictable, and linear thought process of the Concrete Sequential learner appears compatible with Non-Liberal Arts students.
7. As the Liberal Arts students' level of immediacy increased so did their preference for Abstract Random and Concrete Random learning style. Drysdale, Ross, and Schultz (2001) found that in fine arts courses such as drama and art, the Abstract Random and Concrete Random learners were generally more successful than the predominately Concrete Sequential or Abstract Sequential learners. The Non-Liberal Arts students with low nonverbal immediacy had the lowest preference for Abstract Random and Concrete Random learning style although their preference remained in the average range. The Concrete Random learner is outgoing, friendly, curious, and aggressive. The Abstract Random learner is

spontaneous, colorful, enthusiastic, and sensitive. The characteristics of the Concrete Random and Abstract Random learner correlate well with high nonverbal immediacy. The Concrete Sequential learner is very structured, logical, methodical, and calm. The Abstract Sequential learner does not like to draw personal attention, is not good at decoding nonverbal cues, likes order, and is academically very serious. Thus, the characteristics of the Concrete Sequential and Abstract Sequential learner work well with low nonverbal immediacy.

Recommendations for Practice

Recommendations for practice include providing college educators with nonverbal immediacy behaviors and learning styles orientation and training in the academic environment. Traditional aged college students and adult learners respond to varying types of instruction for most effective learning. As stated by Hall (2005), understanding students' learning styles is a fundamental tool for teachers to use in designing appropriate instructional style. For teachers, it is important to vary teaching styles to accommodate the needs of students (Drysdale, Ross, & Schultz, 2001). According to Mottet and Richmond (2002), individuals generally trust nonverbal messages because these messages are primarily outside of our conscious control and thus tend to be true messages. Through training, as teachers observe the level of student's nonverbal immediacy in the classroom, nonverbal immediacy behaviors can be used to help identify cognitive learning style. Providing opportunities for educators and future educators to become aware of learning styles and the significance of nonverbal immediacy can assist in the professional development of these individuals.

Another recommendation is to include in teacher education and adult education training designs specific orientations in cognitive learning styles and nonverbal immediacy behaviors. Educators can benefit from an understanding of these concepts and ways to apply them to individual learning environments. Teacher education training could include informational sessions or instructional design methods that provide the opportunity to understand how to apply the different learning styles and levels of nonverbal immediacy. Understanding how to design classroom instruction to accommodate the learning styles of students could be a very important element of teacher training.

Teacher education programs strive to produce the best educators. This study has provided an association between cognitive learning styles and nonverbal immediacy behaviors. Perhaps it is time to include immediacy instruction in the curriculum of teacher education programs, as well as, in professional development programs. Understanding nonverbal immediacy behaviors of students may be an area of teacher instruction that has been under utilized.

Recommendations for Future Research

1. Recommend that future study include students enrolled in a variety of university courses to represent more diverse experiences and knowledge. This study was conducted with all participants enrolled in a public speaking course.
2. Recommend that this study be replicated with students enrolled in the College of Education because of the emphasis among education students on appropriate classroom instruction. The majority of students in this study were in the College of Liberal Arts.

3. Recommend that this study be conducted in other regions of the United States.
This study was conducted in the southeastern part of the United States.
4. Recommend that other cognitive or affective learning style instruments be used with the Nonverbal Immediacy Scale to investigate the relationship between cognitive or affective learning styles and nonverbal immediacy behaviors. Age, gender, and major can also be examined in relationship to these instruments.
5. Recommend that this study be replicated with a larger sample from specific majors (e.g., adult education, marketing, counseling, communication, public relations) to determine if similarities or differences are noted among students with similar curriculum interests.

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Appendix A
IRB Approval Letter



Office of Human Subjects Research
307 Sanford Hall
Auburn University, AL 36849

Telephone: 334-844-5966
Fax: 334-844-4391
hsubjec@auburn.edu

November 24, 2009

MEMORANDUM TO: Jane B. Teel
Education Foundation Leadership Technology

PROTOCOL TITLE: "A Study of the Relationship between Nonverbal Immediacy Behaviors and Cognitive Learning Styles"

IRB AUTHORIZATION NO: 09-296 EP 0911

APPROVAL DATE: November 23, 2009
EXPIRATION DATE: November 22, 2010

The above referenced protocol was approved by IRB Expedited procedure under 45 CFR 46.110 (Category #7):

"Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

You should report to the IRB any proposed changes in the protocol or procedures and any unanticipated problems involving risk to subjects or others. Please reference the above authorization number in any future correspondence regarding this project.

If you will be unable to file a Final Report on your project before November 22, 2010, you must submit a request for an extension of approval to the IRB no later than November 5, 2010. If your IRB authorization expires and/or you have not received written notice that a request for an extension has been approved prior to November 22, 2010, you must suspend the project immediately and contact the Office of Human Subjects Research for assistance.

A Final Report will be required to close your IRB project file. You are reminded that you must use the stamped, IRB-approved information letter and parental consent when you consent your participants. Please remember that signed consent forms must be retained at least three years after completion of your study.

If you have any questions concerning this Board action, please contact the Office of Human Subjects Research at 844-5966.

Sincerely,

Kathy Jo Ellison, RN, DSN, CIP
Chair of the Institutional Review Board
for the Use of Human Subjects in Research

cc: Dr. Sheri Downer
Dr. James Witte

Appendix B
Information Letter



AUBURN UNIVERSITY

COLLEGE OF EDUCATION

EDUCATIONAL FOUNDATIONS, LEADERSHIP AND TECHNOLOGY

The Auburn University
Institutional Review Board
has approved this document for use
from 11/23/09 to 11/23/10
Protocol # 09-296 ED 0911

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

**INFORMATION LETTER
for a Research Study entitled**

A Study of the Relationship between Nonverbal Immediacy Behaviors and Cognitive Learning Styles

You are invited to participate in a research study to determine if a relationship exists between the amount of nonverbal behaviors (eye contact, facial expressions, bodily movements, etc.) students use and each student's learning style. The study is being conducted by Mrs. Jane B. Teel, doctoral student, under the direction of Dr. James Witte, advisor, in the Department of Educational Foundations, Leadership, and Technology. You were selected as a possible participant because you are enrolled in a COMM 1000 class and are age 19 or older.

What will be involved if you participate? If you decide to participate in the research study, you will be asked to complete one immediacy scale survey and one learning style survey. Your total time commitment will be approximately 20-30 minutes.

Are there any risks or discomforts? Given the nature of the study, you should experience little or no risk in participating in this research project. There is no identifying information connecting the data to you. Your instructor will not be in the classroom at the time of data collection. I will supervise the overall data collection and the drop box to assure protection of the data. Material will be stored in my office – 225 Tichenor Hall- and on a password protected computer in this same office.

Are there any benefits to yourself or others? If you participate in this study, you will not receive any direct benefits. We hope that the results of this study will give us a better understanding of observable immediacy behaviors and learning styles. If understanding a student's level of nonverbal immediacy behaviors can aid in teacher identification of learning style, then the observable nonverbal behaviors in communication could assist educators in adapting their teaching style to more effectively meet each student's need.

4036 Haley Center, Auburn, AL 36849-5221; Telephone: 334-844-4460; Fax: 334-844-3072

w w w . a u b u r n . e d u

Will you receive compensation for participating? You will not be compensated for your participation.

Are there any costs? If you decide to participate, there will be no costs involved.

If you change your mind about participating? You can withdraw at any time during the study. Your participation is completely voluntary. You may withdraw from this study at any time by simply returning the incomplete questionnaire. However, once you turn in your anonymous, completed questionnaire, you will be unable to withdraw your data since there will be no way to identify individual information. Your decision to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Communication and Journalism, or the Department of Educational Foundations, Leadership, and Technology.

Any data obtained in connection with this study will remain anonymous. I will protect your privacy and the information you provide on the completed surveys through the use of a drop box to assure the protection of the data. Information collected through your participation may be used to fulfill the educational requirements of my dissertation, published in a professional journal, and/or presented at a professional meeting, etc.

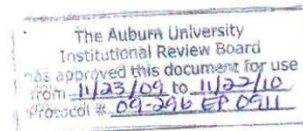
If you have questions about this study, please ask them now or contact me at (334) 844-2727.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at hsubject@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

Investigator's signature _____ Date _____

Print Name _____



Appendix C

Minor Assent Letter



AUBURN UNIVERSITY

COLLEGE OF EDUCATION

EDUCATIONAL FOUNDATIONS, LEADERSHIP AND TECHNOLOGY

The Auburn University Institutional Review Board has approved this document for use from 11/23/09 to 11/23/10 Protocol # 09-296 EP 0911.

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

**PARENTAL PERMISSION/MINOR ASSENT
for a Research Study entitled**

**A Study of the Relationship between Nonverbal Immediacy Behaviors and
Cognitive Learning Styles**

Your son/daughter is invited to participate in a research study to determine if a relationship exists between the amount of nonverbal behaviors (eye contact, facial expressions, bodily movements, etc.) students use and each student's learning style. The study is being conducted by Mrs. Jane B. Teel, doctoral student, under the direction of Dr. James Witte, advisor, in the Department of Educational Foundations, Leadership, and Technology. Your son/daughter was selected as a possible participant because he/she is currently enrolled in a COMM 1000 course at Auburn University. Since your son/daughter is age 18 or younger we must have your permission to include him/her in the study.

What will be involved if your son/daughter participates? If you decide to allow your son/daughter to participate in this research study, he/she will be filling out a survey. It is estimated that completion of the survey will take approximately 20-30 minutes of his/her time.

Are there any risks or discomforts? Given the nature of the study, he/she should experience no risk in participating in this research project. There is no identifying information connecting data to your son/daughter. His/her instructor will not be in the classroom at the time of data collection. I will supervise the overall data collection and the drop box to assure protection of the data. Material will be stored in my office – 225 Tichenor Hall- on a password protected computer in this same office.

Are there any benefits to your son/daughter or others? If he/she participates in this study, your son/daughter will not receive any direct benefits. We hope that the results of this study will give us a better understanding of observable immediacy behaviors and learning styles. If understanding a student's level of nonverbal immediacy behaviors can aid in teacher identification of learning style, then the observable nonverbal behaviors in communication could assist educators in adapting their teaching style to more effectively meet each student's need.

Parent/Guardian Initials _____
Participant Initials _____

4036 Haley Center, Auburn, AL 36849-5221; Telephone: 334-844-4460, Fax: 334-844-3072

w w w . a u b u r n . e d u

Will your son/daughter receive compensation for participating? Your son/daughter will receive no compensation for his/her participation.

Are there any costs? If your son/daughter participates, there will be no costs for his/her participation.

If you change your mind about your son/daughter's participation, notify him/her to not participate. Your son/daughter's participation is completely voluntary. If your son/daughter changes his/her mind, he/she may withdraw from the study by simply returning the incomplete questionnaire. However, once your son/daughter turns in his/her anonymous, completed questionnaire, he/she will be unable to withdraw the data since there will be no way to identify individual information. Your decision about whether or not to allow your son/daughter to participate or to stop participating will not jeopardize you or his/her future relations with Auburn University, the Department of Communication and Journalism, or the Department of Educational Foundations, Leadership, and Technology.

Any data obtained in connection with this study will remain anonymous. I will protect your son/daughter's privacy and the information he/she provides on the completed surveys through the use of a drop box to assure the protection of the data. Material will be stored in my office -225 Tichenor Hall – and on a password protected computer in that same office. Information collected through her/his participation may be used in my doctoral dissertation, published in a professional journal, and/or presented at a professional meeting, etc.

If you have any questions, you are invited to contact me at (334) 844-2727 or teeljan@auburn.edu. I will be happy to answer any questions you may have. You will be provided a copy of this form to keep.

If you have questions about your son/daughter's rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjcc@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO ALLOW YOUR SON/DAUGHTER TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO ALLOW YOUR SON/DAUGHTER TO PARTICIPATE.

Participant's signature Date

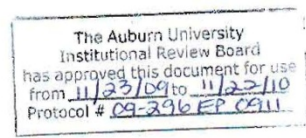
Investigator obtaining consent Date

Print Name

Print Name

Parent's or Guardian Signature Date

Print Name



Appendix D
Demographic Information Survey

Demographic Information Survey

1. What is your age? My age is _____ years.

2. What is your gender?

_____ Male

_____ Female

3. What is your current declared major at Auburn University?

_____ in the College of Agriculture

_____ in the College of Architecture, Design, and
Construction

_____ in the College of Business

_____ in the College of Education

_____ in the College of Engineering

_____ in the College of Forestry and Wildlife Sciences

_____ in the College of Human Sciences

_____ in the College of Liberal Sciences

_____ in the College of Nursing

_____ in the School of Pharmacy

_____ in the College of Sciences and Mathematics

_____ other

Appendix E

Nonverbal Immediacy Scale Self-Report

Nonverbal Immediacy Scale-Self Report (NIS-S)

This is the most up-to-date measure of nonverbal immediacy as a self-report. Alpha reliability estimates around .90 should be expected. This measure has more face validity than previous instruments because it has more and more diverse items. Its predictive validity also is excellent.

When using this instrument it is important to recognize that the difference in these self-reports between females and males is statistically significant and socially significant (that is, substantial variance in the scores on this instrument can be attributed to biological sex). Whether these differences are "real" (that is, females may actually be more nonverbally immediate than males) or a function of social desirability (that is, females think they should be more immediate than males think they should be) or a function of actual behavior has not yet been determined (as of September, 2003).

DIRECTIONS: The following statements describe the ways some people behave while talking with or to others. Please indicate in the space at the left of each item the degree to which you believe the statement applies **TO YOU**. Please use the following 5-point scale: **1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Often; 5 = Very Often**

1. I use my hands and arms to gesture while talking to people.
2. I touch others on the shoulder or arm while talking to them.
3. I use a monotone or dull voice while talking to people.
4. I look over or away from others while talking to them.
5. I move away from others when they touch me while we are talking.
6. I have a relaxed body position when I talk to people.
7. I frown while talking to people.
8. I avoid eye contact while talking to people.
9. I have a tense body position while talking to people.
10. I sit close or stand close to people while talking with them.
11. My voice is monotonous or dull when I talk to people.
12. I use a variety of vocal expressions when I talk to people.
13. I gesture when I talk to people.

- ___ 14. I am animated when I talk to people.
- ___ 15. I have a bland facial expression when I talk to people.
- ___ 16. I move closer to people when I talk to them.
- ___ 17. I look directly at people while talking to them.
- ___ 18. I am stiff when I talk to people.
- ___ 19. I have a lot of vocal variety when I talk to people.
- ___ 20. I avoid gesturing while I am talking to people.
- ___ 21. I lean toward people when I talk to them.
- ___ 22. I maintain eye contact with people when I talk to them.
- ___ 23. I try not to sit or stand close to people when I talk with them.
- ___ 24. I lean away from people when I talk to them.
- ___ 25. I smile when I talk to people.
- ___ 26. I avoid touching people when I talk to them.

Scoring:

Step 1. Add the scores from the following items: 1, 2, 6, 10, 12, 13, 14, 16, 17, 19, 21, 22, and 25.

Step 2. Add the scores from the following items: 3, 4, 5, 7, 8, 9, 11, 15, 18, 20, 23, 24, and 26.

Total Score = 78 plus Step 1 minus Step 2.

Norms:

Females Mean = 102.0 S.D. = 10.9 High = >112 Low = <92

Males Mean = 93.8 S.D. = 10.8 High = >104 Low <83

Source: Richmond, V. P., McCroskey, J. C., & Johnson, A. D. (2003). Development of the Nonverbal Immediacy Scale (NIS): Measures of self- and other-perceived nonverbal immediacy. *Communication Quarterly*, 51, 502-515.