Emotional intelligence as a mediating variable in Astin's I-E-O model of higher education

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Emotional Intelligence as a Mediating Variable in Astin's I-E-O Model of Higher Education

A Dissertation
Presented to
The Faculty of the School of Education
The College of William and Mary in Virginia

In Partial Fulfillment
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Doctor of Philosophy

by Betsy Ross Edison
August 2002
Emotional Intelligence as a Mediating Variable
in Astin’s I-E-O Model of Higher Education

by
Betsy Ross Edison

Approved August 2002

David W. Leslie, Ed.D.
Chairman of Doctoral Committee

Roger G. Baldwin, Ph.D.

Roger R. Ries, Ph.D.
DEDICATION

This dissertation is dedicated with joy

to
Terraplane
and
to my parents,
Pinckney and Bess

to
The Yale Report of 1828

to
the inspired teaching
of
Associate Professor Charles O. Matthews, II 1945-2002,
Professor Roger G. Baldwin
Professor Roger R. Ries
Chancellor Professor David W. Leslie

and to
all those emotions that brighten our thoughts
like sun and blue skies on a clear September day
Acknowledgements

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# Table of Contents

Dedication............................................................................................................................iii

Acknowledgements..............................................................................................................iv

List of Tables..........................................................................................................................ix

List of Figures........................................................................................................................ix

Abstract..................................................................................................................................x

Chapter 1. Statement of the Problem...................................................................................1

The Problem............................................................................................................................1

Introduction to the Problem.................................................................................................1

The Affective Domain Since 1964.........................................................................................3

Undergraduates Seeking Emotion.......................................................................................8

The Taxonomies......................................................................................................................13

Chapter 2. Review of the Literature....................................................................................28

Introduction to the Literature...............................................................................................28

The Historical Exclusion of Emotion....................................................................................28

The Role of Emotion in the Development of

‘Thought’ and ‘Self’.................................................................................................................36

Higher Education and the Emotional Self..........................................................................46

The Educational Role of the Emotional Self........................................................................49

What Is an Emotion?..............................................................................................................49

James’ Four Definitions of Emotion.....................................................................................51

Defining Emotion: James’ Predecessors............................................................................58

Damasio’s Definitions: The Somatic.

Marker Hypothesis..............................................................................................................60

Managing the Primary and Secondary Emotions....62

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Table of Contents

Chapter 2. (continued)

Descartes' Error and the Strange Case of Phineas Gage ........................................ 66
Pavlov's Contribution ........................................................................................................ 71
James' Contribution: Connecting Emotion to Reasoning ........................................ 75
What is Emotional Intelligence? ...................................................................................... 77
Historical Development of the Emotional Intelligence Concept ................................ 79
What Emotional Intelligence is Not ................................................................................. 81

Chapter 3. Methodology .................................................................................................. 86

The Research Problem ................................................................................................. 86
Description of the Test Instrument ............................................................................ 86
Description of the Achievement Data .................................................................... 88
The Research Questions ............................................................................................ 89
The Research Hypothesis ......................................................................................... 89
Selection of the Sample .......................................................................................... 90
MSCEIT, V.2 Data Collection ................................................................................ 90
Obtaining Research Use of the MSCEIT, V.2 and Obtaining Achievement Data ........ 91
Obtaining Use of Human Subjects Approval ......................................................... 91

Data Analysis ................................................................................................................. 92
Descriptive Statistics ............................................................................................... 92
The Pearson r ........................................................................................................... 93
Table of Contents

Chapter 3. (Continued)

- t-tests by Age and Gender .........................................93
- Qualitative Analysis: The Focus Group ............................93

Chapter 4. Results .................................................................95

- The Research Questions ..................................................95
- Characteristics of the Sample .........................................95
- The MSCEIT, V.2 Test Instrument:
  - Scale Item Hierarchy and Test Constructs ..........................97
- Analysis of the Data ............................................................107
- Emotional Intelligence and Academic Achievement ..............107
- Emotional Intelligence and Student Characteristics: Age and Gender .......108
- Focus Group Results ..........................................................110
- Frequently Occurring Words, Ideas and Themes ....................110
- Conclusion ........................................................................124

Chapter 5. Discussion of Results ........................................125

- What This Study Was Looking For .....................................125
- What This Study Found ....................................................131
- What the Results of This Study Suggest .............................135
- What This Study Learned About the Test Construct of Emotional Intelligence .........138
- Suggestions for Future Research .......................................140
- Conclusion .....................................................................147
List of Tables

Table 1 ................................................................................................103
Table 2 ................................................................................................104
Table 3 ................................................................................................109

List of Figures

Figure 1 ................................................................................................105
Figure 2 ................................................................................................105
Figure 3 ................................................................................................106
Abstract

Emotional Intelligence as a Mediating Variable
in Astin’s I-E-O Model of Higher Education

The statistical results of this study detected a tendency for undergraduates who know how to understand and manage emotions to have higher GPAs. Yet the instructional target in higher education has always and traditionally been the cognitive domain. This is an embedded tradition, tracing a long line back to Plato, the Aristotelian model of 'intellect,' and the Cartesian 'self' defined as a cognitive knower. Almost forty years ago, a group of educators from the University of Chicago recognized this as a problem. “Basically the question posed,” they wrote, “...is whether a human being ever does thinking without feeling” (Krathwohl, Bloom and Masia, 1964, p. 7). One way to probe this problem is with the test construct of 'emotional intelligence' (Mayer, Salovey and Caruso, 2000b).

An on-line instrument, the Mayer-Salovey-Caruso-Emotional-Intelligence-Test, Version 2 (the MSCEIT, V.2), was designed to allow emotions to participate in thinking (Mayer, Salovey and Caruso, 2000b, p. 49) and then measure the results. This study used the MSCEIT, V.2 to test an undergraduate sample of academic high achievers at a nationally top-ranked university with high admission standards. Female participants in this study tended to score significantly higher than males on the MSCEIT, V.2 construct of Understanding and Managing Emotions, but only male participants in this study’s focus group self-reported applying emotional intelligence to higher learning.
Future research is needed to understand this gender difference, identify components of 'achievement' and track achievement behaviors of emotionally intelligent undergraduates who are high achievers. The results of this study suggest that emotional intelligence may be a neglected learning resource.

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Chapter One

Statement of the Problem

"Basically the question posed...is whether a human being ever does thinking without feeling"

(Krathwohl, Bloom and Masia, 1964, p. 7)

The Problem

The problem is the continuing historical separation of the cognitive and affective domains in higher education.

Introduction to the Problem


The problem, posed by a committee of professors at the University of Chicago and published in 1964, basically asks: Is the academic exclusion of the affective domain an instructional mistake? (Krathwohl, Bloom and Masia, 1964). This question has languised for decades because it is going upstream, against historical precedent.
The intellectual development of the cognitive domain is being discussed in Plato's *Republic*—as an educational objective (Plato, 428-347 B.C. in Jowett, 1946)—not for masses of undergraduates but for the well-being of “the liberal state which is founded on law and universal education and dedicated to the achievement of knowledge and virtue by its citizens” (Buchanan in Jowett, 1946, pp. 8-9). The educational objective was also a political objective, of great importance to the state. “‘Better to be the poor servant of a poor master’ and to endure anything, rather than think as they do...” Plato said about irrational people who live in caves and refuse to learn how to reason (Plato, 428-347 B.C. in Jowett, 1946, p. 251).

Plato was using a devastating teaching metaphor that placed the self-defensive emotions of non-rational thinking in a dark and lower domain of ignorance and danger (Plato, 428-347 B.C. in Jowett, 1946) where they have epistemologically remained (Solomon, 1993; Mayer and Salovey, 1997; Mayer, Caruso and Salovey, 2000a) ever since.

One century after Plato, his follower Aristotle is describing extremes of emotion as “vice and wickedness” whose bad influence can cause even wisdom to be used unwisely (Aristotle, 384-322 B.C. in Woods, 1982, p. 173). In the *Eudemian Ethics*, Aristotle advises his students to “...be aware as little as possible of the non-rational” (Aristotle, 384-322 B.C. in Woods, 1982, p. 46).

Aristotle’s definitions are part of the historical problem. The historical problem is that ancient definitions of emotion as a threat to cognitive development (Solomon, 1993; Salovey and Mayer, 1990) are embedded in the curriculum of early American higher education (Rudolph, 1962/1990). Throughout the 17th, 18th and early- to mid-19th centuries in America, a college education required reading Plato and Aristotle in the original Greek (Rudolph, 1962/1990). It was Aristotle who wrote that “…desire does not imply the deliberative faculty. But sometimes it overpowers rational wish and moves to action; at other times the latter, rational wish, overpowers the
former, desire” (Aristotle, 384-322 B.C. in Dennett, 1993, p. 70). Aristotle and Plato thus laid the ancient trenches for the academic battlefield that was imported to colonial America and exists today, where emotional development as an educational objective is excluded from the academic classroom as an opposing force to the development of intellect—as it was in Plato’s day (Plato, 428-347 B.C. in Jowett, 1946).

Contemporary thinkers may inherit this historical precedent that “...emotion as such is...more primitive, less intelligent...and more dangerous than reason, and thus needs to be controlled by reason...” (Solomon, 1993, p. 3). Contemporary thinkers may have “...a sense that...when affect plays a role in their decision processes, such influences are seen to be disruptive and tend to make their decisions ‘irrational’ and less appropriate” (Isen, 1993, p. 261).

It should therefore not be surprising that the contemporary university has been defined as a city of intellect (Kerr, 1963/1995). This definition echoes a 19th-century desire that the university be a walled fortress that “...maps out the territory of the intellect...and sees that...there is neither encroachment nor surrender on any side” (Newman in Kerr, 1963/1995, p. 2).

The Affective Domain Since 1964

Since 1964 the educational problem of domain separation identified by Krathwohl, Bloom and Masia, has been addressed by ‘student development’ (Chickering and Reisser, 1993; Astin, 1977/1983, 1993; Pascarella and Terenzini, 1991; Astin, 1970 in Pascarella and Terenzini, 1991), and updated by recent research findings in neuropsychology and neurophysiology (Damasio, 1994, 1999) and a research concept called ‘emotional intelligence’ (Salovey and Mayer, 1990; Mayer, Salovey and Caruso, 2000a, 2000b). To date, however, the domains of cognition and affect remain separated in the academic development of intellect.

This unanswered question may also be an educational outcomes problem. The academic exclusion of emotion from cognitive development in the classroom may be making subtle, negative inroads into the desired outcomes of the undergraduate college experience (Krathwohl, Bloom and Masia, 1964; Wolff, 1969; Astin, 1970 in Pascarella and Terenzini, 1991; Astin, 1977/1983, 1993; Pascarella and Terenzini, 1991; Bandura, 1997; Chickering and Reisser, 1993; Ormrod, 1995; Ifert and Roloff, 1997; Guerrero and Miller, 1998; Levine and Cureton, 1998; Los Angeles Times, 1999; Counseling Services, 2002). Undesired and unintended outcomes of the undergraduate experience are documented year after year and include, for example, prolonged time-to-degree-completion and a phenomenon called stopping-out (Chickering and Reisser, 1993). Other unintended outcomes of the college years are affective or stress-related, as reported by students to counselling services (Counseling Services, 2002; Los Angeles Times, 1999) and listed in books and journals by educational psychologists (Levine and Cureton, 1998; Chickering and Reisser, 1993; Pascarella and Terenzini, 1991; Astin, 1970 in Pascarella and Terenzini, 1991; Astin, 1977/1983, 1993)—all duly reporting but not suggesting how to mediate the persistent unintended outcomes of higher education.

Reported undesired outcomes of the undergraduate experience today (Counseling Services, 2002; Levine and Cureton, 1998; Chickering and Reisser, 1993; Pascarella and Terenzini, 1991; Astin, 1970 in Pascarella and Terenzini, 1991; Astin,
1977/1983, 1993) include statistics on gender-specific stress (Counseling Services, 2002; Los Angeles Times, 1999), flunking out, dropping out, stopping out, chronic oversleeping, cutting classes, prolonged procrastination, chronic binge drinking, eating disorders, insomnia, self-isolation in the dorms, verbal aggression in class, mood swings, chronic headaches, depression, anxiety, low self-esteem, interpersonal peer problems, body image distortion, suicide attempts, the escapism of ‘undergraduate hedonism’ recently described by Chickering (Chickering and Reisser, 1993), but undergraduate behaviors have also been historically reported (Rudolph, 1962/1990) as outright student rebellions and extreme disciplinary problems including assault and battery that permeate the history of early American higher education (Rudolph, 1962/1990; Chickering and Reisser, 1993). Some of the reported undesired outcomes today and “traditional” undergraduate misbehaviors in the historical past may be symptomatic of the research problem being probed here: the isolation of affective development from the traditional instructional target, the cognitive domain.

For the 1,250 students who requested ongoing therapy at a top-ranked U.S. university during 1999-2000 and 2000-2001, the top three reported affective problems were depression, anxiety and low self-esteem (see Appendix A) (Counseling Services, 2002). Of the 597 students requesting ongoing therapy during the academic year 1999-2000, 72.5% were female; 19% were graduate students, 80% were undergraduates. During the academic year 1999-2000, a pattern of increasing use of counseling services per class year is shown: 7.5% of freshmen requested therapy, compared to 16.1% sophomores, 22.8% juniors, 28.8% seniors; this may indicate a cumulative negative impact of the college experience on undergraduates (Pascarella and Terenzini, 1991; Counseling Services, 2002) during the four-year undergraduate experience.

In fact, a large “....body of research offers few opportunities for claims of significant benefits of college attendance in students’ self-systems: their sense of
personal identity, their ego functioning, and their self-evaluation” (Pascarella and Terenzini, 1991, p. 208). The low impact of college on these affective outcomes—identify, ego formation and self-esteem—may be reflected in statistics from one of the leading universities in the United States during the academic year 1999-2000: of the 597 students requesting ongoing therapy that year, 1.7% reported self-mutilation behaviors, 3.2% were suicidal, 7.0% reported body image distortion behaviors, 2.7% reported anger control problems, 14.9% reported difficulty expressing affect, 12.7% reported sleep problems, 34.5% reported interpersonal peer problems, 43.4% reported low self-esteem, 57.1% reported anxiety, and 56.3% reported depression (Counseling Services, 2002).

During the academic year 2000-2001 at the same university, 653 students requested ongoing therapy, with 70.4% being female, 17.8% graduate students, and 82% undergraduates: of these 653 students, there is a pattern of increasing use of counseling services per class year during the four-year undergraduate period, with 8.6% being freshmen, 14.2% sophomores, 21.7% juniors, 33.8% seniors (Counseling Services, 2002). During 2000-2001, 1.8% reported self-mutilation behaviors, 3.7% were suicidal, 6.4% reported body image distortion behaviors, 3.2% reported anger control problems, 6.0% reported difficulty expressing affect, 11.8% reported sleep problems, 23.7% reported interpersonal peer problems, 34.6% reported low self-esteem, 41.0% reported anxiety, and 46.1% reported depression (Counseling Services, 2002).

What can account for the annual reporting (Counseling Services, 2002; Levine and Cureton, 1998; Chickering and Reisser, 1993; Pascarella and Terenzini, 1991; Astin, 1970 in Pascarella and Terenzini, 1991; Astin, 1977/1983, 1993; Los Angeles Times, 1999) of such statistics from the affective domain? What is the role of the college experience itself in relation to these statistics? What is the impact of low self-esteem, depression and anxiety on achievement efforts and outcomes?
With research indicating that college has a measurably low to moderate impact on development of self-systems (Pascarella and Terenzini, 1991, pp. 168-209), the question becomes why the college experience is not more involved in mediating these persistent and undesired outcomes.

"First, and particularly in the areas of identity formation and ego development, these are relatively new fields of inquiry, and theoretical foundations are still being laid and explored....Methodological constraints in the literature as a whole constitute a second reason (for the research findings)...that it may be unrealistic to expect the college experience to have an effect much greater than that revealed by the available research. Self-systems are complex, poorly understood, and generally believed to reach deeply into an individual's being. As such, they are not likely to be easily touched, changed, or measured....If this is so, then we ought not to be too surprised by the apparently modest effects of college in these areas" (Pascarella and Terenzini, 1991, pp. 208-209).

Since 1991 when the available research methodology showed a low impact of college on development of self-systems (Pascarella and Terenzini, 1991, pp. 168-209), the research concept of emotional intelligence has emerged as a new methodology (Mayer and Salovey, 1997) for testing affective development. The self-systems of undergraduates may be more measureable today than in previous decades, but the central affective problem remains unaddressed and unmeasured. The problem is the continuing isolation of affective development from the mainstram of intellectual activity that is the focus of the undergraduate experience in the classroom. The effects of college on self-esteem, self-concept and identity formation "...appear to be more indirect than direct, being mediated largely by the academic and social interactions students have with one another and with faculty members" (Pascarella and Terenzini, 1991, p. 209). But this is just the problem.
The problem is how to design new teaching and learning strategies, or how to upgrade existing teaching and learning strategies, to be academically inclusive of the affective domain, based on current research showing the role of emotion in cognitive achievement (Bandura, 1997; Schutte, et al., 1997; Francis, et al., 1997; Salovey and Mayer, 1990; Mayer, Salovey and Caruso, 2000a; Damasio, 1994, 1999) and the taxonomies of educational objectives for each domain that exist today (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964; Pascarella and Terenzini, 1991; Astin, 1970 in Pascarella and Terenzini, 1991; Astin, 1977/1983, 1993; Chickering and Reisser, 1993; Terenzini, 1997).

The problem of the affective domain, however, is not a simple problem. It is deeply rooted in the traditions of higher education, tracing a history back to the so-called Oxbridge model (Kerr, 1963/1995; Rudolph, 1962/1990) of higher education, which in England was first fashioned in the 13th century at Oxford.

Undergraduates Seeking Emotion

Twentieth-century undergraduates, not unlike their medieval predecessors, were recently described in this way: "Students come to college loaded with emotional baggage. In varying degrees, they come with...self-doubts, old resentments, unmet needs...(and) must face the anxieties of new instructors, new subjects, new challenges. For some, excessive anger, anxiety, or depression become overwhelming. Many struggle with frustration, fear, boredom, or desire, without ever exploring the sources of these feelings or learning how to shift out of them. Others suppress their feelings and divert attention to what others want...." (Chickering and Reisser, 1993, p. 83). As the following paragraphs show, the affective domain has historically been a problem area, and undergraduates across the ages have sought to make its excluded presence known in the college experience.
The first colleges at Oxford were small "self-governing religious foundations" (Chickering and Reisser, 1993, p. 428) patterned after the older European universities' ecclesiastical curriculum for the education of priests (Rudolph, 1962/1990; Kerr, 1963/1995; Chickering and Reisser, 1993). Residential life placed students "in close quarters with authorities deeply concerned about their students' moral character" and behavior (Chickering and Reisser, 1993, p. 428).

As history suggests (Rudolph, 1962/1990), the medieval educational objectives of cognitive control and exclusion of emotion, as anciently advised by Plato and Aristotle, became a problem.

"The prototype (in 13th-century Oxford), Merton College, had sixteen names on its admissions rolls in 1285 and twelve books, including Aquinas, Aristotle, Augustine, the Book of Job, and 'Half the psalter, glossed'... Scholars devoted to the study of letters, or Arts and Philosophy, the Canons, or Theology were to obey the Warden—a man of circumspection in spiritual and temporal affairs. They were to dress as nearly alike as possible and dine in silence at their common table while listening to a reader. When in their chambers, they were expected to speak in Latin and live meekly in fellowship, without burdening each other, but sharing all things fairly" (Chickering and Reisser, 1993, p. 428).

Later in 1636 "the jumbled mass of rules and statutes" governing student behavior was gathered by the Oxford University chancellor, William Laud, into one code, called Laud's Code, which included the barring of students from idling about, from going anywhere where wine was sold...(from being) stage players (students being actors in plays), rope dancers, or fencers (who if caught so doing) were to be confined to their rooms, and under no condition was football to be played” (Chickering and Reisser, 1993, p. 429). In America, Harvard College adopted similar codes of conduct from the colleges at Cambridge which directed students to read the scriptures two times per day, to publicly repeat sermons whenever called upon to do so, to honor
their parents, elders and tutors by being silent in their presence, to spend their time studying and praying, and to never speak in oaths, lies and uncertain rumors as well as avoiding all idle, foolish scoffing, frothy and wanton words and offensive gestures (Chickering and Reisser, 1993, p. 430).

The 13th-century Merton College students, however, studied to be priests "while acting like adolescents" (Chickering and Reisser, 1993, p. 428). They went into town dressed in fur-trimmed gowns, argued heatedly in public places about the number of angels on the tip of a pin, did arithmetic using Roman numerals, and legend has it that the undergraduate mortarboard (worn ever since at college graduations) was devised at Merton when "students stuffed their writing slates into their knit caps, freeing their hands to defend themselves from hostile townspeople" (Chickering and Reiser, 1993, p. 428). A fuller account of the student-priests' misbehavior at Merton College was written by a surprised visitor to the college in 1507. He listed various student misconduct such as "Stokysley baptized a cat and practiced witchcraft; Gregory climbed the gate at the tower and brought a Stranger into College; Pots and cups are seldom washed and are kept in such a dirty state that one sometimes shudders to drink out of them; Gunne has had cooked eggs at the Taberd (Tavern) in the middle of the night; Kyftyll played cards with the butler at Christmas time for money...and Smith stole and killed a calf in the garden of one master..." (Chickering and Reisser, 1993, p. 429).

From the story this history tells, the medieval moral behavior codes and the college authorities were apparently being challenged. Were the students having an identity crisis (Erikson and Loevinger in Santrock, 1997; Pascarella and Terenzini, 1991)?

In later centuries, college authorities still lived with the students in the same building in which they taught them, for example, at 18th-century William and Mary College in Virginia. For some 200 years, William and Mary College held classes and housed students and professors in one big brick building, from which big building
the wealthy and elite 18th-century college boys would slip away at night to meet the town’s apprentice boys for a brawling fight (Rudolph, 1962/1990).

Thus the classical European curriculum with its strict behavioral codes and misbehaviors, brought to medieval England from Paris and Bologna, and later to colonial America, presented, apparently from the start, an opportunity for identity-seeking undergraduates to wrest emotional autonomy from *in loco parentis* authorities, and be rebellious in the affective domain. Yet excluding emotion and teaching to the cognitive domain continued to dominate 18th-century, 19th-century, and 20th-century higher education in America—although there were some notable exceptions. In the 17th century the English philosopher, Francis Bacon, complained that in higher education there was "...a kind of adoration of the mind...by means whereof men have withdrawn themselves too much...and have tumbled up and down in their own reason and conceits" (Bacon in Kerr, 1963/1995, p.2).

Francis Bacon may have perceived the steady devolution of the ancient, idealistic and elevated cognitive objectives of higher education, objectives paved with the philosophical abstractions for which Cardinal Newman must have been yearning when he wrote that the outcomes of a college education should be gentlemen with "...a cultivated intellect, a delicate taste, a candid, equitable, dispassionate mind, a noble and courteous bearing in the conduct of life" (Newman in Levine, 1978, p. 255). But by the mid-19th century in America, before Newman’s *The Idea of a University* saw print in 1873 (Levine, 1978), blatant student disobedience on elite American campuses (Rudolph, 1962/1990) was perhaps proving Bacon’s point.

Disobedience occurred as student rebellions, "...a concerted strike of a majority of the undergraduates, protesting against some real or imagined wrong, threatening to withdraw from the college and to abandon it to the uncertainties of enrollment and finance that were bound to follow" (Rudolph, 1962/1990, p. 97). For example, at Princeton University, there were six rebellions between 1800 and 1830.
whose “true cause” Princeton President Ashbel Green said was undergraduate “hostility...to the whole system...of diligent study, of guarded moral conduct, and of reasonable attention to religious duty” (Rudolph, 1962/1990, p. 106). Other than at Princeton, undergraduate students staged rebellions from 1800 to 1875 at Harvard, Yale, Dartmouth, Amherst, Brown, Williams, Georgetown, the University of South Carolina, Bowdoin, Lafayette, the University of North Carolina, City College of New York, Dickinson, DePauw—rebellions based in the residence dorms which “documented the failure of the colleges to provide altogether suitable ‘rites of adolescence,’ (and) satisfactory outlets for quite normal animal energy and human imagination” (Rudolph, 1962/1990, p. 98).

Other forms of undergraduate misbehaviors in the 19th century are well-documented (Rudolph, 1962/1990), from the comical (taking a professor’s turkey) (Rudolph, 1962/1990, p. 106) to the criminal (stabbings of fellow students, even death in a duel over which student got the platter of trout at dinner), and there is even the report of a student stoning the president and a professor at the University of Georgia (Rudolph, 1962/1990, p. 97).

In addition to the blatant disobedience of student rebellions and other misbehaviors, outspoken student demands for an extra-curriculum (of debate clubs for the reading of literature and other subjects excluded from the classical Greek and Latin-based curriculum) were also negating Newman’s desired educational outcomes of courteous gentlemen with dispassionate minds (Levine, 1978, p. 253). Newman’s 19th-century idealism when seen in the light of the extreme student disobedience and misbehaviors of the same era, however, remains useful for a reassessment of the “satisfactory” development of the affective as well as the cognitive domain in the college experience of today.

Were the widespread student uprisings, and extremes of misbehaviors, on 19th-century college campuses evidence of the undergraduate need to seek and express
emotion? "One tradition in Western thought has viewed emotions as disorganized interruptions of mental activity" (Salovey and Meyer, 1990, p. 185). "A second tradition views emotion as an organizing response...primary motivating forces...processes which 'arouse, sustain, and direct activity.' The full expression of emotions seems to be a primary human motive" (Salovey and Mayer, 1990, p. 186).

Student misbehaviors, demands and disobedience, then, were perhaps really, as Rudolph suggests (Rudolph, 1962/1990, p. 98), a way to express emotions and negate the old medieval-based Idea of a University (Newman, 1873 in Levine, 1978; Kerr, 1963/1995) as a walled fortress of intellect that was more or less imprisoning the 19th-century undergraduate in an unhappy, cheerless place (as some letters home described) (Rudolph, 1962/1990). Undergraduates may need to express emotion because undergraduates are developmentally driven to do so (Erikson and Loevinger, in Santrock, 1997). Undergraduate disobedience may be only a natural eruption of the late-adolescent developmental drive to establish autonomy, self-concept and a young adult identity (Chickering and Reisser, 1993).

In fact the historical misbehaviors of undergraduates have been called "youthful rites of passage" (Rudolph, 1962/1990, p. 98) and developmental vectors in the affective domain—Establishing Autonomy and Identity—(Chickering and Reisser, 1993; Chickering in Pascarella and Terenzini, 1991) that are included in contemporary taxonomies of educational objectives under 'psychosocial' development (Terenzini, 1997; Astin, 1977, 1993).

The Taxonomies

domain, but as a separate ‘psychosocial’ domain which remains historically isolated in the residence halls and campus social interaction, and thereby remains historically separated from the development of intellect (Plato, 428-347 B.C. in Jowett, 1946).

When Handbook II, Affective Domain was finally published, the authors explained with much academic breastbeating and an eloquent mea culpa (Krathwohl, et al., 1964, pp. 12-13) that the committee of professors at the University of Chicago had reluctantly decided to go ahead and define a taxonomy of educational objectives for the affective domain (Krathwohl, et al., 1964, p. 7).

Krathwohl blamed the delay on his committee’s prolonged period of collective doubt and intellectual confusion as they wrestled with the questions of 1) whether they should and 2) how they could identify (as promised in Handbook I, The Cognitive Domain) specific educational objectives in the affective domain to be addressed in the classroom (Krathwohl, et al., 1964). In the end, it was educators who convinced Krathwohl and his colleagues “by the many letters we received from teachers, specialists in measurement and evaluation, and educational research workers, asking when the second Handbook would be published” (Krathwohl, et al., 1964, p. 13) to go ahead and publish Handbook II. The committee’s eventual decision was grounded in their conviction that, “Basically the question posed...is whether a human being ever does thinking without feeling” (Krathwohl, et al., 1964, p. 7).

After the introductory pages, Handbook II states that the book’s “usefulness to teachers, evaluators, and curriculum workers” is to “...help educators redress the erosion in the meaning and substance of affective objectives which has resulted from the greater emphasis on cognitive objectives. What is missing is a systematic effort to collect evidence of growth in affective objectives which is in any way parallel to the very great and systematic efforts to evaluate cognitive achievement” (Krathwohl, et al, 1964, pp. 14-16).
At the end of the 20th century, leading higher education theorists (Pascarella and Terenzini, 1991; Terenzini, 1997; Astin, 1977/1993; Chickering and Reisser, 1993; Astin, 1970 in Pascarella and Terenzini, 1991) identified the separate functions and outcomes of the two domains: “In determining what types of outcomes to consider in our synthesis, we were guided by the thinking of various scholars concerned with taxonomies of the outcomes of college (for example, Astin, 1973; Brown and DeCoster, 1982; Ewell, 1984, 1985, 1988; Hanson, 1982; Jacobi, Astin and Ayala, 1987; Lenning, Lee, Mieck, and Service, 1977; Parker and Schmidt, 1982)....Cognitive outcomes have to do with the utilization of higher-order intellectual processes such as knowledge acquisition, decision making, synthesis, and reasoning. Affective outcomes are attitudes, values, self-concepts, aspirations, and personality dispositions” (Pascarella and Terenzini, 1991, p.5; above cites referenced in Pascarella and Terenzini, 1991).

A leading taxonomy that recently built on previous taxonomies by Astin and Ewell (Terenzini, 1997) retains the historical separation of cognitive and affective domains (Terenzini, 1997). This separation is what Professor Benjamin Bloom and his committees at the University of Chicago in the early 1960s advised educators to address as one inseparable learning domain in the classroom, in order to achieve specifically defined educational objectives in both the affective and cognitive domains (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964). Bloom’s committees concluded that cognitive achievement begins in the affective domain as emotional “willingness” to pay attention to the learning task (Krathwohl, Bloom and Masia, 1964). This is not a new concept: affective willingness to begin learning goes back to Aristotle’s ancient idea that every movement of intellect begins with wanting or desire (Aristotle, 384-322 B.C. in Woods, 1982). But how to test the theory?

The designing of “eduationally powerful” learning environments has been suggested (Chickering and Reisser, 1993). Astin’s I-E-O model of higher education presents a potentially powerful model with which to imagine a new
paradigm for learning and simultaneous teaching to both domains. The Astin model is not just a cognitive environment with an affective appeal. Its dynamic is an inclusive learning environment which gives and receives in both domains. In the Astin model, personal incoming variables (I) are received into an educational environment (E) that eventually produces educational outcomes (O). The incoming variables and the educational environment must include and reflect the affective emotional self, a self which the American psychologist, William James, one hundred years ago, and contemporary neuropsychology (Damasio, 1994, 1999), have identified as being involved in the reasoning process (James, 1884, 1890; Damasio, 1994, 1999).

Developing the critical thinking skills required for abstract reasoning is a desired outcome of higher education; research can show that reasoning requires both the cognitive and affective domains (Damasio, 1994, 1999).

Astin’s model presents a structure with which to begin to imagine ways to engage both domains during the undergraduate development of intellect and self. Astin’s model is powerful because it offers an open-ended, multi-factored environment (E) that absorbs both the cognitive and affective inputs (I) brought by undergraduates to the higher education table. The inputs component (I) “includes a wide variety of personal, family, and educational background characteristics that students bring with them to their postsecondary experience. These traits include such things as academic and intellectual abilities, precollege achievements (academic and otherwise), goals and motivation levels, degree and career aspirations, and a range of demographic, personal, and family characteristics, such as gender, race/ethnicity, socioeconomic status, age, marital status and citizenship. ‘Inputs’ also refers to a variety of other obligations students may have, including those to family and/or work” (Terenzini, 1997, Figure 1 of his report).

In the Astin model, then, there is ample room in the college environment (E) for the incoming (I) emotional ‘self’ of the undergraduate whose self-concept
formation, and self-efficacy beliefs, are a crucial part of the process of intellectual achievement in the classroom, and inseparable from educational outcomes (O), whether academically recognized in the classroom or not (Bandura, 1997; Skaalvik, 1997; Damasio, 1994, 1999; Krathwohl, Bloom and Masia, 1964; Chickering and Reisser, 1993; Garcia and Pintrich, 1996; Guerrero and Miller, 1998; Ifert and Roloff, 1997; Fuchs, et al., 1997; Isen, 1993; James, 1890; Lang, Bradley and Cuthbert, 1997; Levine and Cureton, 1998; Lewis, 1992; Matthews, 1993; Mayer and Salovey, 1990; Mayer, Caruso and Salovey, 2000; Mayer, Salovey and Caruso, 2000a; Ohman, 1993; Pascarella and Terenzini, 1991; Aristotle, 384-322 B.C. in Richardson, 1992; Slipp, 1975; Travers, 1973; Petry, Mouton and Reigeluth, 1987).

The question is how to academically evoke and support the affective domain in ways that assist learning in the classroom, so that an instructional challenge to achieve intellectually is also a challenge or ‘crisis’ opportunity (Erikson and Kohlberg in Pascarella and Terenzini, 1991; Erikson and Kohlberg in Santrock, 1997) for the developing emotional ‘self’ of the undergraduate.

The experience of an identity ‘crisis’ (Marcia, 1965/1966 in Pascarella and Terenzini, 1991; Erikson and Kohlberg in Santrock, 1997) is a developmental challenge that theoretically occurs between late adolescence and young adulthood, but not all psychologists agree that an actual crisis is required (Pascarella and Terenzini, 1991, p. 209). The theoretical identity ‘crisis’ that can lead to young-adult autonomy does not have to be a psychological emergency but instead can be “...engagement of and choice among meaningful but competing alternatives...(in) the making of personal commitments” (Pascarella and Terenzini, 1991, p. 164). The challenge is making a commitment, or not, which ties in with Astin’s theory that personal psychological involvement (Astin, 1984 in Pascarella and Terenzini, 1991) is necessary in order to grow developmentally by “...the investment of psychological energy” (Pascarella and Terenzini, 1991, p. 50). How to academically present and encourage such challenges?
An educationally powerful environment, and the teachers in it, would seek to evoke both intellectual and affective "involvement" (Astin, 1977, 1993; Astin, 1984 in Pascarella and Terenzini, 1991) in order to give structured opportunities to undergraduates as they seek to identify self-concept and achieve the outcome of "satisfaction" (Chickering and Reisser, 1993) with the college experience.

Satisfaction intersects the two domains, as both an affective feeling (such as a feeling of contentment) and a cognitive assessment. An existing "Taxonomy of Student Outcomes" (Terenzini, 1997) that still separates affective from cognitive development, suggests a desired outcomes category called "Educational Success" which lists "retention/persistence, degree completion, time-to-degree, satisfaction" (Terenzini, 1997). These are the very outcomes that are being negatively impacted by self-reported problems in the affective domain (Counseling Services, 2002; Bandura, 1997; Astin, 1977/1983, 1993; Pascarella and Terenzini, 1991; Chickering and Reisser, 1993; Levine and Cureton, 1998).

Even after completion of the college experience, the educational outcome of satisfaction is a lasting affective outcome because linked to a cognitive assessment of self-concept and self-efficacy that can influence future achievement. A taxonomy of desired student outcomes lists "Quality of Life" (Terenzini, 1997) which includes a "sense of well-being" (Terenzini, 1997, Table 2 in his report). The sense of well-being is an affective feeling based on a cognitive assessment of achievement. Yet even with such obviously linked outcomes across both domains, separate outcomes for the cognitive domain are still being separately described (Terenzini, 1997) as, for example, "...a set of general intellectual and cognitive competencies and skills. These skills constitute ...complex mental functions...the effective processing and utilization of information and include such activities as critical thinking, problem-solving, the analysis and utilization of information, creative thinking, and both formal (i.e., Piagetian) and postformal reasoning (the analysis of problems for which there is no verifiably-correct
answer, sometimes called "ill-structured" or "wicked" problems requiring choices involving questions of crime, poverty, abortion). This category also includes moral reasoning, which refers to the processes by which judgments of right and wrong are made...” (Terenzini, 1997, Appendix C of his report). But how, exactly, to guide undergraduates to achieve these desired educational outcomes in only one domain when contemporary research using neuroimaging and case studies of individuals with brain damage to the emotion centers show that “judgments of right and wrong” (Terenzini, 1997, Appendix C of his report) as well as “critical thinking, problem-solving, the analysis and utilization of information, creative thinking, and both formal (i.e., Piagetian) and postformal reasoning”(Terenzini, 1997, Appendix C of his report) cannot be concluded without the involvement of emotions (Damasio, 1994, 1999). This research indicates a new direction for higher education in the cognitive development of intellect. Yet it also remains an area of new research, which needs to be explored.

The research concept of ‘emotional intelligence’ is an exploratory concept that intersects the two domains (Mayer and Salovey, 1990; Salovey and Mayer, 1997; Mayer, Salovey and Caruso, 2000a, 2000b). Emotional intelligence is a set of abilities that can be learned and thus could become a pilot concept to help future research bridge the psychosocial gap in the undergraduate development of ‘thought’ and ‘self.’ Educational applications of the research concept of emotional intelligence, however, have yet to emerge. “There are few ready-made real-life criteria with which to correlate emotional intelligence at present. Questions such as, What is an effective emotional life? or, What is an effective successful life? have only begun to be addressed” (Mayer, Salovey and Caruso, 2000a, p. 416).

Existing taxonomies such as Chickering’s Seven Vectors of affective development, cited in his book, Education and Identity, are already geared toward satisfaction as an undergraduate affective goal, and include managing emotions (Chickering in Pascarella and Terenzini, 1991; Chickering and Reisser, 1993). Managing
emotions is also one of the four objectives of the original and current research concept of 'emotional intelligence' (Mayer and Salovey, 1990; Mayer, Salovey and Caruso, 2000a, 2000b) and could be central to forming self-efficacy beliefs that direct achievement behaviors (Bandura, 1997). Emotional intelligence is a concept that can trace a long line back to Plato and Aristotle as the ability to perceive and mediate extremes of emotional expressions and behaviors (Mayer and Salovey, 1990; Mayer, Salovey and Caruso, 2000a, 2000b). For Aristotle, emotion management was the golden mean (Aristotle, 384-322 B.C. in Woods, 1982).

In the future, emotional intelligence may become an important new mediating variable within the broad scope of the undergraduate experience, in an all-inclusive learning environment such as Astin's model of higher education describes, where an undergraduate could learn how to access and generate the personal emotions that facilitate formation of positive self-efficacy beliefs, achievement behaviors, and complex thinking and abstract reasoning, in other words how to use emotions to engage an optimal cognitive mode for learning and achievement (Mayer, Salovey and Caruso, 2000; Mayer and Salovery, 1990, 1999; Damasio, 1994, 1999; Bandura, 1997). Emotional intelligence may be only one mediating variable in the college learning environment, but it has the potential to mediate both undergraduate self-system development and academic achievement effort.

Finding correlations between emotional intelligence and academic achievement is the conceptual point of departure for this study, in order to look for an interface of the two domains in learning, and probe the feasibility of a new inclusive taxonomy of educational objectives for both domains in the academic classroom, modeled after the two domain taxonomies that Bloom and his colleagues have already written (see Appendix B) (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964). Yet there is difficulty today in conceiving how to academically integrate the two domains.
After all, the domain of psychosocial development is the emotional domain. The emotional or affective domain is impacted not just in residence life and campus social interaction, but in the academic classroom where stressors in the educational experience may be negatively impacting the outcomes of college (Counseling Services, 2002; Levine and Cureton, 1998; Astin, 1993; Chickering and Reisser, 1993; Pascarella and Terenzini, 1991).

This impact, historically apparent in the widespread 19th-century misbehaviors of undergraduates, was referred to even in the lofty Yale Report of 1828 (when it reaffirms the in loco parentis role of colleges) (Day and Kingsley, 1828, in Conrad and Haworth, 1990). Were the rebellions that threatened to close down the campus (Rudolph, 1962/1990) caused by an “unmet emotional need” (Wolff, 1969) of undergraduates to test values and experience a crisis? Undergraduate behaviors are just as perplexing today and as well-documented as they were at Merton College in 1507 (Chickering and Reisser, 1993). For many years, longitudinal four-year tracking of undergraduate behaviors from freshman year through senior-year graduation has been done (Astin, 1977/1983, 1993; (Astin in Pascarella and Terenzini, 1991).

One longitudinal study shows a significant-percentage decrease in church-going by senior year in college (-34.7) and in other religious activities such as praying (-15.6) and a significant-percentage increase in beer drinking (+27.9), wine drinking (+35.3), and oversleeping, resulting in missing class or appointment (+26.7) (Astin, 1977, pp. 74-76). “Students undergo...marked increases in hedonism after entering college...which appears to increase gradually ...the patterns of change in...drinking, sleeping habits, and use of tranquillizers and sleeping pills suggest that college attendance is often accompanied by substantially increased stress” (Astin, 1977/1983, pp. 76-77).

Astin’s early efforts at designing a taxonomy for the affective domain aimed for the inclusion of “affective-psychological outcomes” to mediate the stress...
symptoms being reported in the college experience. The data gathered in Astin’s Cooperative Institutional Research Program (CIRP) questionnaires “over the years have incorporated fifty-seven different affective-psychological (scale) items...(and)... another category of affective-psychological outcomes, student satisfaction with the college environment....” (Astin, 1977/1983, pp. 31-32).

The 58 variables investigated by CIRP were organized into four categories. Astin has documented in all four categories affective self-concept applications to higher education, and it is there that emotional intelligence might be applied as a mediating variable: 1) the CIRP questionnaire area of interpersonal self-esteem which includes leadership ability and self-confidence; 2) the CIRP questionnaire area of intellectual self-esteem which includes intellectual self-confidence; 3) the CIRP questionnaire area of self-criticism which includes sensitivity to criticism and defensiveness; and 4) the CIRP questionnaire area of understanding of self and others, which includes cheerfulness and desire to achieve (Astin, 1977/1983, p. 33).

The CIRP results are more optimistic than previous research (Pascarella and Terenzini, 1991) has reported, and suggests that “positive changes...in both (interpersonal and intellectual) measures of self-esteem suggest that college attendance may increase the individual’s sense of competence and self-worth. Similar (positive) changes have been reported by other investigators (Chickering, 1969, 1974b; Constantinople, 1969; Madison, 1971; McConnell, 1972; Schmidt, 1970)” (Astin, 1977/1983, p. 34; all cites referenced in Astin, 1977/1983, pp. 273-283).

The self-report method of data gathering used by Astin in the CIRP questionnaire, however, has certain inherent flaws and statistical gaps in the perception of how youthful self-concept affectively develops. Astin, however, explains: “In response to the question, ‘How does college affect students?’ one can legitimately ask, ‘In relation to what?’”
Astin points out that for many contemporary students ‘going to college’ may mean little more than driving to campus for a class and then driving home, so that the arena for affective social interaction with others is confined to the academic classroom. There in the classroom, as history shows, the affective domain is excluded from the cognitive development of intellect. Hence in the 1983 revision of his earlier 1977 effort at defining the affective impact of college on students, Astin enlarged the sphere of influence of the affective domain, and recommended a more inclusive educational environment offering psychological “involvement” as the dynamic for achieving such educational outcomes as “satisfaction” (Chickering and Reisser, 1993; Astin, 1977/1983; Astin, 1984 in Pascarella and Terenzini, 1991) with the undergraduate experience. Satisfaction is an educational objective that involves both domains. Hence a new inclusive taxonomy of educational objectives for the 21st century could be housed in the Astin model, because an emotionally intelligent educational environment is needed to academically involve and challenge the emotional self as well as the cognitive self in college.

The historical importance of designing educational objectives that are inclusive of both domains may have been pointed out rather harshly in American higher education when classical Greek and Latin were being pointedly called dead languages (Rudolph, 1962/1990). Using the Greek and Latin classics to teach undergraduates discipline instead of poetry may have exacerbated the unrest arising from the “unmet emotional need” (Wolff, 1969, p. 15) for poetry as well as furniture (Day and Kingsley, 1828 in Conrad and Haworth, 1990; Rudolph, 1962/1990) of the mind. As one educator explained that emotional need, “...between the accumulation of knowledge and skills...there ought to occur an...emotional experience, which is neither a mere continuation of what went before nor a mere foretaste of what is to follow (Wolff, 1969, p. 15).

Why exactly do undergraduates need an emotional challenge?
Undergraduates in the traditional college-age range of 18 to 22 are developmentally preorganized (Santrock, 1997; Erikson and Loevinger in Pascarella and Terenzini, 1991; Chickering and Reisser, 1993) to actively seek to establish an emotional self that is an autonomous young adult, independent from his or her parents’ control and from the control of other adult authority-figures as well.

“Somewhere in late adolescence... (is) an extended period during which (undergraduates) make the difficult transition from childhood to the adult world... (and)...the distinctive phase which Erikson calls the ‘identity crisis’” (Wolff, 1969, p. 15). The college undergraduate is developmentally driven to seek a new emotional identity after losing the identity of high school (Pascarella and Terenzini, 1991; Chickering and Reisser, 1993). The new college identity is an indicator of personal growth, and further stage-development (Kohlberg, Erikson and Loevinger in Santrock, 1997; Kohlberg, Erikson and Leovinger in Pascarella and Terenzini, 1991) of what William James called the ego or emotional self (James, 1884).

But even with today’s understanding that expressing emotion is one of the primary developmental motivations (Mayer and Salovey, 1990) during the undergraduate years, and that emotions regulate self-efficacy beliefs and achievement behaviors (Bandura, 1997) and can assist cognitive development (Damasio, 1994, 1999; Mayer, Salovey and Caruso, 2000a, 2000b), the undergraduate’s historical emotion-seeking and developmental drive for emotional crisis in order to grow into an autonomous young adult (Pascarella and Terenzini, 1991; Chickering and Reisser, 1993; Erikson and Kohlberg in Santrock, 1997) is still isolated as an in loco parentis concern in the college experience (Chickering and Reisser, 1993; Terenzini, 1997). The college experience in the classroom does not include intellectual challenges for the affective identity-seeking and self-concept formation (Astin, 1977, 1993; Pascarella and Terenzini, 1991; Chickering and Reisser, 1993; Terenzini, 1997) that undergraduates are developmentally driven to seek.
The personal self in any case will be gradually identified, with or without a college education, through natural maturation and life experiences as the individual grows older, by traditional and possibly dangerous youthful misbehaviors that may break the rules of authority to establish youthful autonomy, by social interactions with others in the late-adolescent period of the life-span (Santrock, 1997). Yet, self-concept formation does not have to be left to chance.

Self-concept formation could be enlightened within the college learning environment with knowledge of emotional intelligence abilities, such as recognizing and understanding emotions in self and others. Understanding how to recognize and manage emotions could provide self-guidance and self-regulation during the undergraduate years (Chickering and Reisser, 1993; Bandura, 1997) and because self-concept formation includes self-efficacy beliefs (Bandura, 1997), it may become educationally important—even an educational objective—to instructionally include development of the self-concept/self-efficacy of the hidden emotional self during the academic experience.

Research indicates that students with positive self-concept but moderate ability can achieve higher than students with high ability but low self-concept (Mayer, Salovey, and Caruso, 2000a). Self-concept is an emotional feeling based on a cognitive assessment. Thus self-concept has one foot in the affective domain and is demonstrably related to the traditional objective of higher education, academic high achievement (Mayer, Salovey and Caruso, 2000; Bandura, 1992; Damasio, 1994; James, 1890). The formation of emotional self-concept is crucial for optimal learning (Mayer, Salovey and Caruso, 2000; Damasio, 1994, 1999; Bandura, 1992), but self-concept formation is not an instructional target in higher education today. Self-concept is educationally left to chance. Today as in Plato's day, development of the affective domain remains isolated from academic intellectual development.

Is this historical separation justified?
Plato who seems to have started the tradition can give an imaginative answer, using images of: "...composite creations of ancient mythology, such as the Chimera or Scylla or Cerberus...in which two or more different natures are said to grow into one....now model the form of a multitudinous, many-headed monster, having a ring of heads of all manner of beasts, tame and wild, which he is able to generate and metamorphose at will.

"...Suppose now that you make a second form as of a lion, and a third of a man, the second smaller than the first, and the third smaller than the second....And now join them, and let the three grow into one...Next fashion the outside of them into a single image, as of a man, so that he who is not able to look within, and sees only the outer hull, may believe the beast to be a single human creature...

"(A man) should ever so speak and act as to ...watch over the many-headed monster like a good husbandman, fostering and cultivating the gentle qualities, and preventing the wild ones from growing; he should be making the lion-heart his ally, and...uniting the several parts with one another and with himself....

"...men are blamed for pride and bad temper when the lion and serpent in them disproportionately grow and gain strength....And is not a man reproached for flattery and meanness who subordinates the spirited animal to the unruly monster, and...habituates him in the days of his youth to be trampled in the mire, and from being a lion to become a monkey?

....(The) whole soul is perfected and ennobled by the acquirement of...temperance and wisdom....To this nobler purpose the man of understanding will devote the energies of his life" (Plato, 428-347 B.C. in Jowett, 1946, pp. 343-346).

Inside Plato's mythic images is the picture of the 21st-century undergraduate 'self' who is expected to be in rational control of the inner emotional archetypes. Plato's images suggest the hidden emotional complexity of the cognitive thinking self, and the true instructional target of higher education.

Our 21st-century 'self' is a culturally and educationally divided 'self' who has been socially conditioned and taught to isolate and control the affective domain
(Damasio, 1994, 1999). Existing taxonomies of educational objectives have made a place within the undergraduate experience for the emotional complexity of undergraduate identity-seeking and self-concept formation, but not in relation to academic achievement.

Chickering’s Seven Vectors (Chickering, 1969 in Pascarella and Terenzini, 1991; Chickering and Reisser, 1993) have for the past several decades described important affective development objectives that could be used to design a new inclusive taxonomy to academically engage the two domains (Chickering and Reisser, 1993). Terenzini’s taxonomy re-emphasizes but separates the affective importance of Chickering’s developmental vectors (Terenzini, 1997), but Astin’s I-E-O model provides an inclusive environment with unlimited room for challenging affective development and autonomous self-concept formation with a more complex instructional approach to development of ‘intellect’ in relation to ‘self’ than is being offered today (Counseling Services, 2002; Los Angeles Times, 1999; Bandura, 1997; Terenzini, 1997; Levine and Cureton, 1997; Astin, 1977/1983, 1993; Chickering and Reisser, 1993; Pascarella and Terenzini, 1991).

Meanwhile today as in Jeremiah Day’s era when the curriculum wars erupted (Rudolph, 1962/1990), the shunned, non-elevated non-cognitive domain remains an affective problem area “lurking in the background” (Solomon, 1993, p. 3) of higher education. This is precisely the problem, the continuing historical exclusion of the affective domain from the academic development of intellect in higher education today.
Chapter Two

Review of the Literature

"You will not misapprehend me if you interpret the journey upwards to be the ascent of the (self) into the intellectual world" (Plato, 4th century B.C. in Jowett, 1946, p. 252).

Introduction to the Literature

The instructional target in American higher education has always and traditionally been the cognitive domain (Day and Kingsley, 1828 in Conrad and Haworth, 1990; Newman, 1873 in Levine, 1978; Newman, 1873 in Kerr, 1963/1995; James, 1890; Bloom, Englehart, Furst, Hill and Krathwohl, 1956; Rudolph, 1962/1990; Krathwohl, Bloom and Masia, 1964; Wolff, 1969; Petry, Mouton and Reigeluth, 1987; Pascarella and Terenzini, 1991; Chickering and Reisser, 1993; Damasio, 1994; Kerr, 1963/1995; Mayer and Salovey, 1990; Mayer, Caruso and Salovey, 2000a). The American psychologist and philosopher, William James, put it bluntly, "When we teach children to repress their emotional talk and display, it is not that they may feel more—quite the reverse. It is that they may think more..." (James, 1890, p. 466).

Jeremiah Day and James Kingsley said the same for American higher education in *The Yale Report of 1828*, if with more eloquence. They defined the cognitive objectives of the classical Greek and Latin curriculum as "...the art of fixing the attention, directing the train of thought, analyzing a subject proposed for investigation; following, with accurate discrimination, the course of argument; balancing nicely the evidence presented to the judgment...and elevating and controlling the imagination" (Day and Kingsley, 1828 in Conrad and Haworth, 1990, p. 57).
The Yale Report of 1828 is defending the exclusive roots of the cognitive tradition which are set very deep in the history of Western philosophy and education.

Intellectual history today still traces a long line back to Plato (428-347 B.C.) for the traditional belief that non-rational thinking is "a threat to reason" and "a danger to philosophy and philosophers" (Solomon, 1993, p. 3). In fact, in the Republic Plato teaches that reasoning is "the very light of the body" (Plato, 428-347 B.C. in Jowett, 1946, p. 271) while non-rational thinking occurs, metaphorically, in an absence of light.

"'Better to be the poor servant of a poor master' and to endure anything, rather than think as they do..." Plato said, about metaphorical people who live in caves and will not learn how to reason (Plato, 428-347 B.C. in Jowett, 1946, p. 251).

With this metaphorical statement in mind, one must wonder if history has missed the humorous overstatement of Plato’s Socratic teaching metaphors, and the way ideas were presented for debate—not just one point of view but its counterpoint as well. It has been said of Plato’s Republic that "...his comic art runs high and delivers his secret in dialectical statement and counter-statement and finally in luminous myths.... Let (the reader) stretch his imagination...so that he may catch some glimpse of the principle of the liberal state which is founded on law and universal education and dedicated to the achievement of knowledge and virtue by its citizens” (Buchanan in Jowett, 1946, pp. 8-9). Thus when Plato asks, with some humor: "And surely...you would not allow the future rulers to be like posts (the starting posts of a race course) having no reason in them, and yet to be set in authority over the highest matters?" (Plato, 428-347 B.C. in Jowett, 1946, p. 273), his amusing metaphor is persuading the need for the first known educational objective.

Educating government officials, and priests of the church, who as late as the 18th century in colonial America were still being sent to college to learn how to reason, is a most ancient educational objective, as discussed and debated with the Socratic method in Plato’s Republic. Learning how to reason, then as now, is a desired
and serious educational objective. Humor and melodrama, however, were the great teachers of a serious and virtuous subject.

Plato’s attack on non-rational thinking was presented with a flair for dark humor, perhaps to drive home the point. The melodramatic metaphor Plato used to describe the non-rational domain was a cave. In Plato’s day, caves represented a mythical past (Daniel and Renfrew, 1988). Inside Plato’s cave are people who are chained to their own ignorance. Their source of information are shadows cast by firelight, dancing in flickering illusions of reality, on the cave walls. Their intellectual captivity is by choice, and the dark cave of non-rational thinking is pictured by Plato as a place where self-defensive emotions of rage and denial threaten to murder the rational thinker who has learned how to reason and dares to come back (Plato, 428-347 B.C. in Jowett, 1946, pp. 249-255).

"Imagine once more...such an one coming suddenly out of the sun to be replaced in his old situation; would he not be certain to have his eyes full of darkness?....Men (back in the cave) would say of him that up he went and down he came without his eyes; and that it was better not even to think of ascending; and if any one tried to loose another and lead him up to the light, let them only catch the offender, and they would put him to death” (Plato, 428-347 B.C. in Jowett, 1946, p. 252).

It is a very striking thought, then, when Plato advises "...not to remain in the upper world: but...descend again among the prisoners in the den, and partake of their labours and honors, whether they are worth having or not” (Plato, 428-347 B.C. in Jowett, 1946, p. 255). Plato explains that it is the duty of the rational thinker not to abandon the thinkers in the lower domain, but to periodically return, because each domain “...can be beneficial one to another...” (Plato, 428-347 B.C. in Jowett, 1946, p. 252). The Socratic dialogues seem deliberately self-contradicting and thought-provoking, not at all a dictation of what is true or not true, but a thorough exploration of “knowing that one doesn’t know” (Buchanan in Jowett, 1946, pp. 7-8).
Building on the point-counterpoint embedded in Plato’s metaphors, Plato’s devoted follower, Aristotle, one hundred years later, would even theorize that the two domains of thought—non-rational and rational—interact during ethical reasoning (Aristotle, 384-322 B.C. in Durrant, 1993; Aristotle, 384-322 B.C. in Woods, 1982). So, when viewed with intellectual hindsight today, the historical sole pursuit of the reasoning intellect by higher education since Plato’s cave down through the centuries, may have been an instructional error, one that springs anciently from missed cues in the melodramatic statements and counter-statements of the teaching metaphors of the 5th and 4th centuries B.C., and the later Cartesian epistemology that defined a cognitive self modelled upon Platonist and Aristotelian philosophy (Descartes, 1596-1650 in Markie, 1997).


In The Yale Report of 1828, Jeremiah Day and his co-author, Yale professor James Kingsley, reaffirmed the ancient cognitive tradition when they advised, “Familiarity with the Greek and Roman writers is especially adapted to...discipline the mind, both in thought and diction, to the relish of what is elevated, chaste, and simple...” (Day, 1828 in ASHE, p. 63). Day and Kingsley were reiterating the ancient
classical division between an 'elevated'—that is to say, a 'higher'—domain of disciplined rational thought versus a 'lower' domain needing rational control, what intellectual history had always and traditionally interpreted as an ancient and necessary exclusion.

The Historical Exclusion of Emotion

Plato’s discussions in the Republic offer an old way to look at a new problem. The problem is whether to engage the affective domain as an educational objective in the classroom, as has been suggested (Krathwohl, Bloom and Masia, 1964). Academically including the affective domain, thanks to a narrow reading of intellectual history, is an idea going upstream, struggling against the sweep of tradition and precedent.

A 1946 introduction to Plato’s Republic explains that “The Republic is the country of the human mind, and it is on its highways that you and I meet Plato coming back” (Buchanan in Jowett, 1946, p. 9). In the Republic, Plato describes a subterranean (i.e., lower) cave domain (Plato in Jowett, 1946, pp. 249-255) that is ignorant, non-rational and not good (Plato in Jowett, 1946). This lower domain is being compared to the dazzling, bright light of the higher domain of rational thinking. This famous metaphor carved an ancient philosophical schism in stone which has not yet been bridged, not even today, an enduring exclusion of emotion from intellect that has persisted in Western thought (Aristotle, 384-322 B.C. in Durrant, 1993; Aristotle, 384-322 B.C. in Richardson, 1992; Aristotle, 384-322 B.C. in Woods, 1982; Plato, 428-347 B.C. in Jowett, 1946; Solomon, 1993) although “the emotions have always lurked in the background” (Solomon, 1993, p. 3).

“Behold!” Plato writes, “human beings living in an underground den, which has a mouth open towards light and reaching all along the den; here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind
them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets....And do you see...men passing along the wall carrying all sorts of vessels, and statues and figures of animals made of wood and stone and various materials, which appear over the wall? Some of them are talking, others silent.

"You have shown me a strange image, and they are strange prisoners.

"Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?

"True, he said; how could they see anything but the shadows if they were never allowed to move their heads?

"And of the objects which are being carried in like manner, they would see only the shadows?

"Yes, he said.

"And if they were able to converse with one another, would they not suppose that they were naming what was actually before them?

"Very true.

"To them, I said, the truth would be literally nothing but the shadows of the images.

"That is certain.

"And now, look again, and see what will naturally follow if the prisoners are released and disabused of their error. At first when any of them is liberated, and compelled suddenly to stand up and turn his neck round and walk and look towards the light, he will suffer sharp pains; the glare will distress him, and he will be unable to see the realities of which in his former state he had seen the shadows; and then conceive some one saying to him, that what he saw before was an illusion...

"...but that now, when...his eye is turned toward more real existence, he has a clearer vision,—what will be his reply? And you may further imagine that his instructor is
pointing to objects as they pass and requiring him to name them, —will he not be perplexed? Will he not fancy that the shadows that he formerly saw are truer than the objects which are now shown to him?

"...My opinion is that in the world of knowledge the idea of good appears last of all, and is seen only with an effort; and, when seen, is inferred to be the universal author of all things beautiful and right...in this visible world, and the immediate source of reason and truth in the intellectual; and that this is the power upon which he who would act rationally either in public or private life must have his eye fixed. You will not misapprehend me if you interpret the journey upwards to be the ascent of the soul (the contemporary 'self') into the intellectual world" (Plato, 428-347 B.C. in Jowett, 1946, pp. 249-252).

After Plato's devastating cave metaphor and with the growing cultural acceptance of rational thinking in the 5th and 4th centuries B.C., the non-rational domain never regained its former place (Daniel and Renfrew, 1988) of reverence, importance and usefulness (Neumann, 1955/1963) that it had once held in the mythical cave culture described in The Power of Myth by Joseph Campbell (Campbell, 1988), extolled by the ancient Greek historians (Herodotus and Thucydides in Hobbes/Grene, 1959), and by the Greek traveller, Pausanias, who lived in 120-180 A.D. and documented the extant monuments and cave places of an ancient way of thinking that had depended on gods and goddesses and was gradually being replaced by science and reasoning. After Plato (428-347 B.C.) for the next 2000 years, the history of Western philosophy became "the history of the development of reason" (Solomon, 1993, p. 4).

One hundred years after Plato, the Greek philosopher, Aristotle, contributed greatly to the bad reputation which Plato had heaped on the non-rational domain. Although citing its other, nobler attributes, Aristotle described the non-rational domain as a realm of "vice and wickedness" whose bad influence could lead to using even wisdom unwisely (Aristotle, 384-322 B.C. in Woods, p. 173). It must be remembered that American higher education was classically designed upon this
philosophical Greek foundation, which Aristotle helped define when he wrote: "...desire does not imply the deliberative faculty. But sometimes it overpowers rational wish and moves to action; at other times the latter, rational wish, overpowers the former, desire" (Aristotle, 384-322 B.C. in Dennett, 1993, p. 70). Perhaps without intending to do so, Plato and Aristotle anciently dug the trenches for an academic battlefield where emotion was traditionally perceived to be a threat to reason, an opposing force to the development of intellect, and "...the idea that emotion as such is...more primitive, less intelligent...and more dangerous than reason, and thus needs to be controlled by reason" (Solomon, 1993, p. 3).

Contemporary thinkers may unknowingly inherit this ancient dominance of the cognitive domain and perhaps "a sense that affect (feelings, emotion) can influence their decisions, at least under certain circumstances. However, it is usually assumed that such influence is something irregular or unusual, that only strong and infrequent feelings would have such effects; and that most often only negative feelings such as anger, sadness, or fear would have an impact on thinking processes...(and that) such influences are disruptive and tend to make their decisions 'irrational' and less appropriate than otherwise" (Isen, 1993, p. 261).

One of Plato's main teaching points, embedded within the overstated melodrama of the cave metaphor, might come forward again and shed new light on the old historical schism that still yawns between the cognitive and affective domains. Plato's point was that some emotions do threaten the rational thinker. Plato is pointing out that a person has to be willing to leave behind the intriguing shadows cast by firelight, the dark emotions caused by being self-defensive, the self-delusion and ignorance caused by fearing the sharp climb up out of the comfortable darkness and into the bright light of reasoning. This was the 'danger' of emotions: emotional unwillingness to climb out of the cave. Note historically, that emotional willingness to begin learning is step one in Bloom's taxonomy of educational objectives, Handbook II.
Affective Domain (see Appendix B for a synopsis of Bloom's taxonomies) (Krathwohl, Bloom and Masia, 1964).

A closer study now of part of the classical curriculum that built early American higher education reveals a strong positive role for emotions embedded in the earliest philosophical definitions of 'thought' and 'self.' Why else would Plato advise a rational thinker to periodically revisit the dangers of the dark cave, if not to stay in touch with the emotional self?

The Role of Emotion in the Development of 'Thought' and 'Self'

Aristotle himself connects both a cognitive part and an emotional part to the development of 'thought' when he defines 'intellect' as a phenomenon of multiple parts animated by 'soul.' Some contemporary philosophers interpret the Aristotelian 'soul' as actually meaning 'mind' (Aristotle, 384-322 B.C. in Wilkes, 1992), but Aristotle's thinking about 'soul' appears to be much larger than 'mind' because in 'soul' Aristotle includes all animated movement of the physical body ('soul' is what causes the body to grow) and theorizes that 'soul' also animates an 'intellect' with multiple functions. (The consciousness of an individual 'self' was yet to appear) (Aristotle, 384-322 B.C. in Wilkes, 1992, p. 115).

According to Aristotle, one function of 'intellect' is active and rational; another function of intellect is passive and non-rational but it can inspire the rational intellect. The perishable part of intellect thinks; the deathless part inspires thinking (Aristotle, 384-322 B.C. in Woods, 1982).

Intellect, then, is a complex phenomenon of multiple parts, for Aristotle, and is not a single cognitive domain. Note historically, that centuries after Aristotle, toward the end of the 20th century A.D., the concept of "multiple intelligences" (Gardner in Mayer, Salovey and Caruso, 2000a) caused quite a stir in the academic world. One outcome of this "new idea" about intellect was the research concept of
emotional intelligence (Mayer and Salovey, 1990), as one of many possible kinds of intelligences that may be involved in cognition and achievement (Mayer, Salovey and Caruso, 2000a).

Aristotle remained true to Plato’s teachings about the good and ‘higher’ rational domain by defining the rational part of ‘intellect’ as having virtues “whose function is finding the truth concerning how things are or how they came about” (Aristotle, 384-322 B.C. in Woods, 1982, p. 20). However, in the Eudemian Ethics, both rational and non-rational domains of ‘intellect’ are not entirely virtuous; both domains have only an ‘inclination’ to be virtuous, or to seek vice. Aristotle theorizes that “it follows that (a person’s) ‘character’ is virtuous or bad by pursuing or avoiding pleasures and pains” (Aristotle, 384-322 B.C. in Woods, 1982, p. 20) and notes the complexity of various mediating variables that, for any individual, interact to determine how the extreme feelings of pleasure and pain become balanced, or not. The extremes of virtue and vice are defined by Aristotle as the parameters set by “feelings of pleasure or pain” (Aristotle, 384-322 B.C. in Woods, 1982). Aristotle thus brings in the emotions of the affective domain that are evoked by feelings of pleasure or pain as the very basis for ethical reasoning. This is parallel to the emotional intelligence construct of ‘emotional reasoning’ (Mayer, Salovey and Caruso, 2000b) which suggests that feelings can be used to assist rational thinking in making ethical decisions and solving problems.

To further complicate the matter of ethical reasoning, some rational intellects are underdeveloped, ignorant or stupid (Aristotle, 384-322 B.C. in Woods, 1982, p. 173). Even virtue can be used unwisely by an ignorant, or stupid, rational thinker (Aristotle, 384-322 B.C. in Woods, 1982, p. 173).

The opposite may also occur. Ignorance or stupidity in the rational part of intellect may be influenced by virtuous feelings from the non-rational part of intellect, resulting in judging wisely (Aristotle, 384-322 B.C. in Woods, 1982). Aristotle’s rational and non-rational functions of intellect are today’s cognitive and affective domains.

Note historically, that the meaning and function of 'intellect'—hundreds of years after Aristotle—came to be equated with a cognitive self that thinks, because of the irrefutable logic of a self-proclaimed devotee of Aristotle and Plato—the 17th-century French mathematician and philosopher, Rene Descartes.

In 17th-century philosophy, Descartes' philosophical assertion, Cogito ergo sum, effectively stripped the affective domain from its cognitive other half, two halves of a whole 'intellect' as defined by Aristotle (Aristotle, 384-322 B.C. in Woods, 1982), as well as by emotion research (Damasio, 1994, 1999) and emotional intelligence research today (Mayer and Salovey, 1990; Mayer, Salovey and Caruso, 2000a, 2000b). Even though Aristotle described 'intellect' as being both rational and non-rational, Aristotle also advised, "...be aware as little as possible of the non-rational" (Aristotle, 384-322 B.C. in Woods, 1982, p. 46).

In sometimes contradictory ways, then, the work of Plato and Aristotle consistently presented both sides—point and counterpoint—to the rational versus non-rational debate. Although a generous defender of the sometimes important presence of non-rational feelings during ethical reasoning, Aristotle also emphasized that non-rational feelings need to be controlled by reasoning: "...if virtue belongs to a human being...it necessarily includes reasoning, as a starting point of action; reasoning controls inclination and the affections..." (Aristotle. 384-322 B.C. in Woods, 1982, p. 15).

Yet it is not to control, but to connect the two domains that Aristotle talks about ethics (from the Greek ethos which means character). The ethics connection is the interaction of choosing: vice or virtue, emotional desires or a reasonable wish.

"Now 'character' (ethos), as the word itself indicates, is that which is developed from habit...(and)...Virtue...is the sort of disposition...from which are done the best functions of the soul, and its best affections...So let character be thus defined: a quality of the part of the soul that is non-rational, but capable of following reason..."
Aristotle, 384-322 B.C. in Woods, 1982, p. 17). As if anticipating future emotion research, Aristotle teaches that virtue in both the domains becomes "...an instrument of intelligence..." (Aristotle, 384-322 B.C. in Woods, 1982, p. 43). In fact, by connecting ethics to feelings of pleasure or pain, and by using Plato’s idea that love of the good is the basis for rational thinking (Solomon, 1993), Aristotle appears to have intersected the two domains. Perhaps Aristotle devised a pilot concept of emotional intelligence.

If Aristotle could take the MSCEIT V.2 test used in this study today, he would be tested on his understanding and defining of emotions, and management of extremes of emotions.

As if studying for the test, Aristotle lists in the left and middle columns emotional behaviors in their extremes, and, in the far right column, the golden mean or balance:

<table>
<thead>
<tr>
<th>irascibility</th>
<th>impassivity</th>
<th>gentle temper</th>
</tr>
</thead>
<tbody>
<tr>
<td>foolhardiness</td>
<td>cowardice</td>
<td>bravery</td>
</tr>
<tr>
<td>shamelessness</td>
<td>thin-skinnedness</td>
<td>shame</td>
</tr>
<tr>
<td>intemperance</td>
<td>insensibility</td>
<td>temperance</td>
</tr>
<tr>
<td>envy</td>
<td>(unnamed)</td>
<td>fair-mindedness</td>
</tr>
<tr>
<td>prodigality</td>
<td>meanness</td>
<td>liberality</td>
</tr>
<tr>
<td>boastfulness</td>
<td>mock-modesty</td>
<td>truthfulness</td>
</tr>
<tr>
<td>flattery</td>
<td>churlishness</td>
<td>friendliness</td>
</tr>
<tr>
<td>servility</td>
<td>unaccommodating</td>
<td>dignity</td>
</tr>
<tr>
<td>softness</td>
<td>imperviousness</td>
<td>endurance</td>
</tr>
<tr>
<td>vanity</td>
<td>meanness of spirit</td>
<td>pride</td>
</tr>
<tr>
<td>unscrupulousness</td>
<td>unworldliness</td>
<td>practical wisdom</td>
</tr>
</tbody>
</table>

"These affections, and others like them...are so described because of excess, in some cases, or deficiency, in others. Thus the man who gets angry more than he should, and more quickly, and at more things than he should, is irascible, while the man who falls short in what he is angry at, and when, and how, is impassive; again, the man who does not fear the things he should, and neither when nor as he should, is foolhardy, the man who fears things he should not, and when he should not, and in a manner he should not, is cowardly. Similarly, the man who desires what he should not, and goes to excess in every possible way is intemperant, the man who falls short and does not desire even the better and the natural, but is unsusceptible of feeling, like a stone, is insensible....The man who thinks more highly of himself than he should is vain, the man who thinks less highly is mean in spirit....A man is envious through being distressed at good fortune in more cases than he should. (Even those who deserve to do well upset the envious when they do.) ...but there is the man who goes too far in not being distressed even when people do well undeservedly; he is easy-going, like gluttons when food is concerned, while the other (envious) man is hard and grudging” (Aristotle in Woods, pp. 18-19).

"Perhaps the most important single point to make about Aristotle’s view of emotion is the fact that his analyses make sense only in the context of a broader ethical concern. Anger was of interest to him because it is a natural reaction to offense, and a moral force which can be cultivated by reason and rhetoric...he discussed in some detail those circumstances in which it is appropriate to get angry, those in which it is not, and what amount of intensity of anger is justified....He also insisted that only fools don’t get angry, and that although overly angry people may be ‘unbearable,’ the absence of anger (aimed at the right offenses) is a vice rather than a virtue. In (ethics) as in all else, Aristotle defended moderation, the ‘mean between the extremes.’ So too, Aristotle discussed fear at length in the Ethics with regard to courage, which is not ‘fearlessness’ or ‘overcoming’ fear so much as it is having just the right amount of fear—
not to be foolhardy or a coward either…. (analyses of) the emotions, in other words, are central and essential to the good life, and the analysis of their nature is part and parcel of ethical analysis” (Solomon, 1993, p. 5).

“I mean, a man is called sharp-tempered for being affected more quickly than he should, bad-tempered and choleric for being so (angry) more than he should, bitter for being prone to maintain his anger, violent and truculent for the retaliation resulting from the anger. Men are classified as gourmets or gluttons…according to which form of nourishment they have an affectible capacity to enjoy against reason” (Aristotle, 384-322 B.C. in Woods, 1982, p. 20).

Note historically, the necessary discipline to control the emotions by the reasoning intellect, as described by Aristotle—this was the instructional target of the classical Greek curriculum (Plato, 438-327 B.C. in Jowett, 1946). Note historically, that Jeremiah Day’s defense of the classical curriculum was to remind critics about the classical objectives: discipline of the mind and control of the imagination (Day and Kingsley, 1828 in Conrad and Haworth, 1990).

Into the Aristotelian historical context, Descartes’ 17th-century hypothesis, *Cogito ergo sum*, appeared with irrefutable logic. Descartes reasoned about what, if anything, a person can know with certainty about incoming sense perceptions. Descartes often references Aristotle’s early philosophy on ‘thought’ and ‘soul’ and Aristotle, in turn, references Plato (Aristotle, 384-322 B.C. in Woods, 1982). Thus in the first half of the 1600s, Descartes begins to question and reason his way via the Socratic method, to answer an epistemological challenge by the Skeptics (Solomon, 1993), and in so doing “…goes on to define the central problem of epistemology for the next three hundred years” (Descartes, 1596-1690 in Markie, 1997, p. 34).

“In the first place, then, I considered myself as having a face, arms, and all that system of bones and flesh as seen in a corpse which I designated by the name of body…. (Descartes, 1596-1690 in Wilkes, 1992, p. 114). Descartes perceived this body as
having length, depth and breadth in space. “Next I examined attentively what I was. I saw that while I could pretend that I had no body and that there was no world and no place for me to be in it, I could not for all that pretend that I do not exist. I saw on the contrary that from the mere fact that I thought of doubting the truth of other things, it followed quite evidently and certainly that I existed, whereas if I had merely ceased thinking, even if everything else I had ever imagined had been true, I should have had no reason to believe that I existed. From this I knew that I was a substance whose whole essence or nature is simply to think...” (Descartes, 1596-1650 in Markie, 1997, p. 35-36).

Descartes set our contemporary parameters for the idea of ‘consciousness’ of a cognitive self, and the epistemological model for teaching and learning strategies.

The idea of consciousness before Descartes may not have too different from Plato’s and Aristotle’s day (Wilkes, 1992).

“The verb ‘being conscious of’, in its present (range of) sense(s), dates in English from around 1620, and the noun ‘consciousness’ does not appear until 1678; ‘self-consciousness’ does not crop up until 1690. The term existed, of course, before then; but it still retained its etymological meaning of ‘shared knowledge’ (cum + sciere). French and German display the same pattern. It took the challenge of skepticism to hoist consciousness—as we know it today—to the pedestal it still occupies” (Wilkes, 1992, p. 115).

Descartes’ Cogito separated Aristotle’s large idea of ‘soul’ from ‘intellect’ and helped turn ‘being conscious of’ into the contemporary idea of ‘self.’ Descartes writes in a letter to one of his critics, “...men in earliest times did not distinguish in us that principle in virtue of which we are nourished, grow, and perform all those operations which are common to us with the brutes, apart from any thought...(this was part of Aristotle’s definition of ‘soul’)...But I, perceiving that the principle by which we are nourished is wholly distinct from that by means of which we think, have decided
that the name ‘soul’ when used for both is equivocal...and I have called (the principle by which we think) by the name ‘mind’...” (Descartes, 1596-1650 in Wilkes, 1992, p. 115).

Descartes’ connection between thinking, mind, and the consciousness of an individual thinker, evolved into the ‘self’ of contemporary culture. The ancient duality (rational/non-rational) of ‘intellect’ as defined by Aristotle, and the upper vs. lower, good vs. not-good, domains of thought, as defined by Plato, were narrowed into a single ‘conscious self’—a cognitive, thinking self—by their 17th-century student, Rene Descartes, in the Cogito (Descartes, 1596-1650 in Markie, 1997). The cognitive thinking self is still the target of traditional higher education and psychology.

The business of contemporary psychology has been to make the cognitive self aware of the desires and presence of the emotional self. The business of higher education has been to educate the cognitive self, and, in recent years, to make that cognitive self more aware of the desires and presence of the psychosocial domain where the emotional self has been sent to reside on campus (Chickering and Reisser, 1993; Pascarella and Terenzini, 1991; Terenzini, 1997). Education and psychology have yet to recover from the adoration of cognition (Bacon in Kerr, 1963/1995) that some have called Descartes’ error (Damasio, 1994, 1999).

Descartes’ assertion that “I am thinking, therefore I must exist” (Descartes, 1596-1650 in Markie, 1997, p. 36) laid the epistemological groundwork for teaching to a cognitive self. Even intuition for Descrates was born from reasoning: “...intuition is the indubitable conception of a clear and attentive mind which proceeds from the light of reason” (Descartes, 1596-1650 in Markie, 1997, p. 37). Descartes redefined the ancient idea of consciousness as “shared knowledge” (Wilkes, 1992, p. 115)—shared with the goddesses and gods—and replaced it with an independent self who knows that it thinks.

Descartes defined ‘self’ as “the thing that thinks” (Descartes, 1596-1650 in Wilkes, 1992, p. 114). The Cartesian self is a cognitive self because it knows it is thinking, and that whether its thoughts are true or false, it knows that as long as it is
thinking, it has not ceased to exist. As long as the self knows it is thinking, then it knows that it does indeed exist. (Otherwise, how could it know it was thinking?) But Descartes did not entirely exclude the affective domain from the rational development of 'thought' and 'self' in his existential conundrum.

In contemporary psychology, consciousness still retains its Cartesian cognitive dimensions. Today's 'self' is the 'I' or ego of consciousness that appears to be continuous in time (Cortright, 1997, p. 54). The 'I' of consciousness is a personal construct built by a set of values, beliefs and choices (compare to Aristotle's ethical reasoning 'intellect' which rationally and emotionally chooses between virtue and vice). Like Aristotle's emotional-rational intellect, today's 'I' consciousness is a cognitive self with a complex existence.

"Our fundamental identity is consciousness, but we identify with and cling to certain contents of consciousness. That is, we normally believe, "I am this experience...of sensing...feeling...thinking" (Cortright, 1997, p. 54). (Has anything changed since Descartes?)

Among the new thinking about 'self' today is the idea that "...consciousness is modified and conditioned by the structures of the self. It is consciousness that frees us from our unconscious conditioning. Consciousness becomes engaged in its own transformation" (Cortright, 1997, pp. 56, 59). Each conscious decision and choice among values and beliefs, then, for the late-adolescent /young-adult in college becomes an opportunity for a conscious transformation of 'self' by using situations that demand psychological involvement in decision making, as described in Astin's 1984 model of affective development (Pascarella and Terenzini, 1991), situations requiring a choice or commitment. As Aristotle teaches, the values, beliefs and choices of any one individual are decided through both emotional feelings and rational thinking. Aristotle claimed that rational thinking can be guided by a feeling of which choice would be more virtuous, that is, which choice would feel best
(less painful, more pleasurable)—a feeling for virtue which Aristotle called "the instrument of intelligence" (Aristotle, 384-322 B.C. in Woods, 1982, p. 43). What are the educational implications of such an instrument? Why is its presence educationally ignored?

Some undergraduates, like their predecessors in the history of higher education, may have given the emotional self a bad name, by seeking emotional experiences that challenge traditional or inherited beliefs and values. How, then, to educationally understand this experimenting emotional 'self' that may be actively exercising itself in adverse ways during the undergraduate years? Can the undergraduate 'self' really be expected to be cognitive in the classroom, and only emotional in 'interpersonal' social relationships?

An answer is suggested by Plato and Aristotle: 'self' is not one domain or the other, but an interactive construct of at least two domains from which it receives both cognitive and emotional input; each domain can be beneficial to the other. Even Descartes made room within the cognitive self for an emotional self who feels and imagines:

"What is a thing that thinks?" Descarets wrote in a letter to a friend. "It is a thing which doubts, understands, conceives, affirms, denies, wills, refuses, and which also imagines and feels" (Descartes, 1596-1650 in Wilkes, 1992, p. 114).

Although the emotional part of the self, which William James equates with ego (James, 1884, 1890) plays a strong role in the willing ascent of the cognitive self into the intellectual world, the emotional self has been largely ignored and historically excluded from the instructional target of higher education, which has always and traditionally intellectually developed the cognitive domain.
Higher Education and the Emotional Self

Experimental studies show that emotional self-concept is over-sensitized in depressed learners (Slipp, 1975). They are hypersensitive to feedback about performance. In one study, a depressed group of test participants was given a card-sorting task, along with a control group of subjects without depression. Performance of the card-sorting was deliberately interrupted by the researchers so that all subjects in both groups failed. The depressed group had actually performed no worse than the normal group (that is, everyone failed), but depressed subjects reacted to their failure with greater pessimism and far lowered expectations than the normal group (Slipp, 1975). This indicates how depression cues attention to self-defeating interpretation of events. Emotion also determines the speed at which thinking is performed and the richness of multiple information cues that are perceived and attended. In the card sorting task, depression determined the cognitive mode (Damasio, 1994).

Conversely, a feeling of elation can cause rapid generation of multiple mental images and cognitive associations in response to a wide variety of information and meaning cues (Damasio, 1994). The wealth of imagery and associative cues causes ease of inference and inclusive thinking, resulting in bold exploratory behaviors (Travers, 1973). The opposite of this rapid and expansive cognitive mode is, for example, the feeling of sadness and the cognitive mode that is paired with it. Sadness is characterized by slowness of mental image formation, less association of meaning due to perception of fewer mental cues, a more narrow band of inferences, and over-concentration on one or two images that will sustain the negative mood. The cognitive state caused by sadness exhibits psychomotor inhibition such as reduced or lost appetite, and a reduction of exploratory behaviors (Damasio, 1994).

The literature shows that sadness causes slow information processing with perception of few cues; happiness causes rapid processing and a wealth of information and meaning cues (Damasio, 1994; Francis, et al., 1998). Hence specific
emotions are known to predictably generate a specific cognitive mode. For example, happiness generates heightened attention and rich, rapid perception that assist peak performance instead of mediocre or insignificant outcomes. Understanding that the educational role of emotions is to direct cognitive attention to similarities and other meaning cues in the environment "can potentially lead to a transformation" (Salovey and Mayer, 1990, p. 186) in teaching (Krathwohl, Bloom and Masia, 1964) and thinking.

Depression and anxiety are the two emotions that have been studied most by psychology (Francis, et al., 1998). Symptoms relating to learning include loss of interest in activity, loss of pleasure in activity, chronic fatigue, a drop in energy, inability to concentrate, indecisiveness (Oatley and Jenkins, 1996). Appraisal and regulation of emotion to generate an optimal cognitive mode for achievement are demonstrably important (Salovey and Mayer, 1990; Francis, et al., 1998; Schutte, et al., 1998). In fact, research indicates "that happier college students obtain higher grades in general" (Wessman and Ricks, 1966, p. 123 in Mayer, Salovey and Caruso, 2000a, p. 410) although the originators of the emotional intelligence ability model (Mayer and Salovey, 1990; Mayer, Salovey and Caruso, 2000b) caution that emotional intelligence is not a cure-all but "...identifies a previously overlooked area of ability critical to certain human functioning. These emotionally intelligent skills lay hidden in the boundary area between mental ability and noncognitive dispositions..." (Mayer, Salovey and Caruso, 2000a, p. 408). Emotional intelligence is an ability to understand and manage emotions to assist thought, across the two domains. How important is this to learning?

Self-concept is an important mediating variable for achievement in higher education because it can determine the speed, confidence and creativity with which people think. Self-concept involves an emotional measure of self-competence in the objective world—self-efficacy beliefs (Bandura, 1997)—a measure indexed daily by what William James called 'the emotional self' (James, 1884, 1890).
“Students with high self-efficacy tend to learn and achieve more than students with low self-efficacy, even when actual ability levels are the same” (Bandura, 1986; Collins, 1982; Schunk, 1989; Spaulding, 1992; Zimmerman, Bandura and Martinez-Pons, 1992: all cites referenced in Ormrod, 1995, p. 151).

What is the mechanism of self-efficacy in learning?

Self-efficacy beliefs straddle the line between affect and cognition. Self-efficacy is both an emotional feeling about ability and a cognitive assessment of ability to perform a course of action. “Efficacy beliefs create attentional biases and influence whether life events are construed...in ways that are benign or emotionally perturbing.....efficacy beliefs regulate emotional states by supporting effective courses of action to transform the environment in ways that alter its (emotional) potential...” (Bandura, 1997, p. 137). In relation to learning and achievement, then, emotional-cognitive self-efficacy beliefs can transform the learning experience by determining attitude and motivation to achieve, and persistence, “whereas those of low self-efficacy are quick to conclude that additional efforts would be futile” (Bandura, 1997, p. 137).

“If people believe they have no power to produce results, they will not attempt to make things happen” (Bandura, 1997, p. 3). Understanding and managing emotions is central to the formation of self-concept/self-efficacy. Emotional intelligence can therefore lead the way and make it possible for consciousness to become engaged in its own transformation (Cartright, 1992, p. 57).

However, the complexity of self-concept/self-efficacy is a personal construct whose childhood formation must be sought out. Self-concept is constructed across the lifespan by the outcomes of life experiences and relationships with others (Slipp, 1975; Santrock, 1997; Damasio, 1994). Thus, it is not just the responsibility of students to cultivate positive self-concept (as an Aristotelian “instrument of intelligence”) but also a job for higher education to encourage self-concept/self-efficacy in relation to learning, for undergraduates sitting in the academic classroom.
Self-concept covers a lot of emotional territory. The emotional self is a very important thinker, because deeply involved but hidden in the learning process and, in the academic classroom, instructionally excluded or even repressed.

The repressed or excluded emotional self may be developmentally driven to redirect cognitive attention away from achievement efforts, delaying or avoiding the risk of failure, or simply retaining the comfortable status quo (Skaalvik, 1997) of not trying. Personal emotions by late-adolescence may be conditioned to respond to challenges in the personal environment in self-defensive, preorganized ways (Darwin, 1872/1955; James, 1890; Damasio, 1994; Erikson and Weathersby in Santrock, 1997; Skaalvik, 1997). Is there, then, a reason to teach understanding and managing of personal emotions, to the emotional self, in the academic development of rational thinking? "Much of our thinking consists of trains of images suggested one by another," William James wrote, "of a sort of spontaneous revery of which it seems likely enough that the higher brutes are capable. This sort of thinking leads nevertheless to rational conclusions, both practical and theoretical. The links between the terms are either 'contiguity' or 'similarity'....Having been thinking of one, we find later that we are thinking of another, to which we have been lifted along, we hardly know how" (James, 1890, p. 325).

The Educational Role of the Emotional Self

**What Is an Emotion?**

"Every object that excites an instinct excites an emotion as well"

*(James, 1890, p. 442).*

William James was concerned with abstract reasoning, whose set of critical thinking skills is one of today's most desired outcomes of higher education (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964; Pascarella and Terenzini, 1991; Terenzini, 1997). James asked a question that concerns higher education today:
"Why cannot anyone reason as well as anyone else?" (James, 1890, p. 241). The answer to this question requires a definition of the hidden role of emotion in the abstract process of reasoning (James, 1884, 1890; Damasio, 1994, 1999).

James benefitted from the research of his predecessors and contemporaries in physiology, including Darwin, Freud and Pavlov (Ormrod, 1995). When James wrote that "Every object that excites an instinct excites an emotion as well" (James, 1890, p. 442), he was reiterating Darwin's and Pavlov's great findings (Darwin, 1872/1955). The connection between human emotions and human instincts that categorize new experience is William James' conceptual contribution to our contemporary understanding of the necessary role of emotion in cognitive reasoning and decision making (James, 1884, 1890; Damasio, 1994, 1999).

The problem with emotions is that an individual's past experiences beginning in childhood cause ad hoc pairings of emotions with cognitive memory of the past. Across the lifespan there is an ongoing formation of personalized emotional associations (James, 1890; Damasio, 1994; Slipp, 1975; Matthews, 1993; Skaalvik, 1997; Santrock, 1997; Walsh and Vaughan, 1993) with new experiences and events. In William James' era at the end of the 19th century, Pavlov identified this phenomenon as a preorganized learning mechanism in animals and humans (Pavlov, 1872/1927).

Without interventions, emotional past associations may remain cognitively associated with past events occurring first in childhood within the family (Damasio, 1994; Slipp, 1975; Matthews, 1993; Skaalvik, 1997; Santrock, 1997; Walsh and Vaughan, 1993). The educational problem is that these past associations have created the late-adolescent/young-adult developmental identity and self-concept which are brought to the higher education table. The instructional challenge is that personalized past associations emotionally direct cognitive attention (James, 1890; Damasio, 1994; Slipp, 1975; Matthews, 1993; Skaalvik, 1997).
An individual's set of past emotional associations are part of the "contents of consciousness" (Cortright, 1997, p. 54), that form the "I" construct of self. The "I" of cognitive consciousness can be mediated by natural maturation and life experiences across the lifespan (Santrock, 1997) and can also be personally mediated by a set of acquired abilities called emotional intelligence (Mayer and Salovey, 1990; Mayer, Salovey and Caruso, 2000a, 2000b). William James contributed four definitions of how emotion may be related to learning in the contemporary research concept of emotional intelligence: 1. Emotion is a neuro-muscular reflex; 2. Emotion is an intellectual feeling; 3. The ego is the emotional self; 4. Emotions are commonly shared by everyone and can be named and defined.

James' Four Definitions of Emotion

1. **Emotion is a neuro-muscular reflex.** James theorizes that the primal emotions are physical sensations caused by excitation of nerve cells and muscles. James is insistent that the primal emotions **follow, but do not precede, physical exertion of the body.** This is James' primary definition of 'an emotion.' It cuts off emotion as an omnipresent potential (which Damasio calls somatic markers) and forecloses on the possibility that emotion is an ever-present conveyor of personalized survival information that arises to focus cognitive attention for the well-being of the perceiver.

   Instead, in this definition, James gives an idea of the body as a preorganized container within which emotions may be occasioned to swirl.

   James defines the standard emotions as physical sensations but the feeling of 'an emotion' occurs only after a physical response has been made. In the context of James' day, this concept makes perfect sense. Psychology was still in its infancy, predominated by anecdotal and observational research by the great physiologists of the time including Darwin, Pavlov and Freud.
Looking at the physical body from their viewpoint, James was saying nothing new when he theorized that the body’s physical-response network produces a preorganized and involuntary survival-reflex which arouses emotions and can include cognition. The reflex-survival sensation, or feeling, is always involuntary, instinctive, and animal-like. James then goes on a relentless search for “the mind stuff” of an emotion (James, 1884, p. 193)—that is to ask, what remains after the physical sensations of ‘an emotion’ have been felt?

Here James is using the core concept of Darwin’s collection of anecdotal observations. James writes, “If we fancy some strong emotion, and then try to abstract from our consciousness of it all the feelings of its characteristic bodily symptoms, we find we have nothing left behind, no “mind-stuff” out of which the emotion can be constituted, and that a cold and neutral state of intellectual perception is all that remains” (James, 1884, p. 193-194). Perhaps unintentionally in this definition, James has exposed the instinctive pairing of emotion with cognition which is the deep conceptual root of the modern concept of emotional intelligence—the dynamic when emotion-cognition pair or form a relation in preorganized, observable ways within the body state, in response to challenges to the well-being of the individual (Damasio, 1994, 1999). In his search to separate emotion from the body, and sounding like a page out of Darwin’s 1872 book on the physical expressions of emotion, James asks in 1884: “What kind of an emotion of fear would be left, if the feelings neither of quickened heartbeat nor of shallow breathing, neither of trembling lips nor of weakened limbs, neither of goose flesh nor of visceral stirrings, were present, it is quite impossible to think. Can one fancy the state of rage and picture no ebullition of it in the chest, no flushing of the face, no dilation of the nostrils, no clenching of the teeth, no impulse to vigorous action....?” (James, 1884, p. 193).

But what if an emotion is not connected to a survival instinct? Here is where James begins to separate himself from the pack. The pack of 19th-century
physiologists who paved the way for modern psychology—Darwin, Pavlov, Freud—did not anticipate in their published writings James' revolutionary idea that some emotions are non-physical. Thanks to their work, James could readily strip away the observable physical expressions and physiological sensations of an emotion, and what did he find?

At the bottom of 'an emotion' James found “intellectual perception” (James, 1884, p. 194) which may indicate that emotions have another half. James at the time, however, was determined that some emotions are non-physical.

2. Emotion is an intellectual feeling. James’ radical concept of “intellectual feelings” (James, 1884, p. 201)—radical for his time—causes some initial confusion even today because his definition includes the brain but not the rest of the body!

In this definition, James is careful to separate out what he calls “pure cerebral emotion” (James, 1884, p. 201) from the rest of the body where the instinctive emotions occur—James calls instinctive emotions “the standard emotions” such as anger, joy or fear—involuntarily generated by the neuro-muscular pathways of the body in response to environmental cues of danger or well-being. Pure cerebral emotion, when compared to instinctive standard emotion, is a pleasurable and voluntary perception generated by refined sensibilities, both moral and aesthetic (James, 1884, p. 201), and occurs only in the brain.

"Concords of sounds, of colours, of lines, logical consistencies, teleological fitnesses, affect us with a pleasure that seems ingrained in the very form of the representation itself, and to borrow nothing from any reverberation surging up from the parts below the brain....We have then, or some of us seem to have, genuinely cerebral forms of pleasure and displeasure, apparently not agreeing in their mode of production with the so-called standard emotions we have been analysing.....But a sober scrutiny of the cases of pure cerebral emotion....Unless in them there actually be coupled with the intellectual feeling a bodily reverberation of some kind, unless we actually laugh at the neatness of the mechanical device, thrill at the justice of the act, or
tingle at the perfection of the musical form, our mental condition is more allied to a judgment of right than to anything else...it is a cognitive act.

"And the dryness of it, the paleness, the absence of all glow, as it (the intellectual feeling) may exist in an expert critic’s mind, not only shows us what an altogether different thing it is from the standard emotions we considered first, but makes us suspect that almost the entire difference lies in the fact that the bodily sounding-board, vibrating in the one case, is in the other mute" (James, 1884, pp. 201-201). This radical thinking is where James separates himself from the physiologists, whose research James uses extensively, but who may have indeed been unable to understand James’ idea that intellectual feelings do not activate, nor are activated by, the rest of the body’s inseparable neuro-muscular network.

3. Ego is the emotional self. James’ great conceptual contribution is not physiological but a psychological definition of an emotional self. In so doing, he makes a great contribution to the field of educational psychology as it has evolved today. James veers off in a visionary direction by bringing the body back into this definition of emotion. James does this by relying on the physical body in this definition as a great sounding board of consciousness.

James theorized that the physiological changes that accompany emotions, which his predecessors took great pains to delineate, also create “mental moods” (James, 1884) so that “....the entire organism may be called a sounding-board, which every change in consciousness, however slight, may make reverberate...(so) that no shade of emotion, however slight, should be without a bodily reverberation as unique, when taken in its totality, as the mental mood itself” (James, 1890, p. 450).

The important connecting point in James’ entire conceptual structure is that each physical sounding board is personalized by past emotional associations which may or may not be accurate reflections of a present event or challenge (intellectually unraveling the personalized collection of past emotional associations was the point-of-
departure for Freudian analysis). It seems to be William James who begins to forge the current concept that emotion-cognition is an inseparable physical dynamic whose creation is the personalized self. Understanding and managing the emotional part of the cognitive-emotional self of today is the target of contemporary psychology, particularly transpersonal psychology whose goal is to open up past emotional wounds (Walsh and Vaughan, 1993) to cause healing and new growth.

James explains that: "The *fons et origo* of all reality...is...subjective, is ourselves....The world of living realities...is thus anchored in the Ego, considered as an active and emotional term.... Reality, starting from our Ego, thus sheds itself from point to point—first, upon all objects which have an immediate sting of interest for our Ego...and next, upon the objects most continuously related with these. It only fails when the connecting thread is lost" (James, 1890, pp. 296-297).

James' 'connecting thread' (James, 1890, p. 297) is the attention-directing role of personalized past associations. These associations are emotional and as instinctive as Pavlov's dogs, who would salivate even to misleading feeding cues that were associated with similar past feeding events in the same environment (Pavlov, 1927). Personalized past associations can direct and bias the learning activity of the emotional self (Damasio, 1994, 1999). James suggests that perception of objective reality depends on the personalized biases of the emotional self. James even introduces subjective-objective Cartesian duality into his definition of self, by saying that reality includes "the self as knower and the self as that which is known" (Matthews, 1993, p. 37).

This duality means that the cognitive self is able to perceive itself both subjectively and objectively—and this duality is what permits the ever-shifting measurement of the effectiveness of 'self' in the world, and that daily measurement is self-esteem (James in Matthews, 1993). This duality greatly expands James' definition of emotion. Part of the self's dichotomy is its subjective effort to gauge how effective its
objective self is in the real world of external reality (external to the subjective self). James theorizes that self-esteem is a subjective-objective barometer which “rises and falls from one day to the other” (James in Matthews, 1993, p. 37). But lest one begins to feel uncomfortable with the essential fuzziness of James’ theories of an emotional self, it is fortunate that neuroimages and case studies are available today (Damasio, 1994) that support James’ intuitive assertions. The emotions of self-esteem, however, should be familiar to everyone because, as James and his predecessors theorize, emotions and emotional expressions are commonly shared by everyone and can be named and defined.

4. **Emotions are commonly shared by everyone and can be named and defined.** Faces showing emotions are a major part of the shared knowledge-base being tested by emotional intelligence instruments such as the MSCEIT V.2 (Mayer, Salovey, and Caruso, 2000b) today. Darwin did the same thing in his 1872 publication—presenting photographs of people’s faces to point out certain physiological expressions of emotions that can be named and defined by everyone, and also scientifically identifying the facial muscles that make those expressions possible (Darwin, 1872/1955). The theory then as now is that certain standard or primary emotions are commonly expressed and can be commonly named and defined. James like Darwin contributes greatly to the modern knowledge base when he describes and defines some of the physical expressions of the primary emotions.

In his classic two-volume publication in 1890, James writes: “The chief feature of the physiognomy of grief is perhaps its paralyzing effect on the voluntary movements. This effect is by no means as extreme as that which fright produces, being seldom more than that degree of weakening which makes it cost an effort to perform actions usually done with ease. It is, in other words, a feeling of weariness; and (as in all weariness) movements are made slowly, heavily, without strength, unwillingly, and with exertion, and are limited to the fewest possible. By this the grieving person gets...
his outward stamp: he walks slowly, unsteadily, dragging his feet and hanging his arms. His voice is weak and without resonance, in consequence of the feeble activity of the muscles of expiration and of the larynx. He prefers to sit still, sunk in himself and silent. ...With this condition of weakness of the voluntary nerve- and muscle-apparatus of the whole body, there coexists, as aforesaid, just as in all states of similar motor weakness, a subjective feeling of weariness and heaviness, of something which weighs upon one; one feels 'downcast,' 'oppressed,' 'laden,' and one speaks of his 'weight of sorrow,' one must 'bear up' under it...Many are there who 'suffer' to sorrow to such a degree that they literally cannot stand upright, but sink or lean against surrounding objects...this weakness...of the entire voluntary motor apparatus (is in addition to)...the involuntary or 'organic' muscles...found in the walls of the blood vessels....(which) act in grief...(to be) more strongly contracted than usual, so that the tissues and organs of the body become anemic. The immediate consequence of this bloodlessness is pallor and shrunkenness, and the pale color and collapsed features... (which) give to the victim of grief...a feeling of cold and shivering. A constant symptom of grief is sensitiveness to cold, and difficulty in keeping warm” (James, 1890, pp. 443-445).

James's discourse on the physical and subjective symptoms of grief, and the light it sheds on the related mood of sadness, and the related prolonged emotion-state of depression, is an important conceptual root that supports the current theory that emotion determines the cognitive mode (Damasio, 1994). 'Cognitive mode' means how new information is perceived in a learning situation (Pavlov might say here that all life is a learning situation): how quickly, how richly, how many cues from the environment are noticed, how problem-solving is approached within various primary emotion states such as fear vs. happiness.

"What kind of an emotion of fear would be left if the feeling neither of quickened heart-beats nor of shallow breathing, neither of trembling lips nor of weakened limbs, neither of goose-flesh nor of visceral stirrings, were present, it is quite
impossible for me to think. Can one fancy the state of rage and picture no ebullition in the chest, no flushing of the face, no dilation of the nostrils, no clenching of the teeth, no impulse to vigorous action, but in their stead limp muscles, calm breathing, and a placid face?" (James, 1890, p. 452).

Defining Emotion: James' Predecessors

James' anecdotal observations of emotional expressions that form his theories are based on the groundbreaking work of other researchers of his era. His research contemporaries were the 19th-century giants of physiology--Darwin, Pavlov and Freud--who in the last quarter of the 19th century laid the foundations for 20th-century psychology. James' theoretical orientation and work owe a great conceptual debt to Charles Darwin's *Emotions of Man and Animals* (the first manuscript of which was written in 1838) in which Darwin identifies and describes the physical "overflow of nerve-force" (Darwin, 1872/1955, p. 9) resulting in specific facial expressions shared by humankind in common, recognizable expressions of the various human emotions. As Darwin's many references make clear, James' publications (1884, 1890) are not an original contribution to the study of emotion. James is more the crest of the wave of a host of scientists before him, going back to the 1660s in Europe. Darwin quotes from the pioneering work of his day on emotion, and cites some but not all of the emotion researchers before him, most of whom were anatomists or physiologists.

"Many works have been written on Expression, but a greater number on Physiognomy....With this latter subject I am not here concerned. The older treatises, which I have consulted, have been of little or no service to me. ....The following works, on the contrary, deserve the fullest consideration" (Darwin, 1872, p.1).

In the body of his 1872 publication, Darwin frequently cites Herbert Spencer's *Principles of Psychology* published in 1855; Bain's *The Senses and the Intellect*
published in 1864; Sir Charles Bell, in the 1806 first-edition and 1844 third-edition of Bell’s *Anatomy and Philosophy of Expression*.

Darwin himself is building on previous conceptual physiological research dating back to Le Brun’s 1667 work, “Conference on the Expression of the Different Characteristics of the Passions” ("Conferences sur l’espression des differents Caracteres des Passions") which Darwin remarks is “the best known ancient work, and contains some good remarks” (Darwin, 1872, p. 1). Darwin cites the Dutch anatomist, Pierre Camper’s 1774-1782 series of lectures entitled, “Discours par Pierre Camper sur le moyen de representer les diverses passions” and published in 1792 which “can hardly be considered as having made any marked advance in the subject” (Darwin, 1872, p. 1).

Other names of physiologists and anatomists whose works are cited by Darwin in his 1872 book include Drs. Lavater, Duchenne, Moreau, Lemoine, Gratiolet, Piderit, Maudsley, Browne, and Burgess whose 1839 paper is on “The Physiology or Mechanism of Blushing.” Darwin also draws on world literature for descriptions of expressions of emotion, including Homer, Shakespeare and Dickens who in *Oliver Twist* writes about a furious mob surrounding a murderer as “jumping up one behind another, snarling with their teeth, and making at him like wild beasts” (Darwin, 1872, p. 241). Darwin adds a line from Shakespeare’s *Henry V*, Act III, Scene 1 to describe the emotion of rage, and determination: “In peace there’s nothing so becomes a man, As modest stillness and humility; But when the blast of war blows in our ears, Then imitate the action of the tiger: Stiffen the sinews, summon up the blood, Then lend the eye a terrible aspect; Now set the teeth, and stretch the nostrils wide, Hold hard the breath, and bend up every spirit To his full height!” (Darwin, 1872, pp. 240-241). Darwin also cites a list of forty-one older authors listed in an appendix to a paper dated 1746, by J. Parsons, entitled “Philosophical Transactions”—all of these writers, to whom Darwin refers as “the older treatises...of little or no service to me” were writing about the observable expressions of human emotions.
Darwin-like, James relies on describing the physical expressions of emotions, using anecdotal stories and commonly shared observations about animals and humans. In his 1872 publication, Darwin supplements his anecdotes and observations with photographs of human faces and drawings of dogs and other animals; William James later in his two-volume 1890 publication, will also present an assortment of dog stories to support his theory. It must be noted that the neurophysiologist and neurosurgeon, Antonio Damasio, one hundred years after both Darwin and James, also supplements his theories with photographs showing the emotional expressions of a human face.

**Damasio’s Definitions: The Somatic Marker Hypothesis**

The neurosurgeon, Antonio Damasio, is a self-confirmed admirer of the work of William James (Damasio, 1994). Damasio’s own work as a neurosurgeon using neuroimaging technology, reflects James’ conceptual framework in defining how a personalized emotional bias, including self-concept and its daily measure of self-esteem, are all part of a continuous background feeling generated by the body, a source of feelings that directs cognitive attention toward or away from certain perceptions and guides cognitive reasoning in reaching a conclusion.

"The point I want to stress is that your mind is not a blank at the start of the reasoning process. Rather it is replete with a diverse repertoire of images, generated to the tune of the situation you are facing, entering and exiting your consciousness in a show too rich for you to encompass fully. How do you sort out the questions inherent in the images before your mind’s eye? ...imagine that before you apply any kind of cost/benefit analysis...before you reason toward the solution of the problem, something quite important happens. When the bad outcome connected with a given response option comes into mind, however fleetingly, you experience an unpleasant gut feeling. Because the feeling is about the body, I gave the phenomenon the technical term of *somatic* state ("soma" is Greek for body); and because it "marks"
an image, I called it a marker. ...What does the somatic marker achieve? It forces attention on the negative outcome to which a given action may lead...and allows you to choose from among fewer options” (Damasio, 1994, p. 173).

If there is an inseparable dynamic of emotion-body-cognition, as Damasio’s work suggests, this would mean that emotions are not just involved in personality and self-concept development, ego stage-development and successful or failed social relationships, but in every level of paying cognitive attention, understanding the meaning of cognitive perceptions, and completion of learning tasks. From involuntary survival-reflex thinking to higher abstract reasoning—cognitive attention and cognitive responses are ‘driven’ or ‘selected’ by personalized emotions and emotional associations (Damasio, 1994, 1999).

Damasio identifies this as “an internal preference system” (Damasio, 1994, p.179) and describes its physical, neural base as “mostly innate regulatory dispositions, posed to ensure survival of the organism” which is “inherently biased to avoid pain, seek potent pleasure, and is probably pretuned for achieving these goals in social situations” (Damasio, 1884, p. 179).

Damasio thus links the social conditioning of ‘self’ to his idea of somatic markers, which are not just emotion states generated by the body-brain interaction at any given time but “somatic pairings” (Damasio, 1994, p. 179). This means that emotion-cognition-body form a memory bank that automatically associates and compares incoming new perceptions with past emotional experiences, such as extreme exhaustion caused by writing an academic paper. Thus the somatic marker will tag “certain categories of entity or event with the enactment of a body state” (Damasio, 1994, p.180) such that a student may feel negative and tired when thinking about writing the next paper, and embark on a series of delaying tactics (Skaalvik, 1997), or, in extreme cases of prolonged task-avoidance, may become depressed and emotionally unable to perform (Skaalvik, 1997; Slipp, 1975).
Damasio's 'somatic marker hypothesis' links young adulthood thinking to past emotional associations that have "pretuned" the thinker, especially during the childhood development of a differentiated 'self' (Slipp, 1975) and the self-esteem that is a measure of self-concept (James in Matthews, 1993). Emotions associated with childhood and other past experiences are how a college student has been "pretuned" to achieve (or avoid achieving) undergraduate outcomes such as academic high achievement and satisfaction with the college experience.

Managing the Primary and Secondary Emotions

Damasio identifies the primary survival emotions—which James calls the standard emotions—and which Damasio lists as Happiness, Sadness, Anger, Fear, and Disgust. These emotions in turn "correspond to profiles of body state response which are largely preorganized in the James sense" (Damasio, 1994, p. 149). When Damasio says "profiles of body state response" he, like James before him, is referring back to the great 19th-century physiologists—Darwin, Pavlov, Freud—who with the help of anatomists were able to identify specific neural and muscular responses that are universally associated with specific emotions. Damasio agrees with James that the primary emotions are aroused by preorganized survival instincts, just as James described. "When the body conforms to the (physiological) profiles of one of those emotions, we feel happy, sad, angry, fearful, disgusted" (Damasio, 1994, p. 149).

Following James' lead, Damasio further theorizes that, aside from the primary survival emotions, there are secondary emotions which are "tuned by experience" (Damasio, 1994, p. 149). The secondary emotions, also described as universal by Damasio, are much more subtle than the five primary survival emotions of Happiness, Sadness, Anger, Fear, and Disgust.

The secondary emotions also occur only in adulthood. These emotions are the refined spin-offs of the strong survival emotions that children can be observed
to experience, without benefit of mediation by life experience or cognitive adjustment. The secondary emotions are described more as feelings than actual emotions. For example, euphoria and ecstasy are the refined adult feelings of extreme Happiness. The secondary emotions of adulthood can occur when subtler cognition than children are capable of performing, connects to subtle variations in the emotional body state(s). This kind of emotional feeling is tied directly to adult cognition, and is not preorganized and involuntary the way the primary survival emotions experienced in childhood are.

This definition is parallel to James' idea of the intellectual feeling but is far from being what James had in mind when he wanted to separate out the 'cerebral feeling' from the rest of the physical body. Damasio makes sure that the preorganized reflex emotions aroused by the physical body are included in the adulthood experience of the more subtle intellectual feelings, feelings which Damasio labels as universal.

James was trying to differentiate the survival reflex emotions from the more subtle feelings that can occur when cognition mediates emotional feelings (as directed by the re-tuning of past emotional associations and experiences across the lifespan). This definition makes the careful personal construction of an emotional life in young adulthood during the college years vitally important. According to Damasio's theory, emotional re-tuning can occur at any time across the lifespan, not just haphazardly, or by chance, but by a careful individual re-creation of ego, a conscious transformation of the "I" construct (Cortright, 1997) of personality and self-concept.

The pretuning to which Damasio refers is known in psychology as 'object relations' (Slipp, 1975; Matthews, 1993). Object relations are the first emotional relationships that are formed in childhood. If past object relationships with parents and siblings (parents and siblings are the 'objects' of the relationship) formed during childhood, get emotionally associated with an adult's similar new relationships, the intersection of past and present similarities may make or break an adult's effectiveness
as a social self, as well as bias perception of self-concept and the daily measurement of self-esteem (James in Matthews, 1993). Again, emotion is the hidden thinker.

Self-esteem is emotion-biased, a subjective judgment, about one’s objective self who is going through the external circumstances of life as a winner or loser. Damasio explains how emotions direct social behaviors upon which self-concept and self-esteem depend, behaviors which became so severely impaired in the strange 19th-century case of Phineas Gage:

"We were born with the neural machinery required to generate somatic states in response to certain classes of stimuli—the machinery of primary emotions. Such machinery is inherently biased to process signals concerning personal and social behavior, and it incorporates at the outset dispositions to pair a large number of social situations with adaptive somatic markers....The critical neural system for the acquisition of somatic-marker signaling is in the prefrontal cortices...(which) receive signals from all the sensory regions in which the images constituting our thoughts are formed, including the somatosensory cortices in which past and current body states are represented continuously...(and) from the neurotransmitter nuclei in the brain stem (for instance, those which distribute dopamine, norepinephrine, and serotonin) and in the basal forebrain (those which distribute acetylcholine), as well as the amygdala, the anterior cingulate, and the hypothalamus. The innate preferences of the organism related to its survival...are conveyed to the prefrontal cortices by such signals and are thus part and parcel of the decision-making apparatus...(and) the prefrontal cortices themselves represent categorizations of the situations in which the organism has been involved” (Damasio, 1994, pp. 180-181).

Damasio unlike Darwin, James and Pavlov can look at neuroimages of these specific brain areas as they feed information and associated emotional preferences to the prefrontal cortices—such as the ventromedial areas of the frontal lobe which were obliterated in the freak accident that severely injured the left side of Phineas Gage's
brain, and left him conscious and capable of all the cognitive functions such as speech and memory, but unable to make a decision (Damasio, 1994).

According to Damasio’s hypothesis, “most somatic markers we use for rational decision-making probably were created in our brains during the process of education and socialization....Early in development, punishment and reward are delivered not only by the entities themselves (external circumstances), but by parents and other elders and peers, who usually embody the social conventions and ethics of the culture to which the organism belongs....The critical, formative set of stimuli to somatic pairings is, no doubt, acquired in childhood and adolescence” (Damasio, 1994, p. 179).

Instead of backing away from emotions, because fearing that everyone is a pretuned and socialized robot, Damasio suggests that the same society which has socialized and repressed or marginalized emotions from thinking can also set thinking free. Thinking can become free when a thinker learns to recognize if his or her behavior is being directed by emotions from the past that are still “connecting specific classes of stimuli with specific classes of somatic state” (Damasio, 1994, p. 180).

Understanding and managing personal emotions for intellectual and emotional growth remains a neglected part of the individual’s education. “But the accrual of somatically marked stimuli ceases only when life ceases, and thus it is appropriate to describe that accrual as a process of continuous learning” (Damasio, 1994, p.179).

Self-concept formed by childhood emotion-markers may be a necessary condition for higher learning to occur, especially in achieving competence in traditional instructional targets of higher education: decision making and abstract reasoning. The necessary presence of emotion in decision making and abstract reasoning is shown in the tragic case of Phineas Gage, a once-popular young man before his left frontal lobe was physically damaged, in fact obliterated by a length of iron railing which entered his brain through the left eye in a bizarre accident (Damasio, 1994).

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Descartes' Error and the Strange Case of Phineas Gage

The following words by William James are strangely predictive of the Phineas Gage case, as if James is literally paving the way for Damasio's analysis of the strange 19th-century case.

"If our hypothesis is true, it makes us realize more deeply than ever how much our mental life is knit up with our corporeal frame..." (James, 1890, p. 467). "The only way to coercively disprove it, however, would be to take some emotion, and then exhibit qualities of feeling in it which should be demonstrably additional to all those which could possibly be derived from the organs affected at the time. But to detect with certainty such purely spiritual qualities of feeling would obviously be a task beyond human power....A positive proof of this theory would, on the other hand, be given if we could find a subject absolutely anaesthetic inside and out, but not paralytic, so that emotion-inspiring objects might evoke the usual bodily expressions from him, but who, on being consulted, should say that no subjective emotional affection was felt. Such a man would be like one who, because he eats, appears to bystanders to be hungry, but who afterwards confesses that he had no appetite at all" (James, 1890, p. 454-455).

Enter Phineas Gage.

In 1848, Phineas Gage was a young foreman working for Rutland and Burlington Railroad to lay new rail and expand rail service in Vermont. He was only twenty-five years old but already a construction boss, described by his employers as "the most capable and efficient man" in their employ (Damasio, 1994).

Part of young Gage's job was exploding rocks to clear the ground. One afternoon at work, an accidental explosion blew an iron tamping rod sky high, leaving Gage and his men looking down at an intact rock but hearing a strange whistling sound overhead. It is the iron tamping rod which had been packing blasting power into a hole in the rock, but now comes hurtling through the air from the explosion and suddenly...
strikes young Gage in the head. "The iron enters Gage's left cheek, pierces the base of his skull, traverses the front of his brain, and exits at high speed through the top of the head. The rod has landed more than a hundred feet away, covered with blood and brains." Gage is thrown to the ground, and lays there silent but conscious! "Horrible Accident" was the headline reporting the accident in the Boston newspapers a week later on September 20, while in the 19th-century vernacular "Wonderful Accident" was the headline in the Vermont Mercury on September 22, 1848. A Boston medical article entitled "Passage of an Iron Rod through the Head" reported that "his men (with whom he was a great favourite) took him in their arms and carried him to the road...and sat him into an ox cart, in which he rode, sitting erect, a full three quarters of a mile, to the hotel...Gage got out of the cart himself with a little assistance from his men" (Damasio, 1994, pp. 4-5).

Years later a young doctor named Edward Williams wrote the following account of attending young Gage that day: "He was at that time sitting in a chair upon the piazza...When I drove up, he said, 'Doctor, here is business enough for you.' I first noticed the wound upon the head before I alighted from my carriage, the pulsations of the brain being very distinct...the top of the head appeared like an inverted funnel...bone being fractured about the opening for a distance of about two inches in every direction...the opening through the skull and integuments was not far from one and a half inch in diameter...and the whole appeared as if some wedge-shaped body had passed from below upward. Mr. Gage, during the time I was examining this wound, was relating the manner in which he was injured to the bystanders; he talked so rationally and was so willing to answer questions that I directed my inquiries to him in preference to the men who were standing about at this time. I can safely say that neither at that time nor on any subsequent occasion, save once, did I consider him to be other than perfectly rational. The one time...was about a fortnight after the accident, and then he persisted in calling me John Kirwin..." (Damasio, 1994, p. 6.). In less than
two months, Gage was pronounced cured, but Gage’s behavior would begin to show an “extraordinary turn”—“Gage’s disposition, his likes and dislikes, his dreams and aspirations are all to change. Gage’s body may be alive and well, but there is a new (kind of) spirit animating it” (Damasio, 1994, p. 7).

A doctor in Vermont named John Harlow took over the long-term care of Gage and records that although Gage appeared fully recovered, was not paralyzed and could feel, hear and see though his remaining left eye, had no difficulty with speech or language, and walked firmly and used his hands with dexterity, his once-popular personality changed drastically. “Gage became “fitful, irreverent, indulging at times in the grossest profanity which was not previously his custom...impatient of restraint or advice when it conflicts with his desires, at times pertinaciously obstinate, yet capricious and vacillating, devising many plans of future operation which are no sooner arranged than they are abandoned....” (Damasio, 1994, p. 8).

Gage was never able to hold a steady job for the rest of his life and made extreme career moves such as moving to South America and becoming a side-show for Barnum and Bailey Circus, in which he would show his head wound and brandish the iron rod that had caused his tragic injury.

After he left the circus, Gage moved to San Francisco where he “took to drinking and brawling in questionable districts” (Damasio, 1994, p. 10) even though his sister had married into a prominent family in San Francisco. Gage experienced a series of seizures that increased in frequency until he died on May 21, 1861 at age 38.

Using the preserved skull of Phineas Gage 150 years after Gage’s death, Damasio holds up a telling neuroimage to the sad story of Phineas Gage with a computer-generated look at Gage’s damaged brain. The neuroimage connects his irrational and non-social behaviors to the absence of the left frontal, anterior ventromedial lobe that was obliterated by the iron rod. Gage was the victim of the destruction of the brain-body regulator, the mediator between social expressions and

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primal ego desires generated in the lower centers of unrestrained animal instinct, unacceptable social behaviors which defined the course of Gage’s adult life after the accident. In 1848 Gage’s Vermont physician, Dr. Harlow, wrote that “…the equilibrium or balance, so to speak, between his intellectual faculty and animal propensities” had been destroyed (Damasio, 1994).

Gage’s unrestrained and anti-social behaviors that did not appear until after his injury, give evidence of the role of emotion in regulating and developing a social ego, the ‘emotional self’ that William James describes. But more significantly, for higher education, Gage’s inability to make decisions or carry out plans defines the hidden role of emotion in the expressions of ‘thought’ and ‘self.’

“Whenever I call a decision advantageous, I refer to basic personal and social outcomes such as survival of the individual and its kin, the securing of shelter, the maintenance of...health, employment and financial solvency, and good standing in the social group. Gage’s...new mind (after the accident) no longer permitted (him) to obtain any of these advantages” (Damasio, 1994, p. 170)

Before Gage was buried in 1861, the mortician opened Gage’s coffin and removed the skull. He also removed the iron tamping rod that had caused Gage’s injury and that had been placed beside Gage in the coffin. The iron rod was sent along with Gage’s skull to Dr. Harlow in Vermont. Until Damasio recently received the skull and iron rod, they were at the Warren Medical Museum of the Harvard Medical School in Boston.

What did Damasio want with the skull and rod? He wanted to find out what brain areas had been damaged or obliterated, by the iron rod that would have accompanied Phineas Gage to his grave. The intriguing fact about Gage’s severe injury was that his attention, memory, cognitive perception skills, language ability and motor skills were all left intact. What then had been damaged?
Neuroanatomy and neuroimaging technology that can reconstruct brain area images in three dimensions, used computer manipulation of “the raw data obtained from high-resolution magnetic resonance scans” of Gage’s skull (Damasio, 1994, p. 31). The resulting neuroimages rendered pictures of what Gage’s brain would have looked like in 1861 on the autopsy table.

Damasio’s analysis of the computer-generated images of Gage’s reconstructed brain found that the damage was intensive on the left hemisphere and anterior sectors of the frontal lobe. The iron rod did not touch the brain regions regulating motor function and language. The ventromedial prefrontal region of the left hemisphere was severely damaged—and this region had recently been identified by Damasio’s research as “critical for normal decision making” (Damasio, 1994, p.32). It was damage to the prefrontal cortices of Phineas Gage’s brain that stopped him from deciding on and carrying out reasonable plans for his future well-being, and behaving according to social rules which he had previously respected. To reinforce these conclusions about Gage’s injury, Damasio was able to compare the similar post-injury behavior of some of his contemporary patients who had prefrontal brain damage similar to Gage’s. Based on the comparative studies, Damasio concludes that “bilateral damage to prefrontal cortices is consistently associated with impairments of reasoning / decision making and emotion/feeling” (Damasio, 1994, p. 61).

To explain this apparent necessary link between physical brain areas and behaviors including decision making, Damasio writes, “...I propose that human reason depends on several brain systems, working in concert across many levels of neuronal organization, rather than as a single brain center. Both “high-level” and “low-level” brain centers, from the prefrontal cortices to the hypothalamus and brain stem, cooperate in the making of reason. The lower levels in the neural edifice of reason are the same ones that regulate the processing of emotions and feelings, along with the body functions necessary for an organism’s survival. In turn, these lower levels
maintain direct and mutual relationships with virtually every bodily organ, thus placing
the body directly within the chain of operations that generate the highest reaches of
reasoning... Emotion, feeling, and biological regulation all play a role in human reason.
The lower orders of our organism are in the loop of high reason” (Damasio, 1994, p.

Descartes’ error was leaving the body out of his famous equation. His
error was an egocentric error. He equated ‘self’ with the cognitive “I” which performs
thinking. His error was that he excluded the emotions of the body, which are
generated by and inseparable from the body at all times, not just during an emotional
crisis. Descartes separated conscious cognition from the non-conscious “lower orders
of our organism” (Damasio, 1994, p. xiii).

Damasio illustrates the body-cognition-emotion conundrum with
neuroimaging of the preserved skull of the brain-damaged Phineas Gage. Damasio
again asks Descartes’ question: “How is it that we are conscious of the world around
us, that we know what we know, and that we know that we know?” Unlike Descartes,
Damasio concludes that “...all is based on neural events within a brain, provided that
brain has been and now is interacting with its body” (Damasio, 1994, p. xvii).

In his day, William James mused: “Cognition and emotion are parted—
who can say that their antagonism may not just be one phase of the world-old struggle
known as that between the spirit and the flesh?” (James, 1884, p. 203).

Pavlov’s Contribution

In the late-19th and early-20th century, Pavlov’s contribution to the
emerging field of psychology was the chance discovery that preorganized and
involuntary responses form emotional associations that may condition future behavior.
Today’s psychology teaches that past emotional associations across the lifespan impact
development of personality, self-esteem, self-concept, and “pretune” an individual for
success or failure (Damasio, 1994, 1999). Pavlov perceived that the possibilities of such acquired associations are not robotic but fluid, infinite and individualized.

“So infinitely complex, so continuously in flux, are the conditions in the world around, that that complex animal system which is itself in living flux, and that system only, has a chance to establish dynamic equilibrium with the environment. Thus we see that the fundamental and the most general function of the (cerebral) hemispheres is that of reacting to signals presented by innumerable stimuli of interchangeable signification” (Pavlov, 1927, p. 15).

James follows Pavlov in saying “that the nervous system of every living thing is but a bundle of predispositions” which “react in particular ways upon the contact of particular features of the environment” (James, 1884, p. 190). Pavlov's research findings can be used to understand that emotions are preorganized responses to the environment that, instinct-like, continue to direct future cognitive attention to “selected” cognitive perceptions. This hidden, emotional conditioning of cognitive consciousness is a challenge to learning and teaching.

Pavlov's dog salivation experiments presented to the world for the first time scientific evidence of the existence of an automatic learning-reflex, innate, associative, non-rational and instantaneous. In fact, the preorganized learning-reflex which Pavlov's dogs demonstrated, was shown by the dogs to be directed by the instinct of hunger and the reflex behavior to find food to eat. James stated that instincts arouse emotions, but Pavlov blurs the line between instinct and reflex. According to Pavlov, reflexes are just “smaller instincts” “like the driving-belts of machines...” (Pavlov, 1927, p. 8).

Pavlov adds that: “Between the simplest reflex and the instinct we can find numerous stages of transition, and among these we are puzzled to find any line of demarcation” and “It is pretty evident that under natural conditions the normal animal must respond not only to stimuli which themselves bring immediate benefit or harm,
but also to other physical or chemical agencies—waves of sound, light, and the like—which in themselves only signal the approach of these stimuli” (Pavlov, 1927, pp. 9, 14).

Pavlov’s lab dogs consistently showed how a signal of approaching food produces physical responses by the body, but not just simple responses. The dogs responded not just to actual food approaching but to remembered past-associations when food was approaching, including anyone in a white lab coat. James interpreted Pavlov’s great discovery of how associative learning works to mean that Pavlov’s animals simply paired or coupled similarities occurring contiguously into what might be called “feeding associations.” Eating is an obvious survival instinct, and James theorized that instincts arouse emotion. Instinctive learning occurs when emotions are evoked by an experience or event.

Pavlov’s dogs showed how the survival instinct ‘to eat’ arouses instinctive or reflex-emotions that direct attention in a biased way to perceive similarities (some perceived similarities may be only imagined similarities)—associated with previous arrivals of food.

In his theory about human reasoning, James differentiates simple association of events that occur together (as demonstrated by Pavlov’s laboratory animals) from higher human reasoning. James notes the brute animal’s inability to do any “thinking” more complex than simple coupling of similarities; James calls this contiguous thinking.

For example, ringing a bell had been an event that the dogs previously paired with the arrival of their food. Subsequently, simply ringing a bell would cause the dogs to salivate even when no food or feeder was in sight. Pavlov’s dogs did not have the cognitive capacity to dissociate the past similarities of being fed with a ringing bell. Pavlov’s dogs could associate but not dissociate similarities. The present could not be dissociated from the past. In the past, there had been approaches of white-coated people with dog food while a bell rang.
The mind-body-environment, however, does not automatically stay in a state of false equilibrium, as Pavlov's dogs next demonstrated. When a ringing bell continued to signal “no food,” a new contiguous association was formed, and eventually the ringing bell without food elicited no salivation response.

According to James, not all humans are intellectually or emotionally prepared to transcend the preorganized stimulus-response mechanism that begins to emotionally condition thinking in childhood (Matthews, 1993; Slipp, 1977) and which Pavlov’s dogs demonstrated (Pavlov, 1927). The thinking and emotions of some adults may remain self-centered, because still conditioned by childhood experiences, and may continue across the lifespan to be a pawn of the past’s associative, emotional mechanism that is innate to all learning, but is generally ignored even by the learner.

Kohlberg, Erikson, and Loevinger among other developmental theorists identified stages of self-development, ranking the self-centered early stages as the lower stages, that is, the early stages of ‘self’ formation that occur in childhood but can be mediated and transcended by future life experiences (Santrock, 1997; Pascarella and Terenzini, 1991). Lawrence Kohlberg believed that most adult thinking does not develop past the self-centered childhood stage, which is stage two of Kohlberg’s seven stages of cognitive-emotional self-development (Kohlberg in Santrock, 1997). The highest stages of self-development go beyond the simplistic, self-related, contiguous thinking which James describes for some humans and the lower brutes (James, 1890; Matthews, 1993; Walsh and Vaughan, 1993; Cortright, 1997).

James wonders why only some humans, but not others, are cognitively able to dissociate among similarities and reach complex decisions using abstract reasoning. James’ great theoretical contribution to psychology is parallel to the contributions of Pavlov’s heroic laboratory dogs, who demonstrated that “association by similarities” is a preorganized learning mechanism in humans and animals. James theorized that past emotional associations function like an animal’s survival instinct.
In fact when James, like Darwin, presents an extensive number of anecdotal dog stories (James, 1890) to illustrate how the associative learning-reflex is demonstrated by dogs as well as their human owners, he refers to humans as "the talking animal" and "the reasoning animal"—thereby blurring the distinction between animal instinct and instinctive human learning that is preorganized and involuntary.

Pavlov assists James in this blurring when he defines a reflex as "a smaller instinct" and describes "chains of reflexes" that can group together under one umbrella instinct for purposes of well-being and survival. Pavlov’s chance discovery of an innate non-rational learning mechanism—James’ ‘association by similarities’—is useful in defining why emotion is necessary in cognitive reasoning (James, 1890; Damasio, 1994).

James’ Contribution: Connecting Emotion to Reasoning

When James wonders in Principles of Psychology, "...why Darwin and Newton had to be waited for so long" (James, 1890, p. 360) and "Why does it need a Newton to notice the law of the squares, a Darwin to notice the law of the fittest?" (James, 1890, p. 348), he is wondering about individual differences—a pivotal factor in assessing the outcomes differences in higher education, and a question in emotional intelligence research today. Like any good educator, James is wondering why some people are high achievers where others fail to perform. James asks, "Why cannot anybody reason as well as anybody else?" (James, 1890, p. 343).

In answer to his own question, James points out that "Geniuses...differ from from ordinary minds by an unusual development of association by similarity" (James, 1890, p. 348). Abstract reasoning is so complex and rarefied, according to James, that not all humans can perform it. James saw that "The flash of similarity between an apple and the moon...was too recondite to have occurred to any but exceptional minds. Genius...is identical with the possession of similar association to an extreme degree” (James, 1890, p. 360).
James describes an undisciplined stream of consciousness, driven by simple contiguous associations in which some adults, young children and some animals appear to 'think.' The higher level abstract thinking that is both associative and dissociative is a distinctly human cognitive ability, but cognition alone is not enough to reach a solution in the reasoning process, even after analyzing each part of the whole (James, 1890). James describes “the roll out” (James, 1890, p. 347) of a conclusion or solution to a problem “after the flight of reason” (James, 1890) has occurred. He explains that "...association by similarity...operates of itself in highly gifted minds without any deliberation, spontaneously collecting analogous instances, uniting in a moment what in nature the whole breadth of space and time keeps separate, and so permitting a perception of identical points in the midst of different circumstances, which minds governed wholly by the law of contiguity could never begin to attain” (James, 1890, p. 360). James drew a flower-like sketch of the reasoning process, with intersecting petals A, B, C, D, and E and “m” intersecting all the petals in the center.

“If m, in the present representation A, calls up B, C, D, and E, which are similar to A in possessing it, and calls them up in rapid succession, then m, being associated almost simultaneously with such varying concomitants, will 'roll out' and attract our separate notice” (James, 1890, p. 347).

Could the James “roll out” be “the lurking presence of emotion” that has persisted in the history of the development of reason (Solomon, 1993, p. 3)?

Could the James 'roll out' be the Aristotelian inspiration of the affective domain?

As contemporary case studies and neuroimaging show (Damasio, 1994), without intact and healthy emotion areas of the brain in the left frontal lobe, cognitive thinking cannot reach a conclusion or decide which solution best solves a problem (Damasio, 1994). Educational applications that academically engage emotions to determine an optimal cognitive mode for learning (Damasio, 1994) may also facilitate
a "roll out" solution (James, 1890), as spelled out in Bloom's Taxonomy of Educational Objectives: Handbook II (see Appendix B) (Krathwohl, Bloom and Masia, 1964). This 1964 taxonomy suggests that William James' concept of the 'emotional self' (James, 1884) should be academically engaged, because: "Feelings, along with the emotions they come from, are not a luxury. They serve as internal guides... Conceptualize the essence of feelings as something you and I can see through a window that opens directly onto a continuously updated image of the structure and state of our body....In the landscape of your body, the objects are the viscera (heart, lungs, gut, muscles) while the light and shadow and movement and sound represent a point in the range of operation of those organs at a certain moment. By and large, a feeling is the momentary 'view' of that body landscape. It has a specific content—the state of the body and the specific neural systems that support it—the peripheral nervous system and the brain regions that integrate signals related to body structure and regulation.....the qualifying body state, positive or negative, is accompanied and rounded up by a corresponding thinking mode: fast moving and idea rich, when the body state is in the positive and pleasant band of the (emotion) spectrum, but slow moving and repetitive when the body state veers toward the painful band" (Damasio, 1994, pp. xix-xv).

The case for a role for emotions in the development of 'thought' and 'self' gives educational importance to the research concept of 'emotional intelligence.'

What is 'Emotional Intelligence'?

Emotional intelligence is an ability to understand and perceive emotions and emotional expressions in self and others, an ability that can develop naturally from life experience or can be taught and learned. Emotional intelligence when tested as a performance ability intersects the two domains (Mayer, Salovey and Caruso, 2000b) because the test questions call for remembering and defining specific emotions and situations, which is the first step in Bloom's Handbook I: Cognitive Domain:
"...the remembering either by recognition or recall, of ideas, material, or phenomena" (Bloom, et al., 1956, p. 62). Emotional intelligence when tested as a performance ability intersecting the cognitive domain begins in the simple recognition, recall and defining of emotional expressions, for example in photographs, and ends with complex problem-solving in given hypothetical situations about dilemmas involving emotions which require a decision or solution. Note historically, that it was Aristotle who connected emotions to ethical reasoning; the contemporary emotional intelligence research concept also involves emotions in reasoning—called 'emotional reasoning' or 'reasoning with emotions'—about a problem or situation involving the emotions of others (Mayer, Salovey and Caruso, 2000b).

‘Emotional reasoning’ is part of a second definition of ‘emotional intelligence’ in which emotions are tested with traditional measures of intelligence, about the information that emotions convey, which meets the traditional standards of an intelligence that is separate from but related to cognitive intelligence (Mayer, Caruso and Salovey, 2000; Mayer, Salovey and Caruso, 2000b).

The third definition of ‘emotional intelligence’ is that it is “a part of personality” (Mayer, Salovey and Caruso, 2000). Personality development includes ego and self-concept formation (Matthews, 1993; Slipp, 1977; Santrock, 1997, Pascarella and Terenzini, 1991; Astin, 1977, 1993; Chickering and Reisser, 1993), which are directly related to academic achievement efforts in higher learning (Bandura, 1992). Other popularized definitions of, and “cure-all” claims for, the concept of emotional intelligence go beyond the scope of emotional intelligence as a set of abilities that convey information and can be tested (Mayer, Salovey and Caruso, 2000). Even the three limited definitions above, included in the original ability model of emotional intelligence (Salovey and Mayer, 1990) that first introduced the research concept a decade ago, cover a very large and diverse area of physiological and psychological research that has been examined in relation to emotion since 1900.
Historical Development of the Emotional Intelligence Concept

From 1900 to 1969, "psychology was still a young concept" (Mayer, Salovey and Caruso, 2000b, p. 20). This was a period when the research concepts of 'intelligence' and 'emotion' were researched separately. This period defined the historical domain separation of cognition from emotion. During this era, the standardized intelligence or "IQ" test such as the Stanford-Binet (Santrock, 1997) was first devised. In the separate area of emotion research, the early experiments were still focused on confirming or disconfirming one of the concepts that James inherited from his predecessors in physiology, namely, whether "feelings precede physiological emotional responses, or vice versa" (Mayer, Salovey and Caruso, 2000b, p. 20). Darwin's work was also still having an impact on the research of this period, namely, "whether emotions held similar meanings across species, as Darwin had proposed, or whether they were culturally determined" (Mayer, Salovey and Caruso, 2000b, p. 20)—the evolutionist nature-versus-nurture debate.

From 1970 to 1989, "the precursors to emotional intelligence were put into place" (Mayer, Salovey and Caruso, 2000b, p. 20). Research in this period became "more sophisticated and inter-area" (Mayer, Salovey and Caruso, 2000, p. 20). A new field of study defined as "cognition and affect" integrated study of the previously two separated areas of research. Research was looking for "lawful rules of emotion: what emotions meant, and when they arose" (Mayer, Salovey and Caruso, 2000b, p. 20). The research of Paul Ekman published in 1973 supported Darwin's idea that emotions are not just a human phenomenon but evolve in similar ways across species. This assertion helps prove the educational learning applications of Pavlov's findings. The psychological influence of emotions on thinking began to be studied among depressed individuals and in people with bipolar disorder (manic-depressive). Also, computer programs that simulated human intelligence were devised that could demonstrate understanding of the emotions of characters as told in stories (Mayer, Salovey and
Caruso, 2000b, p. 20). Thus the scope of "emotions" was expanded from physiology into psychology and cyberspace. A key development was the emergent idea that "intelligence" is not a static entity but a composite of multiple and different kinds of "intelligences" (Gardner, 1993 in Mayer, Salovey and Caruso, 2000a).

From 1990 to 1997, the concept of 'emotional intelligence' emerged. It drew on diverse areas of research from the previous nine decades. A journal article (Salovey and Mayer, 1990) formally theorized that brain research, intelligence measurement, artificial intelligence, clinical psychology, and other areas of related research, were "all addressing the same phenomenon: a heretofore overlooked intelligence" (Mayer, Salovey and Caruso, 2000b, p. 21).

The first ability scale to measure emotional intelligence was devised in 1990 (Mayer, DiPaolo and Salovey, 1990). The first formal definition of emotional intelligence was published in 1990 as: "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 and Mayer, 1990).

In 1997, a more complex four-branch model was designed (Mayer and Salovey, 1997) to test emotional intelligence as an ability to: 1) perceive, 2) use, 3) understand and 4) manage emotions. The ability in each of these four branches was operationally defined as: 1) the ability to perceive emotions in oneself and others, as well as in objects, art, stories, and the like; 2) the ability to generate, use, and feel emotion as necessary to communicate feelings, or employ them for the emotional facilitation of thought; 3) the ability to understand emotional information, how emotions combine and progress through relationship transitions, and to reason about emotional meanings; and 4) the ability to be open to feelings, to modulate them in oneself and others so as to promote personal understanding and growth (Mayer, Salovey and Caruso, 2000, p. 24).
In the year 2000, the definition was refined by its originators who stated that, “We believe that emotions can be intelligent and that emotions can be integrated with intelligence to improve the quality of our rational decisions” (Mayer, Salovey and Caruso, 2000, p. 23) and endorsed a definition of emotional intelligence in the year 2000 that reiterates their 1997 definition: “Emotional intelligence involves

the ability to perceive accurately, appraise, and express emotion;
the ability to access and/or generate feelings when they facilitate thought;
the ability to understand emotion and emotional knowledge; and
the ability to regulate emotions to promote emotional and intellectual growth” (Mayer and Salovey, 1997, p. 10).

By the year 2000, an emotional intelligence ability test (the MSCEIT, V.2) had been designed based on these four abilities from the 1997 test, having a total of 15 task, area, overall, and branch scores for each test participant.

What Emotional Intelligence Is Not

Emotional intelligence when tested as an ability operationalizes (makes occur) the perception, use, understanding, and management of emotions, but the test cannot be a cure-all for the emotional challenges of achievement. Emotional intelligence as a set of abilities comprise only one mediating variable among hundreds of other individualized variables that mediate achievement for any one person. The social- and self-improvement applications of emotional intelligence “promised” by a popularized self-help book became a sore point for the originators of the research concept during 1994-1998 (Mayer, Salovey and Caruso, 2000a).

"Consider that a person's grade point average is a reflection of her or his behavior, over hundreds of days, over hundreds of quizzes, tests, and other
assignments, as assessed (and influenced) by multiple independent observers” (Mayer, Salovey and Caruso, 2000a, p. 416). Dozens of psychological variables also influence grade point average and other measures of academic and social achievement in college, and are identified in research literature (Bandura, 1992; Krathwohl, et al., 1964; Oatley and Jenkins, 1996; Damasio, 1994, 1999; Skaalvik, 1997; Guerreo and Miller, 1998; Ifert and Roloff, 1997; Lang, Bradley and Cuthbert, 1997).

In the testing and appraisal of emotional knowledge, emotional intelligence is not new. Test instruments that appraise and analyze the emotions that impact learning have been available for decades, such as the Succeed-Fail Questionnaire and the Adjective Rating Scale, designed to probe depression and childhood self-differentiation; and the Multiple Affect Adjective Checklist and Thematic Apperception Test which measure depression, hostility and feelings of well-being (Slipp, 1975, p. 139). The literature indicates that depression has received the bulk of research, making happiness in comparison a lesser known emotion (Francis, et al., 1998). In fact, a search on PSYCHLIT tagging January 1990 to December, 1995 found 18,903 cites for ‘depression’ and “only 515 cites for ‘happiness’” (Francis, et al., 1998, p. 167).

The Bar-On Emotional Quotient Inventory (Bar-On EQi) does measure broader dimensions of emotion than depression including independence, assertiveness, self-actualization, empathy, social responsibility, problem solving, flexibility, tolerance for stress, impulse control, happiness, and optimism (Schutte, et al., 1998). The Style And Perception of Affect Scale is based on the concept “that being able to attend rapidly, appropriately, and effortlessly to feelings (of self and others) is the cornerstone of emotional intelligence” (Schutte, et al., 1998, p. 169); this test measures body-based, evaluation-based, and logic-based perceptions of emotion.

The educational application of emotional intelligence would be to regulate negative emotions based on past experience that may foster task-avoidance (Skaalvik, 1997) and to generate instead positive emotions which engender a rich, rapid and
creative cognitive mode for learning (Damasio, 1994, 1999; Mayer and Salovey, 1990). This is the application of the original emotional intelligence ability model of 1990.

It was with regret, then, that between 1994 and 1998 (Mayer, Salovey and Caruso, 2000b, p. 20), the originators of the research concept of emotional intelligence saw it being proclaimed, sold in a best-selling book (Goleman in Mayer, Salovey and Caruso, 2000), and even appearing on the cover of *Time Magazine* in 1998, as a self-help remedy for social acceptance, a better personality, success in life—improvements “accessible by virtually anyone” (Mayer, Salovey and Caruso, 2000b, p. 22).

The problem with that, as William James and Antonio Damasio have explained, is that each individual is “pretuned” during childhood with personalized emotional associations that function as unique and hidden variables determining individual achievement or avoidance of achievement (Skaalvik, 1997; Matthews, 1993; Slipp, 1977). These hidden psychological variables can produce serious emotion states such as depression that may become “a double-bind on achievement” (Slipp, 1977) for which knowledge of emotional intelligence is not a remedy. Emotional intelligence as a research concept is at this time still growing up. Emotional intelligence is primarily still a research measurement of individual understanding and awareness of emotions and cannot be applied as therapy or remedy for hidden emotional problems that may be impeding greater social or economic success—a misleading promise by self-help books (Mayer, Salovey and Caruso, 2000a).

During 1994-1998, the original researchers saw their concept of 1990 being “stretched—popularly—to include a large number of personality traits (e.g., emotional stability, optimism) or a set of unrelated competencies (e.g., leadership, collaboration)” far beyond the scope of the academic research concept of emotional intelligence as a set of abilities to understand and manage emotions that can be tested and measured (Mayer, Salovey and Caruso, 2000b, pp. 20-23).
The self-help promises and "loose description of the (emotional intelligence) concept created an explosion of activity" in the mid-1990s which equated emotional intelligence with "getting" desired personality characteristics for success such as empathy, motivation, persistence, warmth and generalized good social behavior (Mayer, Salovey and Caruso, 2000, pp. 22-23). The reality is that emotional intelligence cannot guarantee self-improvement. Emotional intelligence tests can provide a mirror to the emotional 'self' which may lead to increased awareness that emotions convey information, to cue cognitive thinking and decision making (Damasio, 1994, 1999).

Learning to understand how to manage emotions with 'emotional intelligence' may indirectly lead individuals to desire a higher level of ego-stage development (Weathersby, 1981; Loevinger in Pascarella and Terenzini, 1991) and the maturity of a self-concept that goes beyond the conceits of self-esteem (Matthews, 1993; Cortright, 1997; Walsh and Vaughan, 1993). The development of 'self' is a very complex dependent variable, but can be mediated by knowledge of emotional intelligence. During the undergraduate years, applications of emotional intelligence could become an educationally important mediating variable within Astin's model of higher education, because it is a learned ability to perceive, understand, use, and manage personal emotions to facilitate self-concept formation, rational thinking and achievement efforts.

The educational question is: Would the instructional inclusion of emotional intelligence as a set of learned abilities become an effective mediating variable in the undergraduate college experience, one that would assist individuals to achieve, in some individual way, more "satisfying" psychosocial and academic outcomes in the higher education experience (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964; Chickering and Reisser, 1993; Astin, 1977, 1993; Terenzini, 1997; Pascarella and Terenzini, 1991)?
It is Plato who must have the final word on this question:

"But the release of the prisoners from chains," Plato writes, "and their translation from the shadows to the images and to the light, their ascent from the underground den to the sun...this power of elevating the highest principle in the soul to the contemplation of that which is best in existence, with which we may compare the raising of that faculty of reasoning which is the very light of the body...is not a theme to be treated of only in passing, but will have to be discussed again and again" (Plato in Jowett, 1946, p. 271).
Chapter Three
Methodology

"What is missing is a systematic effort to collect evidence of growth in affective objectives which is in any way parallel to the very great and systematic efforts to evaluate cognitive achievement" (Krathwohl, Bloom and Masia, 1964, p. 16).

The Research Problem

This study’s research problem was the continuing exclusion of the affective domain from the academic development of intellect in higher education today, a problem that may be impacting the outcomes of the undergraduate college experience. The purpose of this study was to look for a relation between the affective domain of emotions and traditional cognitive domain indicators of academic achievement.

Description of the Test Instrument

In this study, a standardized test instrument, the Mayer-Salovey-Caruso-Emotional-Intelligence-Test, Version 2 (the MSCEIT, V.2) (MHS, Inc./Mayer, Salovey and Caruso, 2000b) was used to test and measure the affective domain ‘intelligence’ of 61 undergraduate college students who participated in this study at a top-ranked public university in the southeastern United States.

The MSCEIT, V.2 was designed by Professor Peter Salovey, Chair of the Department of Psychology at Yale University, and Professor Jack Mayer of the Psychology Department, University of New Hampshire, in collaboration with David Caruso, Ph.D, to involve emotions in simple cognitive thinking and in complex problem-solving. The MSCEIT, V.2 was made available on-line for research use.
See Appendix C for the **MSCEIT, V.2 Test Manual** description of MSCEIT, V.2 construct validity and reliability (MHS, Inc./Mayer, Salovey and Caruso, 2000b).

The forerunner of the MSCEIT, V.2 was the Multifactor Emotional Intelligence Scale (MEIS) developed by Professors Salovey and Mayer, in collaboration with Dr. Caruso, which was made available for research use in 1997. The MEIS tested a set of theoretically interrelated emotional intelligence abilities in tasks asking the test-taker to identify emotions in faces, music, designs, stories; in a synthesis of emotional situations and emotional biases; in blends or combinations of different but related emotions in a given hypothetical situation; and in managing emotions in self and others. Prior to the MEIS, early research in emotion perception and use of emotions in thought was published in 1990 and 1993 by Professors Mayer and Salovey (Mayer and Salovey, 1993; Salovey and Mayer, 1990). This early research integrated existing emotion-perception literature which had focused on perceiving emotions in photographs of faces, in colors, and in abstract designs. The finding by Professors Mayer and Salovey at that time (1990, 1993) was that a single ‘emotional’ ability appeared to be operating in what had been previously researched as separate emotion-perception tasks. The research problem then became how to further define and measure that ability.

The next research step forward was to identify the ability. The name ‘emotional intelligence’ was given to the ability to perceive, use, understand and manage ‘intelligence’ conveyed by “the language of emotions” (Mayer and Salovey, 1990), and to test that ability with exercises designed to measure emotion-perception in written stories (Mayer and Geher, 1996). Further analysis of the findings of that research showed that scores on ‘the stories task’ correlated positively with the test-takers’ SAT scores (Mayer and Salovey, 1990).
From this earlier research, the current research concept of the MSCEIT, V.2 emerged that the 'intelligence' of emotions correlates positively with general intelligence and self-reported Grade Point Average (see Appendix C) (MHS, Inc./Mayer, Salovey and Caruso, 2000b) and with academic achievement as measured and scored by the SAT (Mayer and Geher, 1996).

In this study, whose purpose was to look for a relation between the affective domain of emotions and the cognitive domain of academic achievement, the MSCEIT, V.2 was applicable because specifically designed to involve the 'intelligence' of emotions (emotional intelligence) in exercises of cognitive thinking and abstract problem-solving. This study's research questions ask if emotional intelligence scores on the MSCEIT, V.2 are related to traditional cognitive measures of academic achievement, and if age and gender are related to emotional intelligence test scores.

The MSCEIT, V.2 like the earlier MEIS instrument tests four components of emotional intelligence: 1) the ability to perceive emotions; 2) the ability to access, generate and use emotions to assist thought; 3) the ability to understand emotions and emotional knowledge; and 4) the ability to self-regulate emotions in relation to self and the emotions of others, so as to promote emotional and intellectual growth. To do this, the MSCEIT, V.2 presents eight tasks: the Faces Task, the Facilitation Task, the Changes Task, the Emotion Management Task, the Pictures Task, the Sensations Task, the Blends Task, and the Social Management Task. Chapter 4 provides more detail on each task. The MSCEIT, V.2 tests 8 tasks in four branches of emotional intelligence ability, and provides 3 overall index scores of emotional intelligence, for a total of 15 scores for each test participant.

**Description of the Achievement Data**

The achievement data for each of the 61 test participants were collected and blind-coded for research use by this study:
1) SAT/ACT scores; 2) high-school class rank; 3) current-semester GPA (at the time of MSCEIT, V.2 testing).

The Research Questions

This study's research questions were:

1) Is there a relation between MSCEIT, V.2 measures of emotional intelligence and traditional measures of academic achievement?

2) Do MSCEIT, V.2 mean scores differ by age and gender of the test-taker, and if so, is the difference statistically significant, or by chance?

The Research Hypothesis

The null hypothesis is that there is a zero correlation between measures of academic achievement and measures of emotional intelligence.

The second null hypothesis is that MSCEIT, V.2 mean scores do not differ by age and gender.

The null hypothesis for determining correlations between measures of emotional intelligence and measures of academic achievement, and determining correlations between measures of emotional intelligence and test-taker age was:

\[ H_0: r = 0 \]

and its alternate hypothesis was:

\[ H_a: r \neq 0 \]

The null hypothesis for determining mean score differences by age and gender was:

\[ H_0: \mu_1 = \mu_2 \]

and its alternate hypothesis was:

\[ H_a: \mu_1 \neq \mu_2 \]
Selection of the Sample

Undergraduates at a nationally top-ranked public university in the southeastern United States were identified as the target population. From this population, 61 undergraduates were selected in a convenience sampling for:

1) a group of high achievers, and 2) a comparison group of normal achievers.

Undergraduates in the high achiever group were members of Phi Beta Kappa or designated Monroe Scholars. Undergraduates in the comparison group were not members of Phi Beta Kappa nor designated Monroe Scholars.

To be designated a Monroe Scholar, for undergraduates on the campus which participated in this study, an entering freshman is academically identified as an exceptionally high achiever, by a combination of high-school academic indicators including GPA, class rank, dual enrollment in a college course while in high school (Office of Admissions, 2002). To remain a Monroe Scholar as a college sophomore, junior, and senior, the student’s Grade Point Average (GPA) must remain academically in the top 10% of her/her current undergraduate class. Entering Monroe Scholars live together in the same dormitory and receive other incentives to continue being a high achiever. Twenty Monroe Scholars were test participants in this study. Fourteen Phi Beta Kappa members, who were current inductees of Phi Beta Kappa for that academic year, participated in this study. Both the normal achiever group and the high achiever group were administered the Mayer-Salovey-Caruso Emotional Intelligence Test, V.2 (MSCEIT, V.2) on-line.

MSCEIT V.2 Data Collection

The MSCEIT V.2 was offered to all test participants on-line, accessed by Microsoft WINDOWS Internet Explorer. Each test participant was asked to read and sign an Informed Consent Agreement before being given the MHS-assigned user-codes that accessed the MSCEIT V.2 on-line. All tests were administered and scored on-line,
and the results emailed in an Excel spreadsheet to participating researchers, by Multi-
Health Systems, Inc. (MHS, Inc.) of Toronto, Canada, in association with Professors
Mayer and Salovey and their collaborator, Dr. David Caruso. At the time of the testing
by this study, MHS, Inc. was compiling a normative database of MSCEIT, V.2 scores for
future research use (see Appendix C) (MHS, Inc./Mayer, Salovey and Caruso, 2000b).

Obtaining Research Use of the MSCEIT, V.2 and Obtaining Achievement Data

The methodology for data-gathering began with (a) obtaining permission
for on-line research use of the MSCEIT, V.2 (the Mayer-Salovey-Caruso-Emotional
Intelligence Test, Version 2) which was done by telephoning and emailing Professors
Salovey and Mayer at their respective universities; (b) obtaining blind-coded measures
of undergraduate achievement data for those students who were tested by the on-line
MSCEIT, V.2, which was done through the Department of Institutional Research at the
college being used for the MSCEIT, V.2 testing; and (c) obtaining access to a purposive
sampling of undergraduate high achievers who were members of Phi Beta Kappa
and/or designated Monroe Scholars. Permission was obtained for testing
undergraduates in a required Introductory Geology class, mostly freshmen and
sophomores, who were not members of Phi Beta Kappa nor designated Monroe
Scholars.

Obtaining Use of Human Subjects Approval

Please see Appendix D for: 1) Proposal for Use of Human Subjects for
testing with the MSCEIT, V.2, 2) Addendum Proposal, for a Protocol for conducting a
focus group, and 3) Informed Consent Agreements for the MSCEIT, V.2 testing and for
participation in the focus group, all submitted to the School of Education-Human
Subjects Review Committee (the SOE-HSRC) for approval.
Approval from the SOE-HSRC was obtained in April and October 2001 to conduct the MSCEIT, V.2 testing, and in January 2002 to conduct a focus group of purposively selected MSCEIT, V.2 participants, selected for high scores and gender.

Data Analysis

This study’s research design used the correlation method to quantitatively analyze relationships between the MSCEIT, V.2 scores and test-takers’ academic achievement data, the MSCEIT, V.2 scores in relation to test-taker age. The t-tests were also used, to analyze mean score differences by age and gender. Qualitative analysis of a focus group further probed for themes in student explanations of relationships indicated by the findings of the quantitative analysis. The following data analysis was used.

Descriptive Statistics

Analysis of the data began with descriptive statistics of the MSCEIT, V.2 scores. Scatterplots and histograms of the MSCEIT, V.2 task, branch and overall index scores were done (see Figures 1, 2 and 3 and Appendix E) to determine mean scores variance in relation to the achievement data.

One anticipated problem was the limited range of the achievement data, since all MSCEIT, V.2 participants at this college were high achievers because they had been admitted to an academically competitive, nationally top-ranked public university with high admission standards. Descriptive statistics helped determine the range of the academic achievement data, and scatterplots were especially helpful for determining the cluster of MSCEIT, V.2 scores in relation to academic achievement indicators of the sample. Histograms provided a quick look at the MSCEIT, V.2 scores and the achievement data of the sample.
The Pearson r

Using the MSCEIT, V.2 mean scores on each branch and the overall index of emotional intelligence score, for the sample, the Pearson r determined correlations between:

1. measures of GPA
2. measures of SAT/ACT
3. measures of high-school class rank

**t-tests by Age and Gender**

t-tests were used to determine how MSCEIT, V.2 mean scores related to student characteristics of age and gender, specifically:

1) do MSCEIT, V.2 mean scores differ by age of the test participant?
2) do MSCEIT, V.2 mean scores of males differ from MSCEIT, V.2 mean scores of females?

**Qualitative Analysis: The Focus Group**

In *Handbook of Intelligence* published by Cambridge University, the originators of the research concept of emotional intelligence suggested that future researchers explore the question, “What is an effective emotional life?” because little qualitative research has been done to research the human reality of the subject of emotional intelligence (Mayer, Salovey and Caruso, 2000a, p. 416).

Therefore, to complete this study, a focus group was conducted in order to explore the reality behind the MSCEIT, V.2 scores, in an unstructured format. To keep the discussion in focus on this research study, the open-ended discussion question was asked, “What is an effective emotional life for academic achievement?”

In addition, the focus group participants, who were all tested by the MSCEIT, V.2, were asked *ad hoc* sub-questions such as, “Name three emotions that best
assist learning” and “What emotions do you do feel, and what do you do to manage your emotions, before you begin studying?”

The focus group participants were purposively selected, based on MSCEIT, V.2 scores and gender. The six highest-scoring undergraduates on the overall MSCEITOX index of emotional intelligence ability were invited by email to participate in a focus group. Of the six highest scorers, all were female; three of the six agreed to participate in a focus group discussion.

Three participants in the focus group scored in the enhanced-ability range of emotional intelligence ability, which is a score above 115—i.e., 15 points or more above the MSCEIT, V.2 standardized mean score of 100. One Phi Beta Kappa was randomly invited and participated in the focus group. Two males with good (100 to 115) MSCEIT, V.2 scores and some enhanced (over 115) MSCEIT, V.2 scores were invited and participated in the focus group. A total of six undergraduates who had been tested by the MSCEIT, V.2 participated in the focus group: 4 females and 2 males.

The purpose of a qualitative analysis of the focus group outcomes was to collect and identify the MSCEIT, V.2 test participants’ most frequently used words, concepts, attitudes, themes and ideas in expressing what they think and feel about emotional intelligence and its relation to academic achievement in their experience as college undergraduates.

Analysing the focus group outcomes was intended to help determine what Professors Mayer and Salovey have called “the reality behind the concept of emotional intelligence” (Mayer, Salovey and Caruso, 2000a, p. 416).
Chapter 4

Results

The Research Questions

The MSCEIT, V.2 test scores of 61 test participants and a focus group discussion were analyzed to answer this study's research questions:

1) Is there a relation between measures of emotional intelligence and measures of academic achievement?

2) Do the mean scores differ by age and gender and, if so, is the difference statistically significant, or by chance?

Characteristics of the Sample

The data analyzed in this study were derived by testing a convenience sampling of high achieving college undergraduates (N = 61) at a nationally top-ranked public university in the southeastern United States with high admission standards. Admission is competitive, with an average 8,000 applications each year for 1,332 places in the entering freshman class (Institutional Research, 2002). For the academic year 2002, a total of 8,129 completed applications for admission were received, plus an additional 650 incomplete applications, for a grand total of 8,770 applicants for admission to the freshman class of 2000. Of these, 1,369 were admitted. In each year's freshman class, approximately 200 are high school valedictorians. Academically for the year 2000, 79% of the entering freshman class were in the top-10% of their graduating high-school class.

For 58 of the 61 undergraduates who participated in this study, their mean combined SAT score (the SATOT) was 1380, comprised by a mean SAT Math score of 706, and a mean SAT Verbal score of 673.
Of the 61 test participants, 3 took the ACT instead of the SAT, and 10 took both the SAT and the ACT. The mean ACT English score for these 13 test participants was 29.5, with a mean score of 29.3 on ACT Math, 29.0 on ACT Science, 29.8 on ACT Composition. Of the 61 test participants in this study, 14 were members of Phi Beta Kappa; 20 were Monroe Scholars; 27 were neither members of Phi Beta Kappa nor designated Monroe Scholars.

The criteria for being designated a Monroe Scholar at this college is based solely on high school academic-performance indicators, including high-school class rank, grades, Advanced Placement classes, dual enrollment in a college course while in high school, the complexity of the curriculum being studied in high school, and participation in the international baccalaureate degree program. Ten percent of each entering freshman class are designated Monroe Scholars. These high achieving freshmen are encouraged to continue being high achievers by being offered residence in a special dorm and the opportunity to win a grant for summer research following the freshman year. Note that the Monroe Scholar designation is an especially high achievement because a large percent (79% in the academic year 2000) of each incoming class are in the academic top-10% of their high school graduating class (Office of Admissions, 2002).

The average high-school senior-class size for 47 of the test participants in this study was 229. The other 14 test participants in this study came from high schools that did not academically rank its seniors. High-school class size ranged from a low of 85 students to a high of 545. Class rank percentile was very high for the majority of the test participants, with the mean rank of 5.9 (where the 1 percentile was the highest-ranked student in this study, and the 30 percentile was the lowest-ranked).

More females (N = 44) than males (N = 17) took the test. The mean age of test participants was 19.9 years of age, with two outliers at age 17 (N = 1) and age 26 (N = 1).
The mean current-semester GPA for the 61 test participants at the time the test was taken, was 3.42. Twenty-four of the 61 test participants had a current-semester grade point average (GPA) of 3.6 or above (2 of these test participants had a current-semester GPA of 4.0). Thirty of the 61 test participants had a current-semester GPA of 3.5 to 3.0. Seven of the 61 test participants had a current-semester GPA of 2.9 or below.

A focus group of six of the test participants was composed of one Monroe Scholar, one member of Phi Beta Kappa, and four students who were neither Phi Beta Kappa members nor designated Monroe Scholars. Their ages ranged from 18 to 21. Two focus group participants were male and four were female.

The MSCEIT, V.2 Test Instrument: Scale Item Hierarchy and Test Constructs

The scale item tasks on the Mayer-Salovey-Caruso-Emotional- Intelligence Test, Version 2 (the MSCEIT, V.2) are presented in a hierarchy of ascending complexity. Each task is designed to test a theoretical set of interrelated emotional intelligence abilities. The task constructs for testing emotional intelligence ascend from simple to complex, in the sequential tasks that define each ability, as described below (MHS, Inc./Mayer, Salovey and Caruso, 2000b):

Branch 1X: Perceiving Emotions
Branch 2X: Using Emotions
Branch 3X: Understanding Emotions
Branch 4X: Managing Emotions

These four MSCEIT, V.2 test constructs are presented to the test-taker in eight tasks of ascending complexity, as described below.

Following is the order in which the eight tasks are presented to the test-taker. The MSCEIT, V.2 begins with a simple task.
Perceiving Emotions

**Tested by Task A: The Faces Task**

Task A measures the test-taker's ability to identify which emotion a person is feeling, for example, in a photograph of a person's face (i.e., is that person angry, frustrated, or happy?). (The on-line MSCEIT, V.2 opens with a photograph of a scowling man.)

Using Emotions

**Tested by Task B: The Facilitation Task**

Task B is more complex than Task A. Task B was designed as "transitional" (Mayer, Salovey and Caruso, 2000b) to the more complex Task C. Task B asks the test-taker to recall personal knowledge of how moods can interact with thinking and assist in certain kinds of problem-solving. Task B is a recall-test of how a mood might support or impair thinking and reasoning in given situations.

Understanding Emotions

**Tested by Task C: The Changes Task**

This task measures the test-taker's ability to understand how emotions can change in relation to a situation or event. For example, frustration may change to sadness, then to fear, then to anger. This task measures an ability to understand the experience of multiple emotions as an emotion changes over time.

Managing Emotions

**Tested by Task D: The Emotion Management Task**

This task measures the test-taker's ability to choose among alternative courses of action, in order to achieve a certain result in relation to the emotions of self and others. The test-taker is asked to rate the effectiveness of optional
courses of action that lead to making a decision in a fictional test-situation where a person has to self-regulate their own emotions in relation to others.

After completion of the above tasks (A through D), the following tasks are presented to the test-taker in an order of ascending complexity, from simple to most complex. Task E is a simple task.

**Perceiving Emotions**

**Tested by Task E: The Pictures Task**

This task asks the test-taker to identify which emotions are being expressed in typical pictures of the environment. For example, the test-taker is asked: What emotion is being expressed in a close-up photograph of a landscape of rocks?

**Using Emotions**

**Tested by Task F: The Sensations Task**

This task asks the test-taker to compare different emotions to different sensations such as light, color and temperature. In order to do this successfully (for a high score), the test-taker will have to, theoretically, generate a certain mood in order to use the mood to reason about that mood and “let the feeling direct thinking.” For example, the test-taker may be asked how the emotion of anger compares to the color yellow. The test-taker is asked to compare that mood’s characteristics to the sensations evoked by the color. This task is simple but “transitional” (Mayer, Salovey and Caruso, 2000b), leading into the more complex exercise in Task G.
Understanding Emotions

Tested by Task G: The Blends Task

This task is a complex measure of the test-taker's ability to connect "emotional chains" or "families of related emotions" (Mayer, Salovey and Caruso, 2000b) to situations which may cause those feelings, such as how situations of personal loss can cause sadness that might transition to other related emotions. For example, the funeral of a close friend's father may evoke personal feelings of sadness for the friend's loss but also a feeling of relief that one's own father is alive; then a feeling of guilt for feeling relief may follow.

Managing Emotions

Tested by Task H: Social Management Task

This task is the most complex of the eight tasks because it is testing the ability to manage emotions in relationships. This task measures the test-taker's ability to evaluate the effectiveness of optional courses of action, and to decide on one course of action that, in the judgment of the test-taker, would achieve a desired social outcome involving the emotions of other people.

With this progressive hierarchy of tasks in mind, note that for scoring the MSCEIT, V.2 each task is shuffled into one of the four branches, as shown below:

<table>
<thead>
<tr>
<th>Branch 1X</th>
<th>Branch 2X</th>
<th>Branch 3X</th>
<th>Branch 4X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Task</td>
<td>E</td>
<td>F</td>
<td>G</td>
</tr>
</tbody>
</table>

Each branch tests a construct of 'emotional intelligence' that is described for each branch below.
Perceiving Emotions in Branch 1X tests the ability to accurately identify feelings in self and others. Recall that the two tasks in Branch 1X use pictures and ask the test-taker which emotion is being expressed. The test construct of Branch 1X is 'Emotional Perception.' Previous research indicates that accurate perception of one's own emotions is related to the ability to accurately perceive emotional expressions in others (Zuckerman, Lipets, Koivumaki and Rosenthal, 1975 and Zuckerman, Hall, DeFrank and Rosenthal, 1977 in MHS, Inc./Mayer, Salovey and Caruso, 2000b, pp. 47-48).

Using Emotions in Branch 2X tests the ability to “take feelings into account” and use personal feelings to think more accurately about a given situation or event (Mayer, Salovey and Caruso, 2000, p. 48). The test construct of Branch 2X is ‘Emotional Facilitation of Thought’ (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 48). The tasks in Branch 2X test recall of how emotional moods can influence cognition. Previous research indicates that emotions can change how people think and what they think about (Forgas, 1995 and Mayer, Gaschke, Braverman and Evans, 1992 and Salovey and Birnbaum, 1989 and Singer and Salovey, 1998 in (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 48). For example, positive, self-assertive thoughts are more likely to occur when a person is happy; self-destructive thoughts are more likely to occur when a person is saddened or depressed. Emotions can prioritize cognitive attention to pay more attention to what is emotionally important to the thinker (Easterbrook, 1959 and Mandler, 1975 and Simon, 1982 in MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 48).

Understanding Emotions in Branch 3X tests the ability to recognize how emotions can change and combine over time, in relationships with other people, in thinking about other people, and in thinking about one's self. Understanding Emotions is the ability to decipher the “rich and complexly interrelated symbol set” of emotions (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 49). The test construct of
Branch 3X is ‘Emotional Reasoning’ (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 48). Understanding how to decipher “the language of emotions” is one of the two MSCEIT, V.2 constructs that “allow emotions to participate in thinking” (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 49). The second component in the test construct of ‘emotional reasoning’ is tested in Branch 4X as the ability to Manage Emotions in self and others.

Managing Emotions in Branch 4X is a test of the ability to “neither minimize nor eliminate emotions completely” but, before acting out the emotion, to sit down and fully feel the emotion rather than repress it. After experiencing the feelings caused by the emotion, the experience can be used to make decisions about people and situations in relation to oneself. The test construct of Branch 4X is the second component of ‘Emotional Reasoning’ (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 48). Branch 4X is the most complex level of the test hierarchy. Managing Emotions uses the experience of the emotion to make decisions that self-regulate the behaviors of self in relation to the emotions of others.

The MSCEITOX score on the MSCEIT, V.2 is an overall comparative index of each test-taker’s emotional intelligence ability, based on their test performance on all eight tasks. “As with any global score, the MSCEIT Total score is a handy summary of a person’s performance on this test...The Total score compares an individual’s performance on the MSCEIT (V.2) to those in (the) normative sample” (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 47).

Scores on the four branches described above, and the total MSCEITOX score, were analyzed by this study in relation to indicators of academic achievement, and by age and gender of the test-takers. Table 1 shows the results: that the highest scores by the sample are in the higher levels of the task hierarchy: in Task C and Task G, Branch 3X and in Task D and Task H, Branch 4X.
Table 1. MSCEIT, V.2 Mean Scores, Standard Deviation, and Range of Scores on MSCEITOX, Branches, and Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Range of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest</td>
<td>Lowest</td>
<td></td>
</tr>
<tr>
<td>Task A</td>
<td>101.1</td>
<td>13.90</td>
<td>119.4 54.9</td>
</tr>
<tr>
<td>Task B</td>
<td>98.2</td>
<td>15.22</td>
<td>121.3 55.6</td>
</tr>
<tr>
<td>Task C</td>
<td>108.9</td>
<td>10.50</td>
<td>122.9 80.2</td>
</tr>
<tr>
<td>Task D</td>
<td>104.6</td>
<td>11.20</td>
<td>120.8 75.4</td>
</tr>
<tr>
<td>Task E</td>
<td>97.9</td>
<td>15.61</td>
<td>120.0 48.3</td>
</tr>
<tr>
<td>Task F</td>
<td>99.6</td>
<td>11.31</td>
<td>120.6 70.9</td>
</tr>
<tr>
<td>Task G</td>
<td>110.5</td>
<td>9.99</td>
<td>121.4 79.8</td>
</tr>
<tr>
<td>Task H</td>
<td>103.9</td>
<td>11.15</td>
<td>120.8 54.6</td>
</tr>
<tr>
<td>Branch 1X</td>
<td>99.5</td>
<td>15.34</td>
<td>121.4 41.7</td>
</tr>
<tr>
<td>Branch 2X</td>
<td>98.6</td>
<td>12.96</td>
<td>120.7 67.0</td>
</tr>
<tr>
<td>Branch 3X</td>
<td>111.1</td>
<td>9.58</td>
<td>124.3 82.3</td>
</tr>
<tr>
<td>Branch 4X</td>
<td>104.7</td>
<td>10.93</td>
<td>120.4 65.4</td>
</tr>
<tr>
<td>MSCEITOX</td>
<td>103.7</td>
<td>11.76</td>
<td>123.6 69.8</td>
</tr>
</tbody>
</table>

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Table 2. Correlation of MSCEIT, V.2 Task and Branch Mean Scores with Test-Takers' GPA, Class Rank and SATOT

<table>
<thead>
<tr>
<th></th>
<th>GPA</th>
<th>CLASS RANK</th>
<th>SATOT</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSCEITOX</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson r</td>
<td>.244</td>
<td>.045</td>
<td>-.005</td>
<td>-.084</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.058</td>
<td>.738</td>
<td>.973</td>
<td>.520</td>
</tr>
<tr>
<td><strong>Branch 4X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson r</td>
<td>.314*</td>
<td>.017</td>
<td>.065</td>
<td>-.052</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.014</td>
<td>.897</td>
<td>.630</td>
<td>.689</td>
</tr>
<tr>
<td><strong>Branch 3X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson r</td>
<td>.432**</td>
<td>-.269*</td>
<td>.175</td>
<td>-.056</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.041</td>
<td>.190</td>
<td>.668</td>
</tr>
<tr>
<td><strong>Branch 2X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson r</td>
<td>.109</td>
<td>.159</td>
<td>.027</td>
<td>-.032</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.403</td>
<td>.233</td>
<td>.840</td>
<td>.809</td>
</tr>
<tr>
<td><strong>Branch 1X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson r</td>
<td>-.012</td>
<td>.111</td>
<td>-.157</td>
<td>-.087</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.927</td>
<td>.407</td>
<td>.238</td>
<td>.507</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
Figure 1. GPA and MSCEIT, V.2 Scores on Understanding Emotions in Branch 3X

Figure 2. GPA and MSCEIT, V.2 Scores on Managing Emotions in Branch 4X
Figure 3. High School Class Rank and MSCEIT, V.2 Scores on Understanding Emotions in Branch 3X
Analysis of the Data

**Emotional Intelligence and Academic Achievement**

As shown in Table 2, the MSCEIT, V.2 task, branch and overall index mean scores were correlated with test-takers' GPAs, class rank and SATOT scores to obtain a Pearson r.

The significant results of this study show that the 61 test participants' GPAs at the time they took the on-line MSCEIT, V.2 correlate with their emotional intelligence test scores on the higher level tasks of Understanding Emotions and Managing Emotions. Figure 1 shows the distribution of the GPA-Branch 3X and Figure 2 shows the GPA-Branch 4X correlation.

GPAs correlated significantly with Understanding Emotions in Branch 3X at a Pearson r of .432, significant at p< 0.01 (2-tailed). GPAs correlated significantly with Managing Emotions in Branch 4X at a Pearson r of .314, significant at p< 0.05 (2-tailed). In the lower level tasks of the MSCEIT, V.2 in Branch 1X and Branch 2X, there was no significant correlation found between GPA and Perceiving Emotions in Branch 1X, and no significant correlation found between GPA and Using Emotions in Branch 2X.

The correlation found between GPA and the overall index of emotional intelligence ability, the MSCEITOX score, was nearly significant at a Pearson r of .244, significant at .058 (at p<.05) (2-tailed). Since this is an exploratory study using a small sample, this result suggests a likely overall relation between the MSCEITOX ability index score and GPA, which a larger sample size may have shown.

As Figure 3 shows, a significant negative correlation was found between the high-school class rank of test participants and their MSCEIT, V.2 scores on Understanding Emotions in Branch 3X. A Pearson r of -.269 was found between the high school class-rank of test participants and their Branch 3X scores, significant at p<.05 (2-tailed). Class-rank is inversely related to Understanding Emotions in Branch 3X.
because the highest class-rank is represented by percentile, where the highest possible class rank is also the lowest possible percentile rank. Hence a negative correlation indicates that a high class rank (lowest percentile) is inversely related to high MSCEIT, V.2 scores.

There was no significant correlation found between high school class-rank and test scores on Perceiving Emotions in Branch 1X, on Using Emotions in Branch 2X., nor on Managing Emotions in Branch 4X. There was no significant correlation found between high school class-rank and test scores on the overall MSCEITOX index of emotional intelligence ability.

There were no significant correlations found between SATOT scores and the five measures of emotional intelligence from the MSCEIT, V.2 on Perceiving Emotions in Branch 1X, on Using Emotions in Branch 2X, on Understanding Emotions in Branch 3X, nor on Managing Emotions in Branch 4X. There was no significant correlation found between high school class-rank and test scores on the overall MSCEITOX index of emotional intelligence ability.

**Emotional Intelligence and Student Characteristics: Age and Gender**

There was no significant relation found between age of test participants and any of the four Branches or overall MSCEITOX index of emotional intelligence ability, using both t-tests and the Pearson r.

A mean difference of -6.30 between male versus female scores on Understanding Emotions was found in the t-test results: males scored a mean of 106.56 on Understanding Emotions with a standard deviation of 8.4; females scored a mean of 112.87 on Understanding Emotions with a standard deviation of 9.4; the statistical significance of the difference was .017 at p<.05.

A mean difference of -6.41 between male versus female scores on Managing Emotions was found in the t-test results:
Table 3. MSCEIT, V.2 Mean Score Differences By Age and Gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=17</td>
<td>N=44</td>
<td>N=31</td>
<td>N=30</td>
</tr>
<tr>
<td></td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
</tr>
<tr>
<td>E.I. MEAN SCORE</td>
<td>100.06 12.3</td>
<td>105.05 11.3</td>
<td>104.26 11.8</td>
<td>103.04 11.8</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>-4.98</td>
<td>1.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>Sig  .160</td>
<td></td>
<td>Sig  .691</td>
<td></td>
</tr>
<tr>
<td>Branch 1X</td>
<td>98.46 15.9</td>
<td>99.85 15.2</td>
<td>101.19 16.2</td>
<td>97.68 14.3</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>-1.38</td>
<td>3.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>Sig  .762</td>
<td></td>
<td>Sig  .376</td>
<td></td>
</tr>
<tr>
<td>Branch 2X</td>
<td>97.99 13.9</td>
<td>98.82 12.7</td>
<td>99.63 12.8</td>
<td>97.51 13.1</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>-.83</td>
<td>2.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>Sig  .832</td>
<td></td>
<td>Sig  .528</td>
<td></td>
</tr>
<tr>
<td>Branch 3X</td>
<td>106.56 8.4</td>
<td>112.87 9.4</td>
<td>109.74 10.1</td>
<td>112.52 8.9</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>-6.30</td>
<td>-2.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>Sig  .017*</td>
<td></td>
<td>Sig  .261</td>
<td></td>
</tr>
<tr>
<td>Branch 4X</td>
<td>100.09 10.5</td>
<td>106.50 10.6</td>
<td>105.00 11.4</td>
<td>104.42 10.5</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>-6.41</td>
<td>5.786</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>Sig  .042*</td>
<td></td>
<td>Sig  .838</td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Males scored a mean of 100.09 on Managing Emotions with a standard deviation of 10.5; females scored a mean of 106.50 on Managing Emotions with a standard deviation of 10.6; the statistical significance of the difference was .039 at p<.05.

There was no statistically significant mean score difference by gender found in Perceiving Emotions in Branch 1X, in Using Emotions in Branch 2X, nor on the overall MSCEITOX index of emotional intelligence ability.

As discussed in Chapter 3, a focus group concluded this study. The purpose of including a focus group discussion in this study was to gather the participants' most frequently used words, concepts, attitudes, themes and ideas which they might use to express what they think and feel about emotional intelligence and its relation to academic achievement, in their own experience as college undergraduates. The six focus group participants were asked sub-questions within an unstructured, open-ended discussion format. The overall question being probed was suggested in a journal article (Mayer and Salovey, 1997): What is an effective emotional life, for academic achievement?

The focus group discussion was probing for what the designers of the MSCEIT, V.2 call "the reality behind the concept of emotional intelligence" (Mayer, Salovey and Caruso, 2000b, p. 416).

Focus Group Results

**Frequently Occurring Words, Ideas, Themes**

In answer to the discussion question, "What three emotions do you feel while you are writing a big paper or studying for a big exam?" the most frequently occurring responses were:

- excited, ready to learn, ready to go, eagerness, anticipation,
- pleased, interested, enjoy, relieved, want to share ideas with
- others, focus, balanced, confidence, pride
Negative emotions experienced during learning were not mentioned by the focus group participants. However, some responses did specify negative emotions and unproductive emotion states experienced before beginning to study and before beginning to write a paper, including:

*anxious, disappointed by previous grade, dread, pain, boredom*

but these emotions were said to occur because the subject to be studied was not of interest (but was, for example, a required course outside the student’s area of interest or expertise).

The most frequently occurring words and concepts, describing feelings experienced during the learning experience, were positive, as discussed by the six focus group participants, and when analyzed, the following words began to form evolving patterns:

1. excitement  
eagerness
2. excited  
interested
3. relief, pride  
confidence

1. excited, eager, ready (anticipation)
2. pleased, interested (paying attention)
3. relief (self-satisfaction)

These words and concepts, expressed above, by six academic high achievers in this study’s focus group, are described further by statements from the participants below. The above words and concepts suggest an effective set of emotions for academic achievement, namely, a student who feels:

- eager to begin
- excited, interested
- confident

In their own words, the following comments by the six focus group participants suggest why these feelings might be “an effective emotional life” (Mayer and Salovey, 1990) for academic high achievement.
**Eagerness To Begin**

Comments by the focus group suggest that an undergraduate who is eager to begin is ready to begin. Getting emotionally ready to pay attention and learn has been described as the first educational objective in the affective domain (Krathwohl, Bloom and Masia, 1964). Being emotionally ready to begin learning directs 'controlled attention’ to occur in the cognitive domain (Krathwohl, Bloom and Masia, 1964) (see Step 1 of Bloom’s Taxonomy, Appendix B).

This study’s focus group of academic high achievers, however, described strategies to sidestep emotions, or to provoke the affective domain in negative ways to begin learning.

Procrastination was a strategy used by some participants in this focus group. An example of procrastination was described by a Phi Beta Kappa focus group participant: “If my deadline is too far in advance, I am just not motivated, and I almost need a little bit of frustration and pressure to get stuff done....it’s easier, I think for me to get stuff done in a high pressure, almost stressful situation.”

This participant said she can complete a four-hour learning task in less than half that time when the deadline is fast approaching—but not too fast. She is careful to leave herself just the right amount of time to do a good job and complete the task: “I don’t really get super stressed-out, and I think the deadline thing is part of that, it’s that I create a certain level of stress for myself, and then I am prepared to deal with that amount of stress. I mean, only if some other emergency comes up and now I have less time than I allotted for myself, or something like than, then I would get stressed-out but for the most part, I am like able to manage the amount of stress that works best for me, and that’s usually all I ever can stand....”

The Monroe Scholar in the focus group described a strategy of daydreaming, but said she never daydreams about her pending academic assignments. Like the Phi Beta Kappa member of the focus group, the Monroe Scholar described a
heightened state of attention when she finally stops daydreaming and begins the learning task, induced by a fast-approaching deadline, so that optimal learning is done in a compressed timeframe: "I find I do my best between 11 and 12 at night, maybe because there's a sense of 'You can finish it up now'—maybe because I'm going to go to bed soon anyway, but that's when I'll just focus and the hour will fly by! and I won't be thinking of anything else, and I'll look up and it will be 12 o'clock and I'll say wow, I got so much studying done! I can spend all day staring at one page in a book (and getting nowhere) but at 11 o'clock, I'm just flipping the pages and I get it memorized like that!"

The Phi Beta Kappa participant added, "I’ve learned that you can’t be a procrastinator and a perfectionist all in one! And I’ve definitely encountered people who put things off either for fear, you know, or in dread, or because simply they don’t have time or they’re lazy, or because they think they work better under pressure, but when it comes down to it, they have difficulty getting through any part of what they’re doing because they keep re-doing it, because they’re a perfectionist and they’re worried, and they’ve left it to the last minute....and now it has to be really good, and so they spend too much time on it and it gets overwhelming....(and so they don’t finish). (They) leave things to the last minute and then tear them up and start over at the eleventh hour!" When asked, "And are they high achievers?" she replied, "Well...they get decent grades but not nearly up to what their potential would be."

A 21-year-old male focus group participant said he delays beginning the learning task by first getting everything clean and orderly in his study area (including his personal hygiene). He cleans his room, then takes a shower and puts on clean clothes before he feels ready to begin the academic assignment. Like the Phi Beta Kappa and the Monroe Scholar participants in the focus group, he also self-reported an optimal emotion state when learning finally begins: "I feel a heightened sense of what I’m trying to say! I feel increased attentiveness..."
One 18-year-old female participant who had the highest MSCEITOX overall index score of the sample, said, “I push my emotions aside” (and just dives in to her learning task) because “Learning for me is emotion-less.” She added that, for her, performing the learning task can reverse a bad mood. She begins a learning task without doing anything to mediate a bad or negative mood. When learning “is going well” she self-reports that her bad mood changes “and I end up in a great mood later on!”

Two of the female freshman-class participants in the focus group who were very high scorers on the MSCEITOX overall index of emotional intelligence, and the Monroe Scholar, all said they begin studying even if in a negative mood, and do nothing to mediate a bad mood before beginning to study or write a paper. The Monroe Scholar said that if she is in a depressed mood, she writes a depressing paper. A male focus group participant said, “If I’m in an angry mood, I’d write a sarcastic paper.” However, unlike the female focus group participants, the two male participants say they try to mediate their emotions before beginning to study or write a big paper. One male participant said, “I try to stay balanced, but when I have to start studying or writing a paper, I can’t focus. So I work out. I go jogging, or go to the gym. My emotions transcend everything! They are reflected in everything I do. But I like to have a closing-in deadline. I’m best at an in-class exercise that has a set time limit.”

The senior-class male participant said that he delays starting the learning task. “I have a big exam this Thursday, but I haven’t done a thing! I don’t feel anxious until time starts running out. Procrastination! Point of no return! I (finally) get into intellectual overdrive. Before I study, I clean my room because to think clearly I have to be away from clutter....I really don’t know how to make an emotional relation to my studying. It seems to be an emotion-less adventure for me. But before I begin studying, I feel anticipation—of the pain it’s going to be! Dread!”
When asked if he feels pain and dread about studying a subject he loves, such as his major, he replied, “If it’s a subject I’m interested in, I feel excited. I want to put my best foot forward!”

**Excited By The Subject**

“Excited” was the most frequently used word by focus group participants when asked, “What are three emotions you feel when learning a subject that you really like?”

The highest-scoring MSCEIT, V.2 participant of the sample said, “It depends on the assignment actually. But if it’s in a subject that I enjoy...like I’m taking another geology class, Environmental Geology...we had a problem set that wasn’t due like until the end of the week, but I was really excited about starting it, so I started it early! It’s just something I’m really interested in, and it’s applicable to my career, so....I was eager to get into it and learn stuff....”

The Phi Beta Kappa participant said that, even for her major which was literature, when she knew it was time to stop procrastinating and get started, she would try to generate some kind of excitement about learning the subject.

“I’d try to approach things with a certain amount of eagerness...a kind of excitement or anticipation...I’d try to put myself in a frame of mind where I was happy to start reading...”

A college teacher can also generate a feeling of excitement in students. A teacher who displays intense interest in and love of the subject being taught, and who tries to evoke positive emotions in students in relation to the subject, such as good humor and laughter, before or during the learning experience in the classroom, can help students become eager to go to class and ready to begin learning—as three focus group participants explained about their Geology teacher (who later that semester won a prestigious campus award as teacher of the year).
His students said:

"I was actually like, looking forward to going to that class every day! (laughing)...I was excited...and, like, ready to learn."

"He was interested in what he was teaching. He bounced around a lot...and any time he sensed he was losing us, he'd stand on his head or something! I mean, you know, he'd snatch up the ruler...and one time he whipped out a rock and a hammer and he goes, wham! It was pretty funny!"

The Geology class of 160 undergraduates was conducted in a large stadium-style lecture hall that was more a shadowy amphitheatre than a classroom.

"He threw out frisbees and grapefruit on the first day of class! It got our attention! It was variation from the dull routine. This professor always showed us the excitement he felt about the subject of Geology. He was jazzed. He made it fun!"

Another focus group participant who was a student in the Geology class said, "I didn’t go to that class that much! I just have no interest in Geology. And I also don’t wake up in the mornings...I fell asleep a couple of days in class actually...and then he’d call on you! He knew everybody’s name in class, and he’d say, ‘Hey, so-and-so back there! Wake up!’ I think he’s a good person and a good teacher, it was just the subject (that I didn’t like)..."

The senior-class male participant in the focus group who had earlier said that learning for him is emotion-less, subsequently said, "It’s better to be emotionally attached to the subject you’re studying. For example, in my Latin American History class, I’ve very interested and emotional about the subject because I feel pity for the situation there and their poverty and want to go work there in the Peace Corps."

The highest-scoring test participant of the sample on the MSCEITOX said, "I feel happiness when I’m learning things which are interesting to me, not just, ‘Oh, I have to take this class, ugh...’"
When asked if that feeling of interest would be intellectually interesting or emotionally interesting, the participant replied, "Well, probably like both. If it's something I have a passion about, like say for instance, like the environment for me, learning about it... I don't know, I'm just very passionate about it, really interested in it and ready to go..."

The freshman male participant said, "It makes a big difference to get excited about the subject. If I'm in a bad mood, the paper I write will reflect that mood. A positive or negative attitude is reflected in the work you do. Your work will reflect whatever emotion you feel."

All participants in the focus group agreed that negative emotions can "get in the way" (as one participant put it) of academic performance. However, as each focus group participant described their emotion management strategy, it was a surprising disconnect that the study strategies of these high achievers were not all that 'emotionally intelligent' in that emotions were simply pushed aside and not mediated by self-reflection or self-understanding, and even used in negative ways (procrastination, daydreaming) to provoke anxious emotional readiness to begin the learning task. Several female focus group participants self-reported that they "use" a higher learning task to escape negative emotional situations or events. One focus group participant with enhanced emotional intelligence test scores said, "I put my emotions at the back of my head while I study" because "Emotions belong in relationships."

A female freshman participant in the focus group with enhanced-range MSCEIT, V.2 scores (at least 15 points above the standardized mean score of 100) said, "If I'm thinking about things that are going on in...my personal life, for example, then I'm not really thinking about studying, until I have to sit down and do it, but then sometimes I have a hard time focusing on it....let's say I am upset about something, then studying's really hard."
When asked, "So what do you do? Do you have any techniques to get into a more positive mood?" the focus group participant with some of the highest MSCEIT, V.2 scores of the sample, said, "I wish I knew some!"

When then asked, "Do you just go in with that negative feeling?" she replied, "I guess...I guess I do."

When next asked, "And what about those negative feelings that you said you started out with? Do they just...vanish?"

She replied, "They're just like in the back of my head...if I'm really focused on my studies, I can't think about anything else but my studies."

In response to the question, "How do you get focused?" the Monroe Scholar said, "That's the hardest part! I still don't know! Sometimes I can do it and sometimes I can't. I tend to daydream if I'm not in a great mood. Or even if I am in a good mood, I daydream a lot. And that gets...oh, in the way a lot."

When asked, "Why do you think you daydream a lot?" the Monroe Scholar said, "It helps you figure out things about yourself."

Both of the male participants in the focus group described positive strategies that approach the management of emotions via the physical body. The freshman male participant said, "Before I study, I try to do something physical. If it's been raining for several days, I may feel bad and down—the weather and the environment are important to me. And so I do something physical to clear my mind."

As described above, the other male participant in the focus group routinely goes jogging, then cleans his room, takes a shower, puts on clean clothes, and finally sits down and begins the learning task.

The four females in the focus group, however—including the two highest scorers of the sample—described strategies not to balance emotions or get in focus, but to sidestep, marginalize, or repress emotions before beginning the learning task. Although one female focus group participant said, "I can start studying something in a
bad mood and if it goes well, I can end up in a great mood later on," a second female participant said, "If it goes badly then you’re obviously going to get frustrated really quickly, and get depressed and tired and you want to go to bed and quit..."

When this participant was then asked, "So have you ever written a good paper when you’re depressed and upset?" she replied,

"No! But a depressing paper? I’ve written one or two of those."

A third female participant said, "I just try to do my work even though I am in a bad mood. Because I kind of see, like, my school work as kind of emotion-less. And then my personal life as full of emotion. I see them as two separate things. Like when I’m not working, then I’m like too involved with the emotions I have about, like, what’s going on in my life...But then I try to separate myself from that when I’m doing my work."

This same participant was asked, "But, then, is there another set of emotions involved in learning than the ones involved in your personal relationships?"

She replied, "Oh yes!"

This participant was then asked, "Do you think they are different?"

She replied, "Yeah. I mean I think there’s an element of stress in both, like aspects. But sometimes learning can be a little more positive than a relationship!"

The Monroe Scholar participant was then asked, "So, and then, you don’t do anything to manage yours?"

She replied, "I just try not to think about anything! Then I don’t get attached to anything! I just daydream!"

The Monroe Scholar was asked, "Oh, and so then, you daydream instead of doing the work...?" and she replied, "Yes. And sometimes I talk to myself. Not a good study strategy!"

In contrast to the females in the focus group who seemed familiar with words and expressions of emotions, the senior-class male participant said, "I talk about
emotions so little. My vocabulary is limited for emotions! But as for my (academic) major, I feel a passion for the subject. I feel an intense desire to put my best foot forward! I feel a heightened sense of what I'm trying to say! But as for emotions and academics, I don’t see an emotional relationship with academics.”

The freshman-class male participant in the focus group who never procrastinates said that when writing a paper, “I feel excitement, anxious; I want it to be over with...If I get stuck for a good first sentence, I’ll go on writing the paper and come back later to see how I feel about it! It’s a blank-paper kind of syndrome: as you write, it’s narrowing....emotions get focused and centered, it gets clearer and clearer.”

This participant was then asked, “That’s getting focused, but what is it like to be un-focused?”

He replied, “When you’re un-focused, there’s so much going through your head. Background noise (music, other people talking) can set limits on what’s in your mind.”

The same participant was then asked, “What emotions are best for learning?” He replied that, “You need to be free of stress, more than feeling any one emotion. And relief—I feel relief when I get the first page, then first paragraph. and I feel, ‘Now it’s going to flow.’ ”

“What else?” this participant was asked. “Name another emotion.”

“Not happiness,” he said. “Well, maybe some happiness would be good, but not too much! What you need to feel is confidence!”

Confidence In Ability

All participants in this focus group of high achievers cited a feeling of “confidence” as well as pride in ability when asked for a third feeling they experience during optimal performance of a higher learning task. Confidence in ability was self-reported when optimal performance was perceived to be well underway. As one
focus group participant put it, a feeling of confidence comes with the perception that, “Now it’s going to flow.”

The Phi Beta Kappa participant explained, “I mean like, you’re happy to finish a section or a page or a chapter or whatever, and you feel a certain amount of...success and then that bolsters you on....I mean like it’s important I think for me in the process of reading or writing something or whatever, that I feel like I’ve gotten past certain...markers that say I’m half-done or I’m three-quarters of the way done. So (I feel) something about “relief” and “success” that I’ve finished part of it, so that I can keep working on the rest.

“And (when I feel) a sense of completion of a part, I’m not constantly going back and re-reading and re-writing it. So a good frame of mind I guess for me to be in, is to feel...oh, I don’t know the emotion word for it, but...completion...pride in completing it, I guess. I’m a little bit competitive so there’s a certain element of that, when I feel, “Yes I’m doing well and probably better than some other people” (laughing). It reinforces what I already think about myself and justifies any slight arrogance I might have...(laughing).

“Actually, if I have gotten a grade lower than I usually do, the next time around I am more reluctant, I am not as excited about doing the work. I mean I am motivated in part by wanting to get a better grade, but...(if) I am disappointed in my previous performance, I don’t have as much energy to put toward the next thing.....I think that I rely on this long-term confidence that I generally have in my abilities, reminding myself of past achievements...can restore my confidence level which enables me to do well...reminding myself that “I can do this, it will be fine....”

Other focus group participants also made similar connections between emotions evoked by interest in the subject to be learned, and two traditionally important undergraduate developmental objectives that are related to emotional intelligence:
1) development of interpersonal skills such as being a team player and having empathy for others, and 2) development of positive self-concept. The Monroe Scholar said:

"I like French, and I'm taking two French classes this semester, and...oh, if it's going well and I'm learning things and realizing, and it makes sense and is going right, and something will dawn on you or something like that...then it's really exciting! I want to tell everybody! I guess that's a sort of pride. You know, 'You did it!'"

Other focus group participants, but not all, said they experience a feeling of relief during performance of the learning task. One participant, however, said, "I don't really feel relief because I'm not doing my learning for someone else. You know, like I would feel relieved if someone was like, forcing me to do it. So, not, I don't feel relieved like that. I feel more....like, confidence."

The highest-scoring test participant summed up the developmental relational index of emotions to self-concept: "I mean just basically I feel happy when I am proud of what I have done." Comments by the senior-class male participant in this study's focus group conclude:

"I would say that for learning, balance of emotions is a good thing, but....also confidence. Believing that you can do it. Based on your past success..."

Summary of Important Focus Group Findings

All six of the focus group participants in this study showed marked gender differences in the behaviors and attitudes they self-reported in relation to emotion and learning.

All focus group participants described feelings of positive self-concept, in relation to performance during, and after completing, the learning task. Descriptions of self-concept by the high achievers in this focus group not surprisingly included
confidence, pride, competition, self-satisfaction, but also included negative behaviors of procrastination and daydreaming.

All participants felt that emotions are involved in higher learning in some way, even if only as a hindrance to be avoided.

Four of the six participants initially expressed a traditional belief that emotions interfere with and have no place in higher learning.

Three of the six participants—two females and one male—said that emotions should be pushed aside during higher learning tasks because social relationships are the domain of emotions; these three participants said they leave their emotions in the social-relationship domain while they are studying. “Learning for me is emotion-less.” “I put my emotions at the back of my head while I study.”

Yet, those participants who initially denied the presence of emotion in higher learning, in further comments contradicted their previous statements. All six participants described emotions they said they have personally experienced during performance of the learning task. For example, the senior-class male participant who said that “Learning for me is emotion-less” was later asked, “Do you ever feel any emotion while writing a big paper? Say for example, when you put two and two together, you know, when you come up with a good idea or a great insight?”

His reply: “Yes, then I feel joy or happiness.”

Hence along with the practice of pushing emotions aside, denying their presence in learning, and/or practicing task-avoidance techniques such as procrastination and daydreaming, all six focus group participants described an effective set of emotions for academic high achievement, based on positive emotions that they themselves say they have experienced during the learning task. It is their personal strategy, for dealing with emotions before learning begins, that varies.
Conclusion

This study found two significant results.

1) that higher level 'emotional reasoning' skills of Understanding Emotions and Managing Emotions are significantly related to academic achievement;

2) that significant gender differences in Understanding Emotions and Managing Emotions were found in the data analysis and in the focus group discussion.

Further discussion in the final chapter will explore the implications of these results for teaching and learning in college.
Chapter Five
Discussion of Results

"I think that here I am kind of expected to
push my emotions aside
and just excell"
(College undergraduate, Focus Group, 2002)

"Wherever I go in my mind,
I meet Plato coming back"
(Greek epigram in Jowett, 1946, p. 5)

What This Study Was Looking For

This study was looking for a relation between the traditionally separated domains of cognition and affect and undergraduate academic achievement.

Specifically, this study was looking for indication that both domains are involved in the higher level thinking that is related to academic achievement.

This study began by looking for indication of affective domain involvement in cognitive thinking. As discussed in Chapter 4, the MSCEIT, V.2 is a test instrument designed to involve emotions in higher level cognitive reasoning, as well as in other simpler, cognitive-like tasks. The simplest tasks ask the test-taker to name and define emotions; the more complex tasks ask the test-taker to reason with emotions (Salovey, July, 2002; Mayer, Salovey and Caruso, 2000b). Reasoning with emotions is defined by the MSCEIT, V.2 in a higher level test construct called ‘emotional reasoning’ (Mayer, Salovey and Caruso, 2000b).

‘Emotional reasoning’ is a carefully defined construct tested by four tasks in two branches of the test. The task responses can operationalize an experience of ‘emotional reasoning’ if the test participant “allows emotions to participate in thinking” (Mayer, Salovey and Caruso, 2000b, p. 49). As described in Chapter 4, the
'emotional reasoning' tasks on the MSCEIT, V.2 are designed to measure the test-taker's ability to use emotions to solve abstract reasoning problems. Solving the task problem requires the test-taker to use his or her ability to understand and manage emotions in hypothetical situations and events. It is important to understand the abstract complexity of these 'emotional reasoning' exercises because it was on 'emotional reasoning' tasks that this study's special sample of high achievers had the highest mean scores.

The high test scores on 'emotional reasoning' tasks by the sample in this study were only part of what this study was looking for, namely, for indication that emotions as an 'intelligence' can become involved in cognitive problem-solving. This study was also looking for indication of whether or not the 'intelligence' of emotions (emotional intelligence) is related to indicators of undergraduate academic achievement.

Indicators of academic achievement permeate the objectives of higher education, and are familiar landmarks on the road to college admission: GPA, SAT scores, high-school class rank. This study used these three traditional indicators of academic achievement to look for a possible relation to an emotional 'intelligence' whose language is expressed by emotional feelings that "convey information about relationships" (Mayer, Salovey and Caruso, 1997, p. 399). "Information about relationships" (other than cognitive information) may be a pivotal point of 'intelligence' in complex critical thinking, as suggested in Chapter 2 (Damasio, 1994, 1999; James, 1884, 1890), and in the complex reasoning exercises that the MSCEIT, V.2 presents.

Cognitive reasoning skills indicators (such as grades, SAT scores, class rank) are traditional measures of education outcomes that are systematically evaluated, and were used in this study to look for correlations with emotional intelligence. The educational concern prompting this study was that emotional intelligence may be related to academic achievement, but measures and evaluation of emotional intelligence are not included in traditional higher education.
As discussed in Chapter 2, development of ‘intellect’ in the cognitive domain is an historical tradition in higher education. Development of cognitive intellect as an educational objective traces a long line back to Plato, the Aristotelian model of ‘intellect,’ and the Cartesian ‘self’ that was defined as a cognitive knower. Almost forty years ago, a group of educators at the University of Chicago formally recognized this as a problem (Krathwohl, Bloom and Masia, 1964).


"Basically the question posed...is whether a human being ever does thinking without feeling" (Krathwohl, Bloom and Masia, 1964, p. 7).

Why have these questions languished for decades?

The academic exclusion of the affective domain is an embedded historical tradition in higher education. "'Better to be the poor servant of a poor master' and to endure anything, rather than think as they do..." Plato said about non-rational people who will not learn how to reason (Plato, 428-347 B.C. in Jowett, 1946, p. 251).

One century after Plato, his follower Aristotle made lists of extremes of emotions whose bad influence can cause even wisdom to be used unwisely (Aristotle, 384-322 B.C. in Woods, 1982, p. 173), and, in the Eudemian Ethics, advises his students to "...be aware as little as possible of the non-rational" (Aristotle, 384-322 B.C. in Woods, 1982, p. 46). Aristotle's definitions are part of the historical problem. The historical problem is that ancient definitions of emotion as a threat to cognitive development (Solomon, 1993; Salovey and Mayer, 1990) are embedded in the curriculum of early American higher education (Rudolph, 1962/1990). Throughout the 17th, 18th and early- to mid-19th centuries in America, a college education required reading Plato and Aristotle in the original Greek (Rudolph, 1962/1990).
Recall from Chapter 2 that Aristotle theorized that there are multiple and counteracting parts of 'intellect' which struggle for supremacy during abstract ethical reasoning. For Aristotle 'intellect' is created by personal mediating variables including both rational and emotional 'inclinations' (toward virtue or vice), inclinations that struggle for supremacy but are mediated by personal socializing processes that seem familiar to contemporary culture (Mayer, Salovey and Caruso, 2000b, p. 398). In the Eudemian Ethics, Aristotle links ethical decision making (choosing virtue or vice) to the parameters set by "feelings of pleasure or pain" (Aristotle, 384-322 B.C. in Woods, 1982, p. 173). Aristotle thus brings in the emotions of the affective domain (whose expressions are personalized feelings of pleasure or pain) as the very basis for cognitive reasoning about an ethical problem.

Aristotle theorized that "It follows that (a person's) 'character' is virtuous or bad by pursuing or avoiding pleasures and pains" (Aristotle, 384-322 B.C. in Woods, 1982, p. 20). Using personal feelings about a problem to guide cognitive reasoning in solving it, is hence a very old idea, parallel to the emotional intelligence test construct of 'emotional reasoning' (Mayer, Salovey and Caruso, 2000).

Aristotle, however, not unlike Plato before him, seems deliberately trying to muddy the intellectual waters, and bluntly states that reasoning has its limits because some rational intellects are underdeveloped, ignorant, or stupid (Aristotle, 384-322 B.C. in Woods, 1982, p. 173). Even a desire for virtue can be used unwisely by an ignorant or stupid thinker (Aristotle, 384-322 B.C. in Woods, 1982, p. 173). Aristotle seems to be building an important place for emotions in cognitive thinking when he goes on to say that virtue in the non-rational part of intellect can mediate ignorance or stupidity in the rational part, resulting in judging wisely (Aristotle, 384-322 B.C. in Woods, 1982).
Aristotle is describing a busy intersection of 'intellect' where emotions and reasoning are involved in a kind of rough-and-tumble of 'inclinations' in both domains that determines thinking and behavior: "desire does not imply the deliberative faculty," Aristotle writes. "But sometimes it overpowers rational wish and moves to action; at other times the latter, rational wish, overpowers the former, desire" (Aristotle, 384-322 B.C. in Durrant, 1993, p. 70).

Aristotle's rational and non-rational 'functions' of 'intellect' are today's cognitive and affective domains (Bloom, et al., 1956; Krathwohl, Bloom and Masia, 1964; Mayer and Salovey, 1990). Emotional intelligence is understanding and managing the interactive 'inclinations' in the rough-and-tumble of the Aristotelian model of 'intellect.'

The idea that both domains are "beneficial" to thinking was suggested by Plato. Plato advised the cognitive knower not to abandon the thinker in the metaphorical cave (Plato, 428-347 B.C. in Jowett, 1946, p. 255) but to revisit the cave, because the two domains "can be beneficial one to the other" (Plato, 428-347 B.C. in Jowett, 1946, p. 255). This study has tried to follow all of Plato's and Aristotle's contraindicating, point-counterpoint leads and cues in looking for a beneficial interaction between the two domains in higher learning.

The construct of 'emotional intelligence' was one way to consider the possibility that emotions become involved in higher level cognitive thinking in a beneficial way, to 'arouse, sustain, and direct' achievement efforts (Mayer and Salovey, 1990, pp. 185-186). This study was looking for involvement of the historically separated domains of cognition and affect, in relation to contemporary academic achievement.

This study was additionally looking for possible intervening variables that may mediate emotional intelligence ability-performance. Therefore test-taker age and gender were analyzed in relation to the MSCEIT, V.2 scores of each gender, and by age grouping, to find if age and gender as mediating variables might intervene in some way on performance in the affective domain.
To conclude this study, and to fulfill a research suggestion by the designers of the MSCEIT, V. 2 (Mayer and Salovey, 1997), a focus group was also conducted. The research suggestion was to probe the reality behind emotional intelligence in relation to identifying which emotions are involved in an effective emotional life (Mayer and Salovey, 2000a). This study's focus group was asked to discuss emotions for an effective emotional life in relation to their own academic achievement behaviors.

As Chapter 3 explained, three focus group participants were among the highest-scoring female test-takers in this study; these participants scored in the 'enhanced' range of emotional intelligence (over 115, which is 15 points above the standardized mean of 100). One of the three high-scoring participants was a Monroe Scholar. Also in the focus group was a female Phi Beta Kappa test participant with some 'high' (100 to 115) and some 'enhanced' emotional intelligence test scores. Two male test participants with some 'high' and some 'enhanced' scores also participated in focus group discussion, for a total of six participants.

The focus group participants were asked open-ended discussion questions about their own affective domain involvement in academic achievement. This study was thus looking for statistical as well as qualitative indication of an affective domain relation to undergraduate academic achievement.

Why devote a dissertation study to this objective?

This study became concerned about the academic exclusion of the affective domain based on previous research by the designers of the MSCEIT, V. 2 (Mayer and Salovey, 1990; Salovey and Mayer, 1997; Mayer, Salovey and Caruso, 2000a, 2000b) as well as by related research about happiness (Francis, et al., 1995), research suggesting that happier students have higher GPAs (Schutte, et al., 1997), and research indicating that positive self-concept is a crucial factor in achievement efforts (Skaalvik, 1997; Bandura, 1997). Higher education historians (Rudolph, 1962/1990;
Chickering and Reisser, 1993) describe a long history of academically excluding the affective domain (Rudolph, 1962/1990; Chickering and Resisser, 1993) which may be an instructional mistake (Rudolph, 1962/1990; Krathwohl, Bloom and Masia, 1964) causing or exacerbating the undergraduate distress that is self-reported (Counseling Services, 2002) and has been acted out (Rudolph, 1962; Chickering and Reisser, 1993) in the history of the undergraduate experience.

But even if the affective stress symptoms routinely reported by college undergraduates are not directly related to emotionally understanding and managing the personal challenges of academic achievement, the significant results of this study, and related research in the psychology of learning, suggest that understanding and managing emotions comprise a crucial learning resource. The educational concern that prompted this study is that higher level emotional development in relation to academic achievement is traditionally left to chance in the undergraduate experience.

What This Study Found

The significant results of this study detected a tendency for those undergraduates who understand and manage emotions to have higher GPAs. These results were determined at a high level of statistical certainty, p<.01 and p<.05, respectively. As Chapter 4 explained, Understanding Emotions in Branch 3X correlated significantly with test-takers' GPA at r .432, significant at p<.01 (2-tailed). Managing Emotions in Branch 4X correlated significantly with test-takers' GPA at r .314, significant at p<.05 (2-tailed). These significant p levels mean that there is a 99% certainty, and a 95% certainty, respectively, that these two correlations of higher level emotional intelligence to GPA did not occur by chance. But what does that 'higher level' relation actually represent?

The MSCEIT, V.2 has combined the ability to Understand Emotions with the ability to Manage Emotions into the test construct called 'emotional reasoning.'
It was only on the ‘emotional reasoning’ tasks that the significant relation to academic achievement was found. Hence it is important to understand what ‘emotional reasoning’ represents.

A look inside the ‘emotional reasoning’ test scores reveals a pattern of academic achievement linked to scores on Understanding and Managing Emotions: test participants with higher GPAs had higher scores on Understanding and Managing Emotions. Test participants with lower GPAs had lower scores on Understanding and Managing Emotions. For these two components of the test construct of ‘emotional reasoning’—Understanding and Managing Emotions—test participants with higher GPAs of 3.6 and above had a mean score of 113 on Understanding Emotions. Test participants with lower GPAs of 2.9 and below, had a mean score of 100 on Understanding Emotions. This is a statistically significant 13-point difference. Test participants with ‘medium’ GPAs between 3.0 and 3.59, had a mean score of 111 on Understanding Emotions, an 11-point scores difference from the higher GPAs’ scores on Understanding Emotions. The same pattern was true for higher GPAs and higher scores on Managing Emotions, which is the other more complex part of the test construct of ‘emotional reasoning’.

Test participants with higher GPAs of 3.6 and above, had a mean score of 106 on Managing Emotions. Test participants with lower GPAs of 2.9 or below, had a mean score of 97 on Managing Emotions. This is a statistically significant 9-point difference. Test participants with GPAs in between the higher and lower, that is, GPAs between 3.0 and 3.59, had a mean score of 104 on Managing Emotions. Note from the Chapter 4 summary of mean scores for each branch and overall index score of the MSCEIT, V.2, that all test participants scored higher on the harder, complex tasks of Understanding Emotions and Managing Emotions, than on the simpler tasks of the other two branches in the test. The central question is: Why?
As noted in Chapter 4, the MSCEIT, V.2 was designed to be presented in a hierarchy of tasks of ascending complexity. At the top of the hierarchy of test questions are problem-solving tasks that test Understanding and Managing Emotions. At the top of the task hierarchy, then, is the test construct of 'emotional reasoning.'

'Emotional reasoning' is tested by both Branch 3X and Branch 4X. Test questions in Branch 4X (Managing Emotions) were designed to be more complex than test questions in Branch 3X (Understanding Emotions), but both branches were designed to measure two components of the same abstract construct. That is to say, because the task questions about Managing Emotions and Understanding Emotions are testing the ability to solve complex abstract problems about an emotional situation or emotional event, these are the hardest and most abstract questions on the test. Responding to these questions requires that cognitive reasoning involve the emotions and emotional knowledge of the test participant. Note again that it was only on 'emotional reasoning' tasks that a significant relation to the GPA and class rank of the test participants was found.

As described in Chapter 4, this study detected a tendency for class-rank to correlate significantly with higher test scores on Understanding Emotions, near the top of the MSCEIT, V.2 task hierarchy, in Branch 3X. The significant correlation between high school rank and GPA was found only in the abstract ability to understand emotions.

The correlation of high-school class rank to emotional reasoning scores, as explained in Chapter 4, is further corroboration of what this study was looking for: the correlation of class rank with higher 'emotional reasoning' test scores is a further indication that a relation does exist between ability in the affective domain (high scores on Understanding and Managing Emotions) and academic achievement (shown by high-school class rank).
This study also found a correlation that was nearly significant \( (r = .058) \) between GPA and the overall index of emotional intelligence, the MSCEITOX score. Although a larger sample size might have contributed to a true level of \( p < .05 \) significance, or lower, the 'close proximity' of .058 to statistical significance indicates a likely relation between academic achievement and the overall index of emotional intelligence of the test participants in this study. This suggestion of a relation has thus far, in this study, been suggested by multiple indicators.

Two additional indicators—age and gender—might suggest that personal intervening characteristics may mediate between the 'intelligence' of the affective domain and the 'intelligence' of the cognitive domain, in relation to undergraduate achievement behaviors. Using both the t-test and the Pearson r correlation, there was no significant relation found between the age of the test participants and their test scores, although previous emotional intelligence research on the variable of age has found such a relationship (Mayer, Salovey and Caruso, 2000b). Previous research theorizes that emotional intelligence is developmental across the lifespan, but the results of this study did not support that theory. Two age-groupings were used in a t-test of mean score differences, but the analysis was limited by the small sample size and restriction in range of participant ages.

Previous research on the mediating variable of gender indicates that females tend to score somewhat higher than males on emotional intelligence tests (Mayer, Salovey and Caruso, 2000a, 2000b) and a significant gender-difference was found by this study in the higher test scores of females on Understanding Emotions and Managing Emotions. With this in mind, the following analysis of comments by the six focus group participants suggests a surprising disconnect between the higher female test scores on Understanding and Managing Emotions and actual achievement behaviors as self-reported by gender.
What The Results of this Study Suggest

Although the comments by this study's focus group cannot be generalized back to represent the achievement behaviors of the entire sample, nor to represent the entire U.S. population of high achieving undergraduates, this study's focus group comments do point out that a) undergraduate females who self-report more stress than males (Counseling Services, 2002; L.A. Times, 1999) may feel free to express emotions in social relationships, but marginalize or repress emotions instead of involving emotions in learning; and b) undergraduate males may feel culturally-expected to manage and control emotions but not to express them. One of the male focus group participants said that he hardly knew what words to use to answer the focus group questions, because he so rarely talks about emotions.

Throughout this study's focus group discussion, as described in Chapter 4, participants expressed beliefs and uncertainties about their academic achievement behaviors that seemed to contradict their tested ability to understand and manage emotions. Gender-differences about managing emotions were expressed. The four female participants in this study's focus group self-reported study strategies to sidestep, marginalize, or "push emotions aside." One top-scoring female test participant in the focus group said, "I put my emotions at the back of my head" to study.

After making such assertions as, "Learning for me is emotion-less" and the belief "that I am kind of expected to push my emotions aside here and just excell," the focus group listed positive emotions that they all said they have experienced before and during performance of a higher learning task, provided that the learning task is in a subject that they like, or even "feel a passion for." All focus group participants said they have experienced a feeling of eagerness to begin learning, a feeling of excitement about the subject to be learned, and a feeling of confidence in their ability to learn it.
The contradictions expressed by the focus group about the role of their emotions in higher learning strongly suggest that the affective domain is untaught, unacknowledged, and unidentified during the undergraduate academic experience.

Even though feeling the presence of emotions in higher learning was self-reported by all participants in the undergraduate focus group, five of the six focus group participants initially said they doubted that learning includes emotions. However, as described in Chapter 4, even the doubters contradicted their previous statements as the discussion continued and all participants subsequently described emotional feelings that they say they experience during learning. There was a disconnect, however, between high test scores on understanding and managing emotions and self-reported achievement behaviors.

The high achieving undergraduates in this study's focus group reported such negative achievement behaviors as daydreaming, procrastinating, pushing emotions aside instead of emotionally-intelligent management of emotions to facilitate learning. This apparent disconnect between knowledge and behavior indicates an educational need to teach the meaning and uses of the affective domain for undergraduate academic achievement, at least to this study's focus group. The educational irony is that all 61 test participants—including the ones who self-reported repressing or marginalizing their emotions in learning—scored higher on the harder, complex test construct of Understanding Emotions and Managing Emotions, than on the simpler parts of the test. What does this suggest?

The highest scores on the harder tasks that involved emotions in reasoning are somewhat of a very curious result. Some of the sample's highest scorers on 'emotional reasoning' tasks were in this study's focus group; they initially said that emotions are not involved in learning. This odd result may simply indicate that this special sample of academic high achievers was skilled at cognitive reasoning, and good at following test instructions, instructions asking them to involve their own emotions to
reason about and solve emotional problems. The focus group participants may have simply been unfamiliar with thinking about emotions in relation to learning. The MSCEIT, V.2 was designed to reveal the presence of emotions, which conventional learning situations do not.

The significantly higher test scores on ‘emotional reasoning’ tasks could mean that allowing emotions to facilitate thinking is easily done, is readily learned in taking the test, or is an innate and natural function of ‘intellect’—as Aristotle suggested in his model of an interactive intellect with multiple parts.

Further, the curious and significant result of this study—where the highest scores are on the harder tasks that ask participants to perform ‘emotional reasoning’—suggests that domain separation may be a misleading educational artifice that attempts to exclude, but cannot prevent, the natural involvement of emotions in higher level abstract reasoning. The review of the literature in this study and the significant results of this study suggest that development of the affective domain should be included in the undergraduate development of ‘intellect.’ Including both domains in the academic development of ‘intellect’ is supported by the significant results of this study which show that students who are good at ‘emotional reasoning’ have higher GPAs.

The relation of the affective domain to cognitive thinking can be better understood by looking at the test scores of this study’s sample of high achievers, on the simple, cognitive-like tasks on Perceiving Emotions in Branch 1X. This study’s sample of high achievers attained a lower mean score on Perceiving Emotions in Branch 1X than on ‘emotional reasoning’ in Branches 3X and 4X. Note that the simple Branch 1X tasks did not require the test participants to use their skill at cognitive reasoning and involve their emotions in reasoning. The low scores on Branch 1X may simply indicate that, as the test-taking began, this sample of academic high achievers was not all that familiar with names and definitions of emotions.
The question remains, however, as to why this sample of known high achievers (‘known’ to be high achievers because admitted to a nationally top-ranked and academically competitive college) did not perform as well at simple identification of the names and definitions of specific emotions and emotional expressions, as they did on tasks that asked them to reason with emotions to solve an abstract problem. Why?

Looking at the simple tasks on Using Emotions in Branch 2X reveals tasks that also did not require abstract reasoning, a critical thinking skill at which this special sample of academic high achievers had to be very skilled in order to be admitted to the academically competitive freshman class (Office of Admissions, 2002). Branch 2X tasks asked the test participant to simply recall the feeling of certain moods and then decide how the moods interact with thinking. So, the question remains: Why did this study’s sample of high achievers score lower on the easier tasks?

As the MSCEIT, V.2 tasks proceeded, responding to the simple, cognitive-like identification and recall tasks may have “taught” simple emotional intelligence to the test-takers. This sample of high achievers may have previously been conditioned to suppress emotions when learning, or when taking a test, and hence may have initially been reluctant or resistant to identify emotions or to think in what the MSCEIT, V.2 test designers call the language of emotions (Mayer, Salovey and Caruso, 2000b). As the test proceeded, the progressive “learning” of emotional intelligence skills may have been operationalized in this sample. As responding to the tasks proceeded, a task-hierarchy of ascending complexity unfolded. Taking the test may have operationalized innate higher level emotional skills that are naturally involved (even if not educationally acknowledged) in the intellectual development of cognitive reasoning.
What this Study Learned about the Test Construct of ‘Emotional Intelligence’

Higher Level Achievement Uses Both Domains

The results of this study indicate that emotional involvement in higher level cognition can be evoked during the MSCEIT, V.2 task responses, and can be measured as an emotional ‘intelligence’ ability. Further, based on focus group discussion, it appears that even if the thinker does not acknowledge the involvement of emotions in higher level thinking, or is unaware of the attention-directing and facilitating role that emotions can play in higher level cognition, emotions can become involved in higher learning anyway. The problem, however, with not being aware of personal emotional involvement in complex thinking, or in trying to marginalize or repress personal emotions during higher learning— as students may be conditioned to do— is that potentially harmful anxiety, stress, and other undesired learning outcomes may result.

Domain Separation is a Tenuous Thing

Desired educational outcomes in the cognitive domain appear to still be separated from the affective domain, although some cognitive objectives sound suspiciously like higher level ‘emotional intelligence’ as defined by the MSCEIT, V.2 instrument used in this study. Previous research has already correlated emotional intelligence ability with general intelligence ability (see Appendix C) (Mayer, Salovey and Caruso, 2000b). The two ‘intelligences’ may be more closely related than suspected, as an existing taxonomy of educational objectives (Terenzini, 1997) may unintentionally suggest in its description of cognitive objectives as “...a set of general intellectual and cognitive competencies and skills. These skills constitute... complex mental functions... the effective processing and utilization of information and include such activities as critical thinking, problem-solving, the analysis and utilization of information, creative thinking, and both formal (i.e., Piagetian) and postformal
reasoning (the analysis of problems for which there is no verifiably-correct answer, sometimes called "ill-structured" or "wicked" problems, such as crime, poverty, abortion). This category also includes moral reasoning, which refers to the processes by which judgments of right and wrong are made..." (Terenzini, 1997, Appendix C of his report). Separating the two domains of emotions and cognition may be an error. As described by the strange case of Phineas Gage in Chapter 2 of this study (Damasio, 1994), without emotions, cognitive problem-solving, utilization of information, Piagetian formal and postformal reasoning, judgments of right and wrong in moral reasoning—none of these 'cognitive domain' activities can be completed (Damasio, 1994).

If there is a naturally occurring relation of emotions to higher level cognition, then, what happens if emotions are not "allowed to participate in thinking" (Mayer, Salovey and Caruso, 2000a)? This is the important educational question. Emotional intelligence is knowing that it is important to generate certain emotions before learning begins, because those emotions can facilitate complex thinking tasks. Understanding how to generate and manage emotions is a personal emotional intelligence task, that is not taught in school, but should ideally be done before learning begins (as Bloom’s Taxonomy, Step 1, Handbook II advises) (see Appendix B) (Krathwohl, Bloom and Masia, 1964). But which emotions to "involve"?

Suggestions for Future Research

Research Area 1: What is ‘Achievement’?

In order to better understand the relation between emotional intelligence and academic achievement which this study found, a future area for qualitative research would logically want to explore a series of achievement questions, beginning with, What is ‘achievement’?
What are the components of different kinds of undergraduate ‘achievement’ in various disciplines and areas of activity? Are there different kinds of ‘achievers’? Are some achievement behaviors more effective in some disciplines and areas than others? Or, is there one set of achievement behaviors that are effective across academic disciplines and other areas of achievement activity such as athletics and dramatic arts achievement? One way to test these research questions is to conduct a longitudinal study of the achievement behaviors of diverse populations of undergraduate high achievers and low achievers, across disciplines and areas of achievement.

**What are the characteristics of ‘high achievers’?** The qualitative method in a longitudinal study would be an ideal way to gather new information about the personal characteristics of high achievers. This is an area of previous research in related fields (including the psychology of leadership; teaching to gifted students; Bandura’s study of the achievement factor of self-efficacy beliefs versus actual ability; the motivating role of personal interest). This proposed study would look for support of those characteristics already identified in high achievers, including persistence, openness to change, interest in exploring new ideas, but would also be looking for new indication of whether or not high achievers display an ability to understand and manage their emotions before and during the achievement effort. The educational question is whether such characteristics can be taught to mediate the behaviors of low achievers.

**What are the characteristics of ‘low achievers’?** Previous psychology of learning research on the characteristics of low achievers has identified low self-esteem, negative self-concept, self-inefficacy belief, lack of interest in the learning task, negative behavior patterns that reinforce previous low achievement and low risk, and task-avoidance. This would be an educationally rewarding area of future emotional
intelligence research, if the emotional causes and characteristics of self-defeating task-avoidance behaviors of low achievers (Skaalvik, 1997) could be further identified.

**Diverse Populations.** Future research is needed to qualitatively identify, and then track with longitudinal studies, the undergraduate achievement behaviors of diverse populations, such as sons and daughters of recently arrived immigrant families who learn English as a second language; high-achieving athletes; high-achieving dyslectics; high-achieving dramatic-arts students; high-achieving undergraduates with learning disabilities; high achievers with physical disabilities; high achievers who have succeeded against the odds. Do understanding and managing their emotions play some role in their success?

**Which Emotions Facilitate Learning?** Part of further exploration of the relation this study found between emotional intelligence and academic achievement would ideally answer the research question, What is an effective emotional life? (as the designers of the MSCEIT, V.2 instrument have suggested) (Mayer and Salovey, 1997). The academic focus of such a study would seek to find qualitative and quantitative indication of which emotions best facilitate learning at all levels, and especially in performing complex higher level reasoning which is of particular interest to the objectives of higher education.

**Research Area 2: Can Individual ‘Emotional Intelligence’ be Mediated by Intervention?**

If ‘emotional intelligence’ is a mediating variable related to higher academic achievement, as the results of this study suggest, can it be taught and learned? What would be the effects of knowledge and application of emotional intelligence, for low achieving undergraduates? for diverse populations of undergraduates? across academic disciplines? and different areas of achievement activity?
Ideally the research groundwork for these questions would be laid by work in Research Area 1, described above. Research Area 2 questions would comprise an ideal follow-up study with the same population groups used in studying the components of 'achievement.' Low achievers would be an ideal population for this research question.

For example, experimental studies show that self-concept is oversensitized in depressed learners (Slipp, 1975). They are hypersensitive to feedback about performance. Recall the depressed card-players, as discussed in Chapter 2. The depressed card-players experiment indicated how depression cues attention to perpetuate self-defeating interpretation of events. Recall that depressed subjects reacted to their failure to win (in an experiment situation where the card game was stopped and all players were told they had failed), with pessimism and lowered expectations than the normal group when asked to play another round (Slipp, 1975). Emotion also determines the speed at which thinking is performed and the richness of multiple information cues that are perceived and attended. In the card sorting task, depression determined a cognitive mode of low risk, low achievement (Damasio, 1994).

Recall that, conversely, a feeling of elation can cause rapid generation of multiple mental images and cognitive associations in response to a wide variety of information and meaning cues (Damasio, 1994). The wealth of imagery and associative cues causes ease of inference and inclusive thinking, resulting in bold exploratory behaviors. The opposite of this rapid and expansive cognitive mode is the feeling of sadness and the cognitive mode that is paired with it. Sadness is characterized by slowness of mental image formation, less association of meaning due to perception of fewer mental cues, a more narrow band of inferences, and over-concentration on one or two images that will sustain the negative mood. The cognitive state of sadness exhibits psychomotor inhibition such as reduced or lost appetite, and a reduction of exploratory behaviors (Damasio, 1994).
Hence such research would be educationally important, in order to determine if individuals can learn how to understand the emotions they are feeling, and learn how to manage their emotions to generate a personalized cognitive mode of attention and positive engagement of the learning task. The challenge for higher education is how to teach positive use of personal emotions in relation to higher learning achievement, an educational application “that can potentially lead to a transformation” (Salovey and Mayer, 1990, p. 186) of cultural expectations and achievement behaviors concerning the expression, understanding, and management of emotions as a learning resource.

Instruments that appraise and analyze emotions have been available for decades, such as the Succeed-Fail Questionnaire and the Adjective Rating Scale, designed to probe depression and childhood self-differentiation; and the Multiple Affect Adjective Checklist and Thematic Apperception Test which measure depression, hostility and feelings of well-being (Slipp, 1975, p. 139).

The Bar-On Emotional Quotient Inventory does measure broader dimensions of emotion than depression including independence, assertiveness, self-actualization, empathy, social responsibility, problem solving, flexibility, tolerance for stress, impulse control, happiness, and optimism (Schutte, et al., 1998). The Style And Perception of Affect Scale is based on the concept “that being able to attend rapidly, appropriately, and effortlessly to feelings is the cornerstone of emotional intelligence” (Schutte, et al., 1998, p. 169), and measures body-based, evaluation-based, and logic-based perceptions of emotion. Positive emotions such as happiness with its rich, rapid and effortless cognitive mode is a worthy educational objective in the affective domain and generating it could be an affective target of instructional design in higher education.

Happiness has been identified in the literature as frequency and degree of positive affect (Argyle and Crossland, 1987 in Francis, et al., 1998); as resulting from a
supportive social network in a setting that offers positive interpretation of most daily events (Francis, et al., 1998); identified as inner causation (Veenhoven, 1994 in Francis, et al., 1998); and as having a significant correlation with self-esteem (Lu and Argyle, 1991). The Oxford Happiness Inventory Scale asks: “Who is a happy person?” (Francis, et al., 1998, p. 168).

Responding to the scale items on the MSCEIT, V.2 (MHS, Inc./Mayer, Salovey and Caruso, 2000b) gives undergraduates the opportunity to identify how they subjectively express, experience, and perceive emotions in self and others, and an opportunity to perform emotional reasoning exercises in Tasks D and G (Understanding Emotions) and in Tasks E and H (Managing Emotions). Taking an emotional intelligence test is one way to become aware of the developmental presence of emotional intelligence and its relationship to higher level achievement which this study has reported. Responding to the MSCEIT, V.2 instrument operationalizes a personal experience of emotional reasoning (Salovey and Mayer, 1990).

Other instruments that operationalize emotional understanding and emotional management include 1) the Affect Expression Rating Scale, a self-report of emotional expressiveness; 2) the Affective Communication Test, a self-report Likert-scale; 3) the Affect Sensitivity Test which uses videotaped interactions between two individuals for respondents to identify the emotions being expressed; 4) the Communication of Affect Receiving Ability Test (CARAT) which uses a videotape of people watching slides of beautiful or unpleasant or unusual scenes for respondents to identify, from facial expressions shown on the videotape, what slide each target is watching; and 5) the Profile of Nonverbal Sensitivity (PONS) which presents face and body expressions for cognitive-emotional identification, and a similar scale presents faces, colors and designs for identification of emotional constructs in stimulus-receiving (Salovey and Mayer, 1990).
The State and Trait Meta-Mood Scales (SMMS and TMMS) searches for multiple experiences of moods by asking respondents to identify which moods are typical, which are not; which moods are understandable, which are not; what mood is caused by dancing or studying or other specific situations, in order to help the respondent understand what situations cause or are associated with a specific emotional mood. The SMMS and TMMS are designed to help respondents identify situations or behaviors that have correlated with a desired mood, such as happiness being caused in the past by music and dancing (Salovey and Mayer, 1990). This knowledge can help individuals identify situations and behaviors to generate future moods. The Oxford Happiness Inventory is an instrument for identifying the cognitive mode of happiness, by asking for a response to such scale items as:

I am sure that the future is overflowing with hope and promise.
I feel that I am in total control of all aspects of my life.
Nowadays, I wake up feeling more rested that I used to.
I can make all decisions very easily.
I feel I have boundless energy.
My time is always perfectly organized so that I can fit in all the things I want to do.
I am always committed and involved.

Future research to identify emotionally intelligent individuals and the emotional skills they employ has been suggested in the literature (Salovey and Mayer, 1990; Schutte, et al., 1998) but to date no longitudinal research study has addressed the acquisition and application of the primary emotion state of happiness (Francis, et al., 1998) or related feelings of happiness (such as eagerness to begin, excitement about learning, confidence-contentment) in an educational context as an optimal cognitive mode for achievement.
Research Area 3: How to Design a New Taxonomy for Emotionally Intelligent Undergraduates in a Complex World?

The complexities of the contemporary world may require a new kind of thinker who has learned to be adept at complex problem-solving across the two domains. Ideally, existing taxonomies of educational objectives could be used to design a new taxonomy of educational objectives that would academically include the affective domain. For example, domain-inclusive educational objectives can be designed by looking at Astin's Cooperative Institutional Research Program (CIRP) questionnaires which "over the years have incorporated fifty-seven different affective-psychological (scale) items... (such as) student satisfaction with the college environment...." (Astin, 1977/1983, pp. 31-32).

The variables investigated by CIRP were organized into four categories. Astin has documented in all four categories affective learning objectives, and it is there that emotional intelligence as a mediating variable might be applied: the CIRP questionnaire areas are 1) interpersonal self-esteem which includes social self-confidence; 2) intellectual self-esteem which includes intellectual self-confidence; 3) self-criticism which includes sensitivity to criticism and defensiveness; 4) understanding of self and others, which includes cheerfulness and desire to achieve (Astin, 1977/1983, p. 33).

Combining Astin's model with the first three instructional steps for engaging the affective domain in Bloom's Taxonomy of Educational Objectives, Handbook II: Affective Domain (Krathwohl, Bloom and Masia, 1964), would provide a wealth of clues for designers of instructional strategies who want to fulfill a new taxonomy of academic objectives that engage the affective domain.

An ideal learning environment in which to experiment with strategies to engage the affective domain, is on-line distance and distributed higher education. An effective pedagogy for engaging the affective domain on-line, would include visual manipulation of the on-line learning environment, to visually generate emotions that
facilitate learning, such as eagerness to begin, excitement about the subject to be learned and confidence in ability to learn it. Visual innovations to engage the affective domain would be presented on-line, and could be tailored to engage the attention of the individual learner before learning begins, per Step 1 of Bloom’s Taxonomy, Handbook II (see Appendix B) (Krathwohl, Bloom and Masia, 1964). The effectiveness of an innovative on-line experiment to visually evoke involvement of the affective domain could be determined by pretesting two groups of on-line learners on the subject to be learned; presenting the visual innovation to an experimental group, while not presenting the innovation to a control group; then posttesting to measure academic achievement of each group.

Conclusion

Why has this study researched the emotional intelligence of the affective domain and suggested engaging the affective domain as a pedagogical strategy in higher education? The reason is that there may be a relation between higher level emotional intelligence and higher academic achievement. As the literature in this study and the results of this study suggest, emotional intelligence may not be needed in simple cognitive tasks, but may become naturally involved in higher level cognition, because it is needed to assist complex higher level reasoning in abstract problem-solving.

Although the statistics in this study indicate that emotions are related to higher learning performance, students in this study’s focus group reported disengaging their emotions before beginning higher learning tasks. More research is needed to resolve this paradox and to understand more fully how emotions and cognition may relate during higher learning in the undergraduate experience.

This study has glimpsed the possibility of some kind of relationship between emotional intelligence and academic achievement, and suggests further study
of ways in which emotional intelligence might be further researched to become more fully engaged in higher learning.

In conclusion, it seems that, wherever this study goes, it meets Plato coming back. Plato expresses a good reason for studying the relation of emotional intelligence to the cognitive domain:

"(the) whole soul is perfected and ennobled by the acquirement of temperance and wisdom..." Plato writes in the Republic.

(And) "to this nobler purpose the man of understanding will devote the energies of his life" (Plato, 428-347 B.C. in Jowett, 1946, pp. 343-346).
References


Counseling Services (2002). Students who completed treatment during the academic year. Williamsburg, Virginia: College of William and Mary.


References


References


References


Salovey, P. (July 2002). Email communication.


References


Appendix A

Client Demographics:
Students Who Completed Ongoing Therapy
for the Academic Year 1999-2000
and
for the Academic Year 2000-2001

(Counseling Services, 2002)
Client Demographics, Academic Year 1999-2000
For Students Who Completed Treatment During This Period

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Note that percentages are based on the whole sample. Thus missing data is calculated into percentages.
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Client Demographics, Academic Year 2000-2001
For Students Who Completed Treatment During This Period

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Frequency Table

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**ETHNIC**

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**International**

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Note that percentages are based on the whole sample. Thus missing data is calculated into percentages.
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Appendix B

Synopsis of Bloom’s *Taxonomy of Educational Objectives*

*Handbook II, Affective Domain*

(Krathwohl, Bloom and Masia, 1964)
Appendix B

Synopsis: Bloom’s Taxonomy, Handbook II: Affective Domain

“The additional element in the step beyond the Willingness to Respond level
...is that the behavior is accompanied by a feeling of satisfaction,
an emotional response,
generally of pleasure, zest, or enjoyment”

(Krathwohl, Bloom and Masia, 1964, p. 180).

Steps 1 and 2 in Bloom’s Taxonomy, Handbook II, Affective Domain
are relevant to further exploration of this dissertation’s finding of a relation between
understanding and managing emotions and academic achievement. In “A Condensed
Version of the Affective Domain of the Taxonomy of Educational Objectives”
(Krathwohl, Bloom and Masia, 1964, pp. 176-193) six steps are described to address and
engage the affective domain, first as a prelude to learning, and then during the learning
task. Following are some highlights of this taxonomy’s first two steps of learning in the
affective domain: Receiving and Responding. These lead to a gradual intersection of
both domains, but the first act of learning occurs in the affective domain as simple
awareness and willingness, and ascends to emotional satisfaction (pleasure, zest,
enjoyment) in making a learning response. Recall the comments made by this study’s
focus group; some comments confirm the concepts of this taxonomy. The first steps
that precede learning begin with simple awareness of the presence of a learning
stimulus. The obvious, first educational objective is that the learner ‘receive’ or pay
attention to the learning stimulus.

Step 1.0 Receiving. “At this level we are concerned that the learner
be sensitized to the existence of certain phenomena and stimuli; that is, he (or she)
be willing to receive or attend to them. This is clearly the first and crucial step if the learner is to be properly oriented to learn what the teacher intends that he (or she) will....The category of Receiving has been divided into three sub-categories to indicate three different levels of attending to phenomena....the sub-categories do represent a continuum. From an extremely passive position or role on the part of the learner, where the sole responsibility for the evocation of the behavior rests with the teacher—that is, the responsibility rests with (the teacher) for ‘capturing’ the student’s attention—the continuum extends to a point at which the learner directs his (or her) attention...toward the preferred stimuli” (Krathwohl, Bloom and Masia, 1964, p. 176). The first step, Receiving the Learning Stimulus, is sub-divided into a hierarchy of ascending awareness: Simple Awareness of the Learning Stimulus, Willingness to Receive the Learning Stimulus, Controlled Attention to the Learning Stimulus.

**Step 1.1 Awareness.** “Awareness is almost a cognitive behavior. But unlike Knowledge, the lowest level of the cognitive domain, we are not so much concerned with a memory of, or an ability to recall...as we are that...the learner will merely be conscious of something—that he (or she) take into account a situation, phenomenon, object, or stage of affairs...unlike Knowledge (in the cognitive domain) (this stage) does not necessarily imply attention” (Krathwohl, Bloom and Masia, 1964, pp. 176-177). For example, the learner would be guided to a simple awareness by colors, forms, arrangements of objects or symbols representing people, things or situations to be studied.

**Step 1.2 Willingness to Receive.** “In this category we have come a step up the ladder but are still dealing with what appears to be cognitive behavior. At a minimum level, we are here describing the behavior of being willing to tolerate a given stimulus, not to avoid it.
At this level of the continuum, the teacher is not concerned that the student seek it out, nor even, perhaps, that in an environment crowded with many other stimuli the learner will necessarily attend to the stimulus....At best, he (or she) is willing to take notice of the phenomenon...” (Krathwohl, Bloom and Masia, 1964, p. 177).

**Step 1.3 Controlled or Selected Attention.** “At a somewhat higher level we are concerned with a new phenomenon, the differentiation of a given stimulus into figure and ground at a conscious or perhaps semiconscious level—the differentiation of aspects of a stimulus which is perceived as clearly marked off from adjacent impressions. The perception is still without tension or assessment, and the student may not know the technical terms or symbols with which to describe it correctly or precisely to others. There is an element of the learner’s controlling the attention here, so that the favored stimulus is selected and attended to despite competing and distracting stimuli” (Krathwohl, Bloom and Masia, 1964, p. 178).

The second step in Bloom’s Taxonomy, Handbook II is Responding. Like Step One, which has three components of ascending awareness, Responding is subdivided into three parts: **Acquiescence in Responding, Willingness to Respond, and Satisfaction in Responding.**

**2.0 Responding.** “At this level, we are concerned with responses which go beyond merely attending (paying attention to) the phenomenon. The student...is actively attending. As a first stage in a “learning by doing” process the student is committing himself (or herself) in some small measure to the phenomenon involved...This is the category that many teachers will find best describes their ‘interest’ objectives...that a (student) become sufficiently involved in or committed to a subject, phenomenon, or activity that he (or she) will seek it out and gain satisfaction from working with it or engaging in it” (Krathwohl, Bloom and Masia, 1964, p. 178).
2.1  Acquiescence in Responding. "We might use the word 'obedience' or 'compliance' to describe this behavior....Compliance is perhaps a better term...since there is more of the element of reaction to a suggestion and less of the implication of resistance or yielding unwillingly...The student makes the response, but...has not fully accepted the necessity for doing so" (Krathwohl, Bloom and Masia, 1964, p. 179).

2.2  Willingness to Respond. "The key to this level is...capacity for voluntary activity. There is the implication that the learner is voluntarily committed to exhibiting the behavior...not just because of a fear of punishment, but "on his (or her) own" or voluntarily...the element of resistance or of yielding unwillingly...is here replaced with consent or proceeding from one's own choice" (Krathwohl, Bloom and Masia, 1964, p. 179).

2.3  Satisfaction in Responding. "The additional element in the step beyond the Willingness to Respond level (the consent, the assent to responding, or the voluntary response) is that the behavior is accompanied by a feeling of satisfaction, an emotional response, generally of pleasure, zest, or enjoyment. The location of this category in the hierarchy has given us a great deal of difficulty. Just where in the process of internalization the attachment of an emotional response, kick, or thrill to a behavior occurs has been hard to determine....The category is arbitrarily placed at this point in the hierarchy where it seems to occur most frequently and where it is cited as or appears to be an important component of the objects at this level of the continuum. The category's inclusion at this point serves the pragmatic purpose of reminding us of the presence of the emotional component and its value in the building of affective behaviors" (Krathwohl, Bloom and Masia, 1964, p. 180).
BLOOM'S INSTRUCTIONAL STEP 1

Step 1.1 Present the Learning Stimulus*

Step 1.2 Engage Willingness to Receive It*

Step 1.3 Promote Willingness to Respond to It*

*Resulting in: ‘CONTROLLED’ ATTENTION
THE LEARNING STIMULUS

SIMPLE AWARENESS OF

WITHOUT COGNITION
WILLINGNESS TO RECEIVE

THE LEARNING STIMULUS
IN RESPONDING
SATISFACTION
ATTENTION

CONTROLLED OR SELECTED
Appendix C

The Reliability and Validity of the MSCEIT, V.2

Synopsis of Chapter 7 from

The MSCEIT, V.2 Technical Manual

(MHS, Inc./Mayer, Salovey and Caruso, 2000b, pp. 77-88)
Appendix C

The Reliability and Validity of the MSCEIT, V.2,

A Synopsis of Chapter 7,

The MSCEIT, V.2 Technical Manual

(MHS, Inc./Mayer, Salovey and Caruso, 2000b, pp. 77-88)

The MSCEIT, V.2 instrument used in this study was designed by John D. Mayer, Ph.D. of the University of New Hampshire, Peter Salovey, Ph.D. of Yale University, and David R. Caruso, Ph.D., and was scored and administered by Multi-Health Systems, Inc. of Toronto, Canada at www.mhs.com. The MSCEIT, V.2 instrument “has been designed to produce a highly reliable full scale score, and highly reliable branch scores” (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 77). For the scale group of branch scores on the MSCEIT, V.2, the coefficient alpha of reliability for each branch is as follows: for Branch 1X, Perceiving Emotions, alpha = .87, based on 1,211 test participants; for Branch 2X, Facilitation of Emotions, alpha = .76, based on 1,500 test participants; for Branch 3X, Understanding Emotions, alpha = .73, based on 1,561 test participants; for Branch 4X, Managing Emotions, alpha = .82, based on 1,334 test participants (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 78). The Technical Manual recommends the reliability of the MSCEIT, V.2 branch scores for interpretation (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 78).

The MSCEIT, V.2 was “intended to measure one unified area of ability: emotional intelligence, that can be subdivided into subsidiary areas of
skill. This will be the case only if the various subscales...intercorrelate positively ...(and) That is the case...” (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 79). Although some data were not available for some tasks, the available data showing intercorrelations among the individual Tasks—the Faces, Pictures, Synesthesia, Facilitation, Changes, Blends, Emotional Relationships and Emotions Management Tasks— are all positive (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 79).

Issues of validity are concerned with “face validity” which means “whether a test appears to measure what it is supposed to measure. As noted in the introduction (to The MSCEIT, V.2 Technical Manual), people mean more than one thing by ‘Emotional Intelligence.’ Some people think of it as denoting warmth, motivation, and persistence; others view it as a mental ability....When people review, or take, the MSCEIT, the face validity of the test is immediately apparent. The ability to perceive emotions, via the Faces Task, for instance, has a great deal of face validity. Asking the test taker about a mood’s impact on thinking, such as in the Facilitation Task, or which strategies are more effective in emotional situations, such as in the Emotions Management Task, are readily identifiable by test takers as measures of emotional intelligence (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80). The only part of the test that some test takers have reported as “odd” or “different” than other tests they have taken are the Tasks that measure “the ability to employ emotions to think creatively and/or to solve problems” but, “Typically, it is also our experience that these people also score in the below average range (on these Tasks)” (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80).
"Content, or Sampling, Validity has to do with whether a test's items are rationally drawn from the domains that the test is supposed to cover. The 1997 ability theory of emotional intelligence (Mayer and Salovey, 1997) was designed to capture the most important skills composing emotional intelligence. The MSCEIT, in turn, was designed to measure emotional intelligence according to that theory...and draws sufficient items from each of the four branches of the model to measure them comprehensively. At the same time, some pragmatic compromises were made. For example, Branch 1 items sample from the 'perception'...rather than from the 'expression' portion...because it is technically expensive to assess the expression of emotion. Fortunately, emotionally expressive behavior may be highly correlated with the ability to perceive emotion" (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80). Hence the content validity of the MSCEIT,m V.2 scale can be "summarized as a good representation of the (1997) model, incorporating pragmatic compromises" (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80).

The predictive validity of the MSCEIT, V.2 has yet to be fully determined because "Actual completed studies with the MSCEIT are few in number as-of-yet)" (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80). However, the first version of the MSCEIT, the MEIS, has been used in a number of research studies in relation to ability, personality and behavior measures (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80). Hence "it is reasonable to expect that the MSCEIT will predict criteria similar to that of the MEIS" (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 80). Relevant to this dissertation's
study are the relationships already determined between emotional intelligence and general intellectual ability, using the MEIS which preceded the MSCEIT, V.2. Using 503 test participants who took the MEIS and the Army Alpha Vocabulary Test, a correlation of test scores found that \( r = .36 \), significant at the \( p<.01 \) level; two other studies using 239 participants and 208 participants to take the Army Alpha Vocabulary Test and the MEIS, found correlations of \( r = .38 \) and \( r = .37 \), respectively, significant at the \( p<.01 \) level. For self-reported Grade Point Average, a correlation with the MEIS scores was \( .53 \), significant at the \( p<.01 \) level (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 81).

A strong correlation between "satisfaction with life" and emotional intelligence has also been determined at \( r = .61 \), significant at the \( p<.01 \) level, using 35 test participants, a Satisfaction with Life Scale and MEIS test scores (MHS, Inc./Mayer, Salovey and Caruso, 2000b, p. 84).

The construct validity of the MSCEIT, V.2 "refers to whether a test truly measures the concept it claims to measure. The MSCEIT was designed to measure an intelligence as described by the four-branch ability model... (e.g., Mayer and Salovey, 1997). That is, it is supposed to measure a person’s ability to carry out valid abstract reasoning in the area of emotions, as indicated by the capacity to perceive, facilitate, understand, and manage emotions.

"The construct validity of a test is generally established over many years of research with the instrument. Each study with a test contributes, in effect, to the test’s construct validation. If the test behaves in a theoretically expectable manner, then the test’s construct validity is enhanced. If the test contradicts what scientists would expect to happen on the basis of prior theory
and research concerning the concept, then the test's construct validity is undermined.

"Research with the MSCEIT is still at an early stage. Nonetheless, the findings discussed above (Chapter 7 of The MSCEIT, V.2 Technical Manual) concerning the MSCEIT's content, criterion, and structural validity, may all be used as evidence for the test's construct validity.

"The MSCEIT also has a beautiful subfactor pattern. Results from one of the two factor analyses... (show)... a clear four-factor pattern. Remarkably, every task loaded most highly on its predicted factor. The other—maximum likelihood—factor analysis was about the same" (MHS, Inc./Mayer, Salovey and Caruso, 2000b, pp. 89-90). A pattern matrix using a Principal Axis Factoring, forcing four factors, was one of the factor analyses cited, and can be found with other statistical data indicating the validity and reliability of the MSCEIT, V.2, in Chapter 7 of The MSCEIT, V.2 Technical Manual (MHS, Inc./Mayer, Salovey and Caruso, 2000b) whose distribution and use are administered by MHS, Inc. of Canada at www.mhs.com.
Appendix D

Proposal for Research Use of Human Subjects
and Informed Consent Agreement

(School of Education-Human Subjects Review Committee,
SOE-HSRC, 2000/2001)
Date: April 3, 2001

To: School of Education Human Subjects Review Committee, College of William and Mary

From: Betsy Edison, Ph.D. Candidate, Higher Education College of William and Mary

Subject: Review of Research Involving Human Subjects using a Diagnostic Psychology Test, the MSCEIT V. for Completion of EPPL 765 Advanced Research Course.

1. Please find attached my EPPL 765 Research Proposal employing the Mayer Salovey Caruso Emotional Intelligence Test Version 2 (MSCEIT V.2) as the research instrument. Included is the Informed Consent Agreement for your review, in compliance with the Code of Federal Regulations for research involving human subjects. As described in detail in the attached proposal, my human subjects will be undergraduates at the College of William and Mary. I understand that each participant in my research project is required to read and sign the Informed Consent Agreement before being permitted to take the MSCEIT V.2.

2. The MSCEIT V.2 is administered by Multi-Health Systems of Canada for the ongoing research of Professors Jack Mayer of the University of New Hampshire and Peter Salovey, Chair of the Psychology Department at Yale University. Use of the MSCEIT V.2 on Internet is given to academic researchers with permission from Professors Mayer and Salovey, until June 1, 2001. The MSCEIT V.2 would be taken in April-May 2001 by selected William and Mary undergraduates (who have been selected but not contacted pending SOC-HSRC approval).

3. The purpose of this research is to contribute to the existing new body of research literature, in both higher education and psychology of learning, by finding the correlation between emotional intelligence and high academic achievement in a selected sample of undergraduates at the College of William and Mary.
PROPOSAL ADDENDUM

Date: January 10, 2002
To: Human Subjects Review Committee-School of Education
    College of William and Mary
From: Betsy Edison, Ph.D. Candidate, School of Education,
      College of William and Mary
Subject: Additional Research Involving Human Subjects who were
        Tested April-October 2001 with the MSCEIT V.2

Proposed Addition of an MSCEIT, V.2 Focus Group
for Completion of EPPL 765

1. The proposed addition of a qualitative Focus Group
would complement the quantitative research data already collected
by testing undergraduate students at the College of William and
Mary during April-October 2001, using the Mayer Salovey Caruso
Emotional Intelligence Test, Version 2 (MSCEIT, V.2) as the
research instrument, for which testing the SOE-HSRC approval was
given in April 2001.

2. Only students already tested and scored on the
MSCEIT, V.2 would be invited to participate in a Focus Group.
These students signed the SOE-HSRC approved Informed Consent
Agreement for taking the MSCEIT, V.2. The additional "Informed
Consent Agreement - Focus Group" (please see attached) would also
be signed by all Focus Group participants, and is hereby submitted
for SOE-HSRC approval in compliance with the Code of Federal
Regulations for research involving human subjects. Human subjects
are all undergraduates at the College of William and Mary.
3. The MSCEIT V.2 is administered by Multi-Health Systems of Canada for the ongoing research of Professors Jack Mayer of the University of New Hampshire and Peter Salovey, Chair of the Psychology Department at Yale University. Use of the MSCEIT V.2 on Internet was given to academic researchers with permission from Professors Mayer and Salovey.

4. Precis of the Quantitative Part of this Study

Approved in April 2001 by SOE-HSRC: The purpose of this research is to contribute to an existing but relatively new body of research literature still emerging in educational psychology, by finding the quantitative correlation between emotional intelligence and achievement, using MSCEIT, V.2 test scores and achievement data for a sample of undergraduates at the College of William and Mary.

The Research Hypothesis

This research is testing to see if there is a relationship between achievement and Emotional Intelligence (E.I.). The null hypothesis is that the scores of high achievers do not differ from the scores of normals. The other null hypothesis is that there is a zero correlation between achievement and E.I.

5. The Need for a Qualitative Addendum: According to the designers of the MSCEIT, V.2 (Mayer, Salovey and Caruso, 2000), "...There are reasons to be excited both about emotional intelligence and the variables that predict success....(but)...To some extent, the fate of emotional intelligence measures is connected to...better criteria of life activities (including success)..." (Mayer, Salovery and Caruso, 2000, p. 416).

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EPPL 765
Advanced Research Project
Graduate School of Education at the College of William and Mary

Research Contact: Betsy Edison
edison2001@earthlink.net

Informed Consent Agreement

1. By answering the scale item questions on the Mayer-Salovey-Caruso-Emotional-Intelligence-Test Version 2 (MSCEIT V.2), a standardized diagnostic psychology test accessed on Internet Explorer, you will be participating in a higher education research project at the College of William and Mary.

2. The purpose of this research project is to find the correlation between emotional intelligence and high achievement in undergraduate higher education. The research question asks if undergraduate high achievers are also emotionally intelligent. The research question is two-fold: Are undergraduate 'normal' achievers as emotionally intelligent as undergraduate high achievers at the College of William and Mary?

3. Expected duration of your participation is 30 minutes.

4. There are no reasonably foreseeable risks or discomforts that may occur as a result of participating in this research.

5. There are no compensation or treatments available if injury occurs due to the non-risk status of your participation.

6. You may contact Graduate School of Education researcher, Betsy Edison, Ph.D. candidate in Higher Education with a Cognate in Psychology of Learning, College of William and Mary, at edison2001@earthlink.net by email, or by calling (757) 565-5465, for answers to any pertinent questions about the research or your rights as a research subject.
7. Your participation in this research project is voluntary: refusal to participate will not result in penalty. You may discontinue your participation at any time without penalty.

8. Confidentiality of test participation will be ensured because your computerized test will contribute to a group average or mean, to be used to determine the standard deviation from the mean, a group (not individualized) number to be quantitatively analyzed within a larger database of statistics, which will maintain participant confidentiality.

9. Appropriate alternative procedures or courses of treatment related to emotional intelligence development and research, that might be advantageous to participants in this research project, may be requested from Multi-Health Systems, Inc. which administers the MSCEIT V.2, at www.mhs.com.

10. Benefits to the participant and/or to others that may reasonably be expected from this research include Mayer and Salovey's concept that 'emotional intelligence' is a measurable ability that can be acquired in order to use feelings to motivate, plan, and achieve in one's life.

_________________________  _______________________
Participant Name (Print)    (Date)

_________________________  _______________________
Participant Signature     (Date)
Informed Consent Agreement

1. By discussing questions presented to you in the MSCEIT, V.2 Focus Group (the Mayer-Salovey-Caruso-Emotional-Intelligence-Test, Version 2 Focus Group), you will be participating in a higher education research project at the College of William and Mary.

2. The purpose of this Focus Group is to gather qualitative data for the better understanding of the quantitative correlation sought by this study, between emotional intelligence and achievement in undergraduate higher education.

3. Expected duration of your participation is 45 minutes.

4. There are no reasonably foreseeable risks or discomforts that may occur as a result of participating in this research.

5. There are no compensations or treatments available due to the non-risk status of your participation.

6. You may contact Graduate School of Education researcher, Betsy Edison, Ph.D. candidate in Higher Education with a Cognate in Psychology of Learning, College of William and Mary, at edison2001@earthlink.net by email, or by calling (757) 565-5465, for answers to any pertinent questions about the research or your rights as a research subject.
7. Your participation in this research project is voluntary: refusal to participate will not result in penalty. You may discontinue your participation at any time without penalty.

8. Confidentiality of test participation will be ensured because your comments will be qualitatively synthesized (not individualized) into predominant themes, expressions, and most frequently arising ideas in an analysis of this data that will not cite names of participants but only predominant themes, which will maintain participant confidentiality.

9. Appropriate alternative procedures or courses of treatment and information related to emotional intelligence development and research, that might be advantageous to participants in this research project, may be requested from Multi-Health Systems, Inc., which administers the MSCEIT V.2, at www.mhs.com.

10. Benefits to the participant and/or to others that may reasonably be expected from this research include Mayer and Salovey’s concept that ‘emotional intelligence’ is a measurable ability that can be acquired in order to use feelings to motivate, plan, and achieve in one’s life.

Participant Name (Print) (Date)

Participant Signature (Date)
Appendix E

Histograms, Significant Correlations and Summary Data of this Study
Branch 1X Perception of Emotions

Task A: The Faces Task

This task measures the participants' ability to identify, in a picture of a person's face, what emotion that person is feeling (e.g., angry or happy).

Task A Scores

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Branch 2X Using Emotions

Task B: The Facilitation Task

This task measures the participants' ability to recall personal knowledge of how moods can interact and assist in certain kinds of problem-solving. This is a recall-test of how a mood can support or impair thinking and reasoning in given situations.

![Task B Scores](image)

Frequency

- Std. Dev = 15.22
- Mean = 98.2
- N = 61.00

Task B Scores

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Branch 3X  Understanding Emotions

Task C: The Changes Task

This task measures the participants's ability to understand how "emotional chains" or "families of related emotions" form and transition from one to another, for example, how frustration can change to sadness or anger. This measures knowledge of experiencing possibly conflicting emotions in certain situations.

Frequency

Task C Scores

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Branch 4X  Managing Emotions

Task D: The Emotion Management Task

This task measures the participants' ability to choose alternative actions in achieving a certain result. The test-taker is asked to rate the effectiveness of optional decisions and actions in situations where a person has to regulate their own emotions.

Task D Scores

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Branch 1X  Perception of Emotions

Task E: The Pictures Task

This task measures the participants’s ability to determine which emotions are being expressed in typical pictures of the environment, such as in a landscape picture or in a picture of rocks.

Task E Scores

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Branch 2X  Using Emotions

Task F: The Sensations Task

This task measures the participants’s ability to compare different emotions to different sensations, such as to light, color, and temperature sensations. In order to do this successfully (for a high score), the test-taker must theoretically generate a certain mood in order to then reason with that mood and “let the feeling direct thinking” in comparing a mood’s qualities to a sensation, such as an angry mood and the color yellow.

Frequency

Std. Dev = 11.31
Mean = 99.6
N = 61.00

Task F Scores
Task G: The Blends Task

This task measures the participants’s ability to connect situations with certain emotions (e.g., knowing that a situation involving a loss can make someone feel sad).

Task G Scores
Branch 4X  Managing Emotions

Task H: Social Management Task (Emotions in Relationships)

This task measures the participants's ability to evaluate how effective different actions would be in achieving an outcome involving the emotions of other people.

Task H Scores

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Branch Scores

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Branch Scores

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**Branch 3X**

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Std. Dev = 9.58
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N = 61.00

**Branch 4X**

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Std. Dev = 10.93
Mean = 104.7
N = 61.00

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MSCEITOX: Summary score of Branches 1X, 2X, 3X, 4X

Frequency

Std. Dev = 11.76
Mean = 103.7
N = 61.00
### T-Test

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* Correlation is significant at the 0.05 level (2-tailed).

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

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* Correlation is significant at the 0.05 level (2-tailed).
INSIDE THE PEARSON CORRELATION:

Understanding Emotions

GPA 3.6 to 4.0  Mean MSCEIT, V.2 score = 113
GPA 3.0 to 3.59  Mean MSCEIT, V.2 score = 111
GPA Below 3.0  Mean MSCEIT, V.2 score = 100

Note the 13-point scores difference in Understanding Emotions, for higher GPAs versus lower GPAs.

Managing Emotions

GPA 3.6 to 4.0  Mean MSCEIT, V.2 score = 106
GPA 3.0 to 3.59  Mean MSCEIT, V.2 score = 104
GPA Below 3.0  Mean MSCEIT, V.2 score = 97

Note the 9-point scores-difference in Managing Emotions for higher GPAs versus lower GPAs.