LEARNING STYLES AND EMOTIONAL INTELLIGENCE

OF THE ADULT LEARNER

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Gia Daneka Kimbrough Johnson

Certificate of Approval:

_____   _____
James E. Witte   Maria Martinez Witte, Chair
Associate Professor   Associate Professor
Educational Foundations,   Educational Foundations,
Leadership, and Technology   Leadership, and Technology

_____   _____
Anthony J. Guarino   Joe F. Pittman
Associate Professor   Interim Dean
Educational Foundations,   Graduate School
Leadership, and Technology

LEARNING STYLES AND EMOTIONAL INTELLIGENCE

OF THE ADULT LEARNER

Gia Daneka Kimbrough Johnson

A Dissertation

Submitted to

the Graduate Faculty of

Auburn University

in Partial Fulfillment of the

Requirements for the

Degree of

Doctor of Education

Auburn, Alabama
May 10, 2008

LEARNING STYLES AND EMOTIONAL INTELLIGENCE

OF THE ADULT LEARNER

Gia Daneka Kimbrough Johnson

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Signature of Author

_____

Date of Graduation

VITA

Gia Daneka Kimbrough Johnson is the daughter of Edward and Sandra Kimbrough, and the sister of Ji Kimbrough. She was born and raised in Mobile, Alabama. She graduated from Auburn University in Auburn, Alabama in 2003 with a Bachelor of Arts Degree in Communication. She received the Master of Education in Adult Education in 2004 from Auburn University Auburn, Alabama. In the Spring of 2005, in Shreveport, Louisiana, she participated in a poster session at the Louisiana Education Research Association on *Learning Styles and Multiple Intelligence*. She was a speaker at the Institute for Learning Styles Conference in the Summer of 2005 in Auburn, Alabama on *Learning Styles and Multiple Intelligence*. While completing her requirements for her doctorate degree she worked at the Clinton L. Johnson Center as a GED Instructor and Computer Instructor. She worked with Public Housing, Section 8, and low and moderate income students to prepare them for the GED test, with job placement, to be an Office Assistant, or to take the Alabama Graduate Exit Exam. While working at the Clinton L. Johnson Center, she assisted in writing grants for Mobile Housing Board and Mobile Development Enterprises, which included a Dollar General Grant received in May 2007 and a YouthBuild Grant received in October 2007. She has co-authored a chapter of a rewrite of a textbook, *Providers of Adult Education* (in press). She has been a member of Institute for Learning Styles Research since 2005. She is married to Robert E. Johnson Jr. and they have two children, King and Kobe.

DISSERTATION ABSTRACT

LEARNING STYLES AND EMOTIONAL INTELLIGENCE

OF THE ADULT LEARNER

Gia Daneka Kimbrough Johnson

Doctor of Education, May 10, 2008
(M.S., Auburn University, 2004)
(B.S., Auburn University, 2003)

146 Typed Pages

Directed by Maria Martinez Witte

Everyone has a preferred learning style. Knowing and understanding learning

styles helps individuals learn more efficiently (Silver, Strong, & Perini, 1997). It also

allows an individual to capitalize on their strengths and improve self-advocacy skills. In

the learning environment, many educators are becoming aware that students' emotional

intelligence should be incorporated and embraced in the classroom (Ashkanasy &

Dasborough, 2003). When a student's emotional and social skills are addressed, academic

achievement of the student increases and interpersonal relationships improve (Goleman,

1995).

The purpose of this study was to examine the relationship between learning styles

and emotional intelligence among adult learners. This study was conducted using the

Gregorc Style Delineator to measure the four mediation abilities of learning styles and

the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) for assessing the four branches of emotional intelligence. The sample for this study consisted of 111 participants, who were male and female undergraduate and graduate students, who were at least 19 years of age, and enrolled in a degree of study at this university. Collected data included the participant's gender, race, age, GPA, traditional or Non-Traditional students, education level, and major.

Based on the analysis of the data from this study, the data suggests that there is no correlation between the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test. The data also concluded that there is no statistical difference between learning styles and emotional intelligence based on ethnicity, age, GPA, and gender. The results indicated that The Gregorc Style Delineator and the Mayer-Salovey-Caruso Emotional Intelligence Test measure two separate constructs. The Gregorc Style Delineator and the Mayer-Salovey-Caruso Emotional Intelligence Test are not interchangeable instruments measuring constructs from the same domain.

ACKNOWLEDGEMENTS

To my best friends since high school, Jacalyn Reese, Monique Andry, Kelly York, and Terese White, thank you for always being there for me and supporting me during this *long* process. To Dr. Maria Witte and Dr. James Witte, I thank you for recognizing and developing my potential and most of all believing in me. To Dr. Anthony Guarino, thank you for your statistical assistance. To Dr. Susan Brinson, thank you for sharing your knowledge with students in way that that is unforgettable.

To my dear brother, Ji, as I end this chapter in my life and you prepare to enter a new chapter in your life (a freshman in college), I thank you for your unique humor, which help to keep me grounded. To my mom and dad, I thank you for your wisdom, words of praise, encouragement, generosity, prayers, and dedication to helping me achieve my dreams.

Robert, thank you for the love, support, and words of encouragement that you have always provided. Your encouraging words, "Do what makes you happy," gave me confidence to achieve my goal. To my boys, King and Kobe, thanks for becoming two of the greatest joys in my life. King, thank you for being patient and loving with mommy. Kobe, your precious smile was uplifting to me during this writing process. Above all, I thank my Lord and Savior. Without God, I absolutely would not have completed this dissertation.

Style manual or journal used: <u>Publication Manual of the American Physiological</u>

<u>Association, 5th Edition.</u>

Computer software used: SPSS 12, Windows Media Center, and Microsoft Word 2007.

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CHAPTER I

INTRODUCTION

Introduction

The mind is uniquely and authentically crafted. Human attributes are designed individually and collectively to encompass divergent degrees of learning and processing information. The ideology of learning styles was adapted to incorporate multiple ways people respond, think, see, hear, touch, rationalize, and formulate knowledge or learning (Dunn & Dunn, 1993). Learning styles have gained prime importance in our society. For many years, research has paved a path on the subject of learning styles by experts, educators, psychologists, sociologists, universities, public schools, private schools, doctors, and lawyers (Bloom, 1956; Dunn & Dunn, 1993; Gregorc, 1982a; Jung, 1971; Kolb, 1985; Schmeck, 1988). By using evidence from learning styles research, learner's needs are being met, there is an abundance of literature on this subject readily available, educators are better trained, and numerous strategies and techniques are incorporated in classroom instruction (Benson, 2005; Bloom, 1956; Dunn & Dunn, 1993; Gregorc, 1982a; Jung, 1971; Kolb, 1985; Leavitt, 2004; Lindsay, 2006; Miles, 2004; Schmeck, 1988; Smith, 2006; Yahr, 2005).

Once an individual's learning style has been identified using assessment tools, there is a greater appreciation, deeper insight, and a better understanding by professionals of the numerous ways individuals learn. Meticulously cultivating and nurturing an

individual's style of learning and incorporating an array of methods and learning devices

in learning activities, equips the learner with tools to function effectively in the school

environment and satisfies intellectual and emotional needs (Honigsfeld & Dunn, 2006).

An awareness of learning preferences and an understanding of individual learning styles

can help educators develop instruction using multiple resources. The learner should also

be knowledgeable of their learning styles or individual preferences of learning, so that

optimum learning will occur and everyone who is involved in the learning process can

feel successful (Honigsfeld & Dunn, 2006).

Diversity is a key ingredient in the learning environment. Technology is a method

of teaching used by educators to engage students in rich learning experiences and provide

creative opportunities for learners to exercise a multitude of learning styles. Colleges,

universities, and instructors work cooperatively to design web-based courses to

encompass students' learning styles. By using online web-based courses, several methods

of instruction can be used and students can participate in identifying coursework

according to the design that best suits their leaning style and preferences (White &

Bridwell, 2004).

In today's America, emotional intelligence is emerging with a huge impact in our

society. It is a crucial factor in the workplace, in academic performance at school, and at

home (Goleman, 1998). Many people face many challenges in everyday life, so based on

Goleman's research (1998), in order to be a well-rounded functioning individual, a

person must possess skills to excel in life, such as to plan, motivate, manage feelings, and

handle relationships. By approaching life's tasks armed with emotional intelligence skills,

an individual should be able to rise above obstacles and adapt to daily encounters appropriately (Goleman, 1998).

In the learning environment, many educators are becoming aware that students' emotional intelligence should be incorporated and embraced in the classroom (Ashkanasy & Dasborough, 2003). When a student's emotional and social skills are addressed, academic achievement of the student increases and interpersonal relationships improve (Goleman, 1995). In the workplace, there is a great demand for individuals to perform effectively emotionally and cognitively (Goleman, 1998). Based on Goleman's (1995) emotional intelligence concept, an individual must be able to work effectively in a team environment. An individual must also be able to manage emotions at work and interact successfully with the public to produce positive outcomes on the job.

Parents play a major role in developing emotional skills in children (Kolb & Hanley-Maxwell, 2003). Parents communicate information to their children at birth. They signal messages to children by touching, feeling, and speaking. They provide a support system during emotional times in their children's lives (Honig, 2002). Parents also help build self-esteem, self-control, self-awareness, and confidence. As parents and children work together to develop emotional intelligence skills, the child's ability to make good sound healthy decisions improves, communication skills are also enhanced, and children feel empowered to lead productive lives (Kolb & Hanley-Maxwell, 2003). Everyone needs emotional intelligence to make it through the emotional challenges we face in life. The ability to manage emotional intelligence effectively is important for success in school, home, the workplace, and most importantly in life (Goleman, 1995).

Problem Statement

Learning styles and emotional intelligences have been studied frequently as separate research topics (Benson, 2005; BeShears, 2004; Boyd, 2004; Briody, 2005; Knoll, 2006; Leavitt, 2004; Miles, 2004; Paul-Odouard, 2006; Phillips, 2005; Rivera & Beatriz, 2004; Scott, 2004; Smith, 2006, Spector, 2005; Wells, 2004; Yahr, 2005; Yancey-Bragg, 2006). However, there is a lack of research involving both learning styles and emotional intelligence and the affects on adult learners. Emotional intelligence is a relatively new intelligence construct (Salovey & Mayer, 1990). The limited number of studies in these areas indicates the need for further research in understanding the correlation and relationship of learning styles and emotional intelligence.

Purpose of the Study

The purpose of this study was to examine the relationship between learning styles and emotional intelligence among adult learners. This will help teachers and adult learners better understand these findings and use these findings to enhance classroom learning. This examination of these two concepts can lead to a better understanding of the impact of learning styles and emotional intelligence in adult learners. It can also help adult learners enhance their classroom skills. Understanding one's learning styles can help the learner improve achievement in class (Honigsfeld & Dunn, 2006), but understanding how learning styles and emotional intelligence correlate together can open new doors to an adult's learning skills.

Significance of the Study

Honigsfeld and Dunn (2006) reviewed over 150 studies that focused on adult learning styles. Their study identified that "adult males and females had significantly

different learning styles from each other" (p. 16). Their research also acknowledged that "college students with higher grade-point averages had significantly different styles from those with low grade-point averages" (p. 16). Also denoted in this study was that "learning style was statistically differentiated by participants ages" (p. 16).

Drago (2004) concluded a significant relationship between age and emotional intelligence. In addition, a significant relationship was found between emotional intelligence and GPA. The relationship between emotional intelligence and GPA was also specific to emotional intelligence abilities such as the ability to understand, manage, and reason with emotions. Previous research also found that emotions can support (or detract) from learning (Boud, Keogh, & Walker, 1985; Ingleton, 1995). Elder (1997) pointed out that emotions have a significant role in student's ability to learn content well, thus emotions can facilitate learning.

Everyone has a preferred learning style. Dunn and Dunn (1993) formulated that learning styles is, "the way each learner begins to concentrate on, process, and retain new and difficult information" (p. 2). Knowing and understanding learning styles helps individuals learn more efficiently (Silver, Strong, & Perini, 1997). Identification of learning styles allows an individual to capitalize on their strengths and improve self-advocacy skills.

Jack Mayer and Peter Salovey have been leading emotional intelligence researchers since 1990. In that same year, Mayer and Salovey suggested that emotional intelligence is a true form of intelligence, which had not been scientifically measured until they began their research work. Salovey and Mayer (1990), defined emotional intelligence as, "the subset of social intelligence that involves the ability to monitor one's

own and others' feelings and emotions, and to guide one's thinking and actions" (p. 189).

Emotional intelligence has proven to be a better predictor of future success than traditional methods like the GPA, IQ, and standardized test scores (Salovey & Mayer, 1990). With that information in mind, this study seeks to find the relationship between learning styles and emotional intelligence among adult learners to help teachers and learners better understand these findings and use these findings to enhance classroom learning. This information will serve as a framework of enriching knowledge for college instructors and adult learners.

<div align="center">Research Questions</div>

The following research questions were used in this study:

1. What is the relationship between learning styles performance as measured by the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test?

2. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on ethnicity?

3. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on age?

4. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on GPA?

5. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on gender?

Assumptions

This study contained the following assumptions:

1. The testing administrator performed in a manner that did not bias the study results.

2. Gregorc's (1982c) Style Delineator is a valid instrument for assessing participant's preference for learning abilities and styles.

3. Mayer-Salovey-Caruso Intelligence Test (MSCEIT) (2000a) is a valid instrument for assessing participant's emotional intelligence and their ability levels in relation to the four branches of the model: perceiving emotions, using emotions, understanding emotions, and managing emotions.

4. The participants will answer the questions truthfully.

5. The administration of the test was consistent among groups.

6. The results as reported on the instruments reflect individuals' learning styles and emotional intelligence.

Limitations

This study contained the following limitations:

1. This study was limited to one southeastern four-year university; therefore generalization beyond this institution should be undertaken with caution.

2. This study was limited to adult learners who were 19 years of age or older.

3. The sample was a convenience sample of participating instructors' classes.

Definitions

1. Adult Learners - any student who is 19 years old and older who is attending a university for various reasons.

2. Emotional Intelligence (also known as EI) - "the capacity for recognizing our own feelings and those of other, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" (Goleman, 1998, p. 317).

3. Emotions - "are responses to an event, either internal or external, that has a positively or negatively valence meaning for the individual" (Salovey & Mayer, 1990, p. 186).

4. Gregorc Style Delineator- A measure of cognitive learning style identifying perception and ordering constructs. Learners demonstrate specific perceived attitudes, motivations, and reasoning toward the learning environment based on their mediation channels (Gregorc, 1985).

5. Intelligence - "a characterization of how well the cognitive sphere operates, e.g., how quickly someone can learn, how well they can judge and think, and so on," (Mayer & Salovey, 1997, p. 23).

6. Learning Styles - "the way each learner begins to concentrate on, process, and retain new and difficult information" (Dunn & Dunn, 1993, p. 2).

7. Non-traditional college students - students who postponed attending college due to various reasons such as marriage, family, or work, and are now attending college; or individuals who return to college to prepare for a career change.

8. Traditional college students - students who attend college straight after high school seeking a college degree.

Organization of the Study

Chapter I introduces the study, presenting the problem, the purpose, the conceptual framework, research questions, assumptions and limitations, and definitions of terms. Chapter II includes a review of related literature concerning learning styles and emotional intelligence. Chapter III reports the procedures used in this study, including description of methodology, design of study, and the instrumentation of the Gregorc Style Delineator and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). The findings of the study are presented in Chapter IV. Chapter V includes a summary of the study, conclusions, implication, and recommendations for further practice and research.

CHAPTER II

LITERATURE REVIEW

Introduction

The purpose of this study was to examine the relationship between learning styles and emotional intelligence among adult learners. This will help teachers and adult learners better understand these findings and use these findings to enhance classroom learning. This examination of these two concepts can lead to a better understanding of the impact of learning styles and emotional intelligence in adult learners. It can also help adult learners enhance their classroom skills. Understanding one's learning styles can help the learner improve achievement in class (Honigsfeld & Dunn, 2006), but understanding how learning styles and emotional intelligence correlate together can open new doors to an adult's learning skills.

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<div align="center">Andragogy and Pedagogy</div>

In 1970, Malcolm Knowles introduced a core set of learning concepts or principles known as Andragogy and Pedagogy. According to Knowles' (1970) research, adult development and learning differs greatly from the youth learner. As defined by Knowles (1970), pedagogy is the art and science of teaching children. There are five assumptions that Knowles described in the pedagogy model. First, the learner is dependent on another person. When children enter into the world, they are completely dependent on someone else to take care of them. In the classroom, teachers are responsible for making all the decisions about what, how, and when students should learn (Lee, 1998). Second, the learner lacks relevant experience. Children think that an experience is something that has happened to them, or an event that has affected them. To

children, an experience is what they learn from teachers, textbooks, and other classroom aids, such as computers, videos, blackboard or white dry erase boards, overhead projectors, posters, magazines, brochures, and photographs (Kerka, 2002).

Third, the learner is ready to learn what they have been told to learn in order to advance to the next grade. Children learn things that are necessary for them to advance from one phase of development to the next (Lee, 1998). Fourth, learners enter into an educational activity with a subject-orientation to learning. Subject-orientation materials consist of organized chapters of logical subject matter (Kerka, 2002). To a child, education is a process of learning subject matter in hopes that it will be useful later on in life. Fifth, learners are motivated by external pressures from parents and teachers. Children are also sometimes motivated by external factors such as competition for good grades and the consequences of failure (Kerka, 2002).

Andragogy is the art and science of helping adults learn. Knowles (1970) proposed five assumptions in the andragogical model. First, the adult learner is self-directed. The learner is not dependent on others for directions. The adult learner has a need to be seen as being able to take care of themselves (Lee, 1998). The adult learner likes to be involved in the decision-making aspects of their learning. The learner has a need to know about educational training or development to aid them in self-directed goals so that optimum learning occurs (Ozuah, 2005).

Second, the adult learner enters into an educational setting with more experience than children. The adult learner often incorporates life experiences in their learning processes. The adult learner will bring an array of experiences and knowledge into the educational setting (Bangura, 2003). These experiences are shared with other adult

learners, which enables the learners to learn from each other. The learner's goals and expectation levels are higher and the adult learner knows what to expect from the learning environment.

The third assumption is the adult learner's readiness to learn. The adult learner is ready to ingest new information that will enhance their lifestyles and satisfy educational needs. The adult learner's readiness to learn is usually associated with their need to cope with life changes and challenges, interests, and needs. Assessment instruments can also be used to diagnose and prescribe strategies to ensure the learner is attaining desired educational needs and goals in a timely manner (Ozuah, 2005). Fourth, adult learners enter into an educational activity with a life-centered, task-centered, or problem-centered orientation to learning. In the life-centered orientation, the adult learner may bring information to class from their previous education, family experiences, and /or work related situations. In the task-center orientation, the adult learners have specific results in mind that they want to achieve in their education. In the problem-centered orientation, the starting point for every learning experience is the problems and concerns that adults have on their mind (Knowles & Associates, 1984). Adults want their learning experience to be relevant to their life tasks or problems. They see education as an opportunity to aid in learning to deal with life's problems (Ozuah, 2005).

Fifth, adult learners are motivated by external sources, but internal motivators have a greater affect on their lives. Some external motivators include a salary increase and a better job. Some adults feel that if they increase their education, such as getting a Masters Degree, then they will be able to get a raise at work. Adult learners prefer activities that give them structure and helpful feedback. Internal motivators include a

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better quality of life, greater self-confidence, recognition from others of accomplishments, and an increase in self-esteem (Kerka, 2002). The differences between the andragogy model and the pedagogy model are summarized in Appendix A.

The pedagogical and andragogical models have two different approaches to design and operation of educational programs. The pedagogical model involves a content plan, which requires teachers to respond to four areas of interest (Knowles & Associates, 1984). First, teachers have a responsibility to figure out what content materials need to be covered (Knowles, 1970). Teachers must develop a lesson plan. In the lesson plan, it will address what will be taught daily or weekly, what homework will be assigned, what textbooks will be used, and what outside projects will be incorporated in the lesson. Second, teachers must figure out how the content will be organized into manageable units (Knowles, 1970). Teachers have to determine how much time will be allotted for each assignment. For example in a 50-minute class period, the class can be broken down as: 10 minutes for a review, 20 minutes for new subject material, 15 minutes for classroom activity, and 5 minutes for home work requirements.

Third, teachers must determine the most logical sequence to present the materials (Knowles, 1970). Teachers must determine how one subject matter ties into other subject matter. For example in math classes, a teacher teaches the basic math techniques and then moves into the more complex techniques as the year progresses. Fourth, teachers must decide what would be the most efficient means of transmitting this information (Knowles, 1970). Teachers can transmit information through lectures, visual presentations such as PowerPoint, Videos, through the use of the Internet, teacher demonstrations (especially with science experiments), or group assignments.

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The basic format of the andragogical model is a process design. In this design, the term "facilitator" instead of "teacher" is the preferred terminology (Knowles & Associates, 1984, p. 14). This model assumes there are other resources other than the facilitator that have specialized skills and knowledge. These resources include peers, community members, media resources, and most importantly, field resources. Facilitators must be able to link all these resources together with the adult learners. The andragogical process consists of seven elements, which are setting a climate conducive to learning, the learners planning process, the learner diagnosing their own learning needs, the learner formulating their learning objectives, the learner designing their own learning plans, helping the learner carry out their learning plans, and the learner evaluating their own learning.

The first element is the climate. Facilitators must create a climate that is conducive to learning (Lee, 1998). Adults like to be in an environment in which they feel at ease. In these environments, adults must feel accepted, respected, and supported. Adults learn more from those they trust rather than distrust. Adults learn better when they feel supported rather judged or threatened (Ozuah, 2005). The furnishings, such as desks, should be adult sized and comfortable. Overall, the learning environment should be pleasant for the adult learner.

Second, learning involves including adult learners in the planning process (Knowles & Associates, 1984). Individual's that have participated in making or planning an activity (or making a decision in class) is more committed to that assignment or decision. Adults like the idea of being able to plan their own learning with the facilitator

residing over them. The facilitator is there to keep the learners on track and to ensure that the learners are on the same subject or topic of discussion (Knowles & Associates, 1984).

Third, the adult diagnoses their own learning needs (Lee, 1998). Adults like to be given the respect to make their own decisions. Adults tend to avoid and resist situations in which they feel they are being treated like a child (Knowles & Associates, 1984). Adults look at their gaps in learning and set goals for themselves in order to reach their desirable growth and to close those gaps in learning. Sometimes adults will get feedback from the facilitator to help them assess their strengths and weaknesses.

The fourth, fifth, sixth, and seventh elements are all categorized under one heading, "conducting learning experiences for adult learners" (Knowles, 1970, p. 42). The fourth element is that learners formulate their learning objectives (Knowles & Associates, 1984). The fifth element is that learners design their own learning plans (Knowles & Associates, 1984). The sixth element is the facilitators help the learner to carry out their learning plans (Knowles & Associates, 1984). The seventh element involves learners evaluating their own learning (Knowles & Associates, 1984).

The fourth, fifth, and sixth elements can be addressed by the learner formulating a learning contract. "Learning contracts are formal agreements written by learners that detail what will be learned, how the learning will be accomplished, when the learning will occur, and what criteria will be used to evaluate the results of the learning," (Berger, Caffarella, & O'Donnell, 2004, p. 290). In learning contracts, the learner will first formulate their learning objectives. Then the learner will design their own learning plan which involves determining how learning will be accomplished, and then learning will occur. The facilitators are there to keep the learners on track and to help the learner

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overcome any problems he/she may have. Finally, the learning contracts contain the criteria that will be used to evaluate the results of learning. This evaluation process helps the learner determine whether or not their goals stated in the learning contract have been met.

Some facilitators use learning contracts in their classrooms to help learners structure their learning. According to Berger, Caffarella, and O'Donnell (2004), learning contracts require that the learner diagnose a learning need into a learning objective to be achieved. The learner, with the assistance of the facilitator, will set up a strategy for achieving that objective, such as which order to take courses and the amount of time it will take to complete these contracts. The contracts will determine whether or not the learning objective was fulfilled. Learning contracts force adults to set up their own goals and learning objectives. This way the pressure for them to succeed and do well will be placed on the adult learner instead of the facilitator (Berger, Caffarella, & O'Donnell, 2004).

Knowles contends that there are conditions of learning and teaching which are conducive to growth and development. According to Knowles' and Associates (1984) model the facilitator (1) must make the learners feel a need to learn; (2) establish a climate conducive to learning; (3) create a mutual process of formulating learning objectives; (4) share the responsibility for planning and operating a learning experience; (5) participate in the learning process; (6) conduct learning experiences with suitable techniques; (7) evaluate the learning outcomes and learning needs. Knowles' model emphasizes the need for the facilitator and learner to work collaboratively toward the

learner's desired goals. Table 1 was composed to pair the conditions of adult learning to

the principles of teaching.

Table 1

Comparison Chart of the Conditions of Adult Learning to the Principles of Teaching

Conditions of Learning	Principles of Learning
The learners feel a need to learn	- The teacher exposes students to new possibilities for self-fulfillment - The teacher helps each student clarify his own aspirations for improved behavior - The teacher helps each student diagnose the gap between his aspiration and his present level of performance - The teacher helps the students identify the life problems they experience because of the gaps in their personal equipment
The learning environment is characterized by physical comfort, mutual trust and respect, mutual helpfulness, freedom of expression, and acceptance of differences	- The teacher provides physical conditions that are comfortable (as to seating, smoking, temperature, ventilation, lighting, decoration) and conducive to interaction (preferably, no person sitting behind another person) - The teacher accepts each student as a person of worth and respects his feelings and ideas - The teacher seeks to build relationships of mutual trust and helpfulness among the students by encouraging cooperative activities and refraining from inducing competitiveness and judgmentalness - The teacher exposes his own feelings and contributes his resources as a co learner in the spirit of mutual inquiry
The learners perceive the goals of a learning experience to be their goals	- The teacher involves the students in a mutual process of formulating learning objectives in which the needs of the students, of the institution, of the teacher, of the subject matter, and of the society are taken into account
The learners accept a share of the responsibility for planning and operating a learning experience, and therefore have a feeling of commitment toward it	- The teacher shares his thinking about options available in the designing of learning experiences and the selection of materials and methods and involves the students in deciding among these options jointly

Table 1 *(continued).*

The learners participate actively in the learning process	- The teacher helps the students to organize themselves (project groups, learning-teaching teams, independent study, etc.) to share responsibility in the process of mutual inquiry
The learning process is related to and makes use of the experience of the learners	- The teacher helps the students exploit their own experiences as resources for learning through the use of such techniques as discussion, role playing, case' method, etc. - The teacher gears the presentation of his own resources to the levels of experience of his particular students - The teacher helps the students to apply new learning to their experience, and thus to make the learning more meaningful and integrated
The learners have a sense of progress toward their goals	- The teacher involves the students in developing mutually acceptable criteria and methods for measuring progress toward the learning objectives - The teacher helps the students develop and apply procedures for self-evaluation according to these criteria

From *The modern practice of adult education: Andragogy versus pedagogy* (p. 52-53), by

M. S. Knowles, 1970, Chicago: Follett.

Learning Styles

Research about learning styles began to develop several decades ago from several

different directions. These included early studies on cognitive growth, the areas of the

brain related to intelligence and behavior, and the influence of school environmental and

social factors on students (American Association of School Administrators, 1991).

Learning styles can be defined, classified, and identified in many different ways. In 1921

Carl Jung emphasized learning from human personality types (Jung, 1971). Benjamin

Bloom (1956) emphasized learning from cognitive, affective, and psychomotor skills.

Anthony Gregorc (1978) based learning on perceptual preferences, concrete and abstract,

and ordering preferences, sequential and random. David Kolb (1984) defined the way people learn though "feelings" or through "thinking."

Swiss psychologist Carl Jung published *Psychological Types* in 1921, in which he argued that people take in information differently. Carl Jung conceptualized that a person's readiness or attitude is determined by two basic general attitude types, extraverted or introverted. An extravert's attitude is motivated by the objective world, or from the outside, and is directed by external factors. An introvert's attitude is motivated by the subjective world, or from within, and is internally directed by their thoughts and feelings (Jung, 1971).

Jung viewed people's behavior as patterns and later developed a theory to explain human personality. According to Jung, patterns are the way people prefer to perceive and make judgments are also referred to as psychological types. In Jung's theory, these psychological types can be classified into four mental processes- two perception processes (sensing and intuition) and two judgment processes (thinking and feeling). Sensing is the ability to consciously be naturally dependent on objects. Intuition deals is a way of perceiving reality. Thinking is "a feeling of guidance which ultimately determines judgment" (Jung, 1971, p. 380). Feeling is the process of forming an opinion about whether something is right or wrong, accepted or rejected, liked or disliked, good, bad, or indifferent (Jung, 1971).

What comes into consciousness comes through senses or through intuition and in order to remain in consciousness, perceptions must be used. These perceptions are used, sorted, weighed, analyzed, and evaluated, by the judgment processes of thinking and feeling. Everyone uses all four mental process, sensing, intuition, thinking, and feeling,

but we do not use them equally. Jung considered that each person has a true type that he or she may not yet have discovered. This true type does not change, even though it may seem to, as one focuses on developing different mental processes at different stages of one's life (American Association of School Administrators, 1991).

In 1956, Benjamin Bloom, in *Human Characteristics and School Learning,* put forward a theory about the interdependent factors that account for the differences in student learning. Bloom described three domains of learning factors: cognitive, affective, and psychomotor (Bloom, 1956). The cognitive domain consists of mental skills or knowledge. This domain involves the development of knowledge and intellectual skills. The affective domain consists of growth in feelings, emotions, or attitude. The affective domain involves how a person deals with things emotionally. The psychomotor domain consists of physical or manual skills. This domain includes physical movement or the use of the motor skills. According to Bloom's theory, each domain must be mastered before the next one can take place (Bloom, 1956).

In the 1970s, Anthony Gregorc began working on his theory of mind styles. He based his learning styles on brain hemisphere research. The style represents two types of preferences: perceptual preferences, concrete and abstract, and ordering preference, sequential and random. The concrete quality enables one to grasp and mentally register data through direct use and application of physical senses. The abstract quality allows one to conceive ideas, to visualize, and to understand or believe that which you cannot actually see. You are using your imagination and intuition. The sequential quality allows your mind to organize in a linear, step-by-step manner. When a person has a plan, they follow it rather than relying on impulse. The random quality allows one's mind to

organize information by chunks and in no order. Sometimes a person may skip steps and still produce their desired results. A person may also prefer to act on the spur of the moment, rather than having it planned (Gregorc, 1984).

People can have both concrete and abstract abilities, as well as, sequential and random to some extent. Most people are usually comfortable with using one main ability more than the other. No one has a single style, but each of us has a unique combination of natural strengths and abilities. By recognizing what their strengths are, individuals can learn to use them to the best of their ability in order to enhance their knowledge (Gregorc, 1984).

David Kolb defined learning as "the process whereby knowledge is created through the transformation of experience," (Kolb, 1984, p. 38). In order to understand learning, we must understand the nature and forms of human knowledge and the processes whereby this knowledge is created. In Kolb's Experiential Learning Theory model (ELT), Kolb defined three stages of a person's development: acquisition, specialization, and integration. Acquisition occurs from birth to adolescence and involves the development of basic learning abilities and cognitive structures. Specialization occurs from formal education and/or career training to the early experience of adulthood in work and personal life and involves the development of a particular specialized learning style shaped by social (cultural), educational, and organizational socialization. Integration occurs from mid-career through later life and involves the expression of a non-dominant learning style in work and personal life (Kolb, 1984).

Kolb described a learning style preference as the product of two separate choices that we make, how to approach a task, through reflective observation or active

experimentation, and how our emotions respond to the experience, through abstract

conceptualization or concrete experience. Reflective observation involves watching

others involved in the experience and then focusing on understanding the things that

happened in the experience. Active experimentation involves jumping straight into the

experience and just doing it. Abstract conceptualization involves gaining new

information by thinking, analyzing, or planning. Concrete experience involves

experiencing concrete, tangible, felt qualities of the world. Kolb then developed the Kolb

Learning Style Inventory which identified four learning types according to how learners

process and perceive information: assimilators, divergers, accommodators, and

convergers. This model is discussed in more detail later in this chapter (Kolb, 1984).

<div align="center">Definitions of Learning Style</div>

There are many different learning style definitions. The following is a list of some

of the definitions:

> Learning styles are "the ways individual learners react to the overall learning environment" (James & Gardner, 1995, p. 19).

> Learning styles are "self-consistent, enduring individual differences in cognitive organization and functioning" (Ausubel, Novak, & Hanesian, 1978, p. 203)

> Learning styles are "distinctive behaviors which serve as indicators of how a person learns from and adapts to his environment. It also gives a clue of as to how a person's mind operates" (Gregorc, 1979, p. 234)

> Learning styles are "the way each learner begins to concentrate on, process, and retain new and difficult information" (Dunn & Dunn, 1993, p. 2).

> Learning styles are "preferences that students have for thinking, relating to others, and for various classroom environments and experiences" (Grasha, 1990, p. 106).

> Learning styles are "a consistent way of functioning that reflects the underlying causes of learning behavior" (Keefe, 1987, p. 5).

Learning styles differ among students. Some of the ways learning styles between individuals can differ are amongst achievement levels, gender, age, and culture. Individuals' achievement levels can be high versus low academic achievement. High and low achievers are not likely to perform well with the same methods of learning (Dunn & Dunn, 1999). Differences in gender also affect learning styles. Males and females learn differently from each other. Males tend to be more kinesthetic and tactual, and if they have a third modality strength, it is often visual. Males also need more mobility in a more informal environment than females (Dunn & Griggs, 1995). They are more non-conforming and peer motivated than females. Females tend to be relatively conforming and either self-, parent-, or teacher-motivated (Dunn & Griggs, 1995). Females, more than males, tend to be auditory, authority-oriented, and better able to sit passively in conventional classroom desks and chairs. Females also tend to need significantly more quietness while learning (Pizzo, Dunn, & Dunn, 1990), be more self-motivated, and conform more than males (Marcus, 1977).

Learning styles may change as individuals grow older (Dunn & Griggs, 1995). Some individuals change uniquely and then some do not change at all as they get older. Individuals' sociological, emotional, and physiological preferences change as a person gets older. Sociological preferences could be whether an individual chooses to learn alone or with a group. Emotional preferences can include motivation which fluctuates from day to day, class to class, and teacher to teacher. If a student is interested in a topic and the presenter's teaching style matches the student's learning style, then the student's motivation will be greater. Sound preferences, temperature preferences, and seating preferences also change as individuals get older (Dunn & Griggs, 1995).

Emotional preferences also include the need for breaks for interaction or intake versus the need for persistence. Older adults may require less structure. Physiological preferences can include tactual learning, kinesthetic learning, and/or visual learning. It can also include time preferences, length of time preferences, and mobility preferences. There also is diversity in learning styles among different cultures. There were differences greater within each cultural group than between cultural groups. With that in mind, teachers cannot approach students with a cultural mind set. Instead the learning styles strengths of each student must be assessed and intervention must be designed that are compatible with these preferences (Dunn & Griggs, 2000).

Learning Styles Models

Three types of learning style models that can be used to test a person's learning style are instructional preference models, information-processing models, and personality models. Instructional models, also known as social interaction models, examine the attitudes, habits, and strategies of learners. These models also examine how people engage with their peers when they learn. Information-processing models observe the way a person remembers information, senses, solves problem, and thinks. Personality models study the way a person reacts and feels about different situations. The different types of instructional, informational-processing, and personality models and inventories are presented in Table 2.

Table 2

Learning Styles Models: Instructional, Information-Processing, and Personality

Instructional and Environmental Preference

Inventory Title	Author(s)	Published Date	Measures
Grasha & Riechmann Student Learning Style Scales	Grasha & Riechmann	1974	Describe the learner as one of the following: independent-dependent, avoidant-participant, and collaborative-competitive
Learning Preference Inventory	Rezler & Rezmovic	1974	Three concepts: abstract or concrete, individual or interpersonal, and student structure or teacher structure
Dunn, Dunn, & Price Learning Style Inventory	Dunn & Dunn	1975	Environmental elements, emotional elements, physical elements, sociological elements, and psychological elements
Multi-Modal Paired Associates Learning Test (MMPALT)	Gilley	1975	Perceptual learning modalities: print, aural, oral (interactive), visual, haptic, and motor (kinesthetic)
Friedman & Stritter	Friedman & Stritter	1976	Preferences for pacing, influenced over learning, media, active role in learning, and feedback in learning
Cognitive Style Interest Inventory	Hill	1976	Symbols and their meanings, cultural determinants, and modalities of inference
Learning Style Inventory	Renzulli & Smith	1978	Learning context and teaching styles
Canfield & Lafferty Learning Styles Inventory	Canfield & Lafferty	1980	Conditions of learning, content of learning, mode of learning, and expectations for learning

Information Processing Preference

Inventory Title	Author(s)	Published Date	Measures
Learning Style Inventory	Kolb	1976	How learners process and perceive information: assimilators, divergers, conveyors, or accommodators
Edmonds Learning Style Identification Exercise	Reinert	1976	Four types of learning methods: visual, verbal, listen (aural), and emotional
Inventory of Learning Processes	Schmeck, Ribich, & Ramanaih	1977	Synthesis-analysis, study methods, fact retention, and elaborative processing
Gregorc Style Delineator	Gregorc	1977	Concrete-sequential, abstract-sequential, abstract-random, abstract-sequential
Paragraph Completion Method	Hunt	1978	Need for structure, dependent or conforming
Approaches to Studying Inventory	Entwistle	1979	Reproducing orientation, meaning orientation, achieving orientation, non-academic orientation, and self-confidence
Study Process Questionnaire	Biggs	1987	Surface (instructional v. reproducing), deep (intrinsic v. meaning)

Personality Related Preference

Inventory Title	Author(s)	Published Date	Measures
Myers-Briggs Type Indicator	Myers-Briggs	1962	Extraversion/introversion, Sensing/intuition, thinking/feeling, judging v. perceiving
Matching Familiar Figures	Kagan	1964	Impulsivity or reflectivity
Group Embedded Figures Test	Witkin	1969	Field independence or independence
Keirsey Temperament Sorter II	Keirsey	2004	Character and temperament into four categories: Artisans, Guardians, Rationals, and Idealists

Instructional and Environmental Preference Models

Anthony Grasha and Sheryl Reichmann developed the Grasha Reichmann Student Learning Style Scales (GRSLAA) in 1974 (Grasha, 1972; Reichmann & Grasha, 1974) to develop college student's styles of classroom participation. Over a period of two years, Grasha and Reichmann interviewed undergraduate students at the University of Cincinnati. These students were asked to sort student behaviors in a typical classroom into response styles. The student's response styles were based on three classroom dimensions: student's attitudes toward learning, their views of the teacher and/or peers, and their reaction to classroom procedures. From these three classroom dimensions three styles emerged: avoidant-participant, competitive-collaborative, and dependent-independent.

Avoidant students do not participate in the class actively and are not interested in learning course content (Claxton & Murrell, 1987). These students tend to take little responsibility for his/her learning and have high absentessism (Grasha, 1972). *Participant students* desire to learn course content and enjoy attending class (Claxton & Murrell, 1987). These students relate well to his/her peers and accept responsibility for self-learning. *Competitive students* feel they must compete with others for reward (Grasha, 1972). These students motivation to learn is to do better than others (Claxton & Murrell, 1987).

Collaborative students like learning through sharing with others (Claxton & Murrell, 1987). They are cooperative and see the classroom as a place for learning and interaction with others. *Dependent students* have little intellectual curiosity and learn only what is required (Claxton & Murrell, 1987). These students typically become frustrated

when facing new challenges not directly addressed in the classroom (Grasha, 1972).

Independent students like to think for themselves (Claxton & Murrell, 1987). They prefer

to work alone and require little direction from the teacher.

"Perceptual learning styles are the means by which learners extract information

from their surroundings through the use of their five senses" (Institute for Learning Styles

Research, 2003). Perceptual modalities refer to the ways that our senses take in

information. Russell L. French (1975) developed the idea of the perceptual modalities, in

which people learn by combining the use of their senses while maintaining a primary

sensory modality. Using this idea of perceptual modalities developed by French (1975),

Gilley (1975) developed the Multi-Modal Paired Associates Learning Test (MMPALT).

This test was then implemented by Dr. Daryl Gilley (1975) using six perceptual

modalities which were print, aural, oral (interactive), visual, haptic, and motor

(kinesthetic). Then in 1981, Dr. C. Edwin Cherry (1981) furthered the area by addressing

a seventh perceptual style. The seven perceptual styles are auditory, visual, tactile,

kinesthetic, interactive, haptic, and olfactory.

Auditory or Aural Preferences: Auditory learners learn best when listening to

verbal instruction such as lectures or discussions (Price & Griggs, 1985). In order

to comprehend material they need to read it out loud (Flaherty, 1992).

Visual Preferences: Visual learners learn best by reading or observing (Price &

Griggs, 1985). They like everything to be in print, such as overheads, handouts, or

books (Flaherty, 1992).

Tactile or Print Preferences: Tactile learners learn best by taking notes while they are listening or underlining while they are reading (Price & Griggs, 1985). They have a heightened awareness of their environment, such as whether the room is too hot or too cold (Flaherty, 1992).

Kinesthetic Preferences: Kinesthetic learners learn best through action or body movement (Price & Griggs, 1985). They prefer to do something first hand and read about it later (Flaherty, 1992).

Interactive Preferences: Interactive learners learn best through verbalization. They prefer to discuss things with others (Institute for Learning Styles Research, 2003).

Haptic Preferences: Haptic learners learn best through the sense of touch. They prefer a "hands-on" approach to learning (Institute for Learning Styles Research, 2003).

Olfactory Preferences: Olfactory learners learn best through the sense of smell and taste. They associate particular smells with specific past memories (Institute for Learning Styles Research, 2003).

Rita and Kenneth Dunn describe learning style as individuals' perceptual reactions to each of 21 elements when concentrating on new and difficult academic knowledge and skills (Dunn & Dunn, 1999). The Dunn and Dunn Model emerged from

cognitive theory, brain-lateralization theory, practitioners' observations, and experimental studies (Honigsfeld & Dunn, 2006). The Dunns describe learning style as the ways in which five basic stimuli affect individuals' abilities to master new and difficult academic information and skills. Each of the five stimuli includes smaller components called elements. In order to capitalize on students' variety in learning styles they need to be aware of their own emotions, their environment, their physiological characteristics, their sociological preferences, and their global versus analytic processing elements. Students emotions include motivation, persistence, responsibility (conformity versus non-conformity), and preference for structure versus choices (Dunn & Griggs, 2000).

These emotional elements are developmental throughout life (Thies, 1979). There are three major nonconforming stages during a person's life time. The first is the terrible twos, when children are starting to become more defiant at various degrees. The second stage is adolescence. This takes place in what is known as the teenage years. The last stage is commonly known as the "midlife crisis." This period normally takes place in adults in their forties and fifties.

A student's environment consists of sound versus silence, bright versus soft lighting, warm versus cool temperatures, and formal versus informal seating while concentrating (Dunn & Griggs, 2000). Students' physiological preferences can include perceptual strengths such as hearing (auditory), seeing (visual), handling manipulative instructional resources (tactually), and/or actively participating while standing or moving (kinesthetically) (Dunn & Dunn, 1999). Physiological preferences can also include time-of-day energy levels in which learning takes place, such as early morning or late morning, afternoon, or evening (Dunn & Griggs, 2000). Intake preferences are also

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included in physiological preferences. The need for something to eat or drink while concentrating is a necessity for some students. A final component for physiological preferences are mobility needs. Kinesthetic people learn through activity. They have difficulty concentrating on information passively. The type of seating in a learning environment also affects students' mobility needs. These types of people are able to sit and complete a task, but at a given time, they need to switch positions, such as move to a new area in the room (Dunn & Griggs, 2000).

Students' sociological preferences for learning could be alone, with peers, with either a collegial or an authoritative adult, and/or in a variety of ways as opposed to patterns or routines (Dunn & Griggs, 2000). Some students prefer to think things through and then interact with others. Other students cannot learn with other human beings, but are marvelous with technology, and can spend hours with their computers. Then finally, there are some students that cannot learn with books, or through lectures, but prefer for people to be close by just in case they need help, but not necessarily interacting with them (Dunn & Dunn, 1999). Analytics learn one fact after another gradually building up to an understanding. Then the opposite of analytic processing is global processing. Globals learn concepts first and then concentrate on the details.

<center>Information Processing Models</center>

David Kolb developed the Kolb Learning Style inventory, which identifies four learning types according to how learners process and perceive information (Kolb, 1984, 1985). According to Kolb (1985), individuals develop learning styles that emphasize some learning abilities over others. Kolb's model assumes that individuals exhibit a preference for certain learning behaviors and these preferences can be grouped into four

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distinct styles, assimilators, divergers, accommodators, and convergers. Kolb's model also indicates that students should be challenged by moving into other styles than their preferred ones (Sharp, 1997). These four styles include:

Assimilators: These people perceive information abstractly and process it reflectively. They are rational and logical thinkers. They follow directions well and like to thoroughly understand concepts before they act. They are called assimilators because they do not emphasize practical application, rather they focus on the development of theories, often discarding facts if they do not fit the theory (Kolb, 1984).

Divergers: These people perceive information concretely and process it reflectively. They draw upon their imaginative aptitude and their ability to view complex situations from many perspectives. They prefer to watch rather than do. They are called divergers because they excel at viewing an event or idea from many perspectives and at generating many different ideas (Kolb, 1984).

Accommodators: These people perceive reality through concrete experience and process it through active experimentation. They learn by concrete information from their senses (feelings) and from doing. They use intuition and trial-and-error situations. They are called accommodators because they adapt well to new circumstances and applying knowledge in new ways (Kolb, 1984).

Convergers: These people perceive reality through abstract conceptualization and process it through active experimentation. They organize information through hypothetical deductive reasoning. They prefer technical tasks, and are less concerned with people and interpersonal aspects. They are called convergers because they move (converge) quickly to reach a conclusion or find a single, correct answer (Kolb, 1984).

The Inventory of Learning Processes (ILP) is a learning style instrument developed by Schmeck, Ribich, and Ramanaiah in 1977. According to Schmeck et al. (1977), Schmeck (1982), and Lockhart and Schmeck (1983), the ILP assesses the manner in which students process information. The ILP measures students' learning style by examining the behaviors they employ to process the material, such as critically evaluating it, rewording class information and connecting it to their lives, focusing on facts and details, or using commonly prescribed study methods. The ILP focuses on how students process information in academic settings via such cognitive concepts as organization, elaborative processing, and depth- of-processing, in addition to encoding, storage, and retrieval strategies (Clump, 2005). The ILP consists of four scales: Deep Processing, Elaborative Processing, Fact Retention, and Methodical Study.

The *Deep Processing* scale assesses the extent to which subjects critically evaluate, analyze, organize, and compare and contrast information. The *Elaborative Processing* scale assesses strategies in which one personalizes and concretizes information and translates it into one's own terms. The *Fact Retention* scale assesses how effectively specific factual information is retrieved from one's memory. The *Methodical Study* scale assesses study habits and whether one conforms to guide lines given by

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instructors and/or to suggestions provided in how-to-study manuals (Schmeck, Ribich, & Ramanaiah, 1977).

Anthony Gregorc (1984) developed the Gregorc Style Delineator, which tests the four channels through which the mind receives and expresses information. Each combination of perception and ordering abilities reveals a particular quality to how we see and use the information we receive from the environment. The possible combinations of perception and ordering abilities are, Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR).

Concrete Sequential learners prefer learning that is linear and sequential. They use "train of thought," there is a clear beginning and a clear end to things. They divide time into the immediate past, the present, and an immediate future. They strive for perfection and have an eye for detail. Their creativity lies not with originality, but with producing a concrete product or prototype from someone's idea. They generally do not adapt to new conditions or new environments very well. They are realists who are practical and predictable. They use concise words that are neat, clean, and to the point. They prefer an environment that is quiet, ordered, predictable, and stable (Gregorc, 1982a).

Abstract Sequential learners thrive on a mentally challenging, but ordered learning environment. They place things in order branching into parts derived from the base. Future events are projected and predicted by using history as a foundation. They mentally outline, correlate, compare, and categorize data. Their creativity is original, inventive, and unique. They are serious and determined. They are naturally compelled to use reason and logic to describe and explain things that occur in his everyday life. They are compelled to use words with logic patterns to describe, explain, and justify things.

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They prefer an environment that is ordered, quiet, independent, and mentally stimulating (Gregorc, 1982a).

Abstract Random learners are emotional and imaginative. They organize by putting him (her) self and others into events. The past and present are merged into one and they live in the moment. Creativity is imaginative and often expressed though music and art. They are easily influenced towards change which may or may not affect them positively. They approach life enthusiastically and reveal his/her inner self to those who he/she trusts and love. They communicate through sound, color, music, symbols, poetry, and gestures. They prefer an environment of emotional experiences, active and colorful (Gregorc, 1982a).

Concrete Random learners prefer learning that is concrete and intuitive. They view events in a linear fashion, there is no apparent beginning or end. Time is viewed as now, which is a sum of the past, the interactive present, and the seed for the future. Creativity is original and unique. They are not adverse to change. They are changeable as their environment. They strive to understand the "why" instead of the "how" in life. They use words that have a present literal meaning acceptance. They prefer and environment that is free of movement and expression and competitive (Gregorc, 1982a).

Personality Related Preference Models

The Myers-Briggs Type Indicator (MBTI) (1962) is based on the psychological theory of Carl Jung who disputed that personality traits are inherited or innate. Isabel Myers and her mother, Katherine Briggs' aim for the Myers-Briggs Type Indicator was to understand differences and similarities in human personalities. The Myers-Briggs Type Indicator can aid students in determining their personality type (The Myers & Briggs

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Foundation, 2006). Myers and Briggs addressed two goals in the development and application of the Myers-Briggs Type Indicator instrument: The identification of basic preferences of each of the four dichotomies specific in Jung's theory and the identification and description of the 16 distinctive personality types that results from the interactions among the preferences. The four dichotomies of personality traits are Introversion or Extraversion, Sensing or Intuition, Thinking or Feeling, and Judging or Perceiving . The 16 personality types of the Myers-Briggs Type Indicator instrument are listed below (The Myers & Briggs Foundation, 2006):

ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ

The Matching Familiar Figures was developed by Jerome Kagan in 1964. It measures a dimension of cognitive style known as reflection-impulsivity. This test requires the respondent to compare a stimulus picture with many similar pictures, with one being the correct one. In comparing these pictures respondents use "the tendency to reflect over alternative solution possibilities, in contrast with tendency to make an impulsive selection of a solution," (Kagan, 1965, p. 609).

Impulsive people respond by glancing quickly at the sample and selecting the answer that appears most nearly correct. These people may make a choice of an alternative without adequate consideration of options. Reflective people carefully examine each alternative before finally selecting what he/she believes is the correct one. These people may also delay of decision-making in situations where a correct response is not obvious (Claxton & Murrell, 1987).

The Keirsey Temperament Sorter II® (KTS®- II) (Keirsey, Milner, & Wood, 2004) is based on Dr. David Keirsey's Temperament Theory. As a Gestalt psychologist, Keirsey developed the Temperament theory from a discovery that people can be grouped together by similar patterns of behavior, values, attitudes and the use of language. These similar patterns make up his four temperaments- Artisans, Guardians, Rationals and Idealists (Advisor Team, 1998-2005). Keirsey conceptualized there are two sides to personality; temperament and character.

Keirsey clarified that "temperament is a configuration of inclinations, while character is a configuration of habits. Character is disposition, temperament predisposition" (Keirsey, 1998, p. 20). "Thus temperament is the inborn form of human nature; character, the emergent form, which develops through the interaction of temperament and environment" (Keirsey, 1998, p. 20). According to Keirsey's Temperament Theory, people can be sorted into four Temperaments: Artisans, Guardians, Rationals, and Idealists. The Keirsey Temperament Sorter II then further divides the four Temperaments into one of sixteen character types. The sixteen charater types are **Artisans:** Composers, Crafters, Performers, and Promoters; **Guardians:** Inspectors, Protectors, Providers, Supervisors; **Rationals:** Architects, Fieldmarshals, Inventors, and Masterminds; **Idealists:** Healers, Counselors, Champions, and Teachers (Advisor Team, 1998-2005).

Malcolm Knowles (1973) acknowledges that understanding how a person learns is major requisite for a successful educational program. Learning styles can be defined as characteristics that cognitive, affective, and psychological serve as relatively stable indicators of how learners perceive, interact with, and respond to their learning

environment (Keefe, 1979). Research has identified that students are more successful when learning environments match their learning styles (Jones, Reichard, & Mokhtari, 2003). Students benefit from being able to associate new learning with their previous experiences and accomplishments, thus effective approaches to helping students learn include contribution from the students and their involvement in what is being taught and how it is being taught (Howell, 2001).

Learning is related to thinking, and as individuals, we use specific styles when we think and learn (Cano-Garcia & Hughes, 2000). Not all people learn or approach learning in the same way (Truluck & Courtenay, 1999). Catering to learning styles makes learning interesting and stimulating (Ortigara, 2000). Learning style inventories create personal learning profiles that can empower students to become active learners and successful participants in their own education (Fritz, 2002). When students feel respected and empowered in their classroom, they will feel as if they have a stake in what they have learn, have control in how they learn, and are accepted for the unique individuals they are (Sheets & Gay, 1996). When learners are taught the skills necessary to engage in their own learning it allows them to reap the benefits that can be achieve by such an individualized approach (Hlawaty, 2001).

Emotional Intelligence

Since the eighteenth century, psychologists have recognized a three-part division of the mind. These divisions are cognition (or thought), affect (including emotion), and motivation. The cognitive sphere includes functions such as memory, reasoning, judgment, and abstract thought. The first part of the affective sphere belongs to intelligence. Intelligence pertains to abilities such as the power to combine and separate

concepts, to judge and reason, and to engage in abstract thought. The second part of the affective sphere is emotions. Emotions include feeling, moods, and states of being. Not everything that connects cognition to emotion is emotional intelligence (Salovey & Mayer, 1990).

According to Salovey and Mayer (1990), "emotions are responses to an event, either internal or external, that has a positively or negatively valenced meaning for the individual" (p. 186). Emotions are a state of feeling that convey information about relationships. According to Goleman (1995), emotions are "impulses to act, the instant plans for handling life that evolution has instilled in us" (p. 6). There are seven emotions that are shared universally among people: anger, fear, happiness, love, surprise, disgust, and sadness.

Mayer and Salovey (1997) define intelligence as "a characterization of how well the cognitive sphere operates, how quickly someone can learn, how well they can judge and think, and so on" (p. 23). Intelligence is a set of abilities. It is how an individual gathers information, learns about that information, and reasons with the information (Mayer, Salovey, & Caruso, 2000b). The combination of these two definitions of emotions and intelligence is what led to the term emotional intelligence. According to Salovey & Mayer (1990), emotional intelligence is "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189).

Robert Sternberg and Howard Gardner in the 1980s struck an interest in social/emotional intelligence. Sternberg (1985) found there were social skills when

describing a person with emotional intelligence. He then claimed that social intelligence was separate from academic ability. Howard Gardner addressed a "cross-cultural perspective of intelligence by examining a range of social contexts and ethnic groups across many countries" (Elias, Hunter, & Kress, 2001, p. 134). Gardner (1983, 1993) described intelligence as being directly related to an individual's ability to perceive, comprehend meaning, adapt to new situations, learn from experiences, seize the essential factors of a complex matter, demonstrate mastery over complexity, solve problems, critically analyze, and make productive decisions. He proposed that there are at least nine different kinds of intelligences: linguistic, logical-mathematical, spatial, kinetics, musical, interpersonal, intrapersonal, existential, and naturalistic.

Linguistic intelligence is the ability to manipulate language. Logical-mathematical intelligence is ability to detect patterns, reason deductively, and think logically. Spatial intelligence gives a person the ability to manipulate and create mental images in order to solve problems (Gardner, 1983, 1993; Nolen, 2003).

Bodily-kinesthetic intelligence entails the ability to understand the world through the body. Musical intelligence makes use of sound to the greatest extent possible. The interpersonal intelligence consists of the ability to understand, perceive and discriminate between people's moods, feelings, motives, and intelligences. People with intrapersonal intelligence are usually imaginative, original, patient, disciplined, motivated, and have a great deal of self-respect. Naturalistic intelligence involves the ability to understand nature's symbols and to respect the delicate balance that lets us continue to live (Gardner, 1983, 1993; Nelson 1998).

The first use of the word emotional intelligence appeared in a doctoral dissertation written by Wayne Leon Payne in 1985. The term emotional intelligence, was used five years later by John Mayer and Peter Salovey. In 1990, Mayer and Salovey were trying to develop a way of scientifically measuring the difference between people's ability in the area of emotions. They found that people who have emotional intelligence skills, "understand and express their own emotions, can recognize emotions in others, regulate affect, and use moods and emotions to motivate adaptive behaviors" (Salovey & Mayer, 1990, p. 200).

Daniel Goleman is commonly known and associated with the term emotional intelligence. Goleman became popular after he published *Emotional Intelligence* in 1995. His research focused on emotional intelligence in the workplace. He stated that emotional competence is "a learned capability" (1995, p. 24). Goleman's framework for emotional competence is divided into two categories: personal competence and social competence. Personal competence determines how we manage ourselves and social competence looks at how we manage our relationships (Goleman, 1995).

Goleman's emotional intelligence model thus consisted of five basic emotional and social competencies: self-awareness, self-regulation, motivation, empathy, and social skills. Self-awareness involves knowing what we are feeling in the moment and using those preferences to guide our decision making. Self-awareness involves having a realistic assessment of our own abilities and a well-grounded sense of self-confidence. Self-regulation is how we handle our emotions so that they facilitate rather than interfere with the task at hand. Self-regulation consists of being conscientious and delaying

gratification to pursue goals and recovering well from emotional distress (Goleman, 1998).

Motivation involves using our deepest preference to move and guide us toward our goals. Motivation helps a person to take initiative and strive to improve and to preserve in the face of setbacks and frustrations. Empathy involves sensing what people are feeling. Empathy consists of being able to cultivate rapport and attunement with a broad diversity of people. Social skills involve handling emotions in relationships. Social skills also involve the ability to accurately read social situations and networks and to use these skills to persuade, lead, negotiate and settle disputes, for cooperation and teamwork (Goleman, 1998).

Definitions of Emotional Intelligence

Mayer and colleagues laid the foundation for the abilities model of emotional intelligence. The field of emotional intelligence is fairly new and still growing. Mayer and colleagues constructed several definitions of emotional intelligence as their research progressed:

> Emotional intelligence is the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189).

> Emotional intelligence is "... the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth" (Mayer & Salovey, 1997, p. 5).

> Emotional intelligence refers to the ability to recognize meanings of emotions and their relationships, and to reason and problem-solve on the basis of them" (Mayer, Caruso, & Salovey, 1999, p. 267)

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Emotional intelligence is a set of abilities that accounts for how people's emotional reports vary in their accuracy and how the more accurate understanding of emotion leads to better problem solving in an individual's emotional life" (Mayer, Salovey, & Caruso, 2000b, p. 396).

Even though Mayer & Salovey laid the groundwork for emotional intelligence, there was still not a single definition for emotional intelligence. Other researchers, such as Goleman (1995), Bar-On (1997), Cooper & Sawaf (1998), and Lane (2000) expanded on the meaning of emotional intelligence. They reexamined and changed the meaning of emotional intelligence significantly. By examining the definitions listed below, it is evident that the field of emotional intelligence continues to expand:

Emotional intelligence is "...an array of personal, emotional, and social competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures, and directly affect one's overall psychological well-being" (Bar-On, 1997, p. 14).

"Emotional Intelligence refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and our relationships" (Goleman, 1998, p. 317).

Emotional intelligence does not mean giving free rein to feelings - 'letting it all hang out'. Rather, it means managing feelings so that they are expressed appropriately and effectively, enabling people to work together smoothly toward their common goals" (Goleman, 1998, p. 6).

Emotional intelligence as "one's own subjective emotional responses as well as the information conveyed by the emotional responses of others" (Lane, 2000, p. 171).

Emotional Intelligence Models

There are two types of models of emotional intelligence. They are the ability model and the mixed model. The ability model of emotional intelligence involves the ability to reason with and about emotions, and the capacity of emotions to enhance thought. This model is a set of mental abilities that are part of, and contribute to logical

thought. The mixed model of emotional intelligence involves mixing the qualities of emotional intelligence with other personality traits unrelated to emotions or intelligence. The mixture of abilities, personality traits, and dispositions are synonymous with this trait. A comparison of emotional intelligence "ability" and "mixed" models are presented in Appendix B.

In 1997, Mayer and Salovey discovered a four branch model of emotional intelligence. This four branch model of emotional intelligence describes four areas of capacities or skills that describe emotional intelligence in people. Mayer, Salovey, and Caruso then developed the Multifactor Emotional Intelligence Scale (MEIS), which was the first comprehensive ability model, to measure the four areas of emotional intelligence (Mayer, Salovey, & Caruso, 1997). They later developed the Mayer-Salovey-Caruso Intelligence Test (MSCEIT) (Mayer, Salovey, & Caruso, 2002) which is based directly on the MEIS (Mayer, Caruso, Salovey, 1999; Mayer, Salovey, & Caruso, 1997). The four areas that the MSCEIT measures are perceiving emotions, using emotions, understanding and analyzing emotion, and managing emotions.

Perceiving emotions refers to the ability to identify emotions in other people. It is the ability to identify and express emotions in other people's thought, language, sound, appearance, and behavior. It is the ability to perceive and express feelings. It involves the ability to discriminate between accurate and inaccurate, or honest or dishonest expressions of feeling (Mayer & Salovey, 1997).

Using emotions or facilitating thought entails how an individual's thoughts and other cognitive activities are informed by his or her experience of emotions. It involves prioritizing thinking by directing attention to important information. It is the ability to

generate, use, and feel emotions necessary to communicate feelings or employ them in other cognitive processes. In using emotions generally how we feel is how we think (Mayer & Salovey, 1997).

Understanding and analyzing emotions involves the ability to label emotions, including complex emotions and simultaneous feelings. It is the ability to interpret the meanings that emotions convey regarding relationships. It is the knowledge that each emotion has its own possible messages and actions associated with them. Fully understanding emotions involves the comprehension of the meaning of emotions, coupled with the capacity to reason about those meanings (Mayer & Salovey, 1997).

Managing emotions entails understanding that emotions convey messages. It means that one feels the feeling rather than repressing it, and then uses the feeling to make better decisions. It is the ability to stay open to feelings and to monitor and regulate emotions reflectively to promote emotional and intellectual growth. It is the ability to reflectively engage or detach from an emotion. It is the ability to regulate and manage one's own and other's emotions while also promoting one's own and others personal and social goals (Mayer & Salovey, 1997).

In 1997, Bar-On reviewed psychological literature for personality characteristics that explained how some individuals are more successful than others. He identified a mixed model five broad areas of functioning that are related to success: intrapersonal, interpersonal, adaptability, stress management, and general mood (Bar-On, 2000). Intrapersonal skills involve emotional self-awareness, assertiveness, self-regard, self-actualization, and independence. Interpersonal skills entail interpersonal relationships, social responsibility, and empathy. Adaptability scales include problem-solving skills,

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reality testing, and flexibility. Stress-management scales stress tolerance and impulse control. General mood focuses on happiness and optimism. "Bar-On EQ-i is considered a mixed model because it combines mental abilities (e.g. emotional self-awareness) with other characteristics that are considered separate from mental abilities, such as personal independence (Bar-On, 2000).

Goleman created a mixed model that is characterized by five areas: emotional self-awareness, managing emotions, motivating oneself, recognizing emotions in others, and handling relationships. Emotional self-awareness is the improvement in recognizing and naming one's own emotions. It is the ability to understand the causes of feelings, and the ability to recognize the difference between feelings and actions. It is recognizing a feeling as it happens and it monitors feelings from moment to moment (Goleman, 1995).

Managing emotions is the ability to handle feelings so that they are appropriate. It is the ability to soothe oneself. It involves frustration tolerance and anger management and it creates positive feelings about oneself. Motivating oneself involves tailoring emotions in the service of a goal. It involves delayed gratification and stifling impulsiveness. It is the ability to be able to get into the flow state where a person is able to focus on the task at hand and pay attention (Goleman, 1995).

Recognizing emotions in others is the ability to take another person's perspective. It is empathetic awareness. It is attunement to what others need or want. It is having sensitivity towards other's feelings (Goleman, 1995). Handling relationships involves the skill in managing emotions in others. It involves interacting smoothly with others. It is the ability to analyze and understand relationships (Goleman, 1995).

Goleman (1995) makes extraordinary claims for the validity of his mixed model. He stated that emotional intelligence will cause success at school, home, and work. Goleman stated that at school, "children who are emotionally intelligent are more popular with and better liked by their peers, and are seen by their teachers as more socially skilled…they are also less rude and aggressive…they pay attention better, and are more effective learners" (p. 192). At home, according to Goleman, "people with well-developed emotional skills are more likely to be content and effective in their lives. At work, individuals who are emotionally intelligent enhance teamwork by helping people learn together how to work more effectively. These individuals enhance teamwork because they are "able to see things from the perspective of others and promote cooperation while avoiding conflicts" (p. 163).

Emotional Intelligence Measures

There are two types of Emotional Intelligence measures: performance tests and self-report questionnaires. According to Ciarrochi, Chan, Caputi, & Roberts (2001), performance tests have responses that can be evaluated against objectives, and predetermined scoring criteria, whereas self-report questionnaires requests individuals to report their own level of Emotional Intelligence (EI). There are five key differences between performance and self-report measures. Performance tests assess actual EI, where self-report measures assess perceived EI (Ciarrochi, Chan, Caputi, & Roberts, 2001). Performance measures are generally more time consuming to administer than self-report measures. This occurs because self-report measures allow people to summarize their level of El in a few, concise statements (e.g., "I am good at perceiving emotions"), while per-formance measures require a substantial number of observations before EI level can be

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ascertained (Ciarrochi, Chan, Caputi, & Roberts, 2001). Self-report measures require people to have insight into their own level of EI. However, people may not have an accurate understanding of their own intelligence (let alone EI) and, indeed, past research has found only modest correlations between self-rated and actual ability measures (Ciarrochi, Chan, Caputi, & Roberts, 2001).

Self-report measures can allow people to distort their responses to appear better (or worse) than they actually are. To combat these types of problems, self-report measures can include scales that measure the amount people are distorting their responses (Ciarrochi, Chan, Caputi, & Roberts, 2001). Self-report measures of EI tend to be related to well-established personality traits and in particular the various factors comprising the Big Five factor model. Performance measures of EI tend to be less related to personality measures, sharing overlap instead with traditional intelligence measures. A summary of performance and self-report tests are presented in Table 3.

Table 3

Emotional Intelligence Performance and Self-Report Test Models

Type of Test	Name of Model	What It Measures
Performance	Multifactor Emotional Intelligence Scale (MEIS) (Mayer, Caruso, Salovey, 2000)	Measures emotional perception, and an understanding and managing emotion
Performance	Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, & Caruso, 2002)	Measures a person's ability to perceive, respond to, and manipulate emotional information
Performance	Levels of Emotional Awareness Scale (LEAS) (Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990)	Predicts actual emotion recognition, regardless of whether the recognition task is verbal or nonverbal
Self-report	Bar-On Emotion Quotient Inventory (EQ-i) (Bar-On, 1997, 2000)	Measures emotional self-awareness, assertiveness, independence, self-regard, self-actualization, empathy, interpersonal

		relationships, social responsibility, reality testing, flexibility, problem-solving, stress tolerance, impulse control, optimism, and happiness.
Self-report	Trait Meta-Mood Scale (TMMS) (Salovey & Mayer, 1990)	Assesses attention to emotion, emotional clarity, and emotion repair
Self-report	Schutte Self-Report Inventory (SSRI) (Schutte, et. al., 1998)	Assesses overall EI and four subfactors: emotion perception, managing self-relevant emotions, managing other's emotions, an utilizing emotions
Self-report	Toronto Alexithymia Scale (TAS-20) (Bagby, Parker, & Taylor, 1994)	Initially intended as a measure of the clinical syndrome known as alexithymia (the inability to talk about feelings due to lack of emotional awareness)
Self-report	Emotional Control Questionnaire (Roger & Najarian, 1989)	Measures people's ability to control emotion in trying circumstances
Self-report	Monitoring-Blunting Scale (Miller, Brody, Summerton, 1988)	Measures the extent that people seek out (or avoid) information when faced with a stressful situation
Self-report	Repression-Sensitization Scale (Weinberger, Schwartz, & Davidson, 1979)	Assess the extent that people defensively avoid aversive emotions and stimuli
Self-report	Response Styles Questionnaire (Nole-Hoeksema & Morrow, 1991)	Measures the tendency to experience behavior and thoughts that focus on one's depressive symptoms

Emotional Intelligence and Classroom, Self-Management, and Leadership Skills

Understanding emotional intelligence is important for enhancing classroom skills, self-management skills, and leadership skills. In the classroom, teachers should encourage and empower students to have "simple conversations" in the classroom (Yoder, 2005, p. 56). Simple conversations can involve talking about things that are going on in a person's life. The simple conversations will encourage reflection and participation among students. This allows students to become aware of their emotional dynamics in the classroom. Students perform best when the atmosphere is respectful, empathic, and open to communication (Yoder, 2005).

Teachers should also encourage "wholeness" in the classroom (Yoder, 2005, p. 56). Encouraging wholeness in the classroom explores ways for students to be themselves. It influences students to be creative and social responsible. "It is the whole person who best leads, learners, teachers, and works" (Yoder, 2005, p. 56)

In self-management skills, learning how to manage emotions and motivate oneself, can enhance emotional intelligence. "Being aware of your feelings and behavior as well as others' perceptions of you can influence your actions in such a way that they work to your benefit" (Weisinger, 1998, p. 3). For example, in order to control anger, one must understand what causes that anger. Once a person is aware of what causes the anger, they can find ways to motivate themselves to not become angry again. The self functions to mediate and adapt to the environment based on the emotions he/she is experiencing (Saarni, 2000).

Developing good communication skills, interpersonal expertise, and mentoring abilities will maximize the effectiveness of one's emotional intelligence. The core of each of these skills is self-awareness (Weisinger, 1998). "Increasing individual's understanding of their strengths and weaknesses allows them to take corrective action to change their behavior and to become more effective" (Jordan & Ashkanasy, 2006, p. 149).

"Emotional intelligence can only begin when affective information enters the perceptual system" (Weisinger, 1998, p. 4). When one is highly aware of their emotional intelligence, one can monitor oneself in action. It is important that a person understands what makes them do what they do before they can alter their actions. Everyday people are faced with positive and negative events in their lives, which influence their emotional and

physical well-being (Tugade & Fredrickson, 2002). A person must understand "what it is important to them, how they experience things, what they want, how they feel, and how they come across to others" (Weisinger, 1998, p. 4). This high self-awareness guides an individual's behavior from one situation to another. Self-awareness is the basis upon which all other emotional intelligence skills are built (Weisinger, 1998).

Daniel Goleman is one of the leading pioneers of emotional intelligence and leadership. Goleman, Boyatzis, and McKee (2002) stated that "Great leaders move us. They ignite our passion and inspire the best in us. When we try to explain why they are so effective, we speak of strategy, vision, or powerful ideas. The reality is that leaders are more than primal: Great leadership works through the emotions" (p. 3).

Goleman took the four dimensions of emotional intelligence and related them to certain leadership competencies. These leadership competencies are personal competencies and social competencies. Personal competence is the capability to determine how we manage ourselves and are broken down into two categories, self-awareness and self-management. Social Competence is the capability to determine how we manage relationships and are broken down into two categories, social awareness and relationship management.

Self-awareness includes the competencies emotional self-awareness, accurate self-assessment, and self confidence. Self-management includes the competencies self-control, transparency, adaptability, achievement, initiative, and optimism. Social awareness includes the competencies empathy, organizational awareness, and service. Relationship management includes the competencies inspiration, influence, developing others, change catalyst, conflict management, and teamwork and collaboration. A

summary of leadership competencies complied by Goleman, Boyatzis, and McKee

(2002) are presented in Table 4.

Table 4

Leadership Competencies of Emotional Intelligence

Self-Awareness	
Emotional self-awareness	- Leaders are attuned to their inner signals. - They recognize how their feelings affect them and their job performance. - They are attuned to their guiding values. - They are able to speak openly about their emotions or with conviction about their guiding vision (Goleman, Boyatzis, & McKee, 2002). - Set clear goals, link them to personal values, and break them into manageable steps (Cherniss, 2000).
Accurate self-assessment	- Leaders know their limitations and strengths. - They exhibit a gracefulness in learning where they need to improve. - They welcome constructive criticism and feedback (Goleman, Boyatzis, & McKee, 2002).
Self-confidence	- They know their abilities with accuracy which allows them to play own their strengths. - Their self-confidence can welcome difficult assignments. - They have a sense of presence, a self-assurance that lets them stand out in a group (Goleman, Boyatzis, & McKee, 2002). - They help learners build positive expectations (Cherniss, 2000).
Self-Management	
Self-control	- Leaders find ways to manage their disturbing emotions and impulses and channel them in useful ways. - They stay calm and clear-headed under high stress or during a crisis. - They remain unflappable when confronted by a trying situation (Goleman, Boyatzis, & McKee, 2002).

Transparency	- Transparency is an authentic openness to others about one's feelings, beliefs, and actions-allows integrity.
	- Leaders live their values.
	- They openly admit mistakes or faults.
	- They confront unethical behavior in others rather than turn a blind eye (Goleman, Boyatzis, & McKee, 2002).
Adaptability	- Leaders can juggle multiple demands without losing their focus or energy.
	- They are comfortable with the inevitable ambiguities of organizational life.
	- They are flexible in adapting to new challenges.
	- They are nimble in adjusting to fluid change.
	- They are limber in their thinking in the face of new data or realities (Goleman, Boyatzis, & McKee, 2002).
Achievement	- Leaders have high personal standards that drive them to constantly seek performance improvements for themselves and those they lead.
	- They are pragmatic, setting measurable but challenging goals.
	- They are able to calculate risk so that their goals are worthy but attainable (Goleman, Boyatzis, & McKee, 2002).
Initiative	- Leaders have a sense of efficacy.
	- They have what it takes to control their own destiny and excel in initiative.
	- They seize opportunities or create them rather than simply waiting.
	- They do not hesitate to cut through red tape, or even bend the rules, when necessary to create better possibilities for the future (Goleman, Boyatzis, & McKee, 2002).
Optimism	- Leaders can roll with the punches, seeing an opportunity rather than a threat in a setback.
	- They see others positively, expecting the best of them.
	- They expect that changes in the future will be for the better (Goleman, Boyatzis, & McKee, 2002).

Social Awareness

Empathy	- Leaders are able to attune to a wide range of emotional signals, letting them sense the felt, but

	unspoken, emotions in a person or group.
	- They listen attentively and can grasp the other person's perspective.
	- Their empathy allows them to get along well with people of diverse backgrounds or from other cultures (Goleman, Boyatzis, & McKee, 2002).
Organizational awareness	- A leader is able to detect crucial social networks and read key power relationships.
	- They can understand the political forces at work in an organization.
	- They can guide values and unspoken rules that operate among people there (Goleman, Boyatzis, & McKee, 2002).
Service	- Leaders foster an emotional climate so that people directly in touch with the customer or client will keep the relationship on the right track.
	- They monitor customer or client satisfaction carefully to ensure they are getting what they need.
	- They make themselves available as needed (Goleman, Boyatzis, & McKee, 2002).

Relationship Management

Inspiration	- Leaders create resonance and move people with a compelling vision or shared mission.
	- They embody what they ask of others.
	- They are able to articulate a shared mission in a way that inspires others to follow.
	- They offer a sense of common purpose beyond the day-to-day tasks, making work exciting (Goleman, Boyatzis, & McKee, 2002).
	- They create an encouraging environment (Cherniss, 2000)
Influence	- Leader's influence range from finding just the right appeal for a given listener to knowing how to build buy-in from key people and a network of support for an initiative.
	- Leaders are persuasive.
	- They are engaging when they address a group (Goleman, Boyatzis, & McKee, 2002).
Developing others	- Leaders cultivate people's abilities.
	- They show a genuine interest in those they are helping along.
	- They understand other's goals, strengths, and

		weaknesses.
	-	They give timely and constructive feedback.
	-	They are natural mentors or coaches (Goleman, Boyatzis, & McKee, 2002).
Change catalyst	-	Leaders are able to recognize the need for the change.
	-	They challenge the status quo and champion the new order.
	-	They can be strong advocates for change even in the face of opposition.
	-	They find practical ways to overcome barriers to change (Goleman, Boyatzis, & McKee, 2002).
Conflict Management	-	Leaders are able to draw out all parties, understand the differing perspectives, and then find a common ideal that everyone can endorse.
	-	They surface the conflict, acknowledge the feelings and views of all sides, and then redirect the energy toward a shared ideal (Goleman, Boyatzis, & McKee, 2002).
Teamwork and collaboration	-	Leaders generate an atmosphere of friendly collegiality.
	-	They are models of respect, helpfulness, and cooperation.
	-	They draw others into active, enthusiastic commitment to the collective effort.
	-	They build spirit and identity.
	-	They spend time forging and cementing close relationships beyond mere work obligations (Goleman, Boyatzis, & McKee, 2002).

Goleman (2001) suggests that emotionally intelligent leadership is the key to creating a working climate that nurtures employees and encourages them to give their best (p. 40). The type of leadership that a person upholds sets the tone for the entire organization. This concept can also be applied in the classroom. The type of leadership style that a teacher upholds in the classroom sets the mood for the class. Teachers must keep in mind that emotions are contagious (Cherniss, 2001) and that they influence that tone of the class.

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Summary

The review of literature addressed learning styles and emotional intelligence. The literature review provided a comparison of the principles andragogy and pedagogy. An overview of learning styles research which included Carl Jung, Benjamin Bloom, Anthony Gregorc, and David Kolb was included. Definitions of learning styles and a summary of learning style models concluded the learning styles section. Additionally the review of literature addressed an overview of emotional intelligence, definitions of emotional intelligence, models of emotional intelligence, and emotional intelligence measures. This section concluded with explaining the importance of emotional intelligence in enhancing classroom skills, self-management skills, and leadership skills.

CHAPTER III

METHODS

Introduction

The purpose of this study was to examine the relationship between learning styles and emotional intelligence among adult learners. This will help teachers and adult learners better understand these findings and use these findings to enhance classroom learning. This examination of these two concepts can lead to a better understanding of the impact of learning styles and emotional intelligence in adult learners. It can also help adult learners enhance their classroom skills. Understanding one's learning styles can help the learner improve achievement in class (Honigsfeld & Dunn, 2006), but understanding how learning styles and emotional intelligence correlate together can open new doors to an adult's learning skills.

Research Questions

The following research questions were used in this study:

1. What is the relationship between learning styles performance as measured by the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test?

2. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on ethnicity?

3. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on age?

4. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on GPA?

5. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on gender?

This chapter contains five sections. The first section describes the sample selection of the study. The second section describes the data collection method. The third section provides a description of the research method used. The fourth section provides a summary of the demographic information sheet. The last section includes a discussion of the instruments that were utilized, the Gregorc Style Delineator and the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT) instrumentation.

<div align="center">Sample</div>

The sample for this study was selected from undergraduate and graduate students from one university located in the southeastern United States. The sample included nontraditional and traditional, male and female students from this university. Each student was at least 19 years of age and enrolled in a degree of study the university.

When selecting an appropriate sample size statistical power and effect size should be examined. According to Green (1991), the formula for a sample size with a good power and effect size is: $N = 104 + m$, with m equaling the number of variables and instruments. In this study the variables are age, GPA, gender, and ethnicity and the instruments were the Gregorc Style Delineator and the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT); therefore, the sample size for this study consisted of 111 participants.

<center>Data Collection</center>

The researcher obtained permission from the Auburn University Institutional Review Board for the Use of Human Subjects in Research (IRB) (see Appendix C). The written consent detailed the project abstract, purpose, participant selection, and methodology of the study. Once the approval was granted, participants were selected and recruited. In order to recruit participants, the researcher visited classes at the university.

Details of the study were explained to all classes. Participants were each provided a Participant Information Letter (See Appendix D), which had to be signed and returned to the researcher. If a participant declined to sign the Participant Information Letter, they could not participate in the research study. The Participant Information Letter described the nature and purpose of the study, a description of the instruments that would be used to collect the data, and the approximate length of time it would take to complete the instruments. The participant was also provided a copy of the Participant Information Letter for his/her own records. The participants were notified that there would be no financial compensation for participating in the study. However, participants' individual results would be provided to them at the end of completing each instrument, and these

results can help each participant understand their learning style and emotional intelligence better.

A research packet was assembled for each participant. This packet contained: two copies of the Participant Information Letter (one of each to be kept by the participant), the Demographic Information Sheet (See Appendix E), instructions for the testing procedures (See Appendix F) which included instructions for taking the Gregorc Style Delineator and MSCEIT, the test booklet for the Gregorc and the instructions for taking the MSCEIT online (See Appendix F). The participant was given an opportunity for questions to be answered before, after, and during the administration of the instruments. For the actual administration of the test, the instructions accompanying the test instruments were read aloud to the participant. After the participants completed the Gregorc test, the score sheets were placed in a sealed envelope. After the participants completed the MSCEIT test, the coded data was sent via email to the researcher.

The data was collected anonymously and each of the participants used an identification number to identify themselves. The participants were coded using a number scale from 1 to the total number of participants. On the front of each Gregorc Style Delineator was the participants' identification number. The participants were asked to transfer that identification number onto the instruction sheet. The same number that was on the front of the Gregorc Style Delineator was to be entered in the first and last name section of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) that each student took online. Data were coded with the participants' identification number, so that when the data was analyzed it was compared with each participants' GPA, age, gender,

and ethnicity. Based on the research questions, learning styles and emotional intelligence were measured against the participants' GPA, age, gender, and ethnicity.

Description of Method

This study used the non-experimental research method. Non-experimental research indicates how two events are related and does not manipulate variables or control the environment in which the study takes place (Merriam & Simpson, 2000). A cross-sectional approach was also used to gather descriptive data. The cross-sectional approach gathers data at a single point of time, rather than over a period of time on several different occasions (Merriam & Simpson, 2000). Pearson Product Moment Correlations were conducted to determine whether a correlation existed between learning styles performance as measured by the four mediation abilities of the Gregorc Style Delineator, and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test. Pearson Product Moment Correlations were also used to determine whether a correlation existed between learning styles and emotional intelligence based on age and GPA. Pearson Product Moment Correlation assumes that the two variables are measured on at least interval scales, and it determines the extent to which values of the two variables are proportional to each other (Huck, Cormier, & Bounds, 1974).

Independent sample t-tests were conducted to determine if differences existed between learning styles and emotional intelligence based on ethnicity. Independent t-tests were also conducted to determine if a relationship existed between learning styles and emotional intelligence based on independent samples. T-tests are most often used to compare the means of two groups. T-tests assess whether the means of two groups are

statistically different from each other. The purpose of an independent t-test is to compare the means between two groups whose scores are not related to one another. If two sample means are far enough apart, the t-test will yield a significant difference. This will permit the researcher to conclude that the two populations probably do not have the same mean (Huck, Cormier, & Bounds, 1974). The p-level reported with a t-test represents the probability of error involved in accepting a research hypothesis about the existence of a difference. All tests of significance in this study are two-sided; therefore all p-values reported are two-sided (Huck, Cormier, & Bounds, 1974).

Demographic Information Sheet

A nonstandardized information sheet was developed to obtain information on participant variables pertinent to the study. Participants were asked to respond to questions that pertained to age, ethnicity, gender, occupation, academic level, GPA, major field of study, and whether or not he/she was a traditional or nontraditional student (see Appendix E). These questions were not meant to cause any type of anxiety or stress. These questions were used to aid in the research findings between the correlation of learning styles and emotional intelligence.

Instrumentation

This study was conducted using the Gregorc Style Delineator to determine the participant's learning styles and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) for assessing the participant's emotional intelligence. The Gregorc Style Delineator is a self-report questionnaire that identifies cognitive learning differences. It represents a blend of theories of the psychological sciences of behavioral, psychoanalytic, humanistic, and transpersonal. MSCEIT is a 141-item performance scale that measures

how well people perform tasks rather than asking them for their own personal assessment of their emotional sensitivity.

Gregorc Style Delineator Instrument

Background

The problem of identifying how individuals learn and why they learn as they do necessitated an ideographic methodology that would encourage an individual to reflect on his or her learning experiences in order to identify the meaning of those experiences and their effects upon him or her. The methodology chosen was called phenomenology (Gregorc, 1982b). To employ the phenomenological approach, data were gathered over a seven year period through taped interviews and through written protocols, i.e., documents written by individuals themselves and documents written by the author describing what happened in the semi-structured interviews. More than 400 individuals were involved in the research which led to the development of the Transaction Ability Inventory (Gregorc, 1978), later known as the Gregorc Style Delineator (Gregorc, 1982c).

The selection criterion that was used to secure interview participants was the individual's willingness to share his or her perceptions. Anonymity was guaranteed by the author. Individuals not willing to share their perceptions were not interviewed. The interviews were held in a free-flowing, conversational manner. The questions asked by the author were designed to elicit the individual's perceptions about his or her behavior in general and his or her learning "style" in particular (Gregorc, 1982b).

The interviews were designed to first focus on the actual experiences, verbal and nonverbal behaviors, mannerisms, situational characteristics, called noema. The interview focused on the individual's reflection on the experiences. The reflections addressed the

questions of importance, impact, meaning, and whys of the noema, called noesis. When the noema and noesis are joined a noetic correlate occurs, an idea's existence in the individual's thinking was taken to be confirmed by reoccurring instances of it in the protocols. In summary, the data were subjected to phenomenological methods to analyze outer behaviors in order to discover driving forces which were associated with them (Gregorc, 1982b).

Validity

"The Gregorc Style Delineator has two aspects of validity that are significant to understanding and using the instrument. The first is construct validity. The Gregorc Style Delineator focuses on characteristics of individuals. The characteristics refer to how individuals think about themselves and the world around them" (Gregorc, 1982b, p. 9). The four constructs are Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR) (Gregorc, 1982b).

Three approaches are used to treat the construct validity of the four constructs. The first approach is definitional, providing operational definitions (or noema) reflecting the structure of the instrument. The operational definitions (See Appendix G) of the four constructs reflect the decisions the participant makes while taking the Gregorc Style Delineator. "A person does not need to meet all these decisions exactly, but over 60% of them must correspond" (Gregorc, 1982b, p. 12). The second approach presents the theoretical definitions (see Appendix H). "Theoretical definitions provide a summary of the attributes of each of the four operationally defined constructs" (Gregorc, 1982b, p. 15). The third is empirical, "a test of the internal consistency of the constructs" (Gregorc, 1982b, p. 10).

The second aspect of validity is the predictive validity. Gregorc (1982b) acknowledged the following:

> The Gregorc Style Delineator describes the degree to which an individual sees himself or herself in relationship to each of the four constructs: Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR). An individual can be high or low in one or all four of the scales representing the constructs. When an individual is high on a particular construct, the theory of the Gregorc Style Delineator suggests that specific characteristics can be attributed to that individual, which is part of this instrument's purpose (p. 9).

Reliability

The Gregorc Style Delineator uses two kinds of reliability: internal consistency and stability. "Internal consistency describes estimates of reliability based on average correlation among items within the test, which makes it an aspect of reliability, (Nunnally, 1994, p. 251), but it is also "an aspect of construct validity" (Nunnally, 1994, p. 86). The standardized alpha coefficients are strong, ranging from 0.89 to 0.93. Each of the four scales of the Gregorc Style Delineator exhibit a strong degree of internal consistency. For the stability, repeatability, or the degree to which a second test scores predicts the first test scores, the test-retest correlation coefficients are all statistically significant at the $p < 0.001$ level or less ranging from 0.85 to 0.88. The standardized alpha coefficients on the test-retest correlation coefficient indicate that the Gregorc Style Delineator scales exhibit strong reliability (Gregorc, 1982b, p. 18).

Description

The Gregorc Style Delineator is a self-report questionnaire. Within this questionnaire are 10 sets of four words, in which an individual must rank in the order that best describes them. Individuals must rank the word that most describes them with a 4, then 3, 2, and 1 for the word that least describes them. Category totals range from 10 to 40 and are based on the total sums of the ranking categories. In order for an individual to know his or her strongest or weakest learning styles, the total scores across each of the eight rows are added together, and the scores down each of the four columns are totaled. At the bottom of each column are the four constructs of the Gregorc Style Delineator: Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and Concrete Random (CR). The combined total of the four constructs CS, AS, AR, and CR should total 100.

The Gregorc Style Delineator is designed to reveal only two mediation abilities: perception and ordering. Every individual is naturally endowed with all four qualities of concreteness, abstraction, sequence, and randomness. Every individual has the ability to orient himself or herself toward all four channels (CS, AS, AR, CR), but will be strongly oriented toward one, two, or even three of the channels. It is very seldom that an individual's qualities are distributed equally among the four channels (Gregorc, 1982a).

If an individual's score is high, (27-40), in one of the channels or constructs, then this indicates that these qualities are the most powerful for that individual. If an individual's score is low, (10-15), in one of the channels, then this means that these qualities are the least powerful for that individual. An intermediate score of 16- 26

indicates that those qualities are in the middle for the individual. This means that these are not their strongest or weakest qualities (Gregorc, 1982a).

Finally, a balance score of 25, 25, 25, and 25 is in all four channels means that the qualities are equally distributed for the individual. It indicates that the participant has "equally distributed powerful penetration ability and the capacity for great momentum and concentration in all four channels" (Gregorc, 1982a, p. 14). It could also mean that an individual has "equal and moderately distributed penetration ability and capacity for momentum and concentration in all four channels" (Gregorc, 1982a, p. 14).

Mayer-Salovey-Caruso Emotional Intelligence Test

Background

The Mayer-Salovey-Caruso Intelligence Test (MSCEIT) was designed to assess emotional intelligence. The MSCEIT "was developed from an intelligence-testing tradition that was substantially informed by the emerging scientific understanding of emotions and their function" (Mayer, Salovey, & Caruso, 2002, p. 1). The MSCEIT (Mayer, Salovey, & Caruso, 2002) is based directly on the Multifactor Emotional Intelligence Scale (MEIS) (Mayer, Caruso, Salovey, 1999; Mayer, Salovey, & Caruso, 1997). The MEIS was the first comprehensive ability measure of emotional intelligence (Mayer, Salovey, & Caruso, 1997). The MEIS had performed well as a measure of the Four Branch Model, but it has certain limitations. One limitation was that the administration of the full test was considered too long for research uses (Mayer, Salovey, & Caruso, 2002). Another limitation was that a number of opportunities for improvement were seen, including focusing scale content and adding several new scales.

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The MSCEIT Research Version 1.1 outlined by Mayer & Salovey (1997) was designed as a measure of the ability model of emotional intelligence. The model contains the four branches of emotional intelligence and the 12 scales within those four branches. Although the MSCEIT Research Version 1.1 was over 100 items shorter than the MEIS, at 292 items, it was still too long. Thus the primary objective of the MSCEIT Version 2.0 was to shorten the test. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) Version 2.0 (Mayer, Salovey, Caruso, 2000a) (which is known without the version number as the "MSCEIT") is similar to the MEIS as it also uses the Four Branch Model of emotional intelligence. The 141-item MSCEIT is less than a third the length of the original MEIS (402 items) and less than half the length of the MSCEIT Research Version 1.1 (294 items) (Mayer, Salovey, & Caruso, 2002).

The normative data for the MSCEIT was collected from over 50 research sites and from 5,000 participants. Although the majority of the data was collected from U.S. sites, the United Kingdom, Canada, Malta, South Africa, Australia, Switzerland, Scotland, the Philippines, India, Slovenia, and Sri Lanka were also some of the other countries where data was also collected. The data collection sites administered the test in English to English speaking participants. Participants ranged in age from 17 to 79 with a mean of 24.13 (SD = 9.89). The ethnic classifications of the subjects were Asian (26.4%), Black (5.4 %), Hispanic (4.9 %), White (58.6 %), and Other (4.6 %) (Mayer, Salovey, & Caruso, 2002).

Some of the main features of the MSCEIT are that it is a performance based assessment of overall emotional intelligence for those 17 years of age or older. The MSCEIT also has two Area subscores of emotional intelligence: Emotional Experience

and Emotional Reasoning (Mayer, Salovey, & Caruso, 2002). "The scores of the MSCEIT are reported as emotional intelligence quotients (EIQs). The EI scores on the MSCEIT can be calculated according to the criterion of what *most people say* (the general consensus), and/or according to the criterion of what *experts* say (the expert consensus)" (Mayer, Salovey, & Caruso, 2002, p. 8).

Validity

The MSCEIT has three main areas of validity that are significant to understanding and using the instrument, the face, content, and structural (factorial) validity. Face validity is concerned with whether a test appears to measure what it is supposed to measure. Pusey (2000) analyzed the face validity of the MSCEIT V1.1 and found an interrater reliability of $r = .83$. Pusey concluded, that in general, the MSCEIT scores demonstrate adequate face validity. Pusey also noted that the RV1.1 was too long (V2.0 is roughly half the length), that the test might be biased against non-native English speakers, and that there seemed to be more than one correct answer (Mayer, Salovey, & Caruso, 2002, p. 37).

"Content or sampling validity determines whether test items are rationally drawn from the domains that the test is supposed to cover" (Mayer, Salovey, & Caruso, 2002, p. 37). The MEIS, MSCEIT Research Version 1.1, and MSCEIT Research Version 2.0 were all designed in reference to the Four-Branch Model of emotional intelligence (Mayer & Salovey, 1997). "This model, a further development of the first model of emotional intelligence (Salovey & Mayer, 1990), incorporated new literature reviews and considerations to divide the domain of emotional intelligence into four areas of ability: emotional perception, facilitating thought, emotional understanding, and emotional

management" (Mayer, Salovey, & Caruso, 2002, p. 37). The MSCEIT V2.0 consists of eight subtasks that sample (two each) from each of the four branches of the 1997 model. The MSCEIT thus possesses content validity.

"Structural validity of a particular test refers to how many things a test measures" (Mayer, Salovey, & Caruso, 2002, p. 37). The scoring of the MSCEIT V2.0 at a Full-Scale level, two Area levels, and four Branch levels (as well as eight Task levels) indicates good representations of the subtask interrelations (Mayer, Salovey, & Caruso, 2002, p. 37). The MSCEIT has two types of predictive validity of importance: distinctiveness (technically, discriminant validity) and criterion validity. For measures of general intelligence, Ciarrochi, Chan, Caputi, and Roberts (2001) reported a correlation of approximately $r = .05$ ($N = 129$) with Raven's progressive matrices. This suggests that the MSCEIT is measuring an ability different from general intelligence. However, according to Mayer, Caruso, & Salovey (1999), a correlation of $r = .36$ ($N = 503$) and .38 ($N = 239$) was reported for the Army Alpha Vocabulary Scale. This finding demonstrates some overlap between emotional intelligence and general cognitive ability (Mayer, Salovey, & Caruso, 2002).

Discriminant validity is also found with correlations between the MSCEIT and self-report measures of emotional intelligence. Brackett and Mayer (2001), found a low correlation of $r = .18$ ($N = 207$) between the MSCEIT and the BarOn Emotional Quotient Inventory (BarOn EQ-i). Since the correlation is low, it suggests that the MSCEIT is measuring something different than what is assessed by the BarOn EQ-I, which is a self-report measure of emotional intelligence. Since Mayer and Salovey wanted to distinguish their ability model of emotional intelligence was different from a mixed model of

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emotional intelligence, this was a positive finding. Mixed models include personality and motivation factors, such as the Bar-On (1997) and Goleman (1995), whereas an ability model such as the MSCEIT focuses on the interplay of emotions and intelligence" (Mayer, Salovey, & Caruso, 2000b, p. 399).

For correlations between emotion scales and the MSCEIT, Gohl and Clore (2002) found a correlation of $r = .29$ with a sample of 318 using the Trait Meta-Mood Scale. This suggests there is an overlap in abilities being measured by the two, but not enough to suggest that the Trait Meta-Mood Scale and MSCEIT are measuring the same ability or abilities. Finally, the MSCEIT is measured between several personality measures in various studies (Mayer, Salovey, & Caruso, 2004) that have reported low correlations. This finding is also positive since it suggests the MSCEIT is measuring something other than personality factors (Mayer, Salovey, & Caruso, 2002).

Reliability

The MSCEIT consists of a standardized sample to assess the internal consistency. The MSCEIT scores have a full scale reliability of .91. The two Area scores have reliabilities of .90 (experimental) and .85 (strategic). The Branch score reliabilities range from .74 to .89. Brackett and Mayer (2001) found a test-retest reliability for the full-scale MSCEIT V2.0 of $r = .86$, with N of 62. The MSCEIT subtasks are "somewhat less reliable," ranging from .64 to .88. However, the "alpha coefficients are comparable to those on tests such as the WASIS-R" (Mayer, Salovey, & Caruso, 2002, p. 35). Mayer et al. (2003) reported full-test split-half reliability of .93 for general scoring and .91 for expert scoring. Overall, students should place greater emphasis on the Branch, Area, and

Total Scores, rather than interpreting test scores at the subtask level (Mayer, Salovey, &
Caruso, 2002, p. 35).

Description

Mayer-Salovey-Caruso Intelligence Test (MSCEIT) was selected over other
measures of emotional intelligence because it is an ability-based measurement of
emotional intelligence instead of a self-report measurement of emotional intelligence.
Mayer, Salovey, and Caruso (2000b) stated, "Ability measures have the advantage of
representing an individual's performance level on a task. By contrast, self-report
measures are filtered through a person's self-concept and impression management
motives" (p. 405). The MSCEIT is a an ability-based assessment that measures how well
people *perform tasks* and *solve emotional problems,* rather than asking them, for
example, about their subjective assessment of their emotional skills level (Mayer,
Salovey, & Caruso, 2002, p. 1).

The MSECIT measures each of the four branches of emotional intelligence. The
four-branch model of emotional intelligence describes four areas of capacities or skills of
emotional. The four areas are accurately perceiving emotions in oneself and others, using
emotions to facilitate thinking, understanding emotional meanings, and managing
emotions. The responses to MSCEIT represent actual abilities at solving emotional
problems: which means that scores are relatively unaffected by self-concept, response set,
emotional state, and other confounds (Mayer, Salovey, & Caruso, 2002, p. 1). The
MSCEIT is a performance test of emotional intelligence. A performance test provides an
estimate of a person's ability by having them solve problems. The MSCEIT asks you to

solve problems about emotions, or problems that require the use of emotions (Mayer, Salovey, & Caruso, 2002).

The MSCEIT scores are reported with an average score of 100 and the standard deviation of 15. If a person obtains a MSCEIT score around 100, then they are in the average range of emotional intelligence. However, if a person receives a score of 115, then they are one standard deviation above the average mean. If a person obtains a score of 85, then they are one standard deviation below the average mean. The MSCEIT compare individuals against the normative sample, not with the population in general (Mayer, Salovey, & Caruso, 2002).

The scores from the MSCEIT are an approximate result. There is a good chance that if the participant were to take the test again, their scores would change somewhat due to the variability. Each part of the MSCEIT has greater, and less, variability. The scores are reported with a 90% confidence interval or range. This confidence interval is from 89 to 103 and reflects the range of scores within which a participant can be 90% confident his/her true ability fails (Mayer, Salovey, & Caruso, 2002).

Summary

In this chapter, the research questions and methods were described. This chapter also identified the sample and population. Instrumentation using the Gregorc Style Delineator and the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT) were described along with their reliability and validity estimates. Data were collected in accordance with Auburn University Institutional Research Board. Statistical procedures for data analysis included t-tests and descriptive statistics, which were used to determine whether or not a relationship existed between the learning style and emotional

intelligence of individuals, as well as, possible correlations between learning styles and

emotional intelligence based on ethnicity, age, GPA, and gender.

CHAPTER IV

RESULTS

This chapter will present results of the study. Data to answer each of the research

questions will be presented and analyzed. The analyses will be followed by discussion.

The SPSS statistical system was used for the computation in the analysis of the data.

Purpose

The purpose of this study was to examine the relationship between learning styles

and emotional intelligence among adult learners. This will help teachers and adult

learners better understand these findings and use these findings to enhance classroom

learning. This examination of these two concepts can lead to a better understanding of the

impact of learning styles and emotional intelligence in adult learners. It can also help

adult learners enhance their classroom skills. Understanding one's learning styles can

help the learner improve achievement in class (Honigsfeld & Dunn, 2006), but

understanding how learning styles and emotional intelligence correlate together can open

new doors to an adult's learning skills.

Research Questions

The following research questions were used in this study:

1. What is the relationship between learning styles performance as measured by the

   four mediation abilities of the Gregorc Style Delineator and the four branches of

emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional

Intelligence Test?

2. What is the relationship between learning styles, as measured by the Gregorc

    Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-

    Caruso Emotional Intelligence Test based on ethnicity?

3. What is the relationship between learning styles, as measured by the Gregorc

    Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-

    Caruso Emotional Intelligence Test based on age?

4. What is the relationship between learning styles, as measured by the Gregorc

    Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-

    Caruso Emotional Intelligence Test based on GPA?

5. What is the relationship between learning styles, as measured by the Gregorc

    Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-

    Caruso Emotional Intelligence Test based on gender?

<div align="center">Gregorc Style Delineator Instrument</div>

The Gregorc Style Delineator is a self-report questionnaire. Within this

questionnaire are 10 sets of four words, in which an individual must rank in the order that

best describes them. Individuals must rank the word that most describes them with a 4,

then 3, 2, and 1 for the word that least describes them. Category totals range from 10 to

40 and are based on the total sums of the ranking categories. In order for an individual to

know his or her strongest or weakest learning styles, the total scores across each of the

eight rows are added together, and the scores down each of the four columns are totaled.

At the bottom of each column are the four constructs of the Gregorc Style Delineator:

Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), and

Concrete Random (CR). The combined total of the four constructs CS, AS, AR, and CR

should total 100.

Mayer-Salovey-Caruso Emotional Intelligence Test

The MSCEIT is an ability-based assessment that measures how well people

perform tasks and *solve emotional problems,* rather than asking them, for example, about

their subjective assessment of their emotional skills level (Mayer, Salovey, & Caruso,

2002). The MSECIT measures each of the four branches of emotional intelligence. The

four-branch model of emotional intelligence describes four areas of capacities or skills of

emotional. The four areas are accurately perceiving emotions (PE) in oneself and others,

using emotions to facilitate thinking (FE), understanding emotional (UE) meanings, and

managing emotions (ME).

Gender of Participants

As of fall 2007, at this specific university, there were 12,255 males enrolled and

11,882 females enrolled. The participants in this study were predominately female

(66.7%) with males comprising 33.3% of the population. Distribution of Participants in

this study by Gender is provided in Table 5.

Table 5

Distribution of Study Participants by Gender

Gender	n	%
Female	74	66.7
Male	37	33.3

$N = 111$

Ethnicity of Participants

There were 51 participants who were Caucasian and 48 participants who were African Americans. The remaining participants, 4 who were Asian, 6 who were Hispanic, and 2 who were Native American were not significantly represented within the sample. Distribution of Participants in this study by Ethnicity is provided in Table 6.

Table 6

Distribution of Study Participants by Race/Ethnicity

Race/Ethnicity	n	%
Caucasian	51	45.9
African American	48	43.3
Asian	4	3.6
Hispanic	6	5.4
Native American	2	1.8

$N = 111$

Age of Participants

The participants in this study ranged in age from 19 to 67. The mean age was 34.12 with the largest percentage of the sample (45%) consisting of students who were 19-29 years of age. Distribution of Participants in this study by Age is provided in Table 7.

Table 7

Distribution of Study Participants by Age

Age Ranges	*n*	%
19 - 29	50	45
30 - 39	27	24.4
40 - 49	21	18.9
50 - 67	13	11.7

N = 111

Grade Point Average (GPA) of Participants

The participants reported grade point averages (GPA) that ranged from 2.00 to 4.00. The mean GPA was 3.58 with the largest percentage of the sample (73%) consisting of students whose GPA was between 3.50 and 4.00. Distribution of Participants in this by GPA is provided in Table 8.

Table 8

Distribution of Study Participants by GPA

GPA	*n*	%
4.00 - 3.50	81	73
3.49 - 3.00	15	13.5
2.99 - 2.50	10	9
2.49 - 2.00	5	4.5
1.99 - 1.50	0	0

N = 111

Traditional and Non-Traditional Students

A Non-traditional college student is a student who postponed attending college due to various reasons such as marriage, family, or work and is now attending college; or individuals who return to college to prepare for a career change. A Traditional college student is a student who attends college immediately after high school seeking a college degree. There were 71 participants who were traditional students, while 40 participants were Non-traditional students. Distribution of Participants in this study by program is provided in Table 9.

Table 9

Distribution of Study Participants by Program

Program	*n*	%
Traditional Students	40	36
Non-Traditional Students	71	64

N = 111

Educational Level of Participants

Graduate students (83.8%) comprised the largest percentage of students in this study. Seniors made up 9.9 percent of the population. Juniors made up 2.7 percent of the population. Sophomores made up 3.6 percent of the population and there were no freshman represented in this study. Distribution of Participants in this study by Educational Level is provided in Table 10.

Table 10

Distribution of Study Participants by Educational Level

Educational Level	*n*	%
Freshman	0	0
Sophomore	4	3.6
Junior	3	2.7
Senior	11	9.9
Graduate	93	83.8

N = 111

Major of Participants

Major consisted of the degree of study that each participant was enrolled in while attending this four-year university. There were 26 participants who majored in the Adult Education program. There were 8 participants who majored each in Educational Psychology and Educational Leadership program. The remaining 69 participants majored in Other (Administration in Higher Education, Administration of Elementary and Secondary Schools, Administration, Supervision & Curriculum, Animal & Diary Sciences, Autism & Behavior Disorders, Business Administration, Business Management, Communication Management, Consumer Affairs, Consumer Education, Criminology, Early Childhood Education, Education Administration, Educational Media, Educational Statistics, Elementary Education, English, Exercise Science, History, Human Development & Family, Management Information Systems, Management of Human Resources, Marketing, Math Education, Medicine, Music Education, Nursing, Pharmacy, Physical Education, Political Science, Psychology, Rehabilitation Counseling, Science

Education, Social Work, Software Engineering, and Spanish Education). Distribution of

Participants in this study by Major is provided in Table 11.

Table 11

Distribution of Study Participants by Major

Major	*n*	%
Adult Education	26	23.4
Educational Psychology	8	7.2
Educational Leadership	8	7.2
Other	69	62.2

N = 111

Research Questions

This study explored four research questions to investigate the relationship

between learning styles and emotional intelligence among adult learners:

1. What is the relationship between learning styles performance as measured by

the four mediation abilities of the Gregorc Style Delineator and the four branches of

emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence

Test? Pearson Product Moment Correlation Coefficients were used to examine the

correlations between the four mediation abilities of the Gregorc Style Delineator and the

four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso

Emotional Intelligence Test. Out of the 16 comparisons only 3 had a significant

correlation. The correlation coefficient between Concrete Sequential (CS) and

Understanding Emotions (UE) is -.189. Since this is negative it indicates a negative

relationship, meaning as CS increases UE decreases. The p-value is .047 which is less

than the 5% level of significance indicating a significant correlation. The correlation

coefficent between Abstract Sequential (AS) and Managing Emotions (ME) had the same results which was -.189. Since this is negative it indicates a negative relationship, meaning as AS increases ME decreases. The p-value is .047 which is less than the 5% level of significance indicating a significant correlation.

The last significant correlation was between Concrete Random (CR) and Managing Emotions (ME) with the correlation coefficient at .199 and the p-value of .036. This p-value is less than the 5% level of significance indicating a significant relationship between CR and ME. The remaining correlations are non-significant with p-values ranging from .094 to .618. Even though there are three significant correlations, the degree of the correlation is weak and indicates that the two scales measure two completely different concepts. The results of Question # 1 are presented in Table 12.

2. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on ethnicity? Although the data was collected for Asian, Hispanic, and Native Americans, the frequencies were too low to include in the analysis. A limitation to the results of Research Question 2 would be a lack of generalizabililty due to the sample size. Independent sample t-tests were used to examine the relationship between learning styles and emotional intelligence based on ethnicity. For the four mediation abilities of learning styles (CS, AS, AR, and CR) and the four branches of emotional intelligence (PE, FE, UE, and ME), ethnicity had a significant effect on Understanding Emotions (UE). The p-value is .046 indicating the UE scores of Caucasians are significantly different from that of Blacks. This means that Caucasians

Table 12

Correlation of Gregorc Style Delineator and MSCEIT

		MSCEIT			
		PE	FE	UE	ME
Gregorc Style Delineator					
CS	Pearson Correlation	-.14	-.15	-.19	-.08
	Sig. (2-tailed)	.16	.12	.05*	.43
AS	Pearson Correlation	-.13	-.10	-.10	-.19
	Sig. (2-tailed)	.18	.30	.29	.05*
AR	Pearson Correlation	.10	.12	.13	.05
	Sig. (2-tailed)	.30	.23	.18	.62
CR	Pearson Correlation	.16	.13	.16	.20
	Sig. (2-tailed)	.10	.18	.09	.04*

*$p < .05$, $N = 111$

scored higher in the area of Understanding Emotions (UE) than Blacks. The results of Question # 2 are presented in Table 13. The remaining items (CS, AS, AR, CR, PE, FE, and ME) were not significantly impacted by ethnicity. The p-values range from .197 to .965. When comparing the average UE score for Caucasian and Blacks the difference is only about 6 units (see Table 14).

Table 13

Distribution of Study Participants by Ethnicity

Ethnicity	CS	AS	AR	CR	PE	FE	UE*	ME
F	.00	.90	.59	.00	1.19	8.90	4.08	1.69

p < .05, *N* = 111

Table 14

Gregorc Style Delineator and MSCEIT Mean Scores based on Ethnicity

Race	CS	AS	AR	CR	PE	FE	UE	ME
Caucasian	26.84	24.61	24.33	24.22	98.12	95.14	96.71	93.33
SD	6.75	5.04	6.17	6.03	15.42	20.61	15.09	17.10
Black	26.90	23.73	25.23	24.15	94.21	99.77	90.73	98.44
SD	5.12	4.12	5.37	4.14	20.10	27.92	14.32	21.82

N = 111

3. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on age? A Pearson Product Moment Correlation Coefficient was used to examine the relationship between learning styles and emotional intelligence based on age. The ages ranged from 19 to 67. The average age was 34.12 and the standard deviation was 11.26. For the four mediation abilities of learning styles (CS, AS, AR, and CR) and the four branches of emotional intelligence (PE, FE, UE, and ME),

none had a significant correlation with age. The p-values range from .071 to .892, all of which exceed the 5% level of significance. The results of Question # 3 are presented in Table 15.

Table 15

Gregorc Style Delineator and MSCEIT based on Age

Age	CS	AS	AR	CR	PE	FE	UE	ME
Pearson Correlation	-.04	.12	-.08	.01	-.13	-.14	-.09	.17

$p < .05, N = 111$

4. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on GPA? A Pearson Product Moment Correlation Coefficient was used to examine the relationship between learning styles and emotional intelligence based on GPA. The minimum GPA is 2.0 and the maximum is 4.0. The average is 3.5 and the standard deviation is .517. For the four mediation abilities of learning styles (CS, AS, AR, and CR) and the four branches of emotional intelligence (PE, FE, UE, and ME), none have a significant correlation with GPA. The p-values range from .243 to .975, all of which exceed the 5% level of significance. The results of Question # 4 are presented in Table 16.

Table 16

Gregorc Style Delineator and MSCEIT based on GPA

GPA	CS	AS	AR	CR	PE	FE	UE	ME
Pearson Correlation	-.01	-.03	.03	.02	p < .01	-.05	.11	p < .01

p < .05, *N* = 111

5. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on gender? Independent t-tests were used to examine the relationship between learning styles and emotional intelligence based on gender. For the four mediation abilities of learning styles (CS, AS, AR, and CR) and the four branches of emotional intelligence (PE, FE, UE, and ME), gender has a significant impact on Abstract Random (AR), and Understanding Emotions (UE). For AR the t-test has a p-value of .003 which is less than the 5% significance level. AR had an observed power of .85 and Eta^2 of .08. The mean AR score for females is 25.97 (*SD* = 5.94) while for males it is 22.65 (*SD* = 4.33). These data show that females scored higher in the Abstract Random (AR) style than males. Both female and male averages were in the intermediate range of the Gregorc Style Delineator scores.

The next significant gender effect is for UE. The p-value is .047 which is less than the 5% level of signifcance. UE had an observed power of .52 and Eta^2 of .04. The mean UE score is 95.65 (*SD* = 13.21) for females, while for males it is 89.62 (*SD* = 17.88). These data show that females scores higher in the Understanding Emotions (UE)

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category. The results of Question # 5 are presented in Table 17. The average Gregorc

Style Delineator and the MSCEIT scores, based on gender, are presented in Table 18.

Table 17

Gregorc Style Delineator and MSCEIT based on Gender

Gender	CS	AS	AR*	CR	PE	FE	UE*	ME
F	.35	1.39	9.14	1.85	.56	2.64	4.03	2.15

$p < .05$, $N = 111$

Table 18

Gregorc Style Delineator and MSCEIT Mean Scores based on Gender

Gender	CS	AS	AR	CR	PE	FE	UE	ME
Females	26.73	23.62	25.97	23.68	95.57	99.35	95.65	97.08
SD	6.28	4.92	5.94	5.26	16.09	21.72	13.21	12.91
Males	27.43	24.76	22.65	25.16	98.19	91.70	89.62	91.51
SD	5.06	4.51	4.33	5.74	19.89	26.42	17.88	23.71

$N = 111$

Summary

The purpose of this study was to examine the relationship between learning styles

and emotional intelligence among adult learners. One hundred eleven students

participated in this study. Collected data included the participant's gender, race, age,

GPA, Traditional or Non-Traditional students, education level, and major. Data was also

collected and measured by the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test. In addition, the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test were examined based on ethnicity, age, GPA, and gender.

Based on the analysis of the data from this study, the data suggests that there is no a correlation between the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test. The data also concluded that there is no statistical difference between learning styles and emotional intelligence based on ethnicity, age, GPA, and gender. Overall, the data collected had some significant correlations; however, the degree of correlation was weak indicating that the two instruments are measuring two separate constructs. The Gregorc Style Delineator is measuring the four mediation abilities of learning styles and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) is measuring the four branches of emotional intelligences.

In Chapter IV the results of the study were introduced. Data relating to the research questions was presented and analyzed. Chapter V will provide implications to analyses along with conclusions and recommendations based on the findings.

CHAPTER V

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This study was designed to investigate the relationship between learning styles and emotional intelligence among adult learners. Chapter I introduced the study. Chapter II reviewed the literature related to learning styles and emotional intelligence. Chapter III presented the method for the study and the results of the data were presented in Chapter IV. The final chapter of this study will offer a summary of the study and major conclusions. Finally, some recommendations for future research will be presented. This chapter is divided into the following sections: research questions, acknowledgement of limitations, a summary of the study, implications related to learning styles and emotional intelligence, and recommendations for future research.

Research Questions

This study addressed the need for additional research studies that focused on adult learning styles and emotional intelligence among adult learners. The purpose of this study was to determine what relationships, if any, existed between learning styles and emotional intelligence among adult learners. As a result, this study investigated the following research questions:

1. What is the relationship between learning styles performance as measured by the four mediation abilities of the Gregorc Style Delineator and the four branches of

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emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test?

2. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on ethnicity?

3. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on age?

4. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on GPA?

5. What is the relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on gender?

Acknowledgement of Limitations of the Study

This study was conducted at one southeastern four-year university in Alabama. The sample consisted of 111 participants. All 111 participants were 19 years of age and older. Each one of these participants are enrolled in undergraduate and graduate courses at this four-year university; therefore generalization beyond this institution should be undertaken with caution.

Summary

The significance of this study includes helping teachers and learners better understand the findings of this study and to use these findings to enhance classroom

learning. The examination of these two concepts, learning styles and emotional intelligence, can lead to a better understanding of the impact of learning styles and emotional intelligence in adult learners. It can also help adult learners enhance their classroom skills. Understanding one's learning styles, can help the learner achieve better in class, but understanding how learning styles and emotional intelligence correlate together can open new doors to an adult's learning skills.

The sample in this study consisted of 111 adult students. The instruments used were the Gregorc Style Delineator (Gregorc, 1982c) to measure four mediation abilities of learning styles and the Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer, Salovey, & Caruso, 2000a) to measure the four branches of emotional intelligence. A demographic questionnaire was administered to gather age, ethnicity, martial status, gender, occupation, academic level, GPA, and major field of study. The majority of the students were male (66.7%) and 33.3% of the population were female. The study revealed that 45.9% of the sample were Caucasian, 43.3% were African American, and 10.8% were classified as Other (Asian, Hispanic, and Native American). The mean age was 34.12 with the largest percentage of the sample (45%) consisting of student who were 19-29 years of age and the mean GPA was 3.58.

The purpose of this study was to determine if learning styles has any effect on emotional intelligence of students attending one public university in the southeastern United States. Because there was no significant relationship found between learning styles performance as measured by the four mediation abilities of the Gregorc Style Delineator and the four branches of emotional intelligence as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test, it appears there is no relationship between

learning styles and emotional intelligence. Also, there was no significant relationship between learning styles, as measured by the Gregorc Style Delineator, and emotional intelligence, as measured by the Mayer-Salovey-Caruso Emotional Intelligence Test based on ethnicity, age, GPA, and gender. While there is no apparent relationship between learning styles and emotional intelligence other studies have validated that separately learning styles and emotional intelligence measure entirely different concepts. Learning styles (Benson, 2005; Leavitt, 2004; Lindsay, 2006; Miles, 2004; Smith, 2006, Yahr, 2005) and emotional intelligence (BeShears, 2004; Boyd, 2004; Briody, 2005; Paul-Odouard, 2006; Phillips, 2005; Rivera & Beatriz, 2004; Scott, 2004; Webb, 2005; Wells, 2004; Yancey-Bragg, 2006) have been studied frequently as separate research topics.

Implications

The Gregorc Style Delineator, as a measure of mediation abilities of learning styles, and the Mayer-Salovey-Caruso Emotional Intelligence Test, as a measure of the branches of emotional intelligence, accomplished the purpose for which each was designed. Therefore, the instruments can and should be used to examine independent constructs. The Gregorc Style Delineator and the Mayer-Salovey-Caruso Emotional Intelligence Test are not interchangeable instruments measuring constructs from the same domain. These instruments were designed using different conceptual structures.

Learning Styles

According to Anthony Gregorc, "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). With

learning styles the mind must also deal with environmental factors such as room temperature, the lighting or sound levels, the ability to eliminate visual distracters, and the seating arrangement in the learning environment. Gregorc (1979) found that, "every environment places demands upon individuals for adaptation; that is, individual needs align with the immediate and surrounding environment" (p. 234). For example, when a teacher selects a method of instruction such as movie, he/she is placing certain limited adaptation demands upon the minds of the learner (Gregorc, 1979).

Dunn and Dunn (1993) conceptualized that learning style is "the way each learner begins to concentrate on, process, and retain new and difficult information" (p. 2). Each learner is born with certain tendencies toward a particular learning style. Thus, each learner has distinct and consistent preferred ways of perception, organization, and retention. Learners also use cognitive, affective, and physiological behaviors as indicators of how he/she perceives, interacts, and responds to the learning environment.

James and Blank (1991) indicated that most educators agree that the primary goal of education is to maximize learning for each student; therefore, it is the responsibility of all educators to assist students in learning all that they can in a very efficient method. If a student's learning style and a teachers teaching styles do not match then a student can become bored and discouraged about the class. In order to overcome this discouragement an understanding of student's learning styles and a variety of instructional methods must be provided. When the learning styles of the students are known, the instructor can develop curriculum to address the various needs of the learners in the class (Pallapu, 2007). When students learn in a way that maximizes on his/her strengths they enhance his/her academic performance (Sternberg, 1997).

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In higher educational settings, such as colleges and universities, understanding the relationship between learning environment components (such as students as learners, teachers as learners, teachers, tasks, and physical space) is fundamental in helping educators to address student needs and promote understanding and learning (Ahmad, Piccoli & Ives, 1998; Maor, 1999). Miglietti and Strange (1998) note that specific teaching orientation toward personalized instruction, relating learning to students' experiences, assessing student preferences, encouraging student participant, and maintaining flexibility all seem to offer potential for contributing to student success. Some instructors lecture, while others demonstrate or lead students to self-discovery. Some instructors focus on principles and others on applications and some emphasize memory and others understanding. Sternberg (1997) proposed:

> The proposed diversification of instruction as well as assessment means that students need to adapt to instruction that is not compatible their profile of abilities, but they also can shape their learning environments to best capitalize on the strengths in their ability profiles. Moreover, all students potentially learn better when they are able to encode subject matter taught to them in a variety of ways (p. 1036).

Keefe (1979, 1987) addressed the importance of educators knowing that differences exist among students and that not everyone learns the same. Kolb and Associates (1984) suggested a variety of approaches to instruction to address these differences. He suggested a learning environment that matches students' preferred learning style which will encourage students, but at the same offer students instructional approaches that do not match students' preferred learning styles in order to provide opportunities for growth and development. Instructors should make sure that his/her

curriculum provides for a flexible teaching style that can reach each individual student's learning style.

Teachers have an enormous task of meeting individual learners' learning style in an educational setting (Pallapu, 2007). Identifying students' learning styles influence the types of learning experiences that students find effective, comfortable, and growth promoting (Ross, Drysdale, & Schulz, 2001). It is important to remember that when addressing a student's learning style is only part of the puzzle in terms of things that influence learning and that there are many other pieces to the puzzle that also supports learning. In conclusion, there many different learning styles of students in the classroom; therefore a variety of teaching styles should be sufficient enough to meet the needs of all or most of the students in the class (Jaeger, 2001).

Emotional Intelligence

According to Bar-On (1997), "emotional intelligence is an array of personal, emotional, and social competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures, and directly affect one's overall psychological well-being" (p. 14). In other words, one's knowledge, skills, and overall intelligence must be augmented by the ability to understand, perceive, and regulate emotions. Mayer and Caruso (1999) suggests that emotional intelligence is not set at birth but can be developed through education and training.

Based on this study, one can see how emotions play an important role in learning. Emotions influence a host of cognitive processes, such as attention, perception, memory, decision making, and social judgments (Planalp & Fitness, 1999). Elder (1997) notes that emotions play a significant role in students' ability to learn content, thus emotions can

facilitate learning. How a student uses emotions may also affect his/her ability to learn. For example, if a student has just lost a loved one, then it would probably be hard for the student to focus on learning due to the emotion of sorrow.

Emotions provide people with valuable information about themselves and how they relate to others. Emotions are meaningful to education, they drive attention, which drives learning and memory (Sylwester, 1994). Boud, Keogh, and Walker (1985) state that negative feelings can form negative attitudes towards learning. "They (emotions) can distort perceptions, lead to false interpretations of events, and can undermine the will to persist. Positive feelings and emotions can greatly enhance the learning process; they can keep the learner on the task and can provide a stimulus for new learning" (p. 11).

Emotional intelligence is much more complex and integrative than acknowledging affective components within a learning environment (Jaeger, 2001). Emotions trigger cognitive activities and direct actions (Salovey & Mayer, 1990). Researchers (Barris et al., 1985; Geiger & Pinto, 1991; Mentkowski & Strait, 1983; Pinto et al., 1994) noted than an individual's experiences and environmental factors may lead to changes in learning style preferences. These experiences and environmental factors may be directly or indirectly related to an individual's emotions and feelings, thereby creating a critical role for emotions in learning (Jaeger, 2001).

In higher educational settings, such as colleges and universities, students must feel that he/she is getting quality education while attending a college or university. "A school's curriculum must reflect that belief that student's success is driven not only by traditional academic achievement but also by the school's ability to help students experience success, belonging, respect, power, structure, recognition, consistency,

positivity, and varied learning" (Allen & Cohen, 2006, p.133). The instruction in school must reflect traditional academic skills and activities and experiences that develop students' emotional and social skills. Along with quality instruction come expectations for student's achievement. When teachers hold high expectations for students' reflective capabilities, cooperative/collaborative skills, and their decision making abilities, students grow emotionally thus causes academic achievement. Emotionally students feel the need to uphold high expectations and are emotionally positive thus creating higher achievement in his/her academic goals (Allen & Cohen, 2006).

"Emotional knowledge, skills, and competencies are essential to student development values of individuation and community" (Low et al., 2004). Individuation involves respecting the fact that students entering into higher education settings are searching for his/her own unique identity. A community at a university or college is a place where students grow through his/her involvement in meaningful relationships. Students benefit from relationships that make them feel valued, contribute to positive self-worth, create a healthy, productive learning community, and form a personal sense of belonging (Low et al., 2004, p.6). Healthy relationships are important to the academic and emotional growth and development of students.

Instructors can assist students in perceiving his/her emotions, using his/her emotions, understanding his/her emotions, and manage his/her emotions. Instructors can assist students perceive his/her emotions by making students become more aware of the different external factors that can effect his/her learning. Instructors can help students use his/her emotions in the classroom to promote a positive learning environment. Instructors can help students understand their emotions by helping them label their emotions and

making them realize they have to take responsibility for their emotions. Instructors can help them manage their emotions by empowering them through words of encouragement (Gross, 2007).

Instructors should promote self-awareness, self-motivation, empathy, and social skills in students in order to make them more aware of his/her emotional intelligence. Instructors can use their own emotional intelligence along with their students emotional to set the stage for learning in the classroom. If students tap into their emotions and understand how they play a role in learning use that information to create a positive learning environment. Instructors should also promote self-motivation within students so that even when a student is faced with set backs and discouragement, they can still keep themselves going through self-motivation. Instructors should consider the emotional side of his/her subject, topic, skill, or unit. When presenting instructions to the class the instructor should be able to read people's feelings. By promoting social skills students are able to handle emotions in relationships. When students understand how such social skills as coping with sadness or handling anger can be geared towards making sure he/she is in good spirits, it can promote an effective learning environment. In conclusion, when a student and an instructor perceives, uses, understands, and manages emotions he/she can promote and enhance classroom learning (Gross, 2007).

Recommendations for Future Research

Additional studies comparing learning style and emotional intelligence are needed. Derived from the findings from this study, future research might include:

1. The instruments, Gregorc Style Delineator, and Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) should continue to be

tested outside the state of Alabama to examine the validity and reliability elements with other populations.

2. Replicate this study using a larger sample size of college or university students throughout the United States.

3. Replicate this study to include a wider variety of geographical settings, other colleges and universities with varying enrollments and students from other cultures.

4. Replicate this study using different instruments that measure learning styles and emotional intelligence.

5. Replicate this study to include a wider range of participating student ages.

6. Gather additional research to further clarify the teaching methods for specific learning styles.

7. Gather additional research to further clarify the teaching approaches that are most effective with specific emotional intelligences.

The success of students requires the dedication and commitment from the students as well as the instructor. An instructor's teaching style is essentially important when trying to reach all students. It is also important for the instructor to remember the effect that emotions have on learning. Emotional intelligence affects each student's ability to learn information. Based on the findings of this study, instructors should review his/her teaching styles to reach the variety of learning styles in the classroom, while understanding the effect emotional intelligence may have on the student learning.

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APPENDICES

Andragogy Model v. the Pedagogy Model

Adult Learners	**Children Learners**
Self-directed	Dependent on adults for direction
Has more life experience	Learner lacks relevant experience
Eager to learn new information that will enhance their lifestyles and satisfy educational needs	Learns in order to advance to the next stage in development or grade in schools
Life-centered, task-centered, or problem-centered orientation: they want their learning experience to be relevant to life's tasks or problems.	Subject-oriented: education is a process of learning subject matter to complete each course
Motivated by external factors such as salary increase and a better job Motivated by internal factors such as a better quality of life, greater self-confidence, recognition from others of accomplishments, and an increase in self-esteem	Motivated by external factors such as parents, teacher, grades, competition, and consequences of failure
Often skeptical about new information	Likely to accept new information
Accepts responsibility for their own learning	Depend on others to design their learning

This model is composed based on facts gathered from authors' research (Knowles (1970), Lee (1998), Kerka (2002), Ozuah (2005), and Bangura (2003) to provide a summary of the differences between the andragogy model and the pedagogy model.

Emotional Intelligence Using Ability, Self-Report, and Informant Approaches

Ability Model	Ability Model	Mixed Model	Mixed Model	Mixed Model
Mutifactor Emotional Intelligence Scale (MEIS) (Mayer, Salovey, & Caruso, 1997, 1999)	Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, & Caruso, 2000a) (updated MEIS)	BarOn EQ-I (Bar-On, 1997)	EQ Map (Cooper, 1996/1997)	Emotional Competence inventory (ECI) (Boyatzis, Goleman, & Hay Mc/Ber, 1999)
Emotional Perception Identifying emotions in faces, emotions in designs, emotions in music, emotions in stories	*Perceiving Emotions* Recognize one's own feelings and the feelings of other. Accurately decode facial expressions and tones of voice	*Interpersonal* Emotional self-awareness, assertiveness, self-regard, self-actualization, independence	*Emotional Literacy* Life pressures, life satisfactions	*Social Awareness* Emotional self-awareness, accurate self-assessment, self-confidence
Emotional Facilitation Defining emotions, complex emotional transitions, emotional perspectives	*Using emotions* Understand how emotions combine and change with time; interaction with others	*Stress Management* Problem-solving, reality testing, flexibility	*EQ Competencies* Intentionality, creativity, resilience, interpersonal connections, constructive discontent	*Self-Management* Self-content, trustworthiness, conscientiousness, adaptability, achievement orientation, initiative
Emotional management Managing own emotions, managing other's emotions	*Managing Emotions* Work with emotions judiciously	*Adaptability* Stress tolerance, impulse control	*EQ Values & Attitudes* Outlook, compassion, intuition, trust, radius, personal power, integrated self	*Social Skills* Developing others leadership, influence, communication, change catalyst, conflict management, building bonds, teamwork
		General Mood Happiness, optimism	*EQ Outcomes* General health, quality of life, relationship quotient, optimal performance	

From Selecting a Measure of Emotional Intelligence based on "Selecting a Measure of Emotional Intelligence," Mayer, Caruso & Salovey, in The Handbook of Emotional Intelligence, R. Bar-On & J.D.A. Parker, Editors, (2000), p. 322.

APPENDIX C

IRB Review Protocol Form

AUBURN
UNIVERSITY

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

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

May 29, 2007

MEMORANDUM TO:	Gia Johnson Education, Foundation, Leadership and Technology
PROTOCOL TITLE:	"Learning Styles and Emotional Intelligence of the Adult Learner"
IRB FILE NUMBER:	06-174 EP 0611
ORIGINAL APPROVAL: MODIFICATION APPROVAL: EXPIRATION:	November 20, 2006 May 29, 2007 November 19, 2007

The modification request for the above referenced protocol was approved by IRB Procedure on May 29, 2007. The protocol will continue the designation "Expedited" under 45 CFR 46.110 (#7). 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 19, 2007, you must submit a request for an extension of approval to the IRB no later than November 5, 2007. 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 19, 2007, 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 IRB-approved stamped version of your informed consent/assent (enclosed) when you recruit participants. Please remember that you must keep signed informed consents for three years after your study is completed.

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

Sincerely,

Peter W. Grandjean, Chair
Institutional Review Board for the Use of Human
Subjects in Research

Enclosure

cc: Dr. Jose' Llanes
    Dr. Maria M. Witte

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APPENDIX D

Participant Information Letter

1856 2006

AUBURN UNIVERSITY
Sesquicentennial

EDUCATIONAL
FOUNDATIONS

LEADERSHIP AND
TECHNOLOGY

INFORMED CONSENT / ASSENT
for a Research Study Entitled
Learning Styles and Emotional Intelligence of the Adult Learner

You are invited to participate in a research study to examine the relationship between learning styles and emotional intelligence among adult learners. This study is being conducted by Gia Kimbrough Johnson under the supervision of Dr. Maria Martinez Witte, Associate Professor, Educational Foundations, Leadership, and Technology. We (I) hope that this examination of these two concepts can lead to a better understanding of the impact of learning styles and emotional intelligence of adult learners. We (I) hope it can also help adult learners enhance their classroom skills with these findings. You were selected as a possible participant because the sample for this study was selected from undergraduate and graduate students from Auburn University. The sample includes nontraditional and traditional, male and female students, who are 19 years of age or older, from Auburn University.

If you decide to participate, we (I) will administer the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) for testing emotional intelligence and the Gregorc Style Delineator for testing learning styles. The Gregorc Style Delineator will be administered in a print form, it will be distributed in person to each participant, and it will take about 3-5 minutes to complete. The MSCEIT will be administered via the Internet. The participants will be given an access code and a password in order to take the instrument online and it will take about 30 minutes to complete it. A follow-up email will be sent to remind you to complete the MSCEIT assessment online. Once the MSCIT has been completed, your scores and interpretation of the scores will be emailed to you.

You should not encounter any reasonable risks if you decide to participate in this research because there are no known reasonable risks and discomforts.

The benefits you can expect from participating in this study are that when the student participates in the study after a scheduled class time or if the student participates in the study at a scheduled time and place, then the results from the instruments can be discussed amongst each other. Discussing the results from the instruments can help each participant to better understand himself or herself. It can also help the participant better understand their learning styles and emotional intelligence to be more effective in their every day life. It is my hope that these findings will provide information to be more effective in your every day life. We (I) cannot promise that you will receive any or all of the benefits described.

_____
Participant's Initials

Page 1 of 2

Owing much to the past, Auburn's greater debt is ever to the future.

4036 Haley Center, Auburn, Alabama 36849-5221; Telephone: 334-844-4460; FAX: 334-844-3072

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

Any information obtained in connection with this study and that can be identified with you will remain confidential. A number will be assigned to you and can be located on the front of the Gregorc Style Delineator. That number is to be entered in the first and last name section on the online MSCEIT instrument. Information collected through your participation may be used to fulfill an educational requirement, published in a professional journal, and/or presented at a professional meeting. If so, none of your identifiable information will be included.

The data collected will be stored on a disk that will be password protected and stored in a locked file cabinet. The file cabinet will also be locked in the presence of my absence. Participants may withdraw from participation at any time, without penalty, and any data which has been collected about themselves, as long as that data is identifiable.

Your decision whether or not to participate will not jeopardize your future relations with Auburn University.

If you have any questions we (I) invite you to ask them now. If you have questions later, Gia Johnson, giadjohnson@hotmail.com or Dr. Maria Martinez Witte, wittemm@auburn.edu, will be happy to answer them. A copy of this document is yours to keep.

For more information regarding your rights as a research participant you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

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

_____   _____   _____   _____
Participant's signature   Date   Investigator obtaining consent   Date

_____   _____
Print Name   Print Name

_____ Participant Number

Demographic Information Sheet

Section A: For each item, please circle the correct response:

1. Gender: Male   Female

2. Ethnicity (please choose one):
   a. Black (African American)   c. Asian
   b. Caucasian (White)   d. Other (please
      specify):_____

3. What is your current academic level in college:
   c. Freshman
   d. Sophomore
   e. Junior
   f. Senior
   g. Graduate

4. What is your current occupation?
   h. Self-employed   g. Retail
   i. Stay at Home Mom/Dad   h. Real Estate
   j. Student   i. Production/Manufacturing
   k. Administrative   j. Education
   l. Technical/ IT   k. Retired
   m. Sales   l. Other (please specify):_____

5. A Non-traditional college student is a student who postponed attending college due to various reasons such as marriage, family, or work; or individuals who return to college to prepare for a career change; and a Traditional college student is a student who attends college straight after high school seeking a college degree. Based on the following definitions, please circle if you consider yourself a traditional or nontraditional student:
   a. nontraditional student   b. traditional

Section B: For each item, please indicate the correct response.

6. Age: _____ yrs. old

7. What is your college G.P.A.? _____

8. What is your Major field of study? _____

Thank You!

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APPENDIX F

Instructions for Instruments

Administrator's script
Instructions to complete the Gregorc Style Delineator and Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) Instruments

On the front of your Gregorc Style Delineator instrument is a number. Please write that number in the following blank _____ . This is your identification number and is for your use only.

You will first take the Gregorc Style Delineator. The Gregorc Style Delineator will be administered in a print form. It will be distributed in person to each participant, and it will take about 3-5 minutes to complete. The instructions are printed below for the Gregorc Style Delineator and are also provided on the instrument. The MSCEIT will be administered via the Internet. You will be given an access code and a password in order to take the instrument online and it will take about 30-45 minutes to complete. Once you have logged onto the MSCEIT test, you will need to enter your identification number (that you wrote down in the above blank) once in the first name section and then again the last name section. You will be asked to enter your identification number twice for verification.

Instructions for
Gregorc Style Delineator

The Gregorc Style Delineator used a matrix consisting of 10 columns and four words per column. The four words in each column are ranked from one, the least descriptive word of the participant's self and four, the most descriptive of the participant's true self. The scores are then added together with the high score(s) representing the predominant learning style. The Gregorc Style Delineator will take about 3-4 minutes to complete. Thus, the purpose of this instrument is to identify your predominant learning style.

The following are a list of the instructions that appear through the Gregorc Style Delineator:

1. **REFERENCE POINT**. You must assess the relative value of the words in each group using your SELF as a reference point; that is, who you are deep down, NOT who you are at home, at work, at school or who you would lie to be or feel you ought to be. The REAL YOU MUST BE THE REFERENCE POINT. To take this reference point, reflect on the question, "Who am I?"

2. **WORDS**. The words used in the Gregorc Style Delineator matrix are not parallel in construction nor are they all adjectives or all nouns. This was done on purpose. Just read to the words as they are presented.

3. **RANK**. Rank in order the ten sets of four words. Put a "4" in the space above the word in each set which is the best and most powerful descriptor of your SELF. Give a "3" to the word which is the next most like you, a "2" to the next, and a "1" to the word which is least descriptive of your self. Each word in a set **must** have a ranking of 4, 3, 2, or 1. No two words in a set can have the same rank.
   4 = MOST descriptive of you   **1 = LEAST** descriptive of you

4. **REACT**. To rank the words in a set, react to your *first impressions*. There are no "right" or "wrong" answers. The real, deep-down you is best revealed through a first impression. Go with it. Analyzing each group will obscure the qualities of SELF sought by the Delineator.

5. **PROCEED**. Continue to rank all ten (vertical) columns or words, one set at a time.

6. **TIME ALLOCATION**. Limit yourself to 3 minutes for ranking the 10 columns.

7. **NEXT**. After all 10 sets have been ranked, then score each row.

8. **SCORING.**
   a. **Add Across.** Add across the A row of words in the first five sets. Put that total in the top A column box. Do the same for the B, C, and D rows of the first set. Next, score the last group of five sets, putting the row total in the bottom group of boxes.
   b. **Add Down.** Add the top and bottom boxes in each scoring column to get the total for that column.
   c. **Check.** If your combination score of CS, AS, AR, and CR is greater than 100, please recheck addition. All four columns must total exactly 100.

9. After you score, your highest combination score is your strongest learning style preference and the lowest score is your weaker learner style preference.

Cited from: Gregorc, A. F. (1982) The Gregorc Style Delineator. Connecticut, Columbia: Gregorc Associates.

Instructions for
Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

The MSCEIT is designed to measure the abilities that make up emotional intelligence. The test will return feedback to you in four areas:
1. *Perceiving Emotions-* your ability to recognize how you and those around you are feeling.
2. *Facilitating Thought-* your ability to generate emotions, and use them to enhance reasoning and other cognitive tasks.
3. *Understanding Emotions-* your ability to understand simple and complex emotions.
4. *Managing Emotions-* your ability to manage emotions in your self and in others.

You will be asked to solve a series of emotional problems. These problems are arranged in eight clusters, labeled from "A" to "H." The questions involve identifying emotions in

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faces and pictures, comparing emotional feelings to other sensations such as those of hear and colors, and many others. The MSCEIT will take 30 to 45 minutes to complete. Thus the purpose of this instrument is measure your underlying emotional intelligence ability.

You are being asked to complete the MSCEIT. Please visit **www.mhsassessments.com** and login with the code and password that appear below.

Code: **xxxx-xxx-xxx**
Password: **xxxxx**

Once you have logged onto the MSCEIT test, you will need to enter your identification number (that you wrote down in the above blank) once in the first name section and then again the last name section. You enter your identification number twice just to verify your identification number.

Instructions for how to complete the MSCEIT will appear once you have logged in. If you have any questions or concerns about completing this questionnaire, please feel free to contact me at giadjohnson@hotmail.com. Thank you for your cooperation.

The following instruction will appear for each section as you progress through the test.

General Instructions
The MSCEIT™ contains eight different sections. Each section has its own instructions. Try to answer every question. If you are unsure of the answer, make your best guess. Please record your answers on the separate MSCEIT™ Answer Sheet.

Section A
Please select a response for each item.

Section B
Please select a response for each item.

Section C
Select the best alternative for each of these questions.

Section D
Please select an answer for every action.

Section E
Please select a response for each item.

Section F
For each item below, you are asked to imagine feeling a certain way. Answer as best as you can, even if you are unable to imagine the feeling.

Section G
Select the best alternative for each of these questions.

Section H
Please select an answer for every action.

Cited from: Mayer, J. D., Salovey, P., Caruso, D. R. (2000a). Mayer-Salovey-Caruso Emotional Intelligence Test. North Tonawanda, New York: Multi-Health Systems Inc.

APPENDIX G

Operational Definitions from the Gregorc Style Delineator

Concrete Sequential	Abstract Sequential	Abstract Random	Concrete Random
Objective	Evaluative	Sensitive	Intuitive
Persistent	Analytical	Aesthetic	Experimenting
Careful with detail	Concerned with ideas	Aware	Creative
Thorough	Logical	Spontaneous	Trouble-shooter
Perfectionist	Oriented to research	Colorful	Risk taker
Ordered	Proof	Attuned	Multi-solutions
Realistic	Referential	Empathetic	Innovative
Solid	Quality	Nonjudgmental	Insightful
Product-oriented	Judge	Person-oriented	Practical-dreamer
Practical	Rational	Lively	Perceptive

Gregorc, A. F. (1982b). *Gregorc style delineator: Development, technical and administration manual.* Connecticut: Gregorc Associates, Inc.

APPENDIX H

Theoretical Definitions from the Gregorc Style Delineator

Concrete Sequential Attributes
- Prefers meetings that are structured by an agenda
- Concerned with details and preciseness of their work
- Prefers a room free from distractions
- Prefers to attack a problem straight on
- Comfortable when the "system" tangibly rewards the hard work of its loyal employees
- Prefers a room free from distractions
- Uncomfortable with personal things such as photographs
- Avoids wearing colorful clothing

Abstract Sequential Attributes
- Prefers when meetings are held to discuss serious philosophical and substantive issues
- Prefer to take the time to study and discuss an issue rationally
- Prefer to review, compare, synthesize the thoughts of others and build on them
- Prefer an environment where intellect and academic excellence are appreciated
- Uncomfortable around a person who is a practical dreamer
- Uncomfortable working with individuals who try multiple process, or methods to solving problems

Abstract Random Attributes
- Prefers meetings with a flexible agenda
- Comfortable when it is okay to change his or her mind and stop doing something in order to do something else
- Uncomfortable with circumstances demanding reaching goals by steadily pacing with a definite plan and objective
- Can face difficulty in dealing with practical matters which make a difference in everyday life
- Discomfort may be experienced when people get to the point too quickly and clearly without excess verbiage

Concrete Random Attributes
- Most comfortable when he or she can reduce his or her attention to the facts and details, then try tie facts together
- Prefers to have three or four irons in the fire at the same time and still e considered a person who gets things done creatively
- Uncomfortable when people address problems rationally or logically
- Uncomfortable in the presence of people who use the English language fully and with precision and grace
- Find discomfort when people have read and digested materials prior to a meeting or class
- Find discomfort in people who use clear logic

This summary chart was taken from Gregorc, A. F. (1982). *Gregorc style delineator: Development, technical and administration manual.* Connecticut: Gregorc Associates, Inc.