Evaluating Student-Athlete's Emotional Intelligence Development from Participation in Sport

DISSERTATION

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Abstract

There exists a continued debate over the place of sport within institutions of higher education – from universities competing in the National Collegiate Athletic Association (NCAA) Division I, though those contesting sport on a vastly smaller scale in the selective, residential, liberal arts (Brand, 2006; Snyder & Waterstone, 2015). Critics have highlighted the academic-athletic divide through descriptions of academic under-preparedness and underperformance among student-athletes (Shulman & Bowen, 2001). Proponents of sport have championed its ability to contribute to a holistic notion of education and develop an array of competencies that are often touted in institutional missions (Vella, Crowe, & Oades, 2013). While the debates are frequently repeated, there is a dearth of empirical data examining the educational impact of athletic participation at the college level (Emerson, Brooks, & McKenzie, 2009).

The purpose of this research was to assess the educational ability of sport in a completely unique manner, providing empirical evidence as to whether or not participation enhanced the mission of the liberal arts collegiate experience. In order to assess such impact, the construct of Emotional Intelligence (EI) was used as a proxy for student development; competencies that are encompassed in the construct are central to the educational missions of the selective, residential, liberal arts. Students from five such institutions in the Midwest were sampled. Participants completed the Assessing Emotions
Scale (AES) prior to and after the conclusion of the natural intervention of a season of collegiate athletics participation.

Through a Split-Plot Repeated Measures Analysis of Variance (ANOVA), evidence was produced that the experience of attending a selective, residential, liberal arts institution develops EI within students over a relatively short period of time. Results indicated that student-athletes have higher EI than non-athletes but that a single season of sport participation does not develop participant EI significantly different than the collegiate experience of students not participating in athletics. Differences were not found in the development of EI based on the institution a study respondent attended, or through participation on a specific athletic team. Implications of results are pragmatically discussed.
To be afforded the opportunity to pursue your dreams is an incredible gift.
Melanie, this has always been a life-long aspiration. This work is dedicated to you. For your continual support, I will forever be grateful!
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Table of Contents

Abstract .......................................................................................................................... ii
Dedication ...................................................................................................................... iv
Acknowledgements ...................................................................................................... v
Vita ................................................................................................................................. vi
Table of Contents ........................................................................................................ vii
List of Tables ................................................................................................................ x
List of Figures ............................................................................................................... xii

Chapters

Chapter 1: Introduction .............................................................. 1
  Problem Context ..................................................................................................... 7
  Problem Statement ............................................................................................... 8
  Study Purpose and Research Questions ............................................................... 8
  Theoretical Framework ......................................................................................... 10
  Definition of Terms .............................................................................................. 15
  Operational Definition ......................................................................................... 16
  Chapter Summary ................................................................................................. 16

Chapter 2: Review of Literature ...................................................... 17
  What is EI? ............................................................................................................. 17
    History and Formation of EI ............................................................................. 19
    Ability EI .......................................................................................................... 22
    Trait EI ............................................................................................................. 24
    Mixed Models ..................................................................................................... 25
      Emotional Quotient Inventory (EQi) ............................................................... 28
      Emotional Competence Inventory (ECI) ....................................................... 28
      Assessing Emotions Scale (AES) .................................................................. 29
      Other Mixed Models ....................................................................................... 30
    Emotional Self-Efficacy (ESE) ......................................................................... 31
    A Call for Unification ........................................................................................ 32
  EI in the Workplace ............................................................................................... 34
  EI in Higher Education ........................................................................................ 41
    Scholastic Achievement ................................................................................. 41
    Health and Wellbeing ...................................................................................... 44
    Student Retention ............................................................................................. 47
Chapter 3: Research Design and Methodology...........................................63
  Participation in Collegiate Athletics as an Intervention.........................65
  Sampling Method and Subject Description...........................................66
  Threats to Experimental Validity.........................................................70
  Instrument..........................................................................................75
    Instrument Reliability..........................................................................77
    Instrument Validity............................................................................80
  Variables............................................................................................83
  Data Collection....................................................................................85
  Data Analysis......................................................................................87
  Results...............................................................................................89

Chapter 4: Data Analysis........................................................................92
  Pretest Data.........................................................................................92
    Data Cleaning and Missing Data.......................................................94
    Initial Differences.................................................................100
      Assumptions..............................................................................100
      ANOVA Results.........................................................................102
      Further Exploration of Initial Differences..............................105
  Posttest Data....................................................................................106
    Missing Value Analysis and Outliers............................................107
    Final Sample...............................................................................112
    Assumptions.............................................................................113
    Descriptive Data.........................................................................115
    Three-Factor Split-Plot Repeated Measures ANOVA................119
    Internal Consistency – Cronbach’s Alpha................................123
  Additional Analysis of Posttest Data..............................................124
    Two-Factor Split-Plot Repeated Measures ANOVA...................125

Chapter 5: Discussion..........................................................................128
  Research Question #1....................................................................130
  Research Question #2....................................................................136
  Research Question #3....................................................................140
  Research Question #4....................................................................142
  Additional Study Finding Related to Student-Athletes...............146
  Implications..................................................................................148
List of Tables

Table 1. Descriptive Statistics for Athletic Conference........................................68
Table 2. Pretest Responses by Institution .................................................................93
Table 3. Pretest Responses by Sport.................................................................94
Table 4. Pretest Missing Values Summary........................................................96
Table 5. Comparisons of Original and Imputed Datasets (Pretest).........................99
Table 6. Pretest Descriptive Statistics of the Dependent Variable: Total AES Score…103
Table 7. Tests of Between-Subjects Effects (Pretest).........................................105
Table 8. Group Statistics by Athletic Status (Pretest)............................................106
Table 9. Independent Samples Test – t-test for Equality of Means (Pretest)..........106
Table 10. Posttest Missing Values Summary..................................................108
Table 11. Comparisons of Original and Imputed Datasets (Posttest).......................111
Table 12. Total Responses by Institution...............................................................113
Table 13. Total Responses by Team.................................................................113
Table 14. Total Sample Descriptive Statistics..................................................117
Table 15. Tests of Within-Subjects Effects – Huynh-Feldt (Posttest).......................120
Table 16. Tests of Between Subjects Effects (Posttest)......................................121
Table 17. Tukey HSD Multiple Comparisons by Institution...............................122
Table 18. Tukey HSD Multiple Comparisons by Current Team..........................123
Table 19. Descriptive Statistics: Student-Athletes Versus Non-Athletes……………125
Table 20. Tests of Within-Subjects Effects: Student-Athletes Versus Non-Athletes.....127
Table 21. Tests of Between-Subject Effects: Student-Athletes Versus Non-Athletes....127
List of Figures

Figure 1. Schutte and Malouf’s Dimensional Model of Emotional Intelligence (2013) ................................................................. 34

Figure 2. Kolb’s Model of Experiential Learning (1984) .................................................. 62

Figure 3. Lott’s Proposed Conceptual Model for Incorporating Sport into Educational Missions of the Liberal Arts................................................................. 151
Colleges and universities continuously and passionately deliberate the educational impact and place of sport at American institutions of higher education. The academic focus on the topic has however typically revolved around the high-stakes consumer nature of Division I athletics (Coakley, 2008; T. Feezell, 2005; Snyder & Waterstone, 2015). However, even at the vast majority of National Collegiate Athletic Association (NCAA) institutions where sport is contested on a significantly smaller scale, the debate over the place of sport has remained (Emerson et al., 2009).

While some have pointed out disturbing trends toward the greater differences between college athletes and other students in their academic achievement (Shulman & Bowen, 2001), many coaches and administrators have championed the values and personal growth students can achieve through athletics. Former University of Michigan President James Duderstadt (2000) explained that “in theory at least, college sports provides an opportunity for teaching people about character, motivation, endurance, loyalty, and the attainment of one’s personal best - all qualities of great value in citizens” (p. 70). Others have referenced the development of skills in student-athletes such as strategic and tactical thinking, self-awareness, and an improved understanding of interpersonal relationships (Brand, 2006; Vella et al., 2013). Oklahoma State University Provost Robert Sternberg (n.d.) even professed that, “done right, participation in
competitive athletics is leadership development” (para. 5). However, “serious studies have not been so kind to various claims associated with these purported justifications of college athletics” (R. Feezell, 2015). The typically professed ideals of sport do not seem to be supported by systematic evidence (Emerson et al., 2009).

As a former NCAA student-athlete, assistant coach, head coach, and physical education faculty member, the author has heard many question whether or not collegiate sport truly aligns with the mission and aspirations of higher education. Several scholars have argued that the manner in which an institution’s mission is defined is central in the justification of how sport is operationalized (R. Feezell, 2015; French, 2004). Yet, most attempts to quantify the impact of sport on student-athletes have examined metrics such as grade point average, retention rates, and the average starting salaries of graduates (e.g., Shulman & Bowen, 2001). There then lacks assessment of whether sport develops participants in a manner that specifically pertains to institutional missions. There especially lacks such investigation of sport within NCAA Division III where, “claims for the educational value of athletic participation are most clearly and forcefully articulated” (Emerson et al., 2009, p. 65).

According to the NCAA Facts and Figures (2015), 450 institutions (roughly 40% of the total NCAA membership) compete in Division III athletics. Division III members have enrollments of anywhere from 256 students to over 23,000. While the majority of Division III institutions are private (81%), a sizable proportion are not (19%). Member institutions are split between baccalaureate colleges (54%) and doctoral and master’s universities (43%; Rasmussen & Rasmussen, 2003). It therefore becomes quite apparent that while NCAA Division III members might share a similar athletic philosophy, such
substantial intragroup differences prohibit a homogenous set of core of beliefs and institutional missions.

If as suggested we are to assess sport participation against the language of institutional missions, it becomes imperative to examine a subset of Division III with comparable core objectives. Brenneman (1994) presented the seminal categorical parameters for liberal arts institutions - colleges and universities that have less than a few thousand, traditional-aged, primarily residential students and award more than 40% of their degrees in a liberal arts field. Such parameters are still represented in the Carnegie Classification of Baccalaureate Colleges – Liberal Arts (Blaich, Bost, Chan, & Lynch, 2006). The majority of such institutions, that contest athletics, have aligned themselves in the NCAA Division III classification. In fact, of all those classified by US News and World Report, only 14 liberal arts institutions compete at the NCAA Division I level, with the vast majority competing in Division III (National Liberal Arts College Rankings, 2016).

The verbiage surrounding the mission of the liberal arts is typically encompassed by the development of competencies that provide students with the ability to be successful in a multitude of capacities (Uriciuoli, 2003). Mission statements often discuss communication, ethical reasoning, awareness, and understanding (Knapp, 2013), developing the ability to engage in dialogue with a diverse community (Lowry, 2014), or strengthening the aptitude to lead in a rapidly changing and complex world (Durden, 2009). A unifying component of institutional missions within the liberal arts is the purposeful development of intrapersonal awareness and interpersonal skills that can extend beyond one’s cognitive and technical abilities.
The current research endeavor is an attempt to assess a newly conceptualized version of what R. Feezell (2015) termed “the Education Argument”. Rather than focus on character development/moral education or even the educational aspect of the development of physical skills, this examination has a unique focus. Can sport educate its participants through the development of the aforementioned competencies central to the educational missions of liberal arts institutions? This investigation has therefore looked at student development from participation in sport in a new manner, through the lens of Emotional Intelligence (EI).

Goleman (1995) popularized the construct of EI in his attempt to answer the question of why some people do well in life and others do not, irrespective of their cognitive intelligence (i.e., IQ). Empirical research has shown a statistically significant relationship between one’s EI and physical health, mental health, social interaction, performance at school, performance at the workplace, self-actualization, and subjective wellbeing (Bar-On, 2007; Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007). Bar-On explained, “The implication…is that EQ [Emotional Quotient] more than IQ affects our ability to do our best, to accomplish goals and to actualize our potential to its fullest” (p. 9).

Research has indicated that some of the skills and competency development of student-athletes touted in the rhetoric surrounding sport participation (e.g., leadership ability, self-awareness, and strong interpersonal relationship skills) are significantly related to the construct of EI. Goleman (1998) exclaimed, “I have found…that the most effective leaders are alike in one crucial way: they all have a high degree of… emotional intelligence” (p. 94). In discussing the various conceptualizations and assessment
instruments of EI, Haime (2011) expressed that the unifying element of each conceptualization was that they all recognized self-awareness as the foundation. Schutte et al. (2001) conducted seven studies specifically examining interpersonal relationships and levels of EI. The researchers found that stronger EI resulted in higher empathetic perspective taking, increased self-monitoring in social situations, improved social skills, and a display of more cooperative responses towards partners.

Scholars have only recently been making the connection between sport and EI. In an effort to analyze 20 years of EI research, Stough, Saklofske, and Parker (2009) conducted a search of peer-reviewed literature on EI using the abstract and citation database SCOPUS. After determining which of the papers that were discovered in the search were specifically concerned with the construct of EI, 906 publications were reviewed. The scholars found that most exploration through that point had revolved around the workplace and management (35.4%) and psychometric and construct validity (23.5%). In fact, at the time of publication the authors identified only six published articles on EI in the field of sport (0.6%).

Many have suggested that EI may be important to the context of sport and expressed a need to better understand how the construct is related to both objective and subjective outcomes (Meyer & Fletcher, 2007). McCann (1999) proposed that sport psychology interventions have long worked to develop aspects of what could be termed EI. Others have articulated the importance of “soft skills” within athletic coaches - such as conflict management and the ability to unify team members with a common purpose - that can be assessed with instruments of EI (Chan & Mallett, 2011). Haime advocated that, “in order to be truly effective with athletes, a coach must possess emotional
intelligence fundamentals” (p. 337). Thelwell, Lane, Weston, and Greenless (2008) even found a relationship between EI and the level that sport coaches believed they could impact the development and performance of athletes under their direction (coaching efficacy).

This scant research has focused almost entirely on correlating EI with performance-enhancement, studying the construct to ascertain if an athlete or coach’s abilities to effectively manage both their emotions and those of team members can enhance specific outcomes such as overall team wins or improved offensive output (e.g., Crombie, Lombard, & Noakes, 2009; Meyer & Fletcher, 2007; Pensgaard & Duda, 2003). Only two studies have attempted to develop athlete EI with specific interventions, both with positive results (Ajayi & Fatokun, 2008; Crombie, Lombard, & Noakes, 2011). The intervention utilized by Ajayi and Fatokun improved EI in a sample of 92 amateur athletes enrolled in the Nigerian athletic development program. Crombie et al. developed EI primarily though the usage of emotionally based case studies in 24 cricketers on South Africa’s national team. While there is evidence that student-athletes have higher levels of EI than the general population (Rozell, Pettijohn, & Parker, 2001; Saur, Desmond, & Heintzelman, 2013), it has yet to be tested if participation in sport itself leads to development of EI.

While not explicitly stated, liberal arts institutions have indirectly emphasized the educational value of developing EI through the verbiage of their institutional missions. The current study has attempted to assess the educational merit of athletic participation in the context of the liberal arts by examining whether or not involvement in sport developed participant EI.
Problem Context

There is a distinct disconnect and genuine friction between academic and athletic units at many institutions of higher education (T. Feezell, 2015; Sperber, 2000). Even though issues between faculty and athletics are typically discussed from the perspective of institutions participating in Division I, scholars have contended that there is a growing “athletics culture” in Division III as well (Bowen & Levin, 2003; Shulman & Bowen, 2001). There are strong proponents of including sport as an integral component of the student experience, yet there are also those that malign its presence claiming college sport to be in direct contrast with the purpose of higher education. This was recently exemplified at the University of North Carolina – Chapel Hill as members of the Faculty Council called for the surrendering of sports titles, the abolishment of admissions exceptions for athletes, and the launching of a national crusade to put academics before athletics (Stancill, 2014). Highlighting the elite liberal arts institutions of Amherst and Swarthmore Colleges, Lytle (2003) argued that the strain between faculty and athletics is exacerbated in that environment where colleges, “field as many teams as large universities but with proportionally fewer means: fewer students, less revenue from tuition, fewer alumni boosters, and scant government underwriting” (p. 4.). Former NCAA President Myles Brand (2006) also noticed a growing disconnect with college athletics throughout the overall academic overall community.

A consensus regarding the place of sport in a college and university setting is difficult to obtain for a number of reasons. Bouchet and Hutchinson (2011) explained that financial resources are limited; a comprehensive athletics program requires a substantial commitment from the institution, and the operating costs of doing so are continuously
rising. Between 2004 and 2014, Division III institutions added an average of between 53 and 90 new student-athletes (depending on the presence of a football program) and increased the average cost per athlete by roughly $6,000 (Fulks, 2015). Significant program expenditures from colleges and universities become more difficult to justify when accounts of positive benefits to the educational mission and development of students are strictly anecdotal and unsupported with empirical evidence. The aforementioned attempts to quantify the impact of sport on student-athletes examined indicators of success (e.g., grade point average, retention rates, and average starting salary of graduates), not necessarily learning or development due to participation in sport.

**Problem Statement**

There is not sufficient data to properly assess the rhetoric of sport, the learning and development of the students that participate in athletics, and if the presence of sport supports institutional missions of the liberal arts. If there is ever hope of relieving strained relationships between athletic and academic factions within such institutions, there must be empirical support for sport to be included as an educational component in the development of their students.

**Study Purpose and Research Questions**

At this point it remains unclear whether collegiate athletics is fulfilling the educational missions at selective, residential, liberal arts colleges. Scholarship assessing the impact of athletic participation has focused on success indicators rather than on student competencies that are typically discussed in institutional mission statements (e.g., Shulman & Bowen, 2001). A rift between the academic and athletic factions at such institutions is well documented (Aries, McCarthy, Salovey, & Benaji, 2004; Lytle, 2003;
T. Feezell, 2015). Such a disconnection prohibits a holistic integration of the student experience crucial to the overarching goals of such institutions (as described by King, Brown, Lindsay, & VanHecke, 2007). The present study served to address the theoretical linkages between educational missions of the selective, residential, liberal arts, EI, and the educational impact of participation in collegiate athletics.

The purpose of this study was to use the construct of EI to quantify competency development that occurs through participation in college sport. Through analyzing the patterns of a student athlete’s natural EI development due to such participation, one can assess the validity of the aforementioned rhetoric. Studies showing that certain educative practices can develop one’s EI (e.g., Boyatzis, Stubbs, & Taylor, 2002; Crombie et al., 2011; Schutte & Malouff, 2002) are crucial to the rationale of the proposed exploration. While implementation techniques have differed, research has provided evidence that certain pedagogies can assist in the development of emotional and social competencies measured by EI. Athletic departments and coaches could therefore adopt comparable practices to achieve similar outcomes. It is quite possible that some departments and coaches have already been working towards such student-athlete development.

The end goal is to gain an understanding of the level of EI development that currently occurs from participation in college athletics. This understanding is vital to ensure sports’ potential to be used as part of a curriculum to foster the holistic development of an institution’s students and prepare them for success in life. An additional aim of the research is to indirectly help athletics become a collaborative unit in student development rather than an autonomous element often in conflict with other institutional components.
The study examined four central questions.

(1) Does Emotional Intelligence develop over time throughout a college student’s experience?

(2) Is there a significant difference in the development of Emotional Intelligence between athletes and non-athletes?

(3) Does the development of Emotional Intelligence occur differently based on the environment of a particular institution?

(4) Does the development of Emotional Intelligence occur differently based on the environment of a particular team on which one participates?

**Theoretical Framework**

For the present study the author has framed student-athlete development with the construct of EI. As previously outlined, the rhetoric surrounding sport has encapsulated competencies that can be measured with various EI instruments. Since this study sought to better understand whether or not EI development occurred naturally through the experience of competitive sport at the college level, it is crucial to outline the evolution of the construct itself.

Although he did not use the term emotional intelligence, Wechsler (1943) was potentially the first to start discussing the construct. The doctor noticed that individuals with identical Individual Quotients (IQs) often differed markedly from one another in respect to their global functioning. Wechsler concluded, ”It becomes strikingly evident that even our best test of intelligence give only incomplete measures of the individual’s capacity for intelligent behavior” (p.101). Through an effort to find abilities to effectively deal with any and all, rather than specific situations, Wechsler looked to aspects of
behavior that were traditionally conceptualized as traits of temperament; he named these factors the non-intellective factors in general intelligence. The scholar however believed that one’s general intelligence, described simply as “g” was a static amount possessed by an individual. As described by Sternberg (2005), the belief of a unified general intelligence that was relatively fixed by genetic endowment was a driving assumption in 100 years of intelligence testing. Wechsler also viewed his non-intellective factors in the same manner, mentioning “affective and conative aspects of the mind may function as unitary factors in the same way as the cognitive g” (p. 103).

Various scholars have pointed to Gardner’s theory of multiple intelligences, particularly his discussions on intrapersonal and interpersonal intelligences, as truly providing the foundation for the construct of EI (Mayer, Salovey, Caruso, & Cherkasskiy, 2011; Schutte et al., 1998). It was Mayer and Salovey that first coined the term EI, constructing it as an ability, an intelligence measure, defined as “the ability to perceive and express emotion, assimilate emotion into thought, understand and reason with emotion, and regulate emotion in the self and others” (Mayer, Salovey, & Caruso, 2000, p. 396). As described by Schutte et al. (1998), Goleman’s book, Emotional Intelligence, popularized and “expanded the construct to include a number of specific social and communication skills influenced by the understanding and expression of emotions” (p. 168). There have since been many scholars that have introduced competing frameworks, alternate definitions, and varying conceptualizations of EI. Bar-On (2000) altered the construct, changing its name to Emotional Quotient (EQ) and developed an assessment tool (EQi) to measure “an array of emotional, personal, and social abilities that effect one’s overall ability to effectively cope with daily demands and pressures” (p. 373).
Mayer et al. (2011), critiqued instruments such as Bar-On’s EQi, termed mixed-models, claiming, “[they] include many non-intelligence qualities and traits that, to our minds, more clearly belong to other areas of personality” (p. 533). The body of literature surrounding the construct of EI has become rather disjointed. As explained by Mayer et al., “Although the phrase was widely disseminated [emotional intelligence], its exact meaning often became distorted” (p. 529). Various scholars described two distinct sides, ability models versus trait models (Van Rooy & Viswesvaran, 2007). However, despite the differences in opinion, all conceptualizations of EI are still based on perceiving and directing emotions, recognizing self-awareness as the foundation (Haime, 2011). Schutte et al. (1998) elaborated, “these models do not contradict one another, but they do take somewhat different perspectives on the nature of emotional intelligence” (p. 168).

Mikolajczak (2009) offered a unifying three-level model of EI that included knowledge, abilities, and dispositions. Similarly, Schutte and Malouff (2013) proposed a dimensional model of EI, describing ability EI, trait EI, and emotional self-efficacy all as aspects of the construct at large.

While different instrumentation has been used, there is a great deal of empirical data that supports the importance of EI related to one’s success in a variety of capacities - capacities that are quite important to both athletics and higher education. The construct has been shown to predict scholastic performance above a student’s cognitive abilities (Lam & Kirby, 2002), predict internship performance (Pool & Qualter, 2012), correlate highly with student retention (Parker, Hogan, Eastsbrook, Oke, & Wood, 2006), and even predict a multitude of measures of occupational performance and career success (Cherniss, 2004). Scholars have theorized that these positive outcome measurements,
encapsulated by the construct of EI, are due to a person’s emotional, personal, and social abilities. These same abilities happen to be quite similar to the abilities and competencies that are theorized as being developed through sport.

However, simply correlating the construct of EI with positive outcomes similar to those expressed in the rhetoric of sport does not help in the explanation of sports’ potential ability to develop the aforementioned competencies and skills. It is the research that has indicated EI is a construct that can be developed from specific teaching pedagogies (e.g., Bar-On, 2007; Boyatzis, 2007) that can better explain the theoretical connection. Schutte and Malouff (2002) added an emotional skills component to a Freshman-seminar (first year transition course) at a small private college in the United States. Pool and Qualter (2012) taught a similar course for university students in the United Kingdom. In both cases the intervention was successful in increasing levels of EI among college students. Crombie et al. (2011) utilized emotionally based case studies with a population of professional Cricketers in South Africa and also had success in improving EI levels.

Interestingly, researchers have seen improvements in EI through certain curriculums and interventions that were not even specifically designed to improve participant EI. A longitudinal study at Case Western Reserve University’s Weatherhead School of Management detailed specific curriculum that was implemented and studied over a 20-year period (Boyatzis et al., 2002). Boyatzis et al. outlined how the curriculum focused on developing interpersonal and intrapersonal skills increased levels of EI. Other similar forms of business curriculum (e.g., Management Skills courses and Classroom as Organization pedagogies) have also demonstrated similar capabilities (Clark, Callister, &
Wallace, 2003; Sheehan, McDonald, & Spence, 2009). Such research has provided evidence that certain experiences and types of instruction, even if not explicitly designed to develop EI, can enhance emotional and social competencies.

Sheehan et al. (2009) hypothesized that the testing, practicing, and reflecting through a unique and stressful event management experience facilitated the EI development realized in their research. Could it then be argued that other unique and stressful team experiences in conjunction with practice, testing, and reflection, might also lead to the increased EI? Many have argued that all genuine learning comes from experience (e.g., Beard & Wilson, 2006; Dewey, 1938). There is no doubt that participation in sport has the potential to provide powerful experiences for its participants. Athletes encounter a sense of journey and a stimulation of senses as they pursue target goals. They must employ both collaborative and competitive strategies and consistently deal with constraints, restrictions, obstacles, change, risk, success, and failure. For quite some time sport psychologists have studied the crucial role of emotions in sport in terms of performance variability (Pensgaard & Duda, 2003). Psychological Skills Training (PST) is often employed by sport psychologists to test, practice, and reflect on the powerful experience of sport to enhance athletic performance. Because of nature of the sport experience, the ability for people to develop through powerful experiences, and the documented relationship between emotions and sport performance, the author of this study has decided to look at the experience of sport as a type of natural intervention and assess its developmental utility with an instrument of EI.
Defualtion of Terms

**Emotional Intelligence**: The conceptualization of EI used in this study specifies adaptive emotional functioning that includes accurate appraisal and expression of emotion, ability to regulate emotion, and ability to use emotion in oneself and in others (Schutte & Malouff, 2002). In the present study, EI is operationalized through the dependent variable Total AES Score.

**Ability Emotional Intelligence**: an ability similar to cognitive intelligence that describes one’s capacity to reason with emotions and emotional signals, and utilize emotion to enhance thought (Caruso, 2004).

**Trait Emotional Intelligence**: a set of behavioral dispositions that lead to intelligent behavior concerning one’s ability to recognize, process, and utilize emotion-laden information (Petrides, Frederickson, & Furnham, 2004).

**Mixed-Models of Emotional Intelligence**: assessments of EI that combine specific mental abilities with personal traits or characteristics.

**Emotional Self-Efficacy**: a measure of how confident one is in their abilities pertaining to emotion (Kirk, Schutte, & Hine, 2008)

**NCAA Division I**: a group of universities that typically have a larger student-body, manage a substantial athletic budget, and offer the most generous amount of athletic scholarships.

**NCAA Division III**: the largest grouping of institutions within the NCAA that emphasizes regional competition and shorter practice and playing seasons so that academics can remain the foremost focus of participants.
Experiential Learning: a manner of learning through the engagement and transformation of a rich experience (Beard & Wilson, 2006).

Liberal Arts Institutions: a category of residentially focused institutions with a student body of less than 3,000 students, that awards the majority of their degrees in a liberal arts field (Brenneman, 1994). Such institutions focus on the development of holistic characteristics that span the cognitive, intrapersonal, and interpersonal domains and prepare students for success in life.

Institutional Mission: a composition of a college or university’s goals and objectives pertaining to specific student outcomes.

**Operational Definition**

Total AES Score: Individual EI scores were calculated from the AES instrument, a 33-item self-report scale. Each item was a statement against which participants were asked to judge themselves on a five-point Likert scale. A composite score was then derived by summing all test items; various questions were reversed scored as instructed by Schutte.

**Chapter Summary**

This preliminary chapter provides an introduction to the topic of the study, the issues and problems being addressed, and the theoretical framework for exploration. Chapter Two further investigates the construct of emotional intelligence including its application to higher education and sport. Chapter Three fully addresses study methodology, while Chapter Four provides a detailed analysis of data. Chapter Five explores the implications of the data analyses. Theoretical explanations of study results are provided. The manner in which future exploration on the topic should be pursued is also addressed.
Chapter Two: Review of Literature

The following chapter is comprised of five sections detailing emotional intelligence (EI). The first section provides an overview of the construct of emotional intelligence, its different conceptualizations, and its varying uses. The second section reviews some of the literature related to workplace outcomes – the discipline in which EI has been researched most heavily. The third section highlights the relationship of EI to higher education in general and how the construct has been used to research the topic. The fourth section begins with the importance of emotions in sport performance and psychology and then informs the reader of scholarly work involving EI and sport. The final section explains how EI is developed and interventions that have attempted to train EI in a variety of settings.

What Is EI?

The term EI has been used to denote quite different conceptualizations of the construct, differing in agreement on key competencies and even definitions (Mayer et al., 2011). In fact, many scholars begin a review of literature on the topic by contrasting the seemingly conflicting conceptualizations of Trait EI and Ability EI (e.g. Petrides et al., 2004). Van Rooy and Viswesvaran (2007) hypothesized that the measurement issues regarding EI have manifested because the construct is abstract, that scholars can, “only infer the presence of the construct from assessing a subset of several potential
manifestations of the construct” (p. 260). To date, there is not a firmly agreed upon definition across disciplines.

Yet the construct of EI has been extensively researched, showing strong positive correlations to a wide variety of positive performance outcomes in numerous fields such as psychology, psychiatry, business, education, the health industry, and applied sport psychology (Cherniss, 2004; Crombie et al., 2009; Latif, 2004; Parker et al., 2006; Schutte, Malouff, & Thorsteinsson, 2013). Such prodigious scholarship on EI has led to a maturation of the construct. Scholars have produced extensive meta-analyses of the relationship between EI and occupational success (Joseph & Newman, 2010; O’Boyle, Humphrey, Polack, Hawver, & Story, 2011), overall health (Martins, Ramalho, & Morin, 2010; Schutte et al., 2007), and personal relationships (Schutte et al., 2001). Regardless of the field, researchers have produced results in support of the claim that higher levels of EI in individuals are directly related to positive performance and outcome measures (Bar-On, 2007; Goleman, 1995).

Due to strong supporting evidence, scholars have called for the inclusion of EI into new disciplines and contexts. In discussing pharmacy education, Latif (2004) mentioned that the focus of institutional programs has traditionally been on ensuring that graduates are cognitively and technically competent, completely neglecting any kind of emotional training that would lead to better overall job preparation. Vela (2007) found that EI scores accounted for a higher degree of variance in first year achievement than did Scholastic Aptitude Tests (SATs) and advocated for the inclusion of EI measures in the college admissions process. Codier and Odell (2014) noted that there is a growing body
of evidence that indicates EI should be included as a core competency of nursing education to improve the output of highly competent practitioners.

However, outside of the business community, where ways to improve profitability are always at a premium, most fields have not yet consistently instituted systems to develop EI. Nor have they included the construct as a tool for evaluation or selection. This has not occurred in large part because, “operational definitions of the construct are moving targets” (Landy, 2005, p. 419). Landy noted that conceptual foundations have been continuously in flux and their measurements have often changed. Throughout EI literature, there has been a described need for standardization in the both the conceptualization and assessment of EI (e.g., Meyer & Fletcher, 2007). At this point it becomes necessary to explore both the foundations of EI and its competing conceptualizations.

**History and Formation of EI**

While the construct of EI is relatively new, researchers having been exploring alternative “intelligences” for quite some time. Some scholars credit the formation of the construct to an article written in *Harper’s Magazine* by R.L Thorndike. Thorndike (1920) described a social intelligence that he defined as, “the ability to understand and manage men and women, boys and girls – to act wisely in human relations” (p. 228). Very little empirical investigation into the presence of a social intelligence followed for quite some time and was nearly abandoned altogether as scholars were not able to define or measure a social intelligence (Mayer & Salovey, 1993). However, the idea of alternative intelligences persisted. Wechsler (1943) noticed that individuals with identical Individual Quotients (IQs) often differed markedly from one another in respect to their global
functioning. He concluded, “It becomes strikingly evident that even our best test of intelligence give only incomplete measures of the individual’s capacity for intelligent behavior” (p.101). Through an effort to find abilities to effectively deal with any and all - rather than specific - situations, Wechsler looked to aspects of behavior that were traditionally conceptualized as traits of temperament; he named these factors the non-intellective factors in general intelligence. The doctor believed that one’s general intelligence, described simply as “g,” was a static amount possessed by an individual. Wechsler was not alone in that belief. Sternberg (2005) explained that the belief of a unified general intelligence that was relatively fixed by genetic endowment was a driving assumption in 100 years of intelligence testing. Wechsler also viewed his non-intellective factors in the same manner, mentioning “affective and conative aspects of the mind may function as unitary factors in the same way as the cognitive g” (p. 103).

Wechsler’s efforts served as the groundwork for Gardner’s (1983) research on multiple intelligences. Various scholars have pointed to Gardner’s theory of multiple intelligences, particularly his discussions on intrapersonal and interpersonal intelligences, as truly providing the foundation for the construct of EI (Mayer, et al., 2011; Schutte et al., 1998). Salovey and Mayer (1990) first coined the term “emotional intelligence” as a way to describe one’s capability to internalize and adjust affective information - defined as “the ability to perceive and express emotion, assimilate emotion into thought, understand and reason with emotion, and regulate emotion in the self and others” (Mayer, Salovey, & Caruso, 2000, p. 396). The scholars were not met without criticism. They were challenged on whether EI was indeed intelligence, its underlying mechanisms, and its manifestations (Mayer & Salovey, 1993). The scholars admittedly could have
substituted the word intelligence for competencies. However, Mayer and Salovey chose to focus the construct on mental aptitude and its relationship to mental processing, thus emotional intelligence. Before scholars had the opportunity to fully engage in research pertaining to the underlying mechanisms of EI such as emotionality, emotional management, or neurological substrates, Goleman (1995) popularized the construct with his book, *Emotional Intelligence*.

According to Schutte et al. (1998), Goleman’s book “expanded the construct to include a number of specific social and communication skills influenced by the understanding and expression of emotions” (p. 168). Due in large part to Goleman, popular interest in EI and an accompanying commercial wing outpaced the rate of research from the scientific community (Landy, 2005). The commercial wing was focused on monetizing EI rather than fully developing the construct through scientific rigor. Landy explained that consulting firms such as The Hay Group or Multi-Health Systems (MHS), who now control some of the most well known EI assessment tools, have thwarted proper development of the construct.

As previously articulated, the body of research on EI is rather disjointed. However, despite the differences in opinion, all conceptualizations of EI are still based on perceiving and directing emotions, recognizing self-awareness as the foundation (Haime, 2011). The plethora of scholarly inquiry has provided evidence of the potential utility of EI. In order to properly make sense of EI research and its contribution to a number of fields, an understanding of its various conceptualizations and their accompanying instruments is imperative.
Ability EI

While multiple types of measures exist to assess one’s abilities related to emotion (e.g., Diagnostic Analysis of Nonverbal Accuracy, Japanese and Caucasian Brief Affect Recognition Test, Situational Test of Emotional Understanding, and Situational Test of Emotional Management), very few integrative ability measures of EI exist. Throughout EI literature, discussions on Ability EI pertain almost exclusively to the conceptualization of Mayer, Salovey, and Caruso and their accompanying assessment instruments. The scholars first developed the Multifactor Emotional Intelligence Scale (MEIS). However, due to issues with reliability and scoring procedures, the authors have since replaced the assessment tool with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT: Conte, 2005).

According to the MSCEIT Resource Report, the construct of EI is an intersection between emotion (the feelings induced through a relationship) and intelligence (one’s ability to reason with or about something) (Caruso, 2004). In other words, the ability conceptualization of EI describes one’s “capacity to reason with emotions and emotional signals, and … the capacity of emotion to enhance thought” (Caruso, 2004, p. 2). Mayer and Salovey (1993) argued that EI is best conceptualized as an ability similar to that of cognitive intelligence. The scholars defined four specific abilities that are termed branches of EI. The tiered system includes: (1) Perception and expression of emotions – the most basic emotional skills such as the ability to identify physical states and facial expressions; (2) Assimilating emotion into thought – prioritizing thinking through emotions and generating emotions to aid in judgment; (3) Understanding and analyzing emotion – recognizing feelings occurring simultaneously and relationships with shifting
emotions; and (4) Regulation of emotions – the ability to monitor and control emotions (Mayer et al., 2011).

The MSCEIT is an instrument composed of a series of problem-solving test-items based on a participant’s ability to perceive, use, understand, and manage emotions in themselves and others (Van Rooy & Viswesvaran, 2007). The ability based assessment tool utilizes performance-based responses from which a correct answer can be given. Whether or not an answer is deemed to be correct is based on either an expert opinion, or a consensus from a group of respondents. Mayer, Caruso, Salovey, and Sitarenios (2002) reported a strong inter-correlation between expert and general consensus methods ($r = .98$), demonstrating that either would produce quite similar results. Van Rooy and Viswesvaran revealed that of all measurements of EI, the MSCEIT shared the highest correlation with cognitive ability and the lowest correlation with personality measures. Additional scholars have shown only a small to moderate correlation with other (trait) measures of EI (Bar-On, 2000; Schutte, Malouff, & Bhullar, 2009). For example, Bracket and Meyer (2003) cited a correlation between the MSCEIT and Bar-On’s EQi of $r = .21$.

Many scholars have embraced the ability conceptualization of EI (e.g., Crombie et al., 2009; Meyer & Fletcher, 2007; Pool & Qualter, 2012). Meyer and Fletcher proclaimed such a conceptualization represents an intelligence involving emotion and the ability to use that information to direct cognition and motivate behavior. The explanation goes that a measurement such as the MSCEIT is more likely to gauge one’s actual ability rather than an individual perception of ability. According to proponents of such a conceptualization, the ability model connotes a malleable capacity of individuals; they learn and develop EI over time. The notion has been supported by scholars that have
demonstrated a natural improvement in EI as an individual ages (Van Rooy & Viswesvaran, 2007). Additionally, Crombie et al. (2009) claimed that issues such as personality, self-concert, and response style do not affect the conceptualization.

The most pragmatic critique of the MSCEIT is that simply possessing ability does little to ensure that the ability is consistently used. Additionally, the idiosyncratic emotions of the test-taker cannot be captured in a format of discerning correct responses (Van Rooy & Viswesvaran, 2007). Mathews, Zeidner, and Roberts (2002) claimed that using a consensus method was in direct contrast to considering an objective measure of truth. Conte (2005) was also critical of the scoring used for ability-based EI tests including how “experts” were selected. Further, he asserted that the high correlation between MSCEIT and measures of general intelligence demonstrate less utility in predicting job performance over other cognitive measures that are sometimes used.

**Trait EI**

The alternative theoretical framework of Trait EI is directly related to Weschler’s non-intellective factors of intelligence (1943). Trait EI is meant to encompass qualities in an individual that lead to intelligent behavior. While labeled EI, Trait EI is not typically thought of as intelligence. Petrides et al. (2004) advocated that EI is best conceptualized as a “constellation of behavioral dispositions and self-perceptions concerning one’s ability to recognize, process, and utilize emotion-laden information” (p. 278). Such a conceptualization of EI includes components of Thorndike’s Social Intelligence and Gardner’s Interpersonal Intelligence as well as dispositions such as empathy, assertiveness, and impulsivity (Petrides & Furnham, 2000). Many refer to Trait EI as emotional competency (Wheeler, 2007) or emotional and social functioning (Bar-On,
Critics of trait EI profess that individual qualities encompassed in the conceptualization more closely align with measures of personality and therefore are not representative of the construct of EI (Mayer et al., 2011).

**Mixed Models**

Assessments of EI that combine specific mental abilities with personal traits or characteristics are termed mixed models of EI. In fact, the seminal work on EI (Salovey & Mayer, 1990) seemingly merged mental abilities with related personal dispositions such as persistence, warmth, and positive outlook. The scholars have since attempted to articulate the construct in a manner that more clearly describes mental abilities concerning the processing of emotion and emotional laden information (Mayer & Salovey, 1997). However, due to the history of research in the field and the initial way in which the construct of EI was discussed, mixed models of EI have become quite prevalent.

Mixed-models are used to assess Trait EI and through self-report or peer-report instruments and have been operationalized through such measures as the Emotional Quotient Inventory (EQi; Bar-On, 2000), the Emotional Competence Inventory (ECI; Boyatzis, Goleman, & Rhee, 2000), and the Assessing Emotions Scale (AES; Schutte et al., 1998). Self-report measures possess the unique ability to capture “the rich idiosyncratic emotions experienced by the test-taker” (Van Rooy & Viswesvaran, 2007). Proponents of the conceptualization have also criticized the ability perspective in that simply possessing ability does not determine the extent to which it is utilized (Mikolajczak, 2009). A host of data has indicated that, like the ability conceptualization of EI, EI as established through mixed models can also be developed over time. This has
been chronicled with various trait-based EI instruments including the ECI (Boyatzis et al., 2002), the EQi (Bar-On, 2000, 2007) and the AES (Schutte & Malouff, 2002).

Mixed models of EI are typically lumped together as a singular conceptualization. Yet, there is substantial intragroup difference in components that are included in various models and conceptualizations. Some models of EI were constructed from Salovey and Mayer’s (1990) original model of EI and have attempted to assess abilities rather than dispositions (Schutte et al., 2009). In such cases the inherent difference (at least theoretically) between the integrative ability measure of EI (MSCEIT) and a mixed model of EI (e.g., Schutte’s AES) is more about how EI is measured - demonstrated ability versus perceived ability. Others (e.g. Bar-On, 2000) expanded the construct by adding specific social and communication skills that are influenced by the understanding and expression of emotions (Schutte et al., 1998). Varying conceptualizations of EI that are combined into the mixed model category are further addressed below.

Prodigious research into the psychometrics of EI has transpired over the past twenty years. According to Stough et al. (2009), at the time of publication, 23.5% of all published scholarship on EI pertained to its psychometric properties and construct validity. However, very few studies have examined the convergent validity of various EI scales. Brackett and Mayer (2003) published the first such work finding only moderate to weak correlations. Evidence was produced indicating that the MSCEIT shared vary little variance with Bar-On’s EQi ($r = .21$) and Schutte’s AES ($r = .18$). A greater portion of shared variance ($r = .43$) was demonstrated between the two mixed models studied (Bracket & Mayer). The lack of further research in these regards has clouded empirical findings throughout the literature on EI.
The most substantial critique on Trait EI assessed through mixed models is that some consider it an umbrella term that encompasses aspects of previously investigated psychological constructs. Many scholars have expressed concerns with the usage of the term “intelligence” in mixed models; they believe various components belong to areas of personality (Mayer et al., 2011). Researchers have provided evidence of rather substantial overlap between mixed models of EI and the Big Five Personality measures (Conte, 2005; Dawda & Hart, 2000). Others have also taken issue with mixed models of EI in regards to parsimony. According to Landy (2005), incremental validity studies contrasting EI measures with both personality measures and measures of abstract intelligence are lacking:

The full equation or specification would ask what EI adds when the following variables are already in the regression equation: academic excellence (‘g’), personality (most notably extraversion, agreeableness, and emotional stability), tacit or procedural knowledge, technical knowledge, experience, and interests (p. 419).

As mentioned previously, mixed models of EI are typically assessed through self-report measures, the exception being evaluations by peers or supervisors. Self-reports in general have been often criticized for a number of reasons. Scholars have noted a participant’s ability to “fake” answers based on a social bias or when there is a strong motivation to do so (e.g., selection or promotion: Conte, 2005; Whitman, VanRooy, Visweswaran, & Alonso, 2008). Additionally, scholars have concern over the accuracy of a person’s self-concept. Bracket and Mayer (2003) explained, “If a person’s self-concept is accurate, then self-report data serves as an accurate measure. However, most
people are inaccurate reporters of their own abilities” (p. 1).

**Emotional Quotient Inventory (EQi).** The EQi was the first test of emotional intelligence to be published by a psychological test publisher (Bar-On, 2000). The 133 item scale is a self-report instrument that takes roughly 30 minutes to complete and is comprised of 5 separate factors: (1) interpersonal; (2) self-expression; (3) self-perception; (4) stress management; and (5) decision making. The instrument also contains 15 subscales including items such as emotional self-awareness, assertiveness, empathy, impulse control, and optimism (Bar-On). The EQi is considered a broad conceptualization of EI (Schutte et al., 1998). This is due in part to the timeline of its construction occurring prior to Mayer and Salovey’s article credited with the term of EI (Bar-On). Bar-On described the assessment to measure “an array of emotional, personal, and social abilities that effect one’s overall ability to effectively cope with daily demands and pressures” (p. 373).

**Emotional Competence Inventory (ECI).** The creation of the ECI was based on the conceptualization of Goleman and Boyatzis, stated as, “when a person demonstrates the competencies that constitute self-awareness, self-management, social awareness, and social skills at appropriate times and ways in sufficient frequency to be effective in the situation” (Boyatzis et al., 2000). The latest iteration (ECI-2) is comprised of four different competency scales: (1) self-awareness; (2) social awareness; (3) self-management; and (4) social skills. Each competency scale contains 18 items for a total of 72 test items (Boyatzis & Sala, 2004). The inventory is unique in that it includes a self-report, as well as peer and supervisor ratings for a 360-degree assessment (Conte, 2005).

Boyatzis was primarily focused with the development of competencies needed to
produce successful business school graduates (Boyatzis & Sala, 2004). In order to address six common criticisms of Master of Business Administration (MBA) graduates, he overhauled the curriculum at Case Western Reserve University (Boyatzis, 1994). Boyatzis explained that the goal was for the curriculum to become more outcome-oriented, competency-based, and value-added with a concerted effort to improve MBA students’ competencies and future workplace success. Similarly, Goleman (1995) was foremost concerned with success in the business community, looking to articulate the sine qua non of leadership. His conceptualization was formulated through analyzing competency models of 188 companies (Goleman, 1998). It was the collaboration of their backgrounds in business competency that led to the development of the ECI.

**Assessing Emotions Scale (AES).** Schutte’s model of EI has been referred to in literature by multiple names: The Assessing Emotions Scale (AES), The Emotional Intelligence Scale (EIS), The Self-Report Emotional Intelligence Test (SREIT), or the Schutte Emotional Intelligence Scale (SEIS). Throughout this current research endeavor, the instrument is referred to as the Assessing Emotions Scale (AES). While the AES was derived from identical theoretical underpinnings as the MSCEIT, an ability-based EI measure, Schutte explained that her instrument was designed to assess characteristic or trait EI (Schutte et al., 2009). Schutte (2014) detailed her conceptualization of EI of consisting of four branches: (1) perceiving emotions - recognizing emotional cues in the self and others; (2) understanding emotions - the knowledge of the causes and complexities of emotional experience in the self and others; (3) managing emotions - being able to effectively regulate emotions in the self and others; and (4) harnessing emotions - drawing on emotion to achieve goals, such as solving problems.
Instrument authors introduced the AES as a composite measure of EI. However, while some scholars have produced supporting evidence to a single-factor (Bracket & Mayer, 2003) others (Lane et al., 2009) have suggested that the scale contains six factors, four describing aspects of EI related to oneself and two describing EI related to others. Petrides and Furnham (2000) identified four factors within the AES: optimism and mood regulation, appraisal of emotions, social skills, and utilization of emotions.

The AES is one of the most commonly used measures of EI in scientific literature (Schutte et al., 2009). Unlike many instruments of EI, the AES is not property of a consulting group and is considered public domain for scholarly purposes with permission from the author.

**Other Mixed Models.** While used less frequently in scholarly pursuits than the models discussed above, various other methods of EI assessment are in existence. Such instruments are still termed EI but what exactly they measure is less clear; differing levels of psychometric scrutiny have been applied. Awareness of additional measures is essential. Empirical findings using such instruments are part of the discussion on the utility of EI as a construct and are used to provide recommendations in applied settings. Examples of EI research with other mixed models of EI include, but are not limited to, the following: Trait Emotional Intelligence Questionnaire (Arora et al., 2011), Personal Achievement Skills System (Nelson & Nelson, 2003), Cooper’s Executive EQ Map (Clark et al., 2003), Exploring and Developing Emotional Intelligence Skills Instrument (Vela, 2007), and the Wong and Law Emotional Intelligence Scale (Song et al., 2010).
**Emotional Self-Efficacy (ESE)**

ESE is a more recent development in the field of EI research that encompasses how confident one is in their abilities pertaining to emotion (Kirk et al., 2008). ESE is theoretically linked to Bandura’s (1997) construct of self-efficacy in that it is common for people to act on the belief of their abilities rather than the extent of actual ability.

Articulating the distinction between how Trait EI and Ability EI are operationalized, Petrides and Furnham (2001) equated measurements of disposition with self-efficacy. The scholars claimed Trait EI should be synonymous with Emotional Self-Efficacy. Kirk et al. (2008) argued, “self-perceptions related to emotional functioning include emotional self-efficacy, but that there are other aspects of self-perception and other dispositions not encompassed by emotional self-efficacy” (p.433). Kirk et al. utilized the four-branch model of EI (Salovey & Mayer, 1990) in their conceptualization of The Emotional Self-Efficacy Scale (ESES), designed to rate an individual’s self-efficacy for adaptive emotional functioning.

Kirk et al. (2008) conceptualized ESE as a uni-dimensional construct, believing it to be a type of EI in its own right. The scholars produced initial evidence of incremental validity with their 32-item scale in that ESES scores were significantly related to positive affect while controlling for both AES scores and MSCEIT scores (measures of Trait EI and Ability EI). Qualter, Gardner, Pope, Hutchinson, and Whitely (2012) provided additional evidence that EI and ESE are distinct from one another in predicting academic success. While the construct is young, there appears to be initial supporting evidence that ESE is a unique type of EI.
A Call for Unification

Petrides and Furnham (2001) explained that dissimilar approaches in assessment could not be expected to produce similar results, even when based on the same theoretical model. While many chose to present Trait EI (operationalized through mixed models) and Ability EI as mutually exclusive alternatives, others viewed them more as complementary dimensions of EI (Schutte et al., 2009). Lane et al. (2009) expressed that “evidence showing weak correlations between self-report and performance test suggest they assess different aspects of the same concept.” As scholarship on EI has progressed, multiple models have been produced in an attempt to include both behavioral tendencies and actual abilities regarding emotions.

Mikolajczak (2009) professed the merits of both perspectives, stating that there is no evidence that either Ability EI or Trait EI should be favored over the other. She advocated for a unified model that distinguished EI between knowledge (the breath of one’s emotional knowledge), ability (how one can apply the knowledge into a problem solving situation), and disposition (the propensity of an individual to utilize their abilities). The theoretical model therefore proposed to assess what one knows, what they can do, and what they actually do with emotional information. Mikolajczak stated, “it would therefore be nonsense to reduce EI to only one of its levels” (p. 29). The scholar, however, advocated that differing conceptualizations had unique contextual applications and that further research regarding the relationships between the proposed levels of EI was needed.

Schutte and Malouff (2013) also proposed a dimensional model of EI professing that the aforementioned perspectives are inter-related components of adaptive emotional
functioning. The scholars described Ability EI as the potential to show emotional competency, while Trait EI as the extent to which individuals actually exhibit emotional competency in their daily lives. A study on alcohol provided evidence that Trait EI mediated between Ability EI and problems associated with alcohol (Schutte, Malouff, & Hine, 2011). It was therefore suggested, “Ability EI may be a latent function that when consistently expressed gives rise to Trait EI, which then influences outcomes” (Schutte & Malouff, 2013, p. 473). Schutte and Malouff also included ESE into their proposed model as one of the three aspects of EI. The relationship between the three aspects of EI was explained:

Emotional intelligence ability is an individual’s actual current capacity for adaptive emotional functioning. The individual may or may not act on this capacity. Individuals with higher emotional intelligence ability are more likely to show good emotional functioning in everyday life; this results in higher trait emotional intelligence…whether abilities… are consistently expressed as traits may depend on…an individual’s motivation and situational factors. Higher emotional intelligence ability along with the application of this ability in daily life may result in… higher emotional self-efficacy (p. 473).

The dimensional model of EI by Schutte and Malouff therefore proposed a connection of a large body of research related to a host of various positive outcomes such as greater subjective well being, better mental and physical health, better interpersonal relationships, better work outcomes, and positive measures on the Big-Five Personality Index. A framework for further exploration has been provided but there is much to be done to validate the model. The model is represented in Figure 1.
EI in the Workplace

The body of literature regarding EI and the workplace is quite substantial. While there have been critiques of the construct, especially regarding its incremental validity (Conte, 2005; Landy, 2005), the overall relationship between EI and the workplace appears to be quite positive. There is a strong commercial market for EI training in the corporate world (Mikolajczak, 2009) with potential application in other industries. Many of the outcomes presented in Organizational Behavior, Human Resource, and Management (OBHRM) literature are also quite applicable to other disciplines. The scholarly work regarding employability and workplace flourishing (Pool & Qulater,
2013; Schutte & Loi, 2014) might be of particular interest to those involved in educating students and training prospective job seekers.

Additionally, the construct of EI has been examined to the greatest extent in workplace literature (Stough et al., 2009). It is in such literature, where issues that have plagued the field of EI research have been articulated to the greatest extent. Such issues pertaining to the varied and continuously altered instruments of assessment (Landy, 2005) and the incremental validity EI (O’Boyle et al., 2011) are pertinent not only in OBHRM but in all other disciplines that conduct EI research.

As Goleman (1995) popularized EI in his book *Emotional Intelligence*, he framed the construct as a way to identify individuals with the “right stuff” to be extraordinary leaders in business. Similarly, Boyatzis developed his conceptualization of EI, and the accompanying assessment instrument, based on common critiques of business school graduates entering the workplace. He devised a curriculum for MBA students at Case Western University’s Weatherhead School of Management based on emotional competencies to better prepare graduates for effective leadership (Boyatzis et al., 2002).

Goleman (1998) made lofty claims such as, “effective leaders… all have a high degree of what has come to be known as emotional intelligence,” and, “when I calculated the ratio of technical skills, IQ, an emotional intelligence as ingredients of excellent performance, emotional intelligence proved to be twice as important as the others for jobs at all levels” (p. 94). Cherniss (2004) produced a document for the *Consortium for Research on Emotional Intelligence* outlining 19 cases connecting EI to the bottom line in work organizations. The document highlighted the importance of EI in a wide array of industries such as the military, retail, manufacturing, financial advising, insurance, and
sales. In an effort to build a case for EI, Goleman (1998) and Cherniss (2004) cited research that focused on emotion-related competencies. Both referenced a study conducted at a large beverage firm (McClelland, 1999) that implemented a new hiring process for division presidents. The company’s two-year retention rate for such positions improved from 50% to 94% after selection began to incorporate emotional competency evaluations (e.g., The Thematic Appreciation Test). Further, McClelland professed that those with higher levels of emotional competencies outperformed other division presidents by 15%-20%. Similarly, Pesuric and Byham (1996) provided emotional competency training to supervisors of a manufacturing plant and noted improved safety metrics such as a decrease in formal grievances from 15 to 3 per year, a reduction of lost time due to accidents by 50%, and improved productivity as the plant exceed its goal by $250,000.

Goleman (1995, 1998), Bar-On (2000), Boyatzis (1994), and Cherniss (2004) theoretically articulated the relationship between EI and business excellence. The scholars provided evidence that competencies related to emotions showed some type of relationship with business metrics. However, commercial and popular interest outpaced scientific inquiry on EI (Landy, 2005). Due to the emerging press seemingly backed with concrete data, the business community latched on to EI in the hopes of maximizing profit through effective leadership. As assessment instruments were produced (e.g., EQi and ECI) there was strong commercial interest. Therefore, much of the data supporting the commercial instruments was considered proprietary information and thus not available to be scrutinized by the academic community (Conte, 2005).

The construct became firmly embedded in business lexicon (Lennick, 2007). As
awareness increased, a plethora of EI development programs were attempted both “in house” and by means of consultant groups throughout the corporate world (Lennick). By 2008, about 75% of Fortune 500 companies were attempting to promote EI within their organizations (Mikolajczak, 2009). In the same time period, 57 different consulting firms were principally devoted to EI (Joseph & Newman, 2010).

In his book *Working with Emotional Intelligence*, Goleman (1998) presented a case study of the Financial Services Division of American Express. American Express implemented EI training to improve sales performances of financial advisors based on Goleman’s five levels of EI - self-awareness, managing emotions, motivation, empathy, and social skills. The program was assessed with the only commercially available measure of EI at the time, the EQi. The advisor group that received EI training achieved an 18% greater increase in sales than the control group (Goleman). A significant increase in EQi scores was also reported for the group that received the intervention. Multi-Health Systems (MHS) holds the rights to data from the training program at American Express. Program results were first published in Goleman’s book rather than a scientific journal.

Johnson and Johnson (J&J) conducted an internal leadership study centered on a multi-rater survey that combined an already in use J&J leadership model (Standards of Leadership) and the ECI designed by Boyatzis and Goleman (Cavallo & Brienza, 2006). The study analyzed 358 managers across the J&J Consumer and Personal Care Group. Managers were rated by a combination of achievement measures against business objectives. The most successful group was identified as “high performing.” Each manager was assessed on the blended instrument by one supervisor and four additional employees. The study revealed that there was a strong relationship between high
performing leaders and emotional competency. Cavallo and Brienza explained that J&J modified their leadership training to include emotional competencies based on the results of their study and have continued to apply efforts towards building EI skills throughout their organization.

EI has also received substantial scholarly attention in OBHRM literature (O’Boyle et al., 2011). The theoretical argument stands that utilizing emotion to facilitate the cognitive process aids in the ability to solve complex problems. The awareness and regulation of emotion in both the self and others can improve teamwork and lead to more harmonious work relationships (Schutte & Malouff, 2013).

Similar to the internal study at J&J, much of the early scholarship sought to establish a relationship between high EI and various business metrics. For example Bachman, Stein, Campbell, and Sitarenios (2000) examined debt collectors at a large collection agency. Employees ($N = 36$) were examined on the extent they utilized industry “best practices”, the amount of cash collected, the percentage of collection goal attainment, and their amount of EI (measured by the EQi). Bachman et al. compared collectors identified as underperforming (reached an average of 80% goal attainment) versus participants identified as top performers (reached an average goal attainment of 163%). The data indicated that top performers consistently used best practices to a greater extent and had a statistically significant difference in EI. Additional research connected higher levels of EI favorably to greater organizational productivity (Cherniss & Adler, 2000), stronger revenue performance (Spencer, 2001), superior leadership capabilities (Humphrey, 2002), and stronger negotiation competencies (Fulmer & Barry, 2004).

However, Van Rooy and Viswesvaran (2004) expressed, “it is still to be
determined if EI influences performance consistently or if it differs according to type of job and other potential variables” (p. 74). The researchers also believed it to be unclear if EI was distinct from General Mental Aptitude (GMA) and measures of personality. Van Rooy and Viswesvaran therefore completed a meta-analysis using 59 independent samples \((N = 9522)\) in an attempt to determine an objective picture of the influence of EI on various work-related performance measures. EI demonstrated predictive validity compared to personality measures, but the scholars did express concern over the high correlations between such measures. Overall, Van Rooy and Viswesvaran determined EI to be a valuable predictor \((p = .23)\) of performance.

Researchers however continued to constantly amend their conceptualizations of EI and associated measures (Van Rooy & Viswesvaran, 2004). Even with the promising results of the aforementioned meta-analysis, some scholars noted the lack of consistency regarding an operational definition of EI and therefore questioned the overall utility of the construct (Conte, 2005; Landy, 2005). Assessment instruments continued to be altered after the meta-analysis of Van Rooy and Viswesvaran (O’Boyle et al., 2011) and additional evidence was produced that higher levels of EI was associated with work related outcomes such as leadership effectiveness (Cavallo & Brienza, 2006), managing growth and retaining employees (Stein, Papadogiannis, Yip, & Sitarenios, 2009), and stronger negotiating skills (Mueller & Curhan, 2006). Additionally, Van Rooy and Viswesvaran were critiqued in that their analysis did not control for cognitive intelligence and personality simultaneously (O-Boyle et al.).

Two additional meta-analyses were therefore completed (Joseph & Newman, 2010; O’Boyle et al, 2011). O’Boyle et al. examined a substantially larger grouping of
studies than Joseph and Newman, separating the research into three streams for analysis. Ashkansay and Daus (2005) had produced a theoretical model of EI that categorized EI research into ability-based (e.g., MSCEIT), self-reports based on ability models (e.g., AES), and mixed models (e.g., ECI and EQi). The work of Ashkansay and Daus directed the meta-analysis performed by O’Boyle and colleagues. Principally, the scholars aimed to assess the most current research on EI and determine the relative importance of cognitive intelligence, personality, and EI related to predictive validity. O’Boyle et al. concluded that all three categories of EI contributed to the prediction of positive work-related outcomes. Cognitive ability was the strongest predictor in job performance but EI appeared to be a stronger predictor than personality measures. The scholars therefore advocated for additional research to develop a comprehensive model of EI.

Since the work of O’Boyle et al., OBHRM scholarship has examined more additional criterion variables that relate to other forms of workplace flourishing. Through a short-term intervention, Nelis et al. (2011) demonstrated that improved measures of EI were related to psychological wellbeing, subjective health, and social health. Kirk, Schutte, and Hine (2011) produced evidence that improving employee’s Emotional Self-Efficacy (ESE) decreased instances of workplace incivility – discourteous actions undertaken by employees towards one another. ESE has also been positively associated to overall employability (Pool & Qulater, 2013). The scholars explained employability as being, “concerned with having certain skills and attributes that make a person more likely to choose, secure, and retain employment… good personal networks, being aware of opportunities, and feeling respected within an organization” (p. 220). Similarly, Nelis et al. discovered that after showing interview recordings of employees to a diverse panel of
human resource professionals, those that had higher EI through training were more likely to get hired. Employees that had improved EI through training “referred more often to their feelings and took others’ feelings into account more… better managed their stress in front of the camera, allowing them to answer their questions in a calmer and more structured fashion” (p. 362).

**EI and Higher Education**

Various members of a college or university community have different goals and employ different definitions of success within their units/departments. Yet regardless of the focus of an institution, certain data (e.g., student retention, scholastic achievement, health and wellbeing, employability, and postgraduate success) is universally recorded and has been deemed essential to carrying out institutional missions. Significant research has documented the relationship between EI and many success markers in higher education.

**Scholastic Achievement**

The primary focus of education is academic performance (Vela, 2007). Cognitive student achievement measures (i.e., grade point average: GPA) receive the utmost attention in all settings of higher education. Grehan, Flanagan, and Malgady (2011) explained that most graduate programs attempt to identify the highest quality prospective students by placing foremost emphasis on cognitive skills, measured indirectly through the Graduate Records Examination (GRE).

As previously mentioned, EI is an intersection of emotion and cognition (Caruso, 2004). This is exemplified by the work of Lam and Kirby (2002) that explored the relationship between Ability EI and cognitive performance. Assessing the cognitive
ability of undergraduates through a timed, difficult, logical reasoning test, the scholars determined EI to uniquely explain individual cognitive-based performance beyond the level attributed to a student’s general intelligence (IQ). Lam and Kirby attempted to explain such correlations stating, “Individuals with well-developed emotional intelligence are able to identify and control their own emotions and those of others. They are less likely to be paralyzed by fear, hijacked by negative emotions, and strangled by anxiety” (p. 141).

Other scholars have examined the relationship between EI and more comprehensive measures of student academic achievement in adolescent, college, and graduate student populations (e.g., Khan, Saleem, Tahir, & Nadeem, 2012; Pope, Roper, & Qualter, 2012). Márquez, Martín, and Brackett (2006) analyzed the relationship of various factors to GPA among high school students in Spain. Ability EI (assessed with the MSCEIT) showed discriminant validity in predicting academic grades over measures of Big Five personality, general intelligence, and social competence. Vidal-Rodiero, Bell, and Emory (2009) also studied secondary school students’ academic performance, but specifically regarding science courses. Assessments were conducted in regards to Trait EI with the TEIQ. While the global measure of EI produced by the study instrument did not predict GPA, components of EI did.

Qualter et al. (2012) studied factors that related to academic performance on national examinations in the United Kingdom taken at the end of pupils’ compulsory education (roughly 16 years of age). Data was taken from a cohort of 11 year-olds, 5 years prior to the national examinations (Ability EI, Trait EI, personality indicators, and cognitive ability). Cognitive ability at age 11 was the strongest predictor of academic
achievement at age 16 (Qualter et al.). However structural equation modeling revealed that Ability EI moderated the effect of cognitive ability on performance. Trait EI even directly predicted academic performance five years later for male students, although not for females.

In a university setting, Vela (2007) found that EI scores accounted for a higher degree of variance in first year achievement than did Standard Aptitude Test (SAT) scores. Advocating for the inclusion of EI measures in the admissions process, the author explained that coupling together EI and SAT scores provides a more powerful predictor than either measure alone. Khan et al. (2012) studied EI scores in conjunction with measures of self-esteem and came to a similar conclusion as Vela. Khan and colleagues stated that the two variables taken together accounted for 71.2% of the variance in one’s academic achievement as measured by GPA and that one’s EI was a greater predictor than one’s level of self-esteem. Using a lesser-known assessment instrument, the Swinburne University Emotional Intelligence Test (SUIET), Downey, Mauntsteohen, Lloyd, Hansen, and Stough (2008) also found that a student’s EI could predict academic achievement. The scholars examined achievement records by subject and found evidence that different dimensions of EI might be more related to particular subjects. Through a regression analysis, Downey et al. discovered that the dimension of EI Understanding Emotions was a predictor for classes in the arts and geography. The dimension Emotional Management and Control was found to predict scores in mathematics.

While the majority of scholarship has looked at the relationship of EI and academic achievement from a short-term perspective, Pope et al. (2012) examined the issue longitudinally. The scholars sought to determine if levels of EI had any bearing on
students’ final average percentage mark (APM), as well as on degree completion. Using the ECI, Pope et al. were able to determine a Global EI score as well as specific emotional competency scores. Global EI scores in the study were not significantly related to the final APM. However, higher final APMs were significantly related to five of the EI competencies – conscientiousness, adaptability, empathy, organizational awareness, and building bonds.

Finally, EI scores have been shown to correlate with student achievement in graduate school and internship performance (Grehan et al., 2011). Grehan et al. specifically wanted to gain insight as to what led to greater success in educational psychology graduate student achievement and ultimately what led to the production of better school psychologists. The authors compared both EI scores and scores from the Big Five Personality Test and found that EI was significantly correlated to graduate grade point average (GGPA); none of the components of the Big Five assessment were found to have a significant relationship. The researchers therefore encouraged faculty to utilize study findings to help current students reach their potential in both the academic and applied settings.

Health and Wellbeing

The relationship between EI and overall health is well documented. Higher EI has been linked to better psychological functioning and impulse control (Schutte et al., 1998). Brown and Schutte (2006) explained that more social support and greater satisfaction with social support (both linked to higher levels of EI) might create buffers for various types of illnesses. Schutte and Malouff (2013) hypothesized that higher EI provides resiliency in the face of adversity. Examining 44 effect sizes that included nearly 8,000
participants, Schutte et al. (2007) described a positive association between EI and mental health ($r = .29$), psychosomatic health ($r = .31$), and physical health ($r = .27$). The researchers theorized that a person’s ability to perceive, understand, and manage emotions determined the extent that they would experience health related issues.

Additional studies have concluded that EI is strongly related to a student’s ability to cope with stress and regulate emotions to improve various performance indicators (Arora et al., 2011; Houghton, Wu, Godwin, Neck, & Manz, 2012). Houghton et al. described the collegiate population as one that is particularly prone to high levels of stress. The authors stated that there are severe and varied consequences with high levels of stress and cited these consequences as reasons to integrate EI training in higher education settings. The researchers believed that an educational focus on emotional regulation strategies could assist in the development of coping strategies to better manage stressors as students and in future professional settings. While the research of Houghton et al. is quite promising in the context of student wellbeing, their statements were derived mostly from observations of these strategies being imparted through their own classroom teaching and only qualitatively analyzing course evaluation forms.

Similarly, Arora, et al. stressed the importance of managing stress with monitored outcomes. They explained that in the medical field, stress can significantly impair both psychomotor and teamwork skills in novice surgeons. The researchers assessed medical students performing surgical tasks to gain insight into the relationship of EI and stress management. While Arora et al. found that high Trait EI individuals showed increased sensitivity to environmental stressors, results indicated that students with higher levels of EI recovered from experienced stress at a much greater pace than lower EI students. In
other words, the work of Arora et al. indicated that higher levels of EI allowed surgical students be more aware of negative emotions (stressors) and manage such emotions with greater ability.

Kotsou, Nelis, Gregoire, and Mikolajczak (2011) noted an improvement in overall life satisfaction (12.4%) through a self-report instrument after respondents increased EI through an intervention. Additionally, Kotsou et al. noted a report of improved interpersonal relationships, and decreased stress (both reported stress and stress measured through individual cortisol levels). It appears that all types of interpersonal relationships can be improved through interventions in developing EI; Malouff, Schutte, and Thorsteinsson (2014) produced evidence that increased EI led to greater satisfaction in romantic relationships as well.

Many mood and anxiety disorders are characterized by maladaptive emotional states such as a lack of awareness of emotion or a deficiency in the ability to manage emotion (Schutte & Malouff, 2013). Scholarship has therefore explored the relationship between EI and various types of maladaptive functioning and deviant behavior. Trinidad and Johnson (2002) used the MEIS (an earlier version of the MSCEIT) and found a negative correlation between levels of Ability EI and student’s usage of alcohol and tobacco products. The scholars posited that EI led to a stronger ability to read fellow students and avoid peer pressure. Riley and Schutte (2003) expanded upon the findings of Trinidad and Johnson by studying alcohol and drug related problems (as opposed to simply the amount of consumption). Using the AES, Riley and Schutte found supporting evidence that EI is negatively correlated with issues pertaining to alcohol and tobacco.
Further, Schutte et al. (2011) demonstrated evidence that Trait EI mediates between Ability EI and alcohol related issues such as binge drinking and alcohol dependence.

Research has related EI to many criterions of student health and wellbeing. Happy, healthy, satisfied, and well-adjusted students might just be the most successful ones. According to Pope et al. (2012), specific aspects of EI predict student success and life outcomes. The researchers explained, “Successful students are those with better intra-personal abilities and adaptability, more effective change measurement skills, are better able to identify potential problems and use realistic and flexible coping mechanisms” (p. 908). Studying undergraduate psychology students, the scholars discovered EI to positively correlate with: (1) life satisfaction; (2) social competency; (3) pro-social behavior; (4) optimism; (5) quality of relationships; (6) better career performance; and (7) health and well-being. In sum, the aforementioned literature is of great importance to divisions of student life and academic administrators.

**Student Retention**

Throughout higher education, more than half of all students withdraw before graduation (Parker et al., 2006). Tinto (1993) discussed the complexity of student persistence and multitude of reasons for student departure categorizing factors into the following: (1) pre-entry attributes; (2) goals and commitments; (3) institutional experiences; and (4) integration. The psychological construct of EI has been shown to significantly impact many aspects of the student experience, including aspects contained in models of student retention. Kingston (2008) stated, “the impact of student’s emotional competence in coping with the decision to drop out, or persist, presents a potentially high influential factor that requires further investigation” (p. 129). An emerging body of
research on EI has developed that indicates if a student has a greater ability to understand and manage their emotions, as well as relate and empathize with the emotions of others, they are more likely to successfully navigate the college experience (Nightingale et al., 2013; Parker et al., 2006; Qualter, Whitely, Morely, & Dudiak, 2009).

Higher levels of EI have been linked to stronger academic achievement (Pope et al., 2012; Qualter et al., 2012). Academic failures account for roughly 20% of all student departures (Kingston, 2008). Also, about 20% of students that do not persist in higher education are removed due to disciplinary dismissals (Lillis, 2012). With EI being linked to a student’s propensity to engage in deviant behavior (e.g., Schutte et al., 2011), there is evidence that EI might also be related to the removal of students. Social integration appears to be directly impacted by student EI. Whitney (2010) produced evidence that High EI students have a stronger support network of “safe adults” to assist with coping and transition issues. Song et al. (2010) directly related EI to the quality of social interaction with peers in a university setting. EI as well as Emotional Self Efficacy was determined to help with overall adjustment to higher education (Nightingale et al., 2013). Multiple studies have also concluded that EI is strongly related to a student’s ability to cope with stress (Arora, et al., 2011; Houghton et al., 2012).

The majority of scholarly work examining the relationship between EI and student retention has been short-term and correlational in nature. Kingston (2008) examined the EI of students that chose to enroll in what was considered low dropout rate classes (LDR) versus high dropout rate classes (HDR) at a university in the United Kingdom. The author found that students who chose the LDR course had higher levels of the intrapersonal skills and were more empathetic and reflective. Kingston attributed the
higher dropout rates to students in the HDR class to a higher external locus of control, meaning those students needed external validation but failed to trust peers as a source of academic support. Parker et al. (2006) also found a correlation between EI and student retention. In a survey of 1270 first year students at a small university in Ontario, 213 students had withdrawn from the university by the end of the first year. Students who remained at the university had a significantly higher EI score than those students who dropped out (Parker et al.)

Longitudinal work on the topic has presented conflicting results. Nelson and Nelson (2003) evaluated a cohort of students at Texas A&M University-Kingsville between 1994-1998. Out of the original 165 students sampled, only 15 had graduated after completing 8 regular semesters at the university and were classified as ‘Persistent Achievers’. Results indicated that the group of Persistent Achievers had statistically significant differences from all other groups in the emotional skills categories of positive self-efficacy, assertive communication, rapport, empathy, and time management. The study authors claimed, “Persistent Achievers demonstrated a characteristic pattern of emotional skills… significantly higher than their low achieving classmates. Emotional skills are very important factors in the achievement and retention of university freshman” (p. 7). Pope et al. (2012) completed very similar research testing EI at the onset of a cohort’s college experience and assessing correlations between EI scores of those that graduated by a particular date versus those that did not. Branches of EI scores did impact academic achievement but did not correlate significantly with whether or not the 135 students sampled completed their course of study on schedule (Pope et al.). Many factors could attribute the differing results including survey instruments and study population
Two studies (Qualter et al., 2009; Schutte & Malouff, 2002) utilized an intervention embedded into a transition course to improve student EI and chronicled the results. Schutte and Malouff teamed with a small private university in the southeastern United States to implement specific curriculum for incoming freshman in a semester-long course. Qualter et al. implemented a shorter-term transition course (one week in duration) in the summer prior to the start of the academic year at a university in the United Kingdom. In both cases, development of EI occurred in the experimental groups. Additionally, retention of the students partaking in the EI curriculum was significantly higher than a control group.

Finally, Tinto (1993) discussed the importance of institutional factors regarding student retention. Exploratory evidence suggests that social environments might have EI themselves, composed of the EI of the inhabitants of said environment (Schutte, 2014). Schutte detected a direct relationship between one’s EI and the perceived EI of the two adults with whom they spent the most time. Additionally, Schutte found that the composite EI of a particular social environment in a university setting directly impacted a change in the EI of individuals. The researcher explained that the effect was even more pronounced for new residents potentially through direct mimicry or a social learning process. Lillis (2012) determined that the EI of faculty advisors impacted student retention, especially in cases where low frequency of interactions between the advisor and advisee occurred. Lillis hypothesized that high frequency interactions built trust and a stronger relationship over time. However, in those cases where the frequencies of those interactions were low, students sensed more empathy and understanding from advisors.
with higher levels of EI. Lillis explained, “the tendency for students to seek out interaction beyond their formal class instruction tends to be quite low” (p. 158). If an institution itself has a community of high EI, there is evidence that it can positively impact student retention.

**Postgraduate Success**

If a student were concerned about obtaining employment and having strong earning potential after graduation, various scholars would advise a concerted effort to develop EI (Bar-On, 2000). The relationship between EI and employment and workplace measures has been discussed at length above. In short, individuals with high EI have been deemed to be more employable (Pool & Qualter, 2013) and more likely to flourish in the workplace (Nelis et al., 2011; Schutte & Loi, 2014). As such, programs to develop EI have been implemented through college and university career centers. For example, the development of EI is presented as a central component of The CareeEDGE Model of Graduate Employability at the University of Central Lancashire in the United Kingdom (Darce-Pool & Sewell, 2007).

**EI in Sport**

Sport psychologists have long studied the role of emotions in sport performance (Crombie et al., 2011). Numerous theories have been presented and tested related to how athletes deal with emotions and arousal (Hanin, 2000; Landers & Arent, 2010; Spence & Spence, 1966). Interest in the topic has been driven by examples such as the following anecdote:

I can’t count the number of times a coach has told me that their “best performers” are not their best athletes. Coaches use phrases such as strong minds, amazing
self-confidence, ability to handle anything, incredible work ethic, nerves of steel, and other general descriptions of an athlete’s mental abilities (McCann, 1999, p. 8).

It generally follows that emotions play a crucial role in sport performance. For example, in a study of athletes from the 2000 Olympic games in Sydney, Australia, Pensgaard, and Duda (2003) found that optimizing emotions were related to coping effectiveness and emerged as a significant predictor of overall performance. The exact nature of emotions in sport performance and why individual athletes seem to be uniquely impacted remain less clear, however (Sough, Clements, Wallish, & Downey, 2009). Hanin’s (2000) Individualized Zones of Functioning (IZOF) theory posited that emotion could be optimizing or dysfunctional in regards to an individual’s performance, therefore affecting two different athletes in completely different manners. Working in concert with theories such as IZOF, Psychological Skills Training (PST) refers to the consistent practice of various mental techniques with the objective of enhancing athletic performance; such training is one of the primary functions of many sport psychologists (Weingberg & Gould, 2015).

Despite the sincere interest in emotions and sport performance, the construct of EI has only been studied in the context of sport on a few occasions. By 2009, only six scholarly articles on EI in the field of sport had been published, representing less than one percent of research in the field of EI (Stough et al., 2009). Theoretically advocating for the inclusion of studying EI in sport psychology, Perlini and Halverson (2006) stated, “[elite sport] requires the effective management of stress, tolerance of frustration, regulation of mood, and exercise of emotional restraint, within public purview and
scrutiny” (p. 3). The extent such abilities are manifested in a particular individual or on a particular team could very well be encompassed by measures of EI (Crombie et al., 2009). However, like many other scholarly disciplines, researchers in sport have lacked a standardized approach to inquiry with inconsistent conceptualizations of EI and different assessment procedures (Meyer & Fletcher, 2007). Without substantial expertise in EI, researchers in sport performance and psychology have likely been stymied in their exploration of EI’s utility in sport.

Similar to other fields, initial study on sport and EI examined correlations with particular performance measures. Zizzi, Deener, and Hirschhorn (2003) completed the first study relating EI to athletics. The researchers examined the relationship between EI and hitting and pitching metrics in 61 NCAA baseball players operationalized by Schutte’s AES. Results were mixed. Zizzi et al. did not find statistical significance of EI’s impact regarding hitting measures. However, results demonstrated a moderate relationship between EI and pitching performance, specifically the number of strikeouts thrown. Similarly, Perlini and Halverson (2006) examined EI and its relationship to performance measures in the National Hockey League (NHL). The scholars were concerned with individual’s draft rank, longevity, and offensive output (i.e., points scored). The global measure of EI (assessed by the EQi) was not significantly correlated to any performance measures. However, the dimension General Mood was significantly related to both games played and total points while the dimension Stress Management correlated with a player’s longevity (Perlini & Halverson). Sough et al. (2009) conducted a comparable study with elite basketball players from the South Australian Sports Institute. EI was assessed with the Swinburne University Emotional Intelligence Test.
The factors *Emotional Control* and *Emotional Management* both correlated with the number of field goals made, total points scored, and number of rebounds. However, various other measures such as shooting accuracy did not correlate with any factors of EI (Sough et al.).

All three of the aforementioned studies examined different sports, different populations (collegiate, professional, and national athletes), and used different self-report instruments. These exploratory studies provided evidence that EI training and development might be beneficial to sport performance (Sough et al., 2009) but they did little to provide solid direction on how to pursue EI research in sport. Some correlations were assessed regarding technical skills (e.g., shooting accuracy in basketball) and others were assessed against broader measures (e.g., offensive output). However, all three lacked any kind of definitive supposition of EI’s relationship to overall competitive success.

Crombie et al. (2009) first examined the relationship between EI and winning in a team environment. They assessed the EI of individuals on six cricket teams competing in the South African national cricket competition over two consecutive seasons. Unlike previous scholarship in the field, Crombie et al. assessed Ability EI with the MSCEIT. All professional players from the 2004-2005 and 2005-2006 SuperSport Series four-day competition partook in the research, generating individual and team EI scores. Team EI was shown to be a significant predictor of sports performance with 61% of the variation in log points explained. This study was the first to utilize total team EI in relation to any type of performance measures. There have however been no further attempts to replicate the study in other contexts.
Due to the demonstrated positive relationship between EI and measures of sport performance, two groups of colleagues attempted to develop EI among populations of elite level athletes. Separate interventions were imparted on athletes at The South African National Cricket Academy (Crombie et al. 2011) and on amateur athletes in the Nigerian national programs of handball, weightlifting, volleyball and basketball (Ajayi & Fatokun, 2008). Results of both interventions indicated that EI training has potential to be effective in a population of elite athletes.

There have not been any studies to date that have examined whether or not EI is developed through participation in sport. EI levels differ in student subpopulations (Sanchez-Ruiz, Perez-Gonzalez, & Petrides, 2010) indicating that various student activities or fields of study might facilitate the development of EI. Additionally, Rozell et al. (2002) and Saur et al. (2013) found that student athletes in a college setting have significantly higher levels of EI than non-athletes.

Scholars have recently begun to investigate the relationship between EI and coaching, although the examination has been quite sparse and largely theoretical. For a coach to be truly effective, he or she must be emotionally competent to direct, motivate, and adjust to teams or individual athletes under their direction (Haime, 2011). Chan and Mallett (2011) also highlighted the necessity for a coach to be able to motivate, inspire, manage conflict, and align team members with a common goal. Cultivating trust between leaders and followers is important, and absolutely crucial in the coach-athlete relationship (Chan & Mallett). The scholars explained that accurately perceiving emotions of an athlete enables a coach to identify a particular need. Personal emotional awareness and
the abilities of managing and utilizing emotions can then allow a coach to understand how to direct their behavior and interactions.

Thelwell et al. (2008) examined the relationship between scores on the Coaching Efficacy Scale (Feltz, Chase, Moritz, & Sullivan, 1999) and Schutte’s AES. Feltz et al. defined coaching efficacy as, “the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes” (p.765). Thelwell et al. tested coaches from a variety of different levels in many different sports and noted a significant relationship between overall coaching efficacy and all subscales of EI. Results were replicated in a population of high school basketball coaches as a direct relationship was found between EI and coaching efficacy (Hwang, Feltz, & Lee, 2013). According to Hwang et al., “this finding implies that coaches’ perceived ability to regulate and be aware of their own and athletes’ emotions would inform their sense of being able to affect the learning and performance of their athletes” (p. 302). Interestingly, a coaches’ self-perception of EI might not always match the perceptions of their players (VanSickle, Hancher-Rauch, & Elliott, 2010). Using the ECI, an instrument that allows both self and peer/subordinate/supervisor evaluation, the researchers found that coaches rated themselves higher than their athletes in 14 of the 18 aspects of EI measured as well as in all 4 clusters produced by the assessment instrument.

The Development of EI

Many scholars involved in intelligence research initially criticized the popular and corporate claims of developing EI for improved workplace metrics; such scholars viewed intelligence as a static entity quite difficult to alter (Mayer & Salovey, 1993). Correlational data has provided evidence of the usefulness of EI. However, it is the
scholarly work dedicated to developing EI that has matured our understanding of the construct and proved most applicable to applied settings.

In a meta-analysis of experiments utilizing EI training, Schutte et al. (2013) reviewed studies across various academic disciplines and contrasted results. Schutte et al. only included systematic experimental research in their analysis as the purpose was to present data on whether EI training led to increases in the beneficial characteristics that had been consistently identified in correlational studies. The researchers proclaimed that more intervention studies were needed to establish EI training effectiveness. Only a few experiments of this nature have been completed and used different approaches to training (e.g., didactic instruction, skills-based training, and self-reflection), differed in terms of program duration, and assessed changes in EI with different instruments. However, even with the inconsistency in intervention studies, it appears that EI training can be quite effective (Schutte et al.).

**Improving EI through Management Education**

Various management scholars have indicated that EI can be developed through a variety of training methods incorporated into academic curriculum. A 50-year longitudinal study at the Weatherhead School of Management at Case Western Reserve University provided evidence “that MBAs can develop emotional intelligence…crucial to effectiveness as managers and leaders during their program” (Boyatzis et al., 2002, p. 156). Utilizing an existing curriculum classified as Management Skills Approach, Clark, et al. (2003) demonstrated that current activities found in the approach could in fact have a positive effect on student’s EI, as measured by Cooper’s Executive EQ Map. Sheehan et al. (2009) explored whether students’ EI could be developed without formal instruction
in emotional intelligence theory. Using a peer-rated ECI-U Weatherhead Edition, students were found to improve EI through classroom-as-organization (CAO) pedagogy (Sheehan et al.).

The field of management has long implemented curricular initiatives designed to improve various skills and competencies that are typically encompassed by EI instruments. The focus of these pedagogies were developed to address common criticisms of MBA graduates and enhance workplace success (Boyatzis, 1994) rather than adhering to the conceptual framework of the construct of EI. However, various techniques of skill development used in the aforementioned pedagogies are quite comparable to tactics presented in interventions constructed from EI theory.

**EI Specific Interventions in Higher Education**

Qualter et al. (2009) employed a short summer-session EI intervention program for incoming university students at that included a series of lectures, discussions, and a personal EI workbook designed after Mayer, Salovey and Caruso’s four-branch EI model (2000). Students identified as having Low-EI showed a significant increase in scores post-intervention while students with Average-EI and High-EI showing no significant gains. Pool and Qualter (2012) implemented a longer, 11-week elective within the same university that was designed to improve both EI and emotional self-efficacy (ESE). While the intervention was more substantial than what was used by Qualter et al., the conceptual framework was still based on the same four-branch model of EI. The researchers assessed EI with Mayer, Salovey, and Caruso’s Emotional Intelligence Test (MSCEIT); ESE was measured with Kirk and colleagues’ (2008) Emotional Self Efficacy Scale (ESES). Results showed a significant increase in ESE and strong improvements in
two of four branches of EI measured (Understanding Emotion and Regulating Emotion). Schutte and Malouff (2002) taught a semester-long university transition course utilizing curriculum and pedagogies that the authors stated was purposefully designed to enhance EI. While the scholars failed to articulate the theoretical underpinnings of the transition course, they provided substantial detail of class activities, readings, lectures, and case studies. Significant improvements in student EI were identified by the author’s self-designed AES.

The studies of Qualter et al. (2009), Pool and Qualter (2012), and Schutte and Malouff (2002) represented true experiments or quasi-experiments with a control group in a university setting. While intervention strategies differed in content, length, and focus, there was evidence of EI development in each experimental group; no significant change occurred in any control group’s EI.

**EI Interventions in Sport**

The author is aware of only two studies that have attempted to develop EI among a population of athletes. Ajayi and Fatokun (2008) administered a six-week EI training course with amateur athletes at a sports performance institute in Nigeria. Ajayi and Fatokun neglected to detail the content of the course, simply describing the intervention as a 60-minute session each evening with a 15-minute refresher course each morning designed to improve EI. While positive results were achieved in the experimental group, little is known regarding the pedagogies employed by the researchers.

Crombie et al. (2011) however provided more detail regarding the tactics employed in their intervention to develop EI among professional cricketers in South Africa. Crombie et al. explained that the program included ten three-hour sessions of
training and heavily relied on case study analysis. The experiential cases were designed by seasoned professional cricketers with the intent of linking the metal game to the physical one. Crombie et al. mentioned that athletes were also given an EI diary with explicit instructions on how to relate the cases to their personal experiences. The researchers used an identical conceptualization in the formulation of their intervention, as did Qualter et al. (2009) and Pool and Qualter (2012). Positive results in EI development were determined through assessment with the MSCEIT.

**Additional EI Interventions**

Additional short-term interventions have proven effective at developing EI in the workplace (Kirk et al., 2011; Kotsou et al., 2011; Nelis et al., 2011). Both Kotsou et al. and Nelis et al. utilized behavioral and experiential teaching pedagogies such as group discussions, role-play, and self-observation. Expressive journal writing was also used by two of the research collaborations to:

Reflect in writing on how they effectively perceived, used, understood, and regulated emotions in the self and others in workplace contexts (i.e., personal mastery); observations on how another person managed to process in the workplace effectively (i.e., vicarious mastery); having received encouragement from others (i.e., verbal encouragement); and how their physiological or emotional arousal contributed to emotional processing in the workplace (i.e., physiological states). (Kirk et al., p. 186).

Interventions varied in length including three, 20-minute journal-writing sessions (Kirk et al., 2011), and 15-20 hours of training broken into 5-6 sessions (Kotsou et al., 2011; Nelis et al., 2011). In sum, all three interventions proved to be effective in
improving the EI of an experimental group versus a control. Additionally, both changes in EI scores and measures of subjective and physical wellbeing proved to be lasting. Kotsue et al. retested participant measures after a full year had elapsed. All measures found to be significantly improved after the intervention also proved stable after the duration of a calendar year.

**Methods of Development**

If one is to look closely at each approach, they will see great commonalities uniting each technique. Sheehan et al. (2009) explained, “Experiential methods that provide opportunities for individuals to practice, test, and reflect on learned behaviors in and out of the workplace positively contribute to emotional competency development” (p. 2). The authors particularly focused on the concept of reflection stating, “Reflection becomes necessary in developing emotional competency” (p.85). In reference to their elective modules, Pool and Qualter (2012) stated that the, “program was designed with distinctly experiential learning model in mind, giving students the opportunity to genuinely engage with the subject on a deeper level than the purely theoretical” (p. 310).

Experiential Learning has been defined as the sense-making process of active engagement between the inner world of the person and the outer world of the environment (Beard & Wilson, 2006, p. 19). Kolb (1984) explained that learning and development occurs through one’s engagement in the process of the experience. Each study above mentioned the usage of reflection, abstract conceptualization, and experimentation in their teaching pedagogies designed to improve EI. These aspects of the curriculum and interventions fit nicely into Kolb’s (1984) Experiential Learning Cycle (See Figure 2). Additionally, scholars in experiential learning theory have touted
benefits similar to those that are measured in EI (or at least components of it): (1) teamwork and interpersonal skills; (2) identity and self confidence; (3) improved ability to deal with ambiguity; (4) increased aptitude to operate at a high level of complexity and solve problems; (5) broaden capability to understand multiple perspectives; and (6) strengthen capacity to lead (Bower, 2013; Hawkins & Weiss, 2004). It therefore makes sense that the systematic implementation of experiential learning theory in various courses and modules can lead to the improvement of student’s EI.

*Figure 2. Kolb’s Model of Experiential Learning (1984).*
Chapter Three: Research Design and Methodology

According to Lodico, Spaulding, and Voegtle (2006), applied research is used in cases when the researcher wants to study the effectiveness of a particular educational practice. The goal therefore is to determine the applicability of educational theory in a particular setting. The current research endeavor fits into said category. The rhetoric of sport participation has been equated as an educational theory. As detailed by Vella et al. (2013), “sports can be used to build many positive development assets that provide a strong foundation for growth and development” (p. 417). Through this research project, the author has attempted to determine if using sport as a means to educate specific emotional and social competencies is effective in a particular setting – selective, residential, liberal arts institutions of higher education.

There are two basic designs in educational research used to investigate relationships (Wallen, & Fraenkel, 2000). The proposed research has used a comparison group design rather than a correlational design. Wallen and Fraenkel described comparison group design as a comparison of two or more sets of scores used to test the hypothesis (e.g., a group receiving a particular treatment is compared with a group not receiving the treatment). Wallen and Fraenkel elaborated, “the control or comparison group is important in experimental research, for it serves the purpose of determining if
the treatment has had an effect or if one treatment is more effective than another” (p. 181).

The researcher for this project lacked control over which level a test subject was assigned. The presence of intact groups (participation on a particular team or non-athletic participation) therefore prevented true randomization. The situation led to what is known as a quasi-experimental design (Lomax & Hanhs-Vaughn, 2012). Various types of quasi-experimental research designs exist, including: (1) One-Group Posttest Only Design; (2) One-Group Pretest-Posttest Design; (3) Posttest Only Design with nonequivalent groups; (4) Pretest-Posttest Nonequivalent-Group Design; and (5) Time-Series Design (Morgan, Gliner, & Harmon, 2000). Morgan et al. explained that a specific research design aids in visualizing the independent variables, the levels of the independent variables, when the measurement of the dependent variables will occur, and the internal validity of the study.

For the current study, the author selected a Pretest-Posttest Nonequivalent-Group Design. Pretest measurements were taken on all participants prior to the natural intervention of sport participation. The experimental group was then exposed to the treatment (a particular sport experience), which the control group did not receive. The comparison group proceeded with their usual treatment (their natural collegiate experience). At the end of the intervention period, all groups received a posttest to determine group differences. According to Morgan et al. (2000), such a study design is considered to be non-equivalent because of the potential that groups contained unmeasured characteristics that could have interacted with the treatment and demonstrated group differences that were therefore not strictly due to the treatment.
Participation in Collegiate Athletics as an Intervention

The present study used participation in collegiate athletics as a natural intervention. Using sport participation in such a manner is not without precedence. While the context has typically differed from the current research, scholars have utilized sport participation as an intervention to overcome diversity constraints in the workplace (Joubert & de Beer, 2010), decrease risky sexual behaviors among rural school-going adolescents (Awotidebe, Monyeki, Phillips, & Lens, 2014), and prevent alcohol use (Werch, Moore, DiClemente, Owen, Jobli, & Bledsoe, 2003).

Substantial scholarship has examined sport’s ability to develop character and life skills with mixed results (Danish, Petitpas, & Hale, 2007). Danish and colleagues explained that empirical evidence has not demonstrated a cause and effect relationship between sport participation and psychosocial development. According to Doty (2006), sport participation itself does not build character, but can be used as a mechanism to develop it if the environment is structured in a particular way. As many have discussed, scandals involving cheating, drugs, violence, sexual misconduct, and other inappropriate behaviors, have become prevalent throughout college athletics (e.g., Doty; Sperber, 2000; Stancill, 2014).

The experience of participation in collegiate athletics is quite unique in comparison to other aspects of the college experience. Sport is an emotionally charged environment (Pensgaard & Duda, 2003) that can serve as a proving ground for personal competence and provide clear and immediate feedback (Danish et al., 2007). Athletes encounter a sense of journey and a stimulation of senses as they pursue target goals; they must employ both collaborative and competitive strategies and consistently deal with
constraints, restrictions, obstacles, change, risk, success, and failure (Weinberg & Gould, 2015). Scholars in experiential learning theory have long discussed that such rich experiences possess incredible potential to educate (Dewey, 1938; Jarvis, 1987; Kolb, 1984). It could even be argued that some of the aforementioned ills associated with competitive sport add to the richness of experience from which a student-athlete could utilize in their development. Because of the emotional nature of both the experience of collegiate sport participation and the environment in which it is contested, there is a distinct theoretical connection with EI. Thus, for the present research, participation in collegiate athletics shall be considered a treatment or a natural intervention added to the college experience for student-athletes.

Sampling Method and Subject Description

The population of interest to the researcher is selective, residential, liberal arts institutions that participate in National Collegiate Athletic Association (NCAA) Division III (D-III). The outcomes from participation in sport in this environment affect a sizable portion of the student population. Emerson et al. (2009) explained that with an average enrollment of 2,250, as much as a third or more of the students at liberal arts colleges are listed on a varsity roster. Additionally, the previously mentioned rhetoric surrounding sport closely resembles key learning outcomes of a liberal arts education (Durden, 2009). Because liberal arts institutions claim distinction in holistically developing competencies of their students - which includes educating students outside of the classroom - determining if sport is currently educating student-athletes in such a manner is particularly important at such institutions.
The sample consisted of all winter sport athletes (i.e., Men's and Women's Basketball, Men's and Women's Swimming & Diving, and Men's and Women's Indoor Track and Field) from five liberal arts institutions that participate in a like-minded athletic conference of academically selective liberal arts colleges and universities. Member institutions share a similar mission, strong academic focus, and similar institutional characteristics (See Table 1). Winter sport athletes were selected based on the available timeframe of the present research. The researcher was able to test all athletes in the experimental group prior to the start of the competitive season. Additionally, the end of the competitive season allowed ample time for data collection and analysis prior to university deadlines for a dissertation defense.

The five institutions comprising the study sample represented half of the ten institutions with conference membership. Each institution within the study sample fit into the definition of a liberal arts college (Blaich, et al., 2004; Brenneman, 1994; National Liberal Arts College Rankings, 2016). The mean size of the student body within the conference as a whole was 1,953 ($SD = 578$). Every college or university within the conference was ranked in the Top #150 of all National Liberal Arts Colleges (National Liberal Arts College Rankings) and had a student-faculty ratio of between 9:1 and 12:1. The mean cost of each institution (only including tuition and fees) was $41,644 ($SD = $5,379). Overall, the sample was quite selective regarding admissions with a mean acceptance rate of 58.88% ($SD = 17.52$%). Graduation rates were strong with the mean four-year rate across conference institutions at 70.0% ($SD = 9.23$%). The freshman retention rate throughout the conference was also high with a mean of 86.58% ($SD = 6.29$%). The financial strength (as measured by the endowment) of each member
institution varied substantially with a range of $63.4 Million to $765.8 Million.

Institutional missions and the missions of the athletic departments of conference
members are not outlined in an attempt to protect the identity of study participants.

Chapter Five will discuss missions of comparable institutions as well as liberal arts
experiences in depth.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
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<td>2991</td>
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<td>89.40%</td>
<td>58.88%</td>
<td>17.52%</td>
</tr>
<tr>
<td>4-Year Graduation Rate</td>
<td>10</td>
<td>59.00%</td>
<td>86.00%</td>
<td>70.00%</td>
<td>9.23%</td>
</tr>
<tr>
<td>Freshman Retention Rate</td>
<td>10</td>
<td>75.50%</td>
<td>94.00%</td>
<td>86.58%</td>
<td>6.29%</td>
</tr>
<tr>
<td>Tuition and Fees</td>
<td>10</td>
<td>$30,290</td>
<td>$48,682</td>
<td>$41,644</td>
<td>$5,379</td>
</tr>
</tbody>
</table>

Note. Data obtained through official rankings website (see references).
Endowment is in Millions.

In order to secure support from sample institutions, the researcher contacted all
Athletic Directors within the conference to discuss the study proposal and gauge interest.
Five Athletic Directors, representing half of the conference, expressed interest in
participation. After electronic correspondence and phone conversations, the researcher
completed site visits at the five interested institutions. In each case, Athletic Directors
pledged support as far as informing and encouraging coaching staffs under their direction
to promote participation with student-athletes. Athletic Directors were continuously
informed with the study progress so that reminders to coaches and student athletes could
be generated internally as well as coming directly from the researcher. A combination of
other personnel including Deans of Students, Directors of Institutional Research, Institutional Review Boards, faculty members, and Directors of Wellness and Student-Athlete Services were contacted at each institution to assist in the process of soliciting study participants. A further description of the process is detailed in Data Collection (See below).

In total, the student enrollment at the five participating institutions was 9,409. Based on team rosters available on institutional websites, approximately 3,000 students were varsity athletes and 750 students had participated in winter sports the previous year (the experimental group for the present study).

According to Wallen and Fraenkel (2000), if a researcher possesses previous knowledge of a population and the specific purpose of research, there is potential to engage in purposive sampling. The researcher makes an assumption that such knowledge of the population can determine whether a particular sample will be representative. Wallen and Fraenkel differentiated purposive sampling from convenience sampling in that purposive sampling is based on judgment of selection for a specific purpose; convenience sampling simply studies whoever is available. The scholars however cautioned that a major disadvantage of such a technique is that a researcher’s judgment might be flawed.

In the case of the present research, the author engaged in purposive sampling; mission statements of the selected institutions and the conference as a whole explicitly mentioned many of the competencies that are consistently touted in the rhetoric of sport. The selected institutions encompassed a varying mix of the institutional characteristics outlined in Table 1. It is important to note that the selected sample did not represent
ecological generalizability. In other words, the environment at state sponsored institutions, less academically selective institutions, institutions with larger student bodies, or institutions that participate at other NCAA divisions are likely markedly different. One should therefore take caution before applying findings from this research outside of the studied environment.

The composition of the student bodies within the study sample and the study population are quite comparable. Additionally, the author did not have interest in how the intervention affected different groups (i.e., other demographics) outside of the intact groups of each sport team. For such reasons, little additional demographic information was collected (see Appendix B). Outside of information directly pertaining to the research questions, only data regarding the student’s major, additional curricular activities, and class year were recorded.

**Threats to Experimental Validity**

Lodico et al. (2006) explained that experimental validity is typically divided into two concepts. The scholars defined internal validity as the degree that the outcome variable was affected by the treatment and not some extraneous factor. Lodico et al. summarized external validity as the degree the results from the study were generalizable outside of the sample.

Whenever relationships are tested, there is a possibility that what was observed in the data could be explained by something else (Wallen & Fraenkel, 2000). Lodico et al. (2006) outlined seven threats to internal validity:

1. History: An event that occurs outside of the study that affects the outcome variable
2. Maturation: A personal change that occurs over time in physical, mental, or emotional functioning

3. Testing: An improvement in the posttest simply by taking a pretest

4. Instrumentation: A lack of reliability or validity in the instrument used for testing

5. Statistical Regression: The tendency of scores to migrate toward the average

6. Differential Selection of Subjects: Differences present in intact groups (non-random)

7. Mortality: Subject attrition over time (prevalent in a pretest posttest situation)

Regarding the threats of History, Maturation, Testing, and Statistical Regression, Lodico et al. (2006) advised the use of a control group. Using a valid and reliable instrument would control the threat of Instrumentation (Lodico et al.). The scholars advised using a pretest to avoid issues with Mortality and random sampling to accommodate error associated with Differential Selection of Subjects.

Wallen and Fraenkel (2000) included six additional threats to internal validity:

1. Location: An alteration of results due to the location in which the data was collected

2. Instrument Decay: Differences in the interpretation of results due to such factors as scorer fatigue

3. Data Collector Characteristics: Individual characteristics of collectors that may have an effect on the nature of the data they obtain

4. Data Collector Bias: An unconscious distortion of the collected data to support a hypothesis

5. Attitude of Subjects: The way in which subjects view their participation in a study

6. Implementation: Differences in the manner a treatment is implemented
The previously mentioned research design reduced many of the concerns to internal validity posed by Lodico et al. (2006) and Wallen and Fraenkel (2000). The Pretest-Posttest Nonequivalent-Group Design utilized both a control group and a pretest; many of the threats addressed such as History, Maturation, Testing, Statistical Regression, and Mortality were therefore controlled. The tests were administered online through Qualtrics and were automatically scored. Contacts with study participants followed a set script and correspondence occurred through email. The AES (Assessing Emotions Scale; also referred to in literature as the Emotional Intelligence Scale, The Self-Report Emotional Intelligence Test, and the Schutte Emotional Intelligence Scale) can be completed in approximately five minutes (Schutte et al., 1998). Therefore, threats such as Location, Instrument Decay, Data Collector Bias, and Data Collector Characteristics were mitigated. The internal threat of Implementation, as described by Wallen and Fraenkel actually pertained to a study research question. As the scholars declared, the implementation of a treatment might differ depending on who administered it. The treatment in this case was naturally occurring and potentially differed for each intact group (athletic team). The study author was in fact interested in differences in the dependent variable based on how the treatment was implemented. Schutte et al. (2009) described significant scholarship undertaken on the psychometrics of the AES; at the time of publication over 200 additional studies listed in the PsycINFO database had cited the original article that introduced the scale (Schutte et al.). The threat of Instrumentation (using a valid and reliable instrument) is discussed in detail below.

There is, however, two types of internal validity that require further discussion. The threat of Differential Selection of Subjects could pose an issue because of a study
design that utilized intact groups. Morgan et al. (2000) expressed that in quasi-
experiments, groups are often nonequivalent and can potentially make interpretations of
data difficult. The work of Rozell et al. (2001) indicated that there are differences in EI in
various collegiate sub-populations. The author therefore used pretest data to conduct an
Analysis of Variance (ANOVA) between groups to determine baseline group differences
in EI.

Because the AES is a self-report measure, Attitude of Subjects could potentially
play a role in subject responses. Schutte et al. (2009) explained that self-report measures
are potentially at risk for study subjects to provide answers considered more socially
desirable. It could be argued that simply having the word intelligence in the name of the
instrument might encourage respondents to attempt to provide more socially desirable
answers. Therefore, the researcher elected to refer to the instrument as the Assessing
Emotions Scale (AES) rather than the Emotional Intelligence Scale (EIS). Additionally,
test results were kept anonymous and were not used for selection or promotion; study
participants should have lacked motivation to provide answers that might portray them in
a more positive fashion.

Campbell and Stanley (1963) described threats to external validity as interaction
effects. The scholars elaborated, “they thus represent potential specificity of the effects of
X to some undesirably limited set of conditions” (p. 17). Lodico et al. (2006) outlined
seven threats to external validity:
1. Pretest-Treatment Interaction: A different study outcome due to participant
sensitization from pretest
2. Multiple-Treatment Interaction: A difficulty in determining which of multiple treatments led to found differences

3. Selection-Treatment Interaction: Different group characteristics that interact with treatment variable

4. Specificity of Variables: Conditions unique to a particular setting that are not transferable to other settings

5. Treatment Diffusion: Any communication between experiment and control group that could alter results

6. Experimenter Effects: Methods of conducting a study that are unique to a particular researcher

7. Reactive Arrangements: A difference in feelings, behavior, or attitudes simply from being part in a study

As previously discussed, the AES is a relatively short instrument. Partaking in the AES was the only aspect of the pretest. There was a substantial amount of time between the pretest and posttest (approximately five months). It was therefore unlikely that participating in the pretest for this particular research influenced the manner in which one developed from sport participation. Study participants did not operate in a vacuum; they proceeded with their normal college experience. Some participants could have been exposed to non-traditional curriculum designed to enhance competencies that could be reflected in measurements of EI (Clark et al., 2003; Sheehan et al., 2009) or other extracurricular activities that developed such competencies. These additional “treatments” outside of sport participation could have altered results. However, it can be assumed that no group had markedly differing experiences as a whole outside of sport participation.
Selection/Treatment Interaction posed no issues for this particular research, as the author was interested in such an interaction. The fact that an interaction could occur would allow for further exploration of best or worst practices to assist in the implementation of a concrete intervention in the future.

The study contained very few specific attributes and none that would not be present at other institutions in the population. Communication between control samples and experimental groups should not have altered results; it was the experience of a group being studied that was measured. Administration of the pretest and posttest was uniform for all participants studied. The “treatment” itself was not unique or unexpected. It was highly likely that study participants were not cognizant of or did not remember they were involved in a treatment. For the discussed reasons, threats to external validity were reduced for this particular research. It is however important to note that any generalization involves extrapolation into a realm not represented in a study sample (Campbell & Stanley, 1963).

**Instrument**

This particular research utilized a pre-established instrument – The Assessing Emotions Scale (AES). Lodico et al. (2006) defined pre-established instruments as those that have previously been piloted, typically by someone other than the researcher involved in the current study. The author received permission from the primary researcher that developed the AES, Nicola Schutte, to use the survey instrument free of cost for research.

Schutte et al. (1998) initially generated a pool of 62 test items based on Salovey and Mayer’s (1990) theoretical model of EI. All aspects of the model were represented by
multiple test-items. After each of the first four authors independently evaluated each item for fidelity to the relevant construct, clarity, and readability, the instrument was pilot-tested on 346 participants (Schutte et al.). Schutte et al. administered additional instruments to all study participants on theoretically related constructs such as alexithymia, non-verbal communication of affect, optimism, pessimism, attention to feelings, clarity of feelings mood repair, depressed mood, and impulsivity.

Schutte et al. (1998) completed a principal-components, orthogonal-rotation, factor analysis of participant responses. The study authors reported a first-factor eigenvalue of 10.79 with 33 scale items loading on the first factor at 0.40 or above. The 33 items that loaded on factor one represented all portions of the conceptual model utilized in the instrument creation (Schutte et al.). Because of the strength of factor one and the adherence of the 33 items to the components of the conceptual model, the researchers elected to use the 33 items for the final version of the scale (Schutte et al.; See Appendix A). Shutte’s 33-item self-report scale is unique in that it that does not present ability and trait conceptualizations of EI as mutually exclusive alternatives but rather complimentary dimensions of the construct (Schutte et al., 2009). The researchers elaborated that while Mayer and colleagues (2011) have more recently argued for a pure ability conceptualization, their original model was a mixture of what one might consider traits and abilities.

The AES asks participants to judge themselves on a five-point Likert scale. For example, “I know when to speak to another person about my problems”, rated from 1 (never) to 5 (consistently). The total EI score is derived from summing up item responses, three of which (5, 28, and 33) are reverse-scored. According to Schutte et al. (2009),
respondents require on average of five minutes to complete the scale with scores ranging from 33 to 165. Higher scores indicate a more developed level of EI.

While Schutte et al. (1998) initially conceptualized the AES as a uni-dimensional measure of EI, their construction strategy has been scrutinized (e.g., Petrides & Furnham, 2000). Petrides and Furnham used confirmatory factor analysis to test the fit of a one-factor model. The researchers found, “most fit indices were wide of their recommended values thereby indicating a lack of fit for the one-factor model in question” (p. 317). Data was then subjected to an exploratory factor analysis so that a more appropriate solution could be suggested. Petrides and Furnham thus proposed a four-factor solution that accounted for 40.4% of the total variance and labeled the factors as follows: (1) optimism and mood regulation; (2) appraisal of emotions; (3) social skills; and (4) utilization of emotions. According to Schutte et al. (2009), the four-factor solution proposed by Petrides and Furnham is the most widely used set of subscales. Additional researchers (e.g., Saklofske, Austin, & Minski, 2003) have provided support for the same factors proposed by Petrides and Furnham. However, Schutte et al. (2009) clarified that there has been some disagreement as to what items load on the proposed factors. Others disagreed altogether and suggested a six-factor solution (Lane, Thelwell, Lowther, & Davenport, 2009). The instrument authors however still contended that based on a factor analysis, the AES measures a single general EI factor (Schutte, et al., 2011).

Instrument Reliability

A researcher can have more confidence in the reliability of pre-established instruments assuming that the instrument is implemented in the same manner (Wallen and Fraenkel, 2000). The researchers described reliability as the consistency of the
information obtained within an instrument. Wallen and Fraenkel explained that if a yardstick was used to measure something multiple times and did not achieve a consistent reading, one would conclude that the information was unreliable. In other words, there is an expectation that a reliable instrument provides consistent feedback each time it is used. Scores on subsequent attempts are typically not identical, but they should not differ greatly (Wallen & Fraenkel). The researchers elaborated that a variety of factors such as changes in motivation, anxiety, the testing situation, the wording of questions, or the characteristic itself result in errors of measurement.

Three distinct methods are typically employed to establish reliability: (1) Test–Retest Method; (2) Equivalent Forms Method; and (3) Internal Consistency Methods (Wallen & Fraenkel, 2000). The authors described the test–retest method as an administration of the same instrument twice to identical individuals after a specific time interval has elapsed; the stability of the scores would then be obtained with the calculation of a reliability coefficient. Wallen and Fraenkel however cautioned that retest coefficients could be affected by the length of time that elapsed between a test and a retest. With a greater amount of elapsed time, there is a stronger likelihood of changes in study subjects. Thus the reliability coefficient is likely to be lower (Wallen & Fraenkel). Additionally, reliability can be established by administering two variations of the same instrument to subjects. Wallen and Fraenkel referred to this method as the Equivalent Forms Method. Such a technique utilizes different questions that attempt to measure the same content. In this case a reliability coefficient distinguishes if the two forms of an instrument measured the same thing. Wallen and Fraenkel also detailed multiple types of Internal Consistency Methods that do not require more than one administration of the
test. Methods such as Split-half Testing and the Kuder-Richardson Approach, utilize formulas to determine internal consistency.

Reliability of the AES has been previously established in multiple ways. Initial internal consistency analysis showed a Cronbach’s alpha of .90 (Schutte et al., 1998). The researchers then performed a crosscheck of internal consistency with an additional 32 participants and found a Cronbach’s alpha of .87. Schutte et al. (2009) detailed 27 additional studies that reported Cronbach’s alpha with a mean alpha across all samples of .87. In order to establish test-retest reliability, Schutte et al. (1998) administered the instrument on two separate occasions to an additional group of 28 individuals. Reported two-week test-retest reliability was 0.78 (Schutte et al, 1998).

According to Schutte et al. (1998), the reading level for the AES was established with the Flesch-Kincaid reading grade level formula (Flesch-Kincaid = 5.68). While the development sample for AES consisted of adults varying in age, multiple studies have found the scale to contain strong psychometric properties with other populations such as Australian, Canadian, and Malaysian adolescents (Schutte et al., 2009). The AES was developed and validated in the English language (Schutte et al., 1998). However, Schutte et al. (2009) reported that translated versions of the scale have exhibited potential in languages such as Hebrew and Polish. Zizi, Deaner, and Hirschhorn (2003) completed additional pilot testing of the AES with a group of college baseball players. The authors stated that the scale “fit the sport context well due to readability and brevity of administration” (p. 265).

Because of the extensive previous psychometric work regarding the reliability of the AES, the present research simply administered a reliability analysis in the Statistical
Package for Social Science (SPSS) software to test for internal consistency. Alpha levels were checked to determine the true variance in test scores as opposed to the error variance. Wallen and Fraenkel (2000) exhorted, “there is seldom any excuse for failing to check internal consistency, since the necessary information is at hand—no additional data collection is required” (p. 102).

**Instrument Validity**

It is possible that scores obtained from an instrument can be found reliable, but not valid (Wallen & Fraenkel, 2000). Lodico et al. (2006) described validity as an instrument measuring what it claims to measure. Lodico et al. outlined five types of instrument validity:

1. Construct Validity: A collection of information from a variety of sources that determines the instrument is accurately measuring an abstract trait or quality
2. Content Validity: An examination by experts of both the depth and breadth of scale items
3. Criterion Validity: Evidence of a test’s relationship with another measure (reflects the degree of correlation between the scores on multiple measures)
4. Concurrent Validity: A positive correlation between the instrument and another test taken in the same time frame (Discriminant Validity would then be a negative correlation between the instrument and another test taken in the same time frame)
5. Predictive Validity: The ability to use instrument scores to predict performances in a future situation

A significant breadth of research has utilized the AES, including some of the very few studies that have measured emotional intelligence in the context of sport (Lane et al.,
2009; Thelwell et al., 2008; Zizzi et al., 2006). Schutte et al. (2009) mentioned that at the
time of publication, a search on PsycINFO revealed over 200 publications that had cited
the original study that presented the AES. With the scale so frequently used, substantial
psychometric information is available on the instrument.

The first four authors in the creation of the instrument independently evaluated
each test item, as well as the total instrument, for the conceptual fit with Mayer and
Salovey’s original theoretical framework (Schutte et al., 1998). Schutte et al. (1998)
stated that both the global score and sub-domain scores of the AES correlated
significantly with theoretically similar constructs such as mood repair, optimism, impulse
control and alexithymia. Additional psychological constructs such as loneliness and life
satisfaction have shown strong correlations with the AES (Saklofske et al., 2003).
Gardner and Qualter (2010) tested multiple EI instruments against a host of other
theoretically relevant psychological constructs to further establish criterion validity. They
found the AES to be a significant predictor of all 11 tested criteria.

Numerous scholars have explored how results from the AES related to outcomes
one might expect to be related to EI. AES scores have been directly linked to maladaptive
functioning and deviant behavior (Schutte et al., 2011), mental, psychological, and
physical health (Schutte et al., 2007), and one’s ability to cope with stress (Houghton et
al., 2012).

Many have questioned whether or not measures of EI contribute information
about adaptive emotional functioning that is distinct from personality measures such as
the Big Five Model of Personality (Big Five; e.g., Grehan et al., 2011; Tok & Morali,
2009). Qualter et al. (2012) tested incremental validity against the Big Five (established
by The NEO Personality Inventory) and found the AES to significantly predict modest
degrees of unique variance in approximately half of the criteria tested. Van Rooy and
Viswesvaran (2004) also showed that the AES had incremental validity over the Big
Five, yet the Big Five did not show incremental validity of the AES. They explained,
“Thus, it is possible that EI could be considered a better predictor of performance than
the Big Five factors of personality” (p. 86).

In summation, Petrides and Furnham (2000) reported that the AES has
demonstrated face, construct, predictive, and discriminant validity. Meyer and Fletcher
(2007) stated, “meta-analysis results indicated that AES had higher predictive validity
than all other EI measurements examined” (p.4).

Self-report measures such as the AES may be at risk for respondents to provide
answers that are considered more socially desirable (Schutte et al., 2009). However, Kirk
et al. (2008) provided results indicating a non-significant relationship between the AES
and scores on the Marlow-Cowne Social Desirability Scale. Similarly, another common
critique of self-report measures is that they can be falsified when there is motivation to do
so (Whitman e al., 2008). Whitman et al. utilized a Solomon four-group design to assess
a subject’s ability to “fake” answers on the AES. The results indicated that while the AES
is indeed susceptible to intentional faking, the instrument is much more susceptible to
fake-bad attempts than fake-good attempts. Results indicated that previous exposure to
the test also increased one’s ability to fake. Whitman et al. found that neither general
mental ability or personality factors significantly influenced fakability.

Because of a respondent’s potential ability to select a socially desirable result or
“fake” a preferred answer, it is imperative that the AES is only used in certain contexts
and circumstances. If an employer uses the AES for selection or promotion, there is strong potential that an employee could score considerably higher if they had previously taken the test (Whitman et al., 2008). Whitman et al. advised for an employer to be prudent with retakes unless a certain minimum time has elapsed. Schutte et al. (2009) also cautioned that the purpose of the assessment should be kept in mind when deciding upon the EI instrument to use. They explained, “The scale… appropriately used for research purposes and to assist individuals who are motivated to self-reflect on aspects of their emotional functioning in the context of issues such as career goals or experience of problems” (p. 129). The researchers elaborated that the scale was not appropriate to use when participants have incentive or motivation to appear in a certain manner.

**Variables**

Dependent Variable: EI Score (as measured by the AES)

In the present study, EI scores served as a proxy for student-athlete competency development. Changes in scores therefore represented the extent that participation in sport was serving the education missions of sample institutions.

Independent Variable 1: Institution

- Levels of IV₁: (5) Institution #1, Institution #2, Institution #3, Institution #4, and Institution #5

Independent Variable 2: Sport + Control

- Levels of IV₂: (7) Men’s Basketball, Women’s Basketball, Men’s Indoor Track and Field, Women’s Indoor Track and Field, Men’s Swimming and Diving, Women’s Swimming and Diving, and no sport (control)
• IV$_2$ was considered an active variable with each sport (level) serving as a natural intervention, while the final level (no sport) served as the control.

• Fall and Spring-sport athletes were not included in either the experimental or control group. Based on the timing of the research, those athletes would receive part of the experience of athletic participation (e.g., captain’s practices and off-season community service) and therefore would not represent the experimental or control populations.

It is quite possible that the environment and the culture present at a particular institution and within a particular athletic department could impact a student-athlete’s EI development. Schutte (2014) demonstrated that social context could in fact influence individual EI. She found that a composite EI level of within a university environment predicted individual changes over a three month time period. While the sample institutions are composed of relatively similar characteristics, social contexts could be quite different. A particular athletic department could focus on professional development. Different types of student support systems and resources could be present. The Director of Athletics at one sample institution earned a terminal degree in educational leadership; there is potential that his leadership therefore alters how student-athletes are educated. For these reasons it was necessary to determine the effect of the institution on the EI development of student-athletes.

Coaches arrive to their positions with a variety of backgrounds, experiences, and levels of professional development. Some might have degrees in education while others might not possess any formal training in education. There are also inherent differences between the sports in the sample. While basketball is considered a team sport, both
swimming and diving and track and field are considered individual sports. It is quite possible that different competencies are developed to different extents by the nature of a sport.

**Data Collection**

The first step towards securing study participants was initiating contact with the Director of Athletics at each sample institution. After assessing the interest of particular departments within the desired conference, the researcher completed face-to-face meetings with the Director of Athletics at five institutions. An agreement of participation was reached so that access would be granted to the student-athletes at each research site. The Director of Athletics at each site then conducted meetings with individual head coaches of teams to be sampled. This was done so that each coach knew that there was both departmental and institutional interest in studying athletes on their teams. Coaches were instructed to inform and remind student-athletes about the ongoing research. Email addresses of current rosters were provided by each head coach of the desired sample population to the Director of Athletics and transferred to the researcher.

After the Institutional Review Board (IRB) at the researcher’s host university approved the present research, the IRBs of each research site were contacted as well. An additional IRB submission was required at all but Institution #2. In each case, a letter of support from the Director of Athletics was provided to indicate internal interest in the research project.

At Institution #1, in-person meetings with the Dean of Students and the Director of Institutional Research were required in order to access the student population. Due to additional ongoing research at the institution, it was decided that only a random sample
of students would be solicited for the control group (a random sample of 500 students was therefore allowed to be contacted in addition to all winter-sport athletes). An email distribution of the random sample was provided to the researcher from the Director of Institutional Research at Institution #1. A similar process was conducted at Institution #3. The Director of Wellness and Student-Athlete Services served as the liaison between the researcher and the Director of Institutional Research. An email distribution of roughly 900 randomly selected students was provided for study solicitation.

At Institution #2, Institution #4, and Institution #5, the Director of Institutional Research provided the researcher with an email distribution list of the entire student body. While the control group was solicited exclusively by the researcher at Institution #2 and Institution #4, a faculty member at Institution #5 contacted additional colleagues at her university for assistance in generating awareness among the student body.

An initial contact email was generated to all students that were to partake in the current research at each sample institution in October of 2015. The initial email (See Appendix C) informed students about the nature of the research and the amount of time needed to complete both the pretest and posttest. For reasons previously stated, the word intelligence was not used in the study description. A follow-up email was transmitted to the distribution list five days later officially inviting students to participate in the research. The email (See Appendix D) contained a link to the AES loaded on Qualtrics. Students were ensured confidentiality but were made aware that an identifier would be needed to be able to compare pretest and posttest scores. Two reminder emails were sent to prospective participants in one-week intervals with a final reminder 24 hours before the closing of the study survey (See Appendix F). The survey was closed at each
institution prior to the official start of the competitive winter sport seasons.

All participants that completed the pretest were then contacted in April of 2016 with a link to the posttest. Identical follow-up email procedures were followed for the posttest. The timing of the pretest and posttest allowed for a five-month natural intervention of sport participation to occur.

**Data Analysis**

According to Sheeber, Sorensen, and Howe (1996), pretest-posttest control group designs are frequently used to evaluate effectiveness of treatments and interventions. As noted earlier, the author elected to use a Pretest-Posttest Nonequivalent-Group Design (Morgan et al., 2000). Sheeber et al. outlined five analytic techniques that could be used in determining whether or not the treatment of sport participation was effective including: (1) Analysis of Variance (ANOVA) on posttest scores; (2) ANOVA on difference scores computed between pretest and posttest; (3) split-plot repeated measures ANOVA; (4) profile analysis; and (5) ANCOVA on posttest scores with the pretest score used as a covariate. The first two suggested methods were not viable for the present research because of the necessity of a pretest and the need to examine the interaction of time and sport participation.

ANCOVA on posttest scores using pretest scores as a covariate answers a slightly different question than what the present study necessitated (Sheeber et al., 1996). The researchers stated, “it asks not whether there are between-group differences on posttest scores, but rather, whether there are group differences after controlling for differences that existed prior to the intervention” (p. 194). Because the current study is a quasi-
experiment without randomly assigned groups, ANCOVA might lead to misinterpretation of results (Sheeber et al.).

The profile analysis is a multivariate approach to the split-plot univariate design (Sheeber et al., 1996). Sheeber et al. explained that both approaches test exactly the same three hypotheses: (1) does the outcome variable differ within a group across time; (2) does the outcome variable differ from group to group across time; and (3) is there an interaction between group and time. Hertzog and Rovine (1985) advised that if a specific a priori hypotheses cannot be formulated, an omnibus test is required. If the selected research design utilizes a mixed-model (one factor repeated and at least one non-repeated), a univariate test is needed (Hertzog & Rovine).

Data analysis for the present study was conducted with a Three-factor Split-Plot Repeated-Measures ANOVA. The mixed-model included one repeated factor (time) and two non-repeated factors (institution and sport + control). Results will determine: (1) if there is a significant main effect of time; (2) if there is a significant main effect of institution; (3) if there is a significant main effect for sport; and (4) if there are any interaction effects. If one of the null hypotheses is rejected, a post hoc multiple comparison procedure (MCP) will be used to determine where the differences lie based on the institution or the particular sport (Lomax & Hanhs-Vaughn, 2012). Lomax and Hanhs-Vaughn however cautioned that MCPs involving a repeated factor are, “seriously affected by a violation of the compound symmetry assumption” (p. 505). The scholars recommended pooling both error terms (adding together) for interaction contrasts.

According to Lomax and Hanhs-Vaughn (2012), assumptions for a multiple factor Split-Plot Repeated-Measures ANOVA can be divided into two sets of assumptions – one
for the between subjects factor(s) and one for the within-subjects factor (repeated measures factor). The researcher must test the between subject assumptions - population scores being random, independent, and normally distributed with equal variances – as well as the compound symmetry assumption associated with the repeated measures factor (Lomax & Hanhs-Vaughn). However, Sheeber et al. (1996) claimed that when only two levels of the repeated factor exist the compound symmetry assumption is not applicable. A researcher can ensure assumptions are met based on the following: study design (Independence); Levene’s Test (Homogeneity of Variance); skewness and kurtosis statistics, Shapiro-Wilke’s Test, and assessment of histograms and Q-Q Plots (Normality); and Mauchly’s Test (Sphericity; Lomax & Hanhs-Vaughn).

**Results**

Significant commonalities exist between what selective, residential, liberal arts institutions seek to accomplish, what sport claims to develop, and what measurements of EI assess. Results from the study will provide a new form of assessment of the educative ability of sport in a collegiate setting. They will indicate whether or not sport, in its current form, is helping to fulfill the academic missions of institutions in the study population.

Study results will indicate one of three results: (1) sport, in this particular population, does not develop EI any differently than a typical college experience; (2) development of EI due to sport participation is not consistent in all settings (differences occur based on institution or coaching staff); or (3) there will be new empirical evidence to defend the rhetoric surrounding sport participation.
Sport is a powerful social institution (Danish et al., 2007) with great developmental potential (Vella et al., 2013). Many scholars of experiential learning theory have outlined how to turn impactful experiences into concrete learning and development (e.g., Jarvis, 1987; Kolb, 1984; Schön, 1983). Various researchers have utilized such techniques in designing interventions and curriculum to develop EI in a university setting (Darce-Pool & Qualter, 2012; Schutte & Malouff, 2002; Sheehan et al., 2009) and even in populations of athletes (Crombie et al., 2011). Studies have provided evidence that indicates a purposeful implementation of certain practices and pedagogies can in fact develop EI.

If significant differences are not found between the pretest and posttest of EI among athletes, there is a problem with how athletics are being conducted in the studied environment. This can definitively be stated because of what institutions in the study population desire to develop within their student body; to see this, one only has to peruse institutional and athletic mission statements of study sample/population institutions. Armed with such information, athletic departments and coaches could then work towards a change in mindset, implementing pedagogies and practices to develop EI.

If results indicate that EI development is not consistent in all settings, preliminary evidence of a “best practice” situation would be present. Follow-up research could then seek to find out why EI was developed to a greater extent on a particular team or at a particular institution.

Finally, if participation in college sport is shown to generate significant EI development over a control group of the student body at large, rhetoric of student development from sport participation will be supported. This type of empirical evidence
could help to smooth the friction between academic and athletic units at institutions in the study population. EI development could become a learning outcome collaboratively addressed by multiple facets of an institution.

Substantial research has shown auxiliary benefits to developing EI that are of great concern to institutions of higher education. Schutte et al. (2011) provided evidence that high EI decreases heavy episodic drinking and other alcohol problems. EI has been shown to have a positive relationship with student retention (Parker et al., 2006) and academic achievement (Vela, 2007). There is even strong evidence that higher levels of EI can lead to improved performance in sport, including increased offensive output in hockey (Perlini & Halverson, 2006), superior pitching in baseball (Zizzi et al., 2003), and better team performance in cricket (Crombie et al., 2009).

Through analyzing the patterns of a student-athlete’s natural EI development due to sport participation, sport can better be used as part of the curriculum to foster the holistic development of an institution’s students and prepare them for life. While the focus of this study was restricted to selective, residential, liberal arts institutions, the work could serve as a basis to study athletics within a broader population of higher education. After all, building competencies in student-athletes to prepare them for performance situations in all areas of their lives should be important to any college or university.
Data was collected through Qualtrics from students at five private liberal arts institutions in the Midwest. Nearly 5,000 students were solicited for this research. The entire student body at Institution 2, Institution 4, and Institution 5 were contacted, while the offices of institutional research at Institution 1 and Institution 3 provided a random sample of student emails that represented a portion of their student bodies.

**Pretest Data**

Descriptive data was taken on each subject to differentiate their institution and their athletic affiliation. The numbers of students contacted, response rates, and the percentages of the total sample associated with the categorical variable Institution are represented in Table 2. Table 3 displays frequencies for the categorical variable Sport. All descriptive data discussed and represented in forthcoming tables was already cleaned; missing data had been imputed and univariate outliers had been removed. The process is detailed in the following section. Institution 1, Institution 3, and Institution 4 all consisted of between 14.7% and 22.6% of the total sample. Institution 5 comprised just 3.7% of the sample with the greatest total participation coming at Institution 5 (42.4%). The highest response rate came from Institution 1 with 22.4% of students completing the survey instrument, while the lowest response rate came from Institution 2 with just 3.4%
responding. Institution 3, Institution 4, and Institution 5 exhibited response rates of between 13.2% and 19.1%. The total pretest rate of response for this study was 15.6%.

The sample distribution was relatively evenly split between athletes (50.6%) and non-athletes (49.4%). Roughly half of the varsity athletes that responded to the survey (24.3% of total respondents) could be placed in the experimental group based on their affiliation with Men’s and Women’s Basketball, Men’s and Women’s Indoor Track, and Men’s and Women’s Swimming and Diving. The remainder of the responding varsity athletes (26.3%) identified with a non-winter sport. Only athletes participating in one of the aforementioned winter sports could be placed in the experimental group as the pretest and posttest surveys were conducted prior to and after the completion of their competitive seasons.

Table 2

<table>
<thead>
<tr>
<th>Institution</th>
<th>Emails Sent</th>
<th>N</th>
<th>Response Rate</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>577</td>
<td>129</td>
<td>22.4%</td>
<td>16.6%</td>
</tr>
<tr>
<td>2</td>
<td>843</td>
<td>29</td>
<td>3.4%</td>
<td>3.7%</td>
</tr>
<tr>
<td>3</td>
<td>964</td>
<td>175</td>
<td>18.2%</td>
<td>22.6%</td>
</tr>
<tr>
<td>4</td>
<td>863</td>
<td>114</td>
<td>13.2%</td>
<td>14.7%</td>
</tr>
<tr>
<td>5</td>
<td>1722</td>
<td>329</td>
<td>19.1%</td>
<td>42.4%</td>
</tr>
<tr>
<td>Total</td>
<td>4969</td>
<td>776</td>
<td>15.6%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 3

Pretest Responses by Sport

<table>
<thead>
<tr>
<th>Athletic Team</th>
<th>N</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Basketball</td>
<td>40</td>
<td>5.1%</td>
</tr>
<tr>
<td>W Basketball</td>
<td>20</td>
<td>2.6%</td>
</tr>
<tr>
<td>M Swim/Dive</td>
<td>24</td>
<td>3.1%</td>
</tr>
<tr>
<td>W Swim/Dive</td>
<td>35</td>
<td>4.5%</td>
</tr>
<tr>
<td>M Track</td>
<td>33</td>
<td>4.3%</td>
</tr>
<tr>
<td>W Track</td>
<td>36</td>
<td>4.6%</td>
</tr>
<tr>
<td>Other (Non-Winter Sports)</td>
<td>204</td>
<td>26.3%</td>
</tr>
<tr>
<td>No Varsity Sport</td>
<td>383</td>
<td>49.4%</td>
</tr>
<tr>
<td>Total</td>
<td>776</td>
<td>100%</td>
</tr>
</tbody>
</table>

Data Cleaning and Missing Data

The pretest sample size was initially 781. The dependent variable (Total AES Score) contained 33 scale items. Even in cases where a study participant skipped a scale item, a Total AES Score was still generated. Three cases were removed because of the extent of missing data on scale items that comprised the dependent variable. The cases that were removed were missing 100%, 58%, and 27% of the 33 items represented on the Assessing Emotions Scale (AES). Additionally, one case was removed because the subject selected identical answers on every question with no differentiation on scale items that were reversed-scored.

The researcher also assessed pretest data for the presence of univariate outliers. Tabachnick and Fidell (2013) described four reasons for the presence of outliers: (1) mistakes with the data entry; (2) mistakes with syntax related to missing values; (3) the outlier is not of member of the population of the intended sample; and (4) a particular case has a more extreme value than the normal distribution. Extreme care was used to decrease the possibility of errors pertaining to data entry and computer syntax. All study
participants were from the desired population. In order to address the presence of extreme cases, z scores were generated for the variable Total AES Score. As described in the three-sigma rule, standardized scores greater than 3.29 can be considered a univariate outlier (Tabachnick & Fidell). Only one such score (\( z = -3.46 \)) was identified and removed. After the removal of cases with a large percentage of missing data and the single univariate outlier, the pretest sample size was 776.

In total, .29% of the values were missing. There were no more than five cases (0.6%) of data missing for any single variable. However, 69 cases, or 8.53% of participants in the study completed surveys with missing data. Because a relatively substantial portion of cases contained missing data, it was imperative to conduct procedures to make all cases useable. Additionally, without completing the missing items that comprised the AES, total Emotional Intelligence (EI) scores for such individuals would be lower than actual values. Since the purpose of the research was to determine if EI scores changed over time, it was imperative to address the issue of missing values in the pretest data. A summary of missing values can be seen in Table 4.
Table 4

**Pretest Missing Values Summary**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Missing $N$</th>
<th>Percent</th>
<th>Valid $N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES31</td>
<td>5</td>
<td>0.6%</td>
<td>771</td>
</tr>
<tr>
<td>AES29</td>
<td>5</td>
<td>0.6%</td>
<td>771</td>
</tr>
<tr>
<td>AES21</td>
<td>5</td>
<td>0.6%</td>
<td>771</td>
</tr>
<tr>
<td>AES22</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES20</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES18</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES13</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES12</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES8</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES7</td>
<td>4</td>
<td>0.5%</td>
<td>772</td>
</tr>
<tr>
<td>AES32</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES24</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES23</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES15</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES14</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES11</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES3</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES2</td>
<td>3</td>
<td>0.4%</td>
<td>773</td>
</tr>
<tr>
<td>AES30</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES27</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES25</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES17</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES10</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES4</td>
<td>2</td>
<td>0.2%</td>
<td>774</td>
</tr>
<tr>
<td>AES33</td>
<td>1</td>
<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES28</td>
<td>1</td>
<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES26</td>
<td>1</td>
<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES19</td>
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<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES16</td>
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<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES9</td>
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<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>AES5</td>
<td>1</td>
<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>Current Team</td>
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<td>0.1%</td>
<td>775</td>
</tr>
<tr>
<td>Class Year</td>
<td>1</td>
<td>0.1%</td>
<td>775</td>
</tr>
</tbody>
</table>
According to Tabachnick and Fidell (2013), the pattern of missing data is more important than the amount of data that is missing. It is necessary to test whether the missing values were scattered throughout the matrix or whether there was a distinct pattern. The researcher conducted Little’s MCAR test to determine if the missing values were related to values on another variable. Results yielded a significant result ($\chi^2 = 3089.755$, $df = 1235$, $p < .001$) indicating that the data was not Missing Completely at Random (MCAR). In order to determine if the data was Missing at Random (MAR) or Missing Not at Random (MNAR), separate variance $t$-tests were analyzed. Statistically significant $t$-tests existed in the data. All but 2 of the 33 variables that contained missing data (93.9%) had at least one predictor variable. It was therefore determined that the missing values were related to other variables; they were not related to the actual values that were missing. MAR could then be reasonably inferred.

While various procedures to address missing data exist, Multiple Imputation is a common and useful strategy when dealing with MAR (Yuan, 2010). Tabachnick and Fidell (2013) described the process as using variables as predictors, in turn providing an equation for missing values. Instead of generating single values for the missing data, Multiple Imputation generates a set of plausible data sets of which the researcher can then combine (Tabachnick & Fidell).

Yuan (2010) discussed the relative efficiency using a finite number of imputations as opposed to an infinite number stating, “For cases with little missing data, only a small number of imputations are necessary for the MI analysis” (p.6). Yuan recommended that in cases where no variable contains more than 10% missing data, a researcher should conduct three imputations. In such a case, the relative efficiency would be .9677. Because
no variable in the data set contained more than .6% missing values, the researcher conducted an SPSS analysis containing three imputations.

After completion of the imputations the new datasets were analyzed. Variability between the three imputations was quite low. The largest difference between the variable means in any of the three imputed datasets was .01. A difference of .01 was only present in 7 of the 33 scale items on the dependent variable. In all other cases of variables with missing data there lacked any variability in the imputed datasets. According to Tabachnick and Fidell (2013), if researchers can show that multiple imputations do not result in substantially different outcomes, only a single imputation is needed. Due to the lack of variability between imputed datasets, the first imputed dataset was used for the remainder of analysis. Comparisons between the original data set and the imputed data set can be seen in Table 5. While there was very little variation between data sets, the imputation was imperative because each variable shown in Table 5 is a scale item on the Total AES Score (the dependent variable). The Total AES Score for individual cases were impacted to a greater degree than the means within each scale item.
Table 5

Comparisons of Original and Imputed Dataset (Pretest)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dataset</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
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<tr>
<td>AES31</td>
<td>Original</td>
<td>769</td>
<td>3.87</td>
<td>0.902</td>
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<tr>
<td></td>
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<td>776</td>
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</tr>
<tr>
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<td>0.986</td>
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<td>776</td>
<td>3.36</td>
<td>1.136</td>
</tr>
<tr>
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<td>Original</td>
<td>769</td>
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<td>0.892</td>
</tr>
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<td></td>
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<td>776</td>
<td>3.91</td>
<td>0.894</td>
</tr>
<tr>
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<td>Original</td>
<td>770</td>
<td>4.06</td>
<td>0.739</td>
</tr>
<tr>
<td></td>
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<td>776</td>
<td>4.06</td>
<td>0.742</td>
</tr>
<tr>
<td>AES18</td>
<td>Original</td>
<td>770</td>
<td>4.15</td>
<td>0.774</td>
</tr>
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<td></td>
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<td>0.782</td>
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<tr>
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<td>0.959</td>
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<td>0.962</td>
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<tr>
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<td>1.061</td>
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<td>776</td>
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<tr>
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<td>1.047</td>
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<td>1.059</td>
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<td>4.37</td>
<td>0.698</td>
</tr>
<tr>
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<td>4.36</td>
<td>0.706</td>
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<td>AES11</td>
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<td>1.318</td>
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<tr>
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<td>Imputed</td>
<td>776</td>
<td>3.09</td>
<td>1.317</td>
</tr>
<tr>
<td>AES30</td>
<td>Original</td>
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<td>4.18</td>
<td>0.749</td>
</tr>
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<td></td>
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<td>0.753</td>
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<td>AES27</td>
<td>Original</td>
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<tr>
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<td>Imputed</td>
<td>776</td>
<td>3.28</td>
<td>0.885</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>776</td>
<td>3.87</td>
<td>0.907</td>
</tr>
</tbody>
</table>

Continued
Table 5 continued

<table>
<thead>
<tr>
<th>AES</th>
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<th>Imputed</th>
</tr>
</thead>
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<tr>
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<td>0.675</td>
<td>0.685</td>
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<tr>
<td>AES17</td>
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<tr>
<td></td>
<td>4.22</td>
<td>4.22</td>
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<td></td>
<td>0.750</td>
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<td>AES10</td>
<td>772</td>
<td>776</td>
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<td></td>
<td>3.82</td>
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<td>1.023</td>
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<td>776</td>
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<td></td>
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<td>4.09</td>
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<td></td>
<td>0.912</td>
<td>0.915</td>
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<td>AES2</td>
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<td>776</td>
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<td>2.46</td>
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<tr>
<td></td>
<td>1.145</td>
<td>1.142</td>
</tr>
</tbody>
</table>

*Note.* Only AES items with missing values displayed.

**Initial Differences**

The researcher was interested in whether there were initial differences in population means between institutions and the sport in which one participated. In order to examine any potential differences between study subjects, the researcher conducted a two-factor analysis of variance (ANOVA).

**Assumptions.** Lomax and Hahs-Vaughn (2012) explained that there are three standard assumptions concerning ANOVA models: (1) Independence; (2) Homogeneity of Variance; and (3) Normality.

Independence is assured when all observations within and across samples are independent of one another. The present research obtained data through sampling either entire student populations (at three of the study institutions) or independent random samples of students (at two of the study institutions). The researcher also examined scatterplots of residuals by group, noting a random pattern of points for each group. Such
an assessment is considered the simplest way to test the assumption of Independence (Lomax & Hahs-Vaughn, 2012).

In order to test the assumption of Homogeneity of Variance, the researcher examined residual plots and conducted Levene’s Test of Homogeneity. Residual plots showed similar variances across all groups and the Levene’s Test confirmed that there was not a breach in the assumption ($F = 1.458, df = 31,776, p = .052$).

All skewness and kurtosis statistics were between the range of -2 and 2, providing evidence that normality was a reasonable assumption. Further evidence of normality could be seen through the visual inspection of quantile-quantile (Q-Q) plots and histograms of residuals. In nearly all cases, visual inspection yielded a normal appearing distribution, especially considering the fairly small $n$’s of many groups. However, one histogram (Institution 3) appeared to have a slightly skewed distribution. Additionally, in the examination of the Q-Q plots, it appeared that some points began to veer slightly off the diagonal line in two levels of the variable Sport (No Varsity Sport and Other Sports). While the majority of Shapiro-Wilk tests were non-significant, one level of the independent variable ‘Institution’ and two levels of the independent variable ‘Current Team’ yielded a significant result: Institution 5 ($p = .003$), Other Sport ($p < .001$), and No Sport ($p = .007$). While the majority of evidence related to the assumption of normality points to a normal distribution, there are cases of conflicting evidence. Lomax and Hahs-Vaughn (2012) explained that a violation of normality could be a result of outliers. In each case where a significant Shapiro-Wilk test was present, the researcher observed residual points that were more than two standard deviations away from their group mean in the box plots. These points were however kept in the analysis because of the three-
sigma rule (Tabachnick & Fidell, 2013). Additionally, the $F$ test has been determined to be relatively robust to violations of the assumption of normality (Lomax & Hahs-Vaughn). Therefore, because of the previously described evidence of normality and ANOVA’s reported robustness to non-normality, there is not an issue with the data in these regards.

**ANOVA Results.** A two-factor ANOVA was conducted to determine if there was a mean difference in the Total AES Scores between students at the five institutions and between the sports in which they participated. Descriptive statistics of the dependent variable can be seen in Table 6.
Table 6

*Descriptive Statistics of the DV: Total AES Score (Pretest)*

<table>
<thead>
<tr>
<th>Current Team</th>
<th>Institution</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Basketball</td>
<td>1</td>
<td>132.50</td>
<td>10.247</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>126.27</td>
<td>17.182</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>95.00</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>131.06</td>
<td>9.833</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>122.43</td>
<td>11.928</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>127.48</td>
<td>13.621</td>
<td>40</td>
</tr>
<tr>
<td>W Basketball</td>
<td>1</td>
<td>130.14</td>
<td>15.356</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>125.75</td>
<td>13.401</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>130.22</td>
<td>10.918</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>129.30</td>
<td>12.503</td>
<td>20</td>
</tr>
<tr>
<td>M Swim/Dive</td>
<td>1</td>
<td>128.18</td>
<td>11.902</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>125.00</td>
<td>13.077</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>128.00</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>131.33</td>
<td>5.132</td>
<td>3</td>
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<td></td>
<td>Total</td>
<td>128.17</td>
<td>10.877</td>
<td>24</td>
</tr>
<tr>
<td>W Swim/Dive</td>
<td>1</td>
<td>122.08</td>
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<td>3</td>
<td>128.75</td>
<td>20.457</td>
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<td></td>
<td>5</td>
<td>127.93</td>
<td>11.750</td>
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<td>Total</td>
<td>126.11</td>
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<td>135.67</td>
<td>18.009</td>
<td>3</td>
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<tr>
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<td>3</td>
<td>128.52</td>
<td>12.139</td>
<td>65</td>
</tr>
<tr>
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<td>4</td>
<td>124.54</td>
<td>14.043</td>
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<td></td>
<td>5</td>
<td>128.55</td>
<td>11.941</td>
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<td>Total</td>
<td>128.53</td>
<td>12.227</td>
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</table>

Continued
As depicted in Table 7, there was not a statistically significant main effect for either independent variable ($F_{\text{Institution}} = .495$, $df = 4,743$, $p = .739$; $F_{\text{Sport}} = 1.376$, $df = 7,43$, $p = .212$). There also lacked a statistically significant interaction effect at an $\alpha$ level of .05 ($F_{\text{Institution} \times \text{Sport}} = 1.439$, $df = 20,743$, $p = .096$). For example, male basketball players did not have a significantly different mean AES Total Score than female swimmers, non-athletes, etc., nor was there a significant difference in mean AES Total Score between any institutions. Finally, a joint effect of both factors on the dependent variable was not present. Without a statistically significant omnibus ANOVA $F$ test, a post hoc analysis was not necessary.
Table 7

*Tests of Between-Subjects Effects (Pretest)*

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<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial η²</th>
<th>Observed Power</th>
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</thead>
<tbody>
<tr>
<td>Current Team</td>
<td>1871.677</td>
<td>7</td>
<td>267.382</td>
<td>1.376</td>
<td>.212</td>
<td>.013</td>
<td>.590</td>
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<td>Institution</td>
<td>384.802</td>
<td>4</td>
<td>96.200</td>
<td>0.495</td>
<td>.739</td>
<td>.003</td>
<td>.169</td>
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<tr>
<td>Interaction</td>
<td>5592.902</td>
<td>20</td>
<td>279.645</td>
<td>1.439</td>
<td>.096</td>
<td>.037</td>
<td>.926</td>
</tr>
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<td>Error</td>
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*Note.* Computed using α = .05.

**Further Exploration of Initial Differences.** According to Rozell et al. (2003) there is evidence that subpopulations of students (i.e., student-athletes and students involved in Greek Life) have higher levels of emotional intelligence compared to the general population of students. Because the researchers were foremost concerned with whether or not sport can develop EI, there was interest in examining the claims of Rozell et al. in that student-athletes could potentially have a higher level of EI than the general student body. Data was recoded so that each subject was placed in the category of either student-athlete (*N* = 392) or non-athlete (*N* = 385: See Table 8).

A one-sample *t*-test was conducted at an α level of .05 to determine if there was a mean difference in AES Total Score between student-athletes and non-athletes. As shown in Table 9, student-athletes had a mean AES Total Score of 128.06 (*SD* = 12.53), while non-athletes had a mean score of 125.65 (*SD* = 15.47). The one-sample *t*-test was
statistically significant \((t = 2.38, \ df = 737.34, \ p = .017)\). This provided evidence to suggest that the mean AES score of student-athletes was significantly higher than that of non-athletes on the pretest. While the effect size was considered small (.20), a post hoc power analysis was 1.00. This provides further evidence to support the assertions of Rozell and colleagues (2003) that subpopulations of students can differ in their mean levels of EI.

Table 8

<table>
<thead>
<tr>
<th>Group Statistics by Athletic Status (Pretest)</th>
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<tbody>
<tr>
<td>Group</td>
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<td>AES Score</td>
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Table 9

<table>
<thead>
<tr>
<th>Independent Samples Test - t-test for Equality of Means (Pretest)</th>
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<tbody>
<tr>
<td>t</td>
</tr>
<tr>
<td>AES Score</td>
</tr>
</tbody>
</table>

*Note. Computed using \(\alpha = .05\).*

**Posttest Data**

Participants that completed the pretest instrument were invited to retake the instrument approximately five months later, after winter sport athletes had completed their competitive season. Identical procedures were followed in the collection of both the pretest and posttest data. Approximately 43% of pretest respondents completed the
posttest as well ($N = 336$). The experimental group of winter sport athletes had a posttest completion rate of 45.8% ($n = 86$) while the control group of non-student athletes had a 47.3% completion rate ($n = 181$). Non winter-sport athletes were eliminated from the analysis.

**Missing Value Analysis and Outliers**

Similar to the pretest analysis, posttest results were initially screened for instrument completion. Even when a participant left a scale item blank, a Total AES score was generated. One case was removed from the sample because of the amount of missing data related to the AES instrument (36.4% of scale items left blank). The posttest sample size available for further analysis was 335.

In total, 36 values (.30%) were missing. While no variable had more than six missing values (1.8%), 31 cases (9.25%) contained at least 1 missing value. A missing value analysis was therefore completed in order for the dependent variable (Total AES Score) to be usable with all respondents. As previously discussed, without data imputation for missing values, the Total AES for individuals would remain lower than the actual score for an individual. A full summary of missing data by variable is displayed in Table 10.
<table>
<thead>
<tr>
<th></th>
<th>Missing N</th>
<th>Percent</th>
<th>Valid N</th>
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</thead>
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<tr>
<td>AES 28</td>
<td>6</td>
<td>1.8%</td>
<td>329</td>
</tr>
<tr>
<td>AES 29</td>
<td>4</td>
<td>1.2%</td>
<td>331</td>
</tr>
<tr>
<td>AES 27</td>
<td>3</td>
<td>0.9%</td>
<td>332</td>
</tr>
<tr>
<td>AES 24</td>
<td>3</td>
<td>0.9%</td>
<td>332</td>
</tr>
<tr>
<td>AES 22</td>
<td>3</td>
<td>0.9%</td>
<td>332</td>
</tr>
<tr>
<td>AES 21</td>
<td>2</td>
<td>0.6%</td>
<td>333</td>
</tr>
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<td>AES 17</td>
<td>2</td>
<td>0.6%</td>
<td>333</td>
</tr>
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<td>AES 6</td>
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<td>0.6%</td>
<td>333</td>
</tr>
<tr>
<td>AES 4</td>
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<td>0.6%</td>
<td>333</td>
</tr>
<tr>
<td>AES 31</td>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 30</td>
<td>1</td>
<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 28</td>
<td>1</td>
<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 16</td>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 14</td>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 12</td>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 11</td>
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<td>0.3%</td>
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</tr>
<tr>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 2</td>
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<td>0.3%</td>
<td>334</td>
</tr>
<tr>
<td>AES 33</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 32</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 26</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 25</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 23</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
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<td>0.0%</td>
<td>335</td>
</tr>
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<td>AES 19</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 18</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 15</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 13</td>
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<td>0.0%</td>
<td>335</td>
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<td>AES 10</td>
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<td>335</td>
</tr>
<tr>
<td>AES 9</td>
<td>0</td>
<td>0.0%</td>
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<td>0</td>
<td>0.0%</td>
<td>335</td>
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<tr>
<td>AES 7</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>AES 3</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
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<td>0.0%</td>
<td>335</td>
</tr>
<tr>
<td>Current Team</td>
<td>0</td>
<td>0.0%</td>
<td>335</td>
</tr>
</tbody>
</table>
In order to determine if there was a distinct pattern of missing data, a Little’s MCAR test was conducted (Tabachnick & Fidell, 2013). The significant result ($\chi^2 = 1341.216, df = 655, p < .001$) suggested that the data was not Missing Completely at Random (MCAR). Separate variance $t$-tests however produced statistically significant results with nearly all variables that had two or more missing cases; the only exception was variable AES 29. Significant $t$-test results demonstrated that variables containing missing data had at least one predictor variable. Similar to the pretest data, MAR (Missing at Random) could therefore be inferred.

Posttest missing data was handled in the same manner as the pretest missing data - with multiple imputations. Similar to the pretest data, no single variable contained a large percentage of missing values. Variable AES 28 contained the highest percentage of missing data at 1.8%. In dealing with data where not a single variable contains more than 10% missing cases, Yuan (2010) recommended generating three imputations. The researcher therefore conducted an SPSS analysis containing thee imputations.

In conducting the analysis of the newly imputed datasets, it was once again apparent that due to the small amount of missing data there was quite low variability between the imputed datasets. A difference of 0.1 between means of AES scale items was the largest on any variable within the three imputed datasets. Since variability between all three imputed datasets was quite low, the first imputed dataset was used for the remained of the analyses (Tabachnick & Fidell, 2013). Comparisons between the original posttest data set and the imputed posttest data set can be seen in Table 11. While there was very little variation between data sets, the imputation was vital because each variable shown in Table 11 is a scale item on the Total AES Score (the dependent variable). While the
means for each AES scale item were not greatly impacted through the process of
imputation, each individual’s AES Total Score that had one or more missing values was
substantially altered and thus made closer to a true score.

Posttest data was also scanned for univariate outliers. Z scores were generated to
look for extreme cases on the variable Total AES Score. All Z scores fell between the
range of -2.77 and 2.34. According to the three-sigma rule, none of the standardized
scores represented a univariate outlier for the variable Total AES Score (Tabachnick &
Fidell, 2013). The total sample thus remained at 335.
Table 11

Comparisons of Original and Imputed Dataset (Posttest)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dataset</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES 2</td>
<td>Original</td>
<td>334</td>
<td>4.12</td>
<td>0.855</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.12</td>
<td>0.853</td>
</tr>
<tr>
<td>AES 4</td>
<td>Original</td>
<td>333</td>
<td>4.15</td>
<td>0.851</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.15</td>
<td>0.851</td>
</tr>
<tr>
<td>AES 5</td>
<td>Original</td>
<td>334</td>
<td>2.32</td>
<td>1.146</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>2.33</td>
<td>1.148</td>
</tr>
<tr>
<td>AES 6</td>
<td>Original</td>
<td>333</td>
<td>4.28</td>
<td>0.790</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.28</td>
<td>0.789</td>
</tr>
<tr>
<td>AES 11</td>
<td>Original</td>
<td>334</td>
<td>3.16</td>
<td>1.315</td>
</tr>
<tr>
<td></td>
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<td>335</td>
<td>3.17</td>
<td>1.317</td>
</tr>
<tr>
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<td>Original</td>
<td>334</td>
<td>3.41</td>
<td>1.003</td>
</tr>
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<td>Imputed</td>
<td>335</td>
<td>3.41</td>
<td>1.005</td>
</tr>
<tr>
<td>AES 14</td>
<td>Original</td>
<td>334</td>
<td>4.34</td>
<td>0.733</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.34</td>
<td>0.732</td>
</tr>
<tr>
<td>AES 16</td>
<td>Original</td>
<td>334</td>
<td>3.97</td>
<td>0.829</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>3.97</td>
<td>0.827</td>
</tr>
<tr>
<td>AES 17</td>
<td>Original</td>
<td>333</td>
<td>4.14</td>
<td>0.723</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.14</td>
<td>0.723</td>
</tr>
<tr>
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<td>Original</td>
<td>333</td>
<td>3.31</td>
<td>1.186</td>
</tr>
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<td>3.30</td>
<td>1.190</td>
</tr>
<tr>
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<td>Original</td>
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<td>3.86</td>
<td>0.957</td>
</tr>
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<td>Imputed</td>
<td>335</td>
<td>3.87</td>
<td>0.954</td>
</tr>
<tr>
<td>AES 24</td>
<td>Original</td>
<td>332</td>
<td>4.45</td>
<td>0.627</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.46</td>
<td>0.627</td>
</tr>
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<td>Original</td>
<td>332</td>
<td>3.33</td>
<td>0.821</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>3.33</td>
<td>0.829</td>
</tr>
<tr>
<td>AES 28</td>
<td>Original</td>
<td>334</td>
<td>1.84</td>
<td>0.973</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>1.84</td>
<td>0.972</td>
</tr>
<tr>
<td>AES 29</td>
<td>Original</td>
<td>329</td>
<td>3.44</td>
<td>0.977</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>3.44</td>
<td>0.974</td>
</tr>
<tr>
<td>AES 30</td>
<td>Original</td>
<td>331</td>
<td>4.15</td>
<td>0.739</td>
</tr>
<tr>
<td></td>
<td>Imputed</td>
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<td>4.15</td>
<td>0.742</td>
</tr>
<tr>
<td>AES 31</td>
<td>Original</td>
<td>334</td>
<td>3.81</td>
<td>0.884</td>
</tr>
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<td>Imputed</td>
<td>335</td>
<td>3.81</td>
<td>0.889</td>
</tr>
<tr>
<td>AES 32</td>
<td>Original</td>
<td>334</td>
<td>4.06</td>
<td>0.727</td>
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<tr>
<td></td>
<td>Imputed</td>
<td>335</td>
<td>4.06</td>
<td>0.726</td>
</tr>
</tbody>
</table>

Note: Only AES items with missing values displayed.
Final Sample

The purpose of this research was to determine if participation in intercollegiate athletics developed EI. Participation in the competitive season therefore served as the natural intervention. It was determined that varsity athletes that were not part of the experimental group (e.g., Softball, Football, etc.) should not be included in the analysis. These athletes, while not technically “in-season”, would still have contact with their coaches and teammates, complete pre-season and post-season voluntary or captain-led workouts, and participate in team activities (e.g., bonding activities and community service). Such important aspects of sport participation could potentially develop an individual’s EI. Since non winter-sport athletes would be receiving aspects of the natural intervention during the timeframe of the research, their experience would not fit into either the control group (non-athletes) or the experimental group (in-season athletes).

Therefore, after removing survey data of varsity athletes of non-winter sports ($n = 68$) the final sample for analysis was 267.

The final sample consisted of 86 winter-sport athletes and a control group of 181 (students that do not participate in varsity sport). Representation among the five participating institutions was similar to the participation in the pretest survey. Institution Five had the highest participation at 31.5% with Institution 2 only contributing 4.1% of the total sample. Individual teams represented between 3.0% and 9.0% of the total sample. Descriptive data is represented in Table 12 and Table 13.
Table 12

**Total Responses by Institution**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Pretest N</th>
<th>Final N</th>
<th>Posttest Response Rate</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>129</td>
<td>72</td>
<td>55.8%</td>
<td>27.0%</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>11</td>
<td>37.9%</td>
<td>4.1%</td>
</tr>
<tr>
<td>3</td>
<td>175</td>
<td>62</td>
<td>35.4%</td>
<td>23.2%</td>
</tr>
<tr>
<td>4</td>
<td>114</td>
<td>38</td>
<td>33.3%</td>
<td>14.2%</td>
</tr>
<tr>
<td>5</td>
<td>329</td>
<td>84</td>
<td>25.5%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Total</td>
<td>776</td>
<td>267</td>
<td>34.4%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 13

**Total Responses by Team**

<table>
<thead>
<tr>
<th>Current Team</th>
<th>Pretest N</th>
<th>Final N</th>
<th>Posttest Response Rate</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Basketball</td>
<td>40</td>
<td>9</td>
<td>22.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>W Basketball</td>
<td>20</td>
<td>12</td>
<td>60.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td>M Swim/Dive</td>
<td>24</td>
<td>8</td>
<td>33.3%</td>
<td>3.0%</td>
</tr>
<tr>
<td>W Swim/Dive</td>
<td>35</td>
<td>18</td>
<td>51.4%</td>
<td>6.7%</td>
</tr>
<tr>
<td>M Track</td>
<td>33</td>
<td>15</td>
<td>45.5%</td>
<td>5.6%</td>
</tr>
<tr>
<td>W Track</td>
<td>36</td>
<td>24</td>
<td>66.7%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Control</td>
<td>383</td>
<td>181</td>
<td>47.3%</td>
<td>67.8%</td>
</tr>
<tr>
<td>Total</td>
<td>571</td>
<td>267</td>
<td>46.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*Note: Pretest N in this chart is smaller because non-winter sport athletes were removed from the total pretest sample of 776.*

**Assumptions**

Assumptions for a three-factor split-plot research design are actually a combination of assumptions for the within-subjects (repeated measures) factor and the between-subjects factor (Lomax & Hahs-Vaughn, 2012). Therefore, in addition to checking the assumptions of Independence, Homogeneity of Variance, and Normality (as
described pertaining to the pretest data), the assumption of Sphericity also needed to be addressed. According to Lomax and Hahs-Vaughn, Sphericity is defined as the necessary condition to obtain a valid $F$ test and assumes that the variance of the difference scores is the same across all levels. It is however necessary to have at least three levels of the repeated factor for the assumption of Sphericity to be applicable. The current study’s research model only contained two levels of the repeated factor (time). Therefore, Mauchly’s Test of Sphericity was unable to generate a statistic and the assumption was not applicable.

To examine the extent that the assumption of normality was met, the distributional shape for each residual was examined through a visual inspection of histograms and Q-Q plots. In all cases, evidence of normality was produced. The skewness statistic of the residuals for the pretest Total AES Score was -.044 and the kurtosis statistic for the residuals of the pretest Total AES Score was -.387. The skewness and kurtosis statistics for the residuals of the dependent variable in the posttest were -.174 and -.233 respectively. Shapiro-Wilk (S-W) tests pertaining to both the pretest ($p = .782$) and posttest data ($p = .227$) were non-significant. In sum, the skewness and kurtosis statistics, S-W tests, Q-Q plots, and histograms all suggested normality was a reasonable assumption.

In order to test the assumption of Independence residuals were plotted against levels of both independent variables (Institution and Current Team) on a scatterplot. Points appeared to fall randomly above and below the horizontal line at 0. The relatively random display of residuals indicated that the assumption of independence had been met (Lomax & Hahs-Vaugh, 2012).
In addition to the examination of residual plots, the Homogeneity of Variance assumption was addressed through the Levene’s Test of Homogeneity. The Levene’s Test confirmed that there was not a breach in the assumption. Results pertaining to the pretest ($F = 1.157, df = 20,246, p = .293$) and posttest ($F = 1.260, df = 20,246, p = .207$) were non-significant.

**Descriptive Data**

Sample sizes, means, and standard deviations of Total AES Score by Institution and Current Team are represented in Table 14. Institution 4 had the highest mean Total AES initially (125.82), closely followed by Institution 1 (125.75) and Institution 5 (125.07). Institution 2 had a mean Total AES of 123.00 on the pretest and Institution 3 had the lowest initial score on the dependent variable of 122.37. Each institution showed an increase in mean Total AES between the pretest to the posttest, although no mean differences were significant at $\alpha = .05$ (See Table 15). Institution 2 showed the greatest increase in mean Total AES (3.27), while Institution 4 increased by 3.26 and Institution 1 increased by 2.90. Institution 3 increased the mean of the dependent variable by .60 and Institution 5 improved the mean Total AES Score by .03. Statistical significance related to the factor Institution is discussed in the following section (Three-Factor Split-Plot Repeated Measures Analysis of Variance).

Within Institution 1, all athletic teams in the experimental group saw an increase in mean Total AES scores over the course of the natural intervention. Women’s Basketball showed the highest increase (4.60) while Men’s Swimming increased by the least improvement (1.42). The control group’s mean Total AES Score improved by 2.20. The mean improvement of winter sport teams at Institution 1 was 3.59. No members of
the men’s basketball team completed both the pretest and posttest assessment. The only groups that completed both the pretest and posttest at Institution 2 were Men’s Basketball and Control. Men’s Basketball realized a mean increase of 3.60 while Control had a mean increase of 3.00. At Institution 3, no members of the men’s basketball team completed both rounds of testing and two other groups (Men’s Swimming and Men’s Track) had quite small sample sizes ($n = 1$ and $n = 2$). Both Women’s Swimming and Women’s Track actually showed a decrease in mean Total AES Scores by .33 and 1.40 respectively. The control group at Institution 3 improved their Total AES Score by a mean of .62 while the average improvement in the dependent variable by teams within the experimental group was 3.58. Institution 5 is not a coeducational institution; Men’s Swimming also lacked participation leaving the only groups for assessment as Men’s Basketball, Men’s Track, and Control. All groups showed improvement in the mean Total AES Score with the most substantial improvement realized in Men’s Track (6.86). Overall, the mean improvement in the dependent variable for the control group was 2.71 and the mean improvement of the teams in the experimental group was 3.81. No members of men’s winter-sport teams completed both the pretest and posttest instrument at Institution 5. Additionally only one member of Women’s Track completed both assessments. At Institution 5 the mean Total AES Score decreased for three of the four groups (Women’s Swimming, Women’s Track, and Control). Only Women’s Basketball improved their mean on the dependent variable (by 9.75). Similar to the factor Institution, the factor Current Team was also non-significant at $\alpha = 0.05$ (Table 15). See the section below for a full explanation.
<table>
<thead>
<tr>
<th>Institution</th>
<th>Current Team</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
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<td>125.60</td>
<td>15.566</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>M Swim/Dive</td>
<td>129.29</td>
<td>14.986</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>W Swim/Dive</td>
<td>120.83</td>
<td>10.167</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>M Track</td>
<td>121.83</td>
<td>7.935</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>W Track</td>
<td>132.77</td>
<td>12.584</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>123.97</td>
<td>13.906</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Total</td>
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<td>13.374</td>
<td>72</td>
</tr>
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<td>21.783</td>
<td>5</td>
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<td>Control</td>
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<td>11.140</td>
<td>10</td>
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<td>Control</td>
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<td>16.232</td>
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Continued
Table 14 continued

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<td></td>
<td>Control</td>
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<td>M Basketball</td>
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<td>16.279</td>
<td>9</td>
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<td></td>
<td></td>
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<td>W Swim/Dive</td>
<td>126.94</td>
<td>14.822</td>
<td>18</td>
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<td>9.010</td>
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<td>W Track</td>
<td>132.75</td>
<td>14.001</td>
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<td></td>
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<td>Control</td>
<td>124.60</td>
<td>15.296</td>
<td>181</td>
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<td>Total</td>
<td>126.18</td>
<td>14.86</td>
<td>267</td>
</tr>
</tbody>
</table>

*Note.* Only those that completed both the pretest and posttest are included in the table.
Three-Factor Split-Plot Repeated Measures ANOVA

As depicted in Table 10, results of the univariate ANOVA indicate a significant main effect for the within subjects, or repeated factor of time ($F = 6.503$, $df = 1,246$, $p = .011$) at an $\alpha$ level of .05. If the assumption of Sphericity is met, the Sphericity Assumed $F$ statistic is typically used in reporting. If the assumption of Sphericity is violated, it is advised to use the Geisser-Greenhouse or Huynh-Feldt $F$ statistic (Lomax & Hahs-Vaughn, 2012). In this case, because there was only two levels of the within subjects factor, there was no difference in the $F$ statistic between various sets of results (i.e., Sphericity Assumed, Geisser-Greenhouse, and Huynh-Feldt). The significant main effect for time suggests that there is a mean difference in Total AES Score between the pretest and posttest. Sufficient power was observed (power = .719) signaling that there is a high probability of rejecting the null hypothesis when the null is indeed false (Lomax & Hahs-Vaughn). The effect size was however small (Partial $\eta^2 = .026$). Cohen (1988) explained that a small effect size (Partial $\eta^2 < .06$ when using ANOVA) demonstrates a minimal overall effect. Effect size can best be described as being related to the amount of practical significance in a result (Walker, 2008). The results in Table 10 also demonstrated the following:

1. A lack of interaction effect between Time and Institution ($F = .235$, $df = 4,246$, $p = .918$)
2. A lack of interaction effect between Time and Current Team ($F = .873$, $df = 6,246$, $p = .516$)
3. A lack of interaction effect between Time, Team and Current Institution ($F = .420$, $df = 10,246$, $p = .936$)
Each interaction however lacked sufficient power (Time*Institution = .101, Time*Current Team = .343, and Time*Institution*Current Team = .217). The lack of power indicates a possibility of a larger sample producing a significant interaction effect (Lomax & Hahs-Vaughn).

Testing for contrasts of the within subject factor through Multiple Comparison Procedures (MCPs) was not necessary because there were only two levels of the factor. The significant $F$ statistic could therefore only indicate a difference between Time 1 and Time 2 (the pretest and posttest).

Table 15

<table>
<thead>
<tr>
<th>Tests of Within-Subjects Effects - Huynh-Feldt (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>Time*Institution</td>
</tr>
<tr>
<td>Time*CurrentTeam</td>
</tr>
<tr>
<td>Time<em>Institution</em>CurrentTeam</td>
</tr>
<tr>
<td>Error (Time)</td>
</tr>
</tbody>
</table>

*Note. Measure: Total AES Score. Computed using $\alpha = .05.$

The results from tests of between-subject effects (non-repeated factors) are displayed in Table 16. The main effect of Institution was non-significant ($F = .300, df = 4,246, p = .878$) indicating that the institution of respondents did not significantly impact the Total AES Score. The data also demonstrated a lack of main effect regarding Current Team ($F = .904, df = 6,246, p = .492$). Evidence indicated that there was not a significant
difference in the change of Total AES based on the team of an individual. Additionally, there was no interaction effect between Institution and Current Team \((F = .502, df = 10,246, p = .888)\). Supporting evidence of non-significant effects can be seen in Table 17 and Table 18. By examining the pairwise contrasts of both independent variables, substantial overlap can be observed within their 95% Confidence Intervals. Similar to results of the within-subjects test, power was not sufficient in all three cases (Institution = .117, Current Team = .356, and Interaction = .259). Therefore, there remains potential of falsely supporting the null hypothesis. Due to the non-significant main effects of Institution and Current Team and the non-significant interaction effect, all pairwise comparisons as calculated through Tukey Honestly Significant Difference (HSD) were also non-significant. Pairwise comparisons are available in Table 17 and Table 18.

### Table 16

*Tests of Between-Subjects Effects (Posttest)*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
<th>Partial η²</th>
<th>Observed Power</th>
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</thead>
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<td>115.796</td>
<td>0.300</td>
<td>.878</td>
<td>.005</td>
<td>.117</td>
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<tr>
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<td>6</td>
<td>348.905</td>
<td>0.904</td>
<td>.492</td>
<td>.022</td>
<td>.356</td>
</tr>
<tr>
<td>Institution* Current Team</td>
<td>1938.058</td>
<td>10</td>
<td>193.806</td>
<td>0.502</td>
<td>.888</td>
<td>.020</td>
<td>.259</td>
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<tr>
<td>Error</td>
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<td>246</td>
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</tr>
</tbody>
</table>

*Note.* Measure: Total AES Score. Computed using \(\alpha = .05\).
Table 17

*Tukey HSD Multiple Comparisons by Institution*

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<tr>
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<th>Institution</th>
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<th>SE</th>
<th>Sig.</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
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<td>11.15</td>
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<td>2.231</td>
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</tr>
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<td>4.544</td>
<td>.993</td>
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<td>14.45</td>
</tr>
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<td>-0.45</td>
<td>4.454</td>
<td>1.000</td>
<td>-12.69</td>
<td>11.79</td>
</tr>
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</table>

*Note.* Measure: AES Total Score. Based on observed means. Computed using $\alpha = .05$. 

122
Table 18

**Tukey HSD Multiple Comparisons by Current Team**

<table>
<thead>
<tr>
<th>Current Team</th>
<th>Current Team</th>
<th>Mean Difference</th>
<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
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<tbody>
<tr>
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<td>6.125</td>
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<td>6.749</td>
<td>.946</td>
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<td>5.670</td>
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<td>5.429</td>
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<td>1.00</td>
<td>-13.08 - 15.12</td>
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<tr>
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<th>Current Team</th>
<th>Mean Difference</th>
<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
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<td>2</td>
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<td>-4.04</td>
<td>6.340</td>
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<td>5.379</td>
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<td>.984</td>
<td>-18.56 - 10.64</td>
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<table>
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<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
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<td>.754</td>
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<td>4</td>
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<td>5.018</td>
<td>.689</td>
<td>-6.94 - 22.9</td>
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</table>

<table>
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<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
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</thead>
<tbody>
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<td>3.48</td>
<td>4.856</td>
<td>.991</td>
<td>-10.95 - 17.92</td>
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<td>6</td>
<td>8</td>
<td>-5.46</td>
<td>4.331</td>
<td>.869</td>
<td>-18.33 - 7.42</td>
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<td>2.44</td>
<td>3.433</td>
<td>.992</td>
<td>-7.77 - 12.64</td>
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</table>

<table>
<thead>
<tr>
<th>Current Team</th>
<th>Current Team</th>
<th>Mean Difference</th>
<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
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<td>3.732</td>
<td>1.00</td>
<td>-12.14 - 10.05</td>
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</table>

<table>
<thead>
<tr>
<th>Current Team</th>
<th>Current Team</th>
<th>Mean Difference</th>
<th>SE</th>
<th>Sig.</th>
<th>95% CI for Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>8</td>
<td>7.90</td>
<td>3.017</td>
<td>.125</td>
<td>-1.07 - 16.87</td>
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</tbody>
</table>

*Note.* Measure: AES Total Score. Based on observed means. Computed using \( \alpha = .05 \).

**Internal Consistency – Cronbach’s Alpha**

The composite AES score, a measure of uni-dimensional EI, is derived from 33 scale items. In order to test the internal consistency associated with the composite score, Cronbach’s Alpha was tested on all scale items of the AES in both the pretest and the posttest data. A commonly cited recommendation of “good internal consistency” is a Cronbach’s Alpha score of at least .80 (Taylor, 2013). Such a score presents strong
evidence that it is justifiable to interpret scores that have been aggregated together (i.e., The Total AES Score).

Cronbach’s Alpha on the 33-item AES for the pretest data (N = 776) was .83, indicating that 83% of the variability in the Total AES Scores was considered true score variance or internally consistent reliable variance (Taylor, 2013). Only reverse-scored scale items had negative inter-correlations. Additionally, in the output labeled Cronbach’s Alpha if Item Deleted, only items AES5, AES28, and AES33 (the reverse-scored items) would provide higher Cronbach’s Alpha scores if removed from the composite score. Posttest data revealed a Cronbach’s Alpha of .85 on the sample size of N = 335. Similar with the pretest data, the inter-item correlation matrix provided evidence that all scale items should be included; only the removal reverse-scored items would provide a higher Cronbach’s Alpha.

The composite scale was therefore internally consistent with each scale item providing utility to the composite score in both the pretest and posttest data. All scale items were therefore indicators of EI. Schutte et al. (1998) initially reported Cronbach’s Alpha as .90 when the scale was introduced. A mean alpha score across 27 studies was found to be .87 (Schutte et al., 2009). Results from the current study then present additional substantiation of the internal consistency of the AES.

**Additional Analysis on Posttest Data**

In order to fully address the research question of whether or not there is a significant difference in the development of EI between athletes and non-athletes, it was necessary to look at all student-athletes that participated in the experimental group as a single group compared to the control group (non-student athletes). Data was therefore
recoded for an additional analysis to be executed (two-factor split-plot repeated measures ANOVA) was executed.

Two-Factor Split-Plot Repeated Measures ANOVA

When combining all of the separate athletic teams, the experimental group of winter sport athletes had a posttest sample size of 86 while the control group of non-student athletes had a posttest sample of 181. Descriptive statistics for the recoded data are displayed in Table 19.

Table 19

<table>
<thead>
<tr>
<th></th>
<th>Athlete</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>Athlete</td>
<td>126.66</td>
<td>13.963</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Non-Athlete</td>
<td>123.69</td>
<td>15.138</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>124.65</td>
<td>14.809</td>
<td>267</td>
</tr>
<tr>
<td>Posttest</td>
<td>Athlete</td>
<td>129.49</td>
<td>13.386</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Non-Athlete</td>
<td>124.60</td>
<td>15.296</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>126.18</td>
<td>14.860</td>
<td>267</td>
</tr>
</tbody>
</table>

Just as in the primary analysis, the assumption of Sphericity was not applicable because there were still only two levels of the repeated factor. All assumptions pertaining to the non-repeated factor were met. Histograms of residuals from both the pretest and posttest dependent variable indicated a normal distribution, as did an examination of the Q-Q plots. To examine the extent that the assumption of normality was met, the distributional shape for each residual was examined through a visual inspection of histograms and Q-Q plots. The skewness and kurtosis statistics of the residuals for the
pretest Total AES Score was -.121 and -.414 respectively. The skewness and kurtosis statistics of the residuals for the posttest Total AES Score was -.179 and -.302 respectively. Shapiro-Wilk (S-W) tests pertaining to both the pretest (p = .306) and posttest data (p = .337) were non-significant. The relatively random display of residuals plotted against the independent variable provided evidence that the assumption of independence had been met (Lomax & Hahs-Vaugh, 2012). The Levene’s Test of Homogeneity ($F_{\text{Pretest}} = 1.177, df = 1,265, p = .185; F_{\text{Posttest}} = 2.498, df = 1,246, p = .115$) confirmed that there was not a breach in the assumption.

Results from the within-subjects effects (Table 20) and the between-subjects effects (Table 21) are displayed below. Because no data was altered related to the repeated factor (time), results of the significant main effect for the within subjects held at an $\alpha$ level of .05 ($F = 7.803, df = 1,265 \ p = .006$). All information pertaining to the power and effect size of the main effect of time has already been discussed above. The interaction effect between time and whether or not one was a student-athlete (experimental versus control) was non-significant ($F = 2.047, df = 1,265 \ p = .154$). Power was non adequate (observed power = .297), signaling a less than desired probability of rejecting the null hypothesis if it was indeed false.

As previously detailed, the researcher examined the pretest data for initial differences in the study population. A one-sample $t$-test was completed at an $\alpha$ level of .05 to determine if there was a mean difference in AES Total Score between student-athletes and non-athletes ($t = 2.38, df = 737.34, p = .017$). The statistically significant test provided evidence that the mean AES score of student-athletes was higher than that of non-athletes. Similarly, the two-factor split-plot repeated-measures ANOVA provided
evidence of a significant main effect of sport participation regarding Total AES Scores ($F = 4.707, df = 1,265 p = .031$). Medium power was observed (power = .580) but the effect size was however small (Partial $\eta^2 = .017$), demonstrating a minimal overall effect (Walker, 2008).

Table 20

Tests of Within-Subjects Effects: Student-Athletes Versus Non-Athletes

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>MS</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial $\eta^2$</th>
<th>Observed Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>407.122</td>
<td>1</td>
<td>407.122</td>
<td>7.803</td>
<td>.006</td>
<td>.029</td>
<td>.795</td>
</tr>
<tr>
<td>Time*Athlete</td>
<td>106.785</td>
<td>1</td>
<td>106.785</td>
<td>2.047</td>
<td>.154</td>
<td>.008</td>
<td>.297</td>
</tr>
<tr>
<td>Error (Time)</td>
<td>1382.485</td>
<td>265</td>
<td>52.175</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Measure: Total AES Score. Computed using $\alpha = .05$.

Table 21

Tests of Between-Subjects Effects: Student-Athletes Versus Non-Athletes

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>MS</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial $\eta^2$</th>
<th>Observed Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athlete</td>
<td>1800.106</td>
<td>1</td>
<td>1800.106</td>
<td>4.707</td>
<td>.031</td>
<td>.017</td>
<td>.580</td>
</tr>
<tr>
<td>Error</td>
<td>101340.258</td>
<td>265</td>
<td>382.416</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Measure: Total AES Score. Computed using $\alpha = .05$. Transformed Variable (Average Total AES Score).
Chapter Five: Discussion

The foremost aim of the current research endeavor was to gain insight on whether participation in athletics - in the context of the selective, residential, liberal arts - is serving to fulfill educational missions. Institutional missions and learning objectives at such colleges and universities are distinct within higher education (Astin, 2000; Seifert et al., 2008). The interdisciplinary nature and focus on holistic student development at these institutions therefore necessitates an educational contribution from athletic participation.

Scholars have noted a distinct disconnect and genuine friction between academic and athletic units throughout higher education, especially at academically rigorous institutions (Aries et al., 2004; Feezell, 2015; Lytle, 2003). Not coincidentally, there lacks assessment of whether sport develops participants in a manner that specifically pertains to institutional missions.

In order to address the challenge, the researcher employed the psychological construct of EI; competencies that are encompassed in the construct are central to the educational missions of such institutions. Never before has scholarship explored the theoretical linkages between the rhetoric of development through athletic participation, EI, and the educational missions of the selective, residential, liberal arts. This investigation has therefore examined the educational impact of participation in collegiate athletics in a completely unique manner.
The researcher not only examined whether athletic participation facilitated the development of EI, but also explored differences in EI development based on particular environments such as a specific institution or athletic team. Secondly, the researcher was concerned with the environment of selective, residential, liberal arts institutions as a whole, and whether the collegiate experience in such an environment facilitated EI development.

The current research generated evidence that participation in collegiate athletics does not consistently provide unique educational benefits outside of the typical college experience at selective, residential, liberal arts institutions. Evidence was produced that student-athletes have higher EI than their peers that do not participate in varsity sports. However, in the course of one season of participation (approximately five months) student-athletes did not develop EI to a greater extent than non-athletes over the same period of time. There did not appear to be any differences in the composite development of EI within a particular athletic team, although this finding was substantially impacted by inadequate sample sizes of certain groups. The present study supported the efficacy of the liberal arts in that the overall study sample significantly improved EI over the course of a five-month college experience. EI did not develop in a significantly different manner between the institutions that participated.

Three principal implications emerged from the present research: (1) The higher EI of student-athletes compared to non-athletes impacts various measures such as post-collegiate employability and career success; (2) The experience of matriculating at a selective, residential, liberal arts institution develops student-competencies embodied in assessments of EI; and (3) Collegiate athletic departments would benefit from a
purposeful and consistent implementation of pedagogies designed to enhance the development of student-athlete EI.

The remainder of this section will provide a discussion pertaining to each research question and the additional study finding. Practical implications are communicated at the conclusion of all sections elucidating study findings. The study instrument is addressed in how its usage impacted study results. Study limitations as well recommendations for future research are also provided.

**Research Question #1**

This section will present a discussion regarding the main effect of time on the dependent variable of Total AES Score in the present study. There was approximately five months between the pretest and posttest at each of the five participating institutions. Examining the main effect of time will provide insight into the overall college experience of the participating colleges and universities. The techniques used in data analysis allowed the researcher to explore whether or not there was a significant change in Total AES in both the control and experimental populations.

RQ1: Does Emotional Intelligence develop over time throughout a college student’s experience?

In the present study, the mean Total AES Score across both the control and experimental populations was significantly different between the pretest and the posttest ($F = 6.503, df = 1,246, p = .011$) at an $\alpha$ level of .05. In other words, students in the study population as a whole increased their level of EI over a five-month time period. This finding is unique in EI literature. Even with a small effect size (Partial $\eta^2 = .026$), the
sufficient power (Observed Power = .719) of the significant main effect of time over the relatively short duration of the study produced compelling implications.

According to Schutte et al., (2013), there has not been a great deal of systematic experimental research examining the development of EI through interventions. Several research endeavors of that nature have occurred in workplace settings (e.g., Kirk et al., 2011) or with professional adult populations (e.g., Kotsou et al., 2011). Other forms of systematic experimental research examining the development of EI have occurred within institutions of higher education but have employed very brief EI interventions, thus not assessing a control group for an extended duration. Qualter et al., (2009) employed a summer-session one week in length, designed to develop EI at The University of Central Lancashire in the United Kingdom. Pool and Qualter (2012) implemented a longer, 11-week elective of similar aims within the same university. As expected, control groups in both research studies did not exhibit a significant change in EI. Without a designed intervention, 1 week, or even 11 weeks would not expect to yield gains in student EI.

Three studies in the field of higher education have however assessed the development of EI through an intervention over a duration comparable to the present research. Clark et al. (2003) assessed the impact of Management Skills Training (MST) on student EI over the course of a 16-week semester (Refer to Clark et al. for a detailed explanation of how MST objectives encompass many components of EI). All participating students were enrolled in upper-level business courses at a university in the western United States. Those that were exposed to the special curriculum significantly improved EI while those enrolled in traditional business curriculum did not. Schutte and Malouff (2002) studied the effects of different types of freshman transition courses at a
private university in the southeast United States. The university already employed transition courses that were designed to hone the oral and written communication skills of incoming students as well as introduce them to critical examination of literary texts (Schutte & Malouff). The scholars added an emotional skills component to the confines of the pre-existing transition course in three separate sections. EI scores significantly improved over the course of a semester for students exposed to the EI curriculum; EI scores for the five sections of students in the traditional curriculum were not significantly altered by the conclusion of the semester. Nelis et al. (2011) utilized three, six-hour EI training blocks over a six-week duration at the University of Liegè. Scores in EI were tested at the end of the six-week training cycle, as well as after six months, in an effort to determine if the effects of EI training were lasting. Similar to the aforementioned scholarship, the control group did not demonstrate a significant improvement in EI over the course of the study (six months). The experimental group showed improved EI within the six-week training window; the changes also remained over the six-month period of study. While there has been limited exploration on the topic, the experience of attending college for a semester has not been shown to develop EI.

The ability to develop EI through unique curriculums and pedagogies (Boyatzis et al., 2002; Schutte & Malouff, 2002; Sheehan et al., 2009) and specific interventions (Crombie et al., 2011; Nelis et al., 2011; Pool & Qualter, 2012) is well documented. While it appears that EI naturally improves as an individual ages (Bar-On, 2007), literature has not demonstrated a significant change in EI over the course of less than an academic school year in a control group of college and university students. The findings of the current research appear to be the first that provide evidence that a student might
develop EI through their educational experience, even over the course of a single semester.

It is important to note that the current research was undertaken within a group of relatively comparable, selective, residential, liberal arts institutions. The context of inquiry within the present research therefore becomes quite important in the explanation of such unique results. Scholarship has demonstrated that social environments can impact the development of EI (Schutte, 2014; Wheeler, 2007). The environment at selective, residential, liberal arts institutions has been shown to be quite different than the environment of most institutions of higher education, producing distinctive outcomes (Seifert et al., 2008). The researcher specifically selected the context of inquiry because of the commonalities between their institutional missions and the theoretical underpinnings of EI. According to King et al. (2007), “The overarching goal of a liberal arts education is to provide students with the necessary skills to construct lives of substance and achievement” (p. 2). Similarly, Bar-On (2007) explained, “The implication…is that EQ [Emotional Quotient]… affects our ability to do our best, to accomplish goals and to actualize our potential to its fullest” (p. 9).

Blaich et al. (2006) explained that it is essential to differentiate between a liberal arts college and liberal arts education. The scholars hypothesized that a liberal arts college did not guarantee a particular experience and that it is possible to obtain a liberal arts experience at other types of institutions. Blaich et al. defined the liberal arts experience as containing the following elements: (1) a specific institutional ethos focused on maximizing holistic student development; (2) a well-integrated and challenging intellectual experience; (3) a focus on effective teaching pedagogies (4) frequent
interactions in and outside of the classroom between students and faculty and students and their peers; (5) extensive student extracurricular involvement; and (6) an emphasis on the residential experience. Such an environment is most likely to occur at a selective, residential, liberal arts institution (Astin, 1999, 2000) and therefore “more likely to foster growth on a host of student outcomes” (Pascarella, Wolniak, Seifert, Cruce, & Blaich, n.d., p. 1).

The mission statements of such institutions typically articulate a focus on developing student competencies that are embodied in the construct of EI. For example, “The mission of Kalamazoo College is to prepare its graduates to better understand, live successfully within, and provide enlightened leadership to a richly diverse and increasingly complex world” (Introduction and Mission, 2014). Bowdoin College articulated how the integration of the college experience in a particular environment leads to such development:

It is the mission of the College to engage students of uncommon promise in an intense full-time education of their minds, exploration of their creative faculties and development of their social and leadership abilities, in a four-year course of study and residence that concludes with a baccalaureate degree in the liberal arts. (Office of Communications and Public Affairs, 2016).

The residential aspect of the environment is key and is detailed in the objectives of Kenyon College:

To be a residential college means more than that the College provides dormitory and dining space for its students. It argues a relationship between students and professors that goes beyond the classroom. It emphasizes that students learn and
develop, intellectually and socially, from their fellows and from their own responses to corporate living (Kenyon College: It’s Mission and Goals, 2016).

As described above, selective, residential, liberal arts colleges claim distinction through the development of holistic characteristics that span the cognitive, intrapersonal, and interpersonal domains and prepare students for success in life. Some scholars have definitively stated that selective, residential, liberal arts colleges generate positive student outcomes that are absent from other types of higher education (e.g., Astin, 2000). Others however believe that because of issues in classification (especially pertaining to the actual experience occurring at a college or university), our understanding regarding outcomes of liberal arts colleges and liberal arts education remains unclear (Blaich et al., 2006). King et al. (2007) questioned whether or not liberal arts institutions had implemented programs designed to “encompass the personal and social dimensions of learning and development” (p.3) and called for further research.

The environment at the five participating institutions was quite similar in many regards, including institutional missions and ethos. All members of the athletic conference represented in the present study are classified as National Liberal Arts Colleges and ranked in the “Top 150” by US News and World Report; all but two of the conference institutions are ranked in the “Top 100” (National Liberal Arts College Rankings, 2016). Determining the extent that participating students obtained the liberal arts experience as detailed by Blaich and colleagues was outside the purview of the present research. However, based on institutional similarities and shared ethos in institutional mission statements, it can be assumed that these fellow colleges and
universities share a focus on providing students the aforementioned liberal arts experience.

The present study has then provided empirical evidence pertaining to liberal arts outcomes surrounding the psychological construct of EI. The significant main effect of time on Total AES Score in the present research indicates that the environment of inquiry (selective, residential, liberal arts colleges) positively impacts the development of student EI. Because it is the development of EI that makes up a large component of what such institutions claim as a distinctive element, evidence has been provided that study institutions are in fact fulfilling their academic missions through providing a unique kind of student development.

**Research Question #2**

The following section will present a discussion on how the researcher assessed differences between athletes and non-athletes in the current study. The primary analysis, a Three-Factor Split-Plot Repeated Measures ANOVA, did not provide the necessary statistics to properly detail the relationship between student-athletes and non-athletes. The analysis compared levels of sport participation (particular teams) rather than sport participation as a whole. For that reason the researcher recoded the data set and completed a Two-Factor Split-Plot Repeated Measures ANOVA (refer to Chapter 4 for greater detail). Only athletes that were part of the experimental group (i.e., winter-sport athletes) were included in the analysis.

RQ2: Is there a significant difference in the development of Emotional Intelligence between athletes and non-athletes?
What RQ2 is really examining is the interaction effect between sport participation and time. In other words, did the mean Total AES Score in the population of student-athletes develop significantly different over the five-month natural intervention than non-athletes in the control group? The non-significant $F$ statistic ($F = 2.047, df = 1,265, p = .154$) indicated that development occurred in a similar manner between both student-athletes and non-athletes. However, power was not adequate (observed power = .297), signaling a viable probability of falsely rejecting the null hypothesis. Evidence was provided that there was not an additive effect of sport participation in EI development but a larger sample might have yielded different results (see section on study limitations).

Blaich et al., (2006) explained that one of the tenants of the liberal arts experience is high participation in extracurricular activities. Based on the environment of the present study, and the positive main effect of time on the dependent variable (see RQ1), it is reasonable to assume that all study participants were afforded a plethora of opportunities to engage in activities with the potential to facilitate EI development. Based on such logic, one could claim that the experience of participation in collegiate athletics might not be unique compared to other experiences available to students at selective, residential, liberal arts institutions. For example, some have equated the educational experience of collegiate athletics with that of the performing and studio arts (i.e., music, theatre, and dance: Brand, 2006).

However, if the experience of sport is truly unique (e.g., Danish, 1983; Saur et al., 2013), another explanation for the non-significant interaction effect could involve how student-athletes are engaging in the experience of sport participation. Dewey (1938) believed that all genuine education comes from experience. This sentiment has often
served as a central reference point for discussions of experiential learning (e.g., Bower, 2013; Pauline, 2013). However, taking the description at face value acts as a simplification of the construct. The laymen does not typically understand the nuances of experiential learning for it is not as straightforward as one might think (Beard & Wilson, 2006). One has to be predisposed to or become open to truly learning from their experience (Silberman, 2007). Kolb (1984) defined learning as a process of knowledge acquisition generated through the **transformation** of the experience (emphasis added). The process of experiential learning must be purposeful, requiring a linkage between action and thought. Beard and Wilson defined experiential learning as, “the sense-making process of active engagement between the inner world of the person and the outer world of the environment” (p. 19). The scholars emphasized that not all experiences lead to new insights or new learning. Various internal or external barriers can serve to inhibit a learner’s preparedness for a particular experience (Boud & Walker, 1993). Jarvis (1987) even included non-learning pathways in his model of experiential learning. While participation in collegiate athletics might provide a powerful and emotional experience (Botterill & Brown, 2002), it is quite feasible that student-athletes are not transforming their experiences in a way to generate the development of EI on a consistent basis.

According to Danish (1983), “Sport provides an environment which is more personal, concrete, time-limited, and intense than the rest of society” (p. 238). While sport might in fact be an incredible and unique experience, experiential learning theory would posit that some student-athletes possess a natural propensity to engage the experience while others might not. The role of a facilitator then becomes crucial in how a student-athlete transforms emotional experiences. Both providing and receiving
mentorship through coaches and peers is a unique and pervasive aspect of collegiate athletics (Sauer et al., 2013). The problem however is that, “Many athletes and coaches are uninformed about the nature and function of emotions” (Botterill & Brown, 2002, p. 49). Without such knowledge, it becomes unlikely that student-athletes can properly engage with the emotional experiences of sport.

According to Haime (2011), most coaches receive very little education on developing their own interpersonal and intrapersonal competencies, let alone how to facilitate such development in others. While many collegiate coaches acknowledge the importance of “soft skills”, most do not make concerted efforts to develop them (Haime). For that reason, Williams, Jerome, Kenow, and Rogers (2003), explained that coaches are not able to accurately predict the psychological states of their athletes. The scholars also cited a lack of accuracy by coaches in perceiving the level of supportiveness of their own behavior. The work of VanSickle et al. (2010) demonstrated how coaches overestimate their own EI competencies compared to ratings completed by athletes under their direction. In their study of collegiate softball coaches, participants significantly overrated their EI competencies on 8 of 14 scales measured by the ECI. It then appears that coaches as a whole are not prepared to act as facilitators of EI development among the student-athletes they coach.

While sport’s capacity to facilitate the development of EI among its participants has not previously been studied, many have attempted to discern the relationship between athletic participation and other forms of development (e.g., life skills, competencies, and positive character). In short, literature has indicated that other types of development are not “caught” through participation in athletics but must be “taught” (Danish et al., 2007).
Results throughout scholarly work on sport’s ability to develop life skills within its participants have therefore been quite inconsistent (Gould & Carson, 2008). Gould and Carson explained, “Sport has the potential to facilitate life skills development in young people. However, this growth does not occur from merely participating in programs. Life skills must specifically be targeted and taught in environments that are conducive for doing so” (p. 63). Similarly, Doty (2006) professed that character can be developed through participation in collegiate athletics but only when coaches, teachers, and administrators make a conscious decision to include such development as a concrete objective of the experience. Referring to the development of competencies, Danish et al. proclaimed that development would not occur without specific efforts designed to teach the athlete how to know him or herself. While their work did not detail the process of learning from the experience of participation in athletics, the aforementioned scholars have produced findings that help to explain the data from the present research. Similar to scholars of experiential learning, the aforementioned researchers are attempting to articulate that without someone (e.g., a coach) in place capable of facilitating the transformation of emotionally related experiences achieved through sport participation, consistent EI development within student-athletes is not likely to occur.

Research Question #3

The following section contains a discussion of study results pertaining Research Question #3. Through the question, the researcher was principally concerned with the environment in which students lived and learned - the surroundings, conditions, and ethos of each institution at large.
RQ3: Does the development of Emotional Intelligence occur differently based on the environment of a particular institution?

Results relating to Research Question #3 help to portray a more complete picture of how EI was developed throughout the present research. Additionally, because specific pedagogical techniques have demonstrated a positive effect on EI development (e.g., Sheehan et al., 2009) and evidence has been provided that social environments can impact EI development (Schutte, 2014; Wheeler, 2007), there was reason to explore whether or not certain institutions facilitated the development of EI differently than others.

Similar to Research Question #2, Research Question #3 was best addressed through an interaction effect (Institution*Time). The non-significant interaction effect ($F = .235, df = 4,246, p = .918$) indicated that the development of EI occurred similarly at the five participating institutions. The non-significant main effect of Institution ($F = .300, df = 4,246, p = .878$) provided additional evidence that attending one of the five institutions as opposed to any of the others that participated in the present research did not impact a student’s EI. It is important to note that power was quite low related to the interaction effect of Time*Institution (Observed Power = .101) and related to the main effect of Institution (Observed Power = .117).

Based on the similarities of participating colleges and universities (See Table 1-1), results are not particularly surprising. Had the study included institutions of different classifications (e.g., National Research Universities), there would have been a greater potential to observe within-group differences. Pascarella et al. (n.d.) discussed an ethos of holistic student development that permeates residential liberal arts colleges. Astin (2000)
claimed that such an ethos is even more entrenched at selective and highly selective liberal arts institutions.

There is an expectation, for selective, residential, liberal arts colleges to integrate institutional learning outcomes, provide substantial student-faculty interactions, and the implement “best practices” related to teaching pedagogies (Seifert et al., 2008). Such a normative force for colleges to resemble an ideal liberal arts institution exemplifies Institutional Isomorphism (DiMaggio & Powell, 1983). The process of Isomorphism influences organizations within a particular population to resemble one another (Cunningham & Ashley, 2001). While there are no doubt institutional differences between the colleges and universities that participated in the current research, substantial similarities exist. The development of competencies embodied in the construct of EI is central to the mission of all selective, residential, liberal arts colleges (Blaich et al., 2006). And, all institutions that participated in the study not only fit said classification but also share regional proximity and athletic conference affiliation. It is therefore unlikely that the development of EI would occur in a unique fashion at a particular institution in the present research. Study results related to Research Question #3 provide evidence that participating institutions are quite similar in the manner that they facilitate the development of student EI.

**Research Question #4**

Research Question #4 was posed to help to illuminate the effects of a specific environment on EI development - that of a particular athletic team. A team environment is established by many factors including the coach and team leaders. The researcher had interest on whether such influential individuals effected the development of student-
athlete EI. If differences emerged between particular teams, the current study would not possess the capability of explaining why the differences were observed. However, detecting such differences could serve to guide future research. The following section reviews data analysis regarding the interaction effect that illustrates EI development within the context of a particular team.

RQ4: Does the development of Emotional Intelligence occur differently based on the environment of a particular team on which one participates?

Research Question #4 simply adds another component to Research Question #3. The interaction between the variables Time and Institution have been discussed above. To explain whether or not the particular team on which a student-athlete participated impacted the development of EI in a unique manner, the interaction between Time, Institution, and Team must be examined. The effect of the three-way interaction (Time*Institution*Current Team) was non-significant ($F = .420, df = 10,246, p = .936$), yet lacked adequate power (Observed Power = .217). While not addressing the development of EI (the change between pretest and posttest), the non-significant interaction of Team*Institution ($F = .502, df = 10,246, p = .888$) provided further evidence that there was not a mean difference in Total AES Score based on a particular team on which a student-athlete participated. Less than adequate power was reported for the interaction of Team*Institution as well (Observed Power = .256).

It is however the opinion of the researcher that simply examining the $F$ statistic of the interaction in the present study might lead to an incomplete understanding of the relationship. Investigating the three-way interaction decreased the size of each group being compared to a point where the response rate became critical. While relatively
sizable groups (student-athletes of a particular team) were available for data analysis related to the pretest only, a substantial percentage of participants did not complete the posttest instrument. For example, at Institution 4, all but one athlete listed on the roster for Men’s Basketball \( (n = 17) \) completed the pretest. Yet, only four team members completed the posttest survey instrument. Certain individual teams (e.g., Women’s Track at Institution 1) had strong participation in both rounds of testing (13/30 or 43.3%), while other teams (e.g., Men’s Basketball at Institutions 1, 3, and 5) did not have a single athlete complete both the pretest and posttest. Further detail is provided in the section describing study limitations. It is important to note that while the interaction effect was non-significant, the very small \( n \)’s and less than adequate power indicate that there was a low probability of finding a significant interaction even if one was present in the population.

Theoretically, the coaches and teammates of a student-athlete create a specific social environment that could influence various types of development. In a study of university students, Schutte (2014) determined that the composite EI levels of peer groups and learning communities had a direct impact on the EI development of students. Lillis (2012) provided evidence that the EI levels of persons in the role of an advisor might influence behaviors of students. This paper has already discussed at length various pedagogical practices that enhance the development of EI (e.g., Pool & Qualter, 2012; Boyatzis et al., 2002).

The extent that such pedagogies have been transferred into the coaching realm is unclear. According to Gilbert and Trudel (2001), coaching knowledge and techniques are predominately developed through the observation of other coaches. It is therefore quite likely that a high degree of variance in pedagogy will be found among coaches based on
their influences and exposures. Coaches though are the central figure in the athletics environment responsible for the overall experience of the student-athlete (Potrac, Brewer, Jones, Armour, & Hoff, 2000). They are accountable for the social and psychological wellbeing of athletes under their direction, as well as all technical aspects of sport related to practice and competition (Borrie, 1998) and can heavily influence athletes under their direction (Martens, 1997). Côté and Gilbert (2009) centered their definition of an effective coach on maximizing an athlete’s learning outcomes.

Student-athletes, no matter the NCAA division, devote substantial time to their athletic pursuits (Brand, 2006). Scholars (e.g., Sperber, 2000) have hypothesized that the substantial time spent together serves to isolate them from the general student body. Examining participants of collegiate athletics at highly selective liberal arts institutions, Aries et al. (2004) noted that student-athlete isolation did not occur and that participation in additional extracurricular activities was present in over 90% of study respondents. However, Aries et al. explained that while not isolated, the student-athletes reported spending significantly more time with group members both inside and outside of practices, meetings, and events than did group members of other types of extracurricular activities. Sauer et al. (2013) demonstrated that regardless of sport, student-athletes are heavily engaged in both mentoring and being mentored by their teammates. It could then be argued that teammates make up an influential component of a student-athlete’s social environment.

As previously mentioned, the findings from the current research did not indicate that the environment of a particular team effected the development of EI. However, the potential for the environment of a particular team to differ substantially and the various
teaching pedagogies of which a student-athlete could be exposed, makes the topic worthy of future exploration.

**Additional Study Finding Related to Student-Athletes**

There have been concerted attempts to discern differences between student-athletes and non-athletes in university populations (e.g., Aries et al., 2004; Bowen & Levin, 2003; Shulman & Bowen, 2001). Primary focuses of such research have typically examined admissions criteria, academic achievement, deviant behavior, and career earnings. There have only been two scholarly pursuits that have studied differences in EI between student-athletes and non-athletes (Rozell et al., 2002; Saur et al., 2013).

Rozell et al. (2002) assessed a population of undergraduate and graduate business students at a university in the mid-western United States using Goleman’s EQ Test. The scholars examined group differences in EI regarding academic majors, participation in Greek life, and participation in varsity athletics. Exploring factors that theoretically related to early career success, Saur et al. (2013) assessed the EI of recent alumni that were either student-athletes or non-athletes at 17 universities across the United States. Sauer et al. measured EI though 12 questions adapted from “Goleman’s five major facets of EI” (p. 648). Arguments against the methods of assessing EI in the aforementioned literature aside, both Rozell et al. and Saur et al. reported a significantly higher level of EI in student-athletes compared to those that did not participate in collegiate athletics.

The present research also provided evidence to support the notion that student-athletes have higher EI than non-athletes. A significantly different t-test ($t = 2.38$, $df = 737.34$, $p = .017$) on the pretest data indicated an initial difference in EI between athletes and non-athletes. This was based on the original 776 respondents and included student-
athletes that participated in any varsity sport. The researcher discovered that significant
differences between the EI of student-athletes and non-athletes persisted after the five-
month natural intervention. Through the assessment of athletes in the experimental group
(winter-sport athletes) that completed both the pretest and posttest ($n = 86$) against non-
athletes ($n = 181$), a significant main effect of sport participation was discovered ($F =
4.707, df = 1,265 p = .031$) with medium power (observed power = .580) and a small
effect size (Partial $\eta^2 = .017$).

Shulman and Bowen (2001) professed that differences found between student-
athletes and non-athletes in areas such as career earnings were more related to selection
(traits developed prior to college) than treatment (experiences from participation). The
scholars claimed that student-athletes arrived on campuses with superior levels of drive to
succeed, determination to reach goals, levels of energy, ability to work hard over long
periods of time, competitiveness, and confidence in ability to work well in groups.
Shulman and Bowen were uncertain as to if individuals with such traits were naturally
drawn to sport or if participation in athletics throughout childhood served to enhance the
differentiating characteristics.

The present research provides further evidence of correlation between student-
athletes and higher levels of EI. Based on the significant initial differences between the
two groups on EI scores and the non-significant interaction effect of time and
participation in collegiate athletics, one could argue that Shulman and Bowen were
correct in their assertion that student-athletes arrive to campus with different
characteristics than their peers. However, students in the present research represented
each class year; many had been exposed to one to three years of collegiate athletics at the
start of the research. Thus it is not clear based on the current exploration, if differences in EI between student-athletes and non-athletes were present prior to matriculation, or if they materialized over a longer duration than was examined in the present study.

**Implications**

**Implication #1**

According to Seifert et al. (2008), “The elaborate rhetoric and anecdotal support, long used to advance liberal arts education as the premier type of education with value for all, is no longer sufficient” (p. 108). Such was the primary reason for the formation of the Center of Inquiry for the Liberal Arts and the Wabash National Study of Liberal Arts Education (Blaich et al., 2006).

Results from the present study serve to bolster evidence on the efficacy of the liberal arts – at least pertaining to selective, residential, liberal arts institutions. Study findings demonstrated the achievement of learning objectives exemplified in the mission statements above. Conclusions from the present research could be utilized as a point of distinction in marketing efforts to attract prospective students. Institutional career centers could be armed with more data to suggest that graduates from their institutions have been prepared in a unique manner integral to career and life success.

**Implication #2**

One conference member of the present study specifically referred to the development of student-athlete’s emotional and social capacities within their athletic mission statement. Another discussed the goal for athletics to act as an integral part of the educational mission of developing students holistically (not cited to protect identity). Data from the present study indicated that these institutions might not be realizing their
athletic missions to their fullest. The potentially powerful experience of participation in collegiate athletics could be more fully utilized. In order for that to occur, it is advised that athletic departments alter assessment protocols to include measures of EI development; such measures closely assess the extent that athletic participation is truly aligning with the institutional missions of selective, residential, liberal arts institutions.

In addition to assessments, a consistent effort to develop EI from the experiences of athletic participation is crucial. The approach must include both coaches and student-athletes. As previously discussed, the role of the facilitator is vital in the process of student-athlete EI development. Coaches would therefore strongly benefit from professional development programs focused on interpersonal competencies and self-awareness (Gallimore et al., 2013; Gilbert & Trudel, 2001; Vella et al., 2013).

Athletic administrators could look to academic literature on the development of EI as a guide for the implementation of programs for both coaches and student-athletes. For example, intensive workshops and training modules (e.g., Pool & Qulater, 2012) could be employed in the “off-season”. Workout and training journals could be kept throughout the season with an added focus on the emotional aspects of participation (Kirk et al., 2011). Student-athletes could work together to develop original case studies for specific sports that demonstrate the presence or absence of EI (Crombie et al., 2011). Similar tactics could also be employed in the review of specific occurrences witnessed throughout the competitive season.

Experiential learning methods afford opportunities for individuals to practice, test, and reflect on behaviors, positively contributing to EI development (Sheehan et al., 2009). Nearly all interventions designed to facilitate the development of EI mention
pedagogies of experiential learning such as the usage of reflection, abstract conceptualization, and experimentation (as described by Kolb, 1984: See Figure 2). Additionally, scholars of experiential learning theory have touted benefits similar to those that are measured in EI (or at least components of it): (1) teamwork and interpersonal skills; (2) identity and self confidence; (3) improved ability to deal with ambiguity; (4) increased aptitude to operate at a high level of complexity and solve problems; (5) broaden capability to understand multiple perspectives; and (6) strengthen capacity to lead (Bower, 2013; Hawkins & Weiss, 2004). It therefore makes sense that the systematic implementation of experiential learning pedagogies could lead to the improvement of student-athlete EI.

A focus on transforming the incredible experience of participation in collegiate athletics - as discussed in the literature of experiential learning - has the potential to consistently develop EI within participants. It is such consistency in the development of EI within all student-athletes that would serve to assist departments of athletics in the fulfillment of their missions.

**Proposed Conceptual Model.** Empirical data generated from the present study has indicated that the experience of participating in collegiate athletics is not consistently and directly facilitating the institutional mission of the selective, residential, liberal arts. Scholarly literature on experiential learning and EI has provided explanations that corroborate such findings. Based on results from the present exploration, a continued reflection on observations of athletes throughout years of coaching, and an extensive review of literature, the following propositions have been developed to form a conceptual model: (1) The experience of participation in collegiate athletics has the potential to be
educative and develop a student-athlete’s EI; (2) Not all student-athletes will develop and mature through the experience; (3) Coaches that implement experiential learning pedagogies in a multitude of situations throughout the experience of collegiate sport can more consistently facilitate the development of a student-athlete’s EI; and (4) Developing a student-athlete’s EI progresses institutional missions of the selective, residential, liberal arts. These stated propositions are illustrated in the following model (See Figure 3).

![Figure 3. Lott’s Proposed Conceptual Model for Incorporating Sport into Educational Missions of Liberal Arts Institutions.]

**Implication #3**

The significant difference in regards to EI between student-athletes and non-athletes is one of the principal findings of the present study. The effects of higher EI on measures pertaining to various health indices (e.g., Schutte et al., 2007), academic...
achievement (e.g., Pope et al., 2012), and student-retention (e.g., Parker et al., 2006) have already been thoroughly discussed. Yet, matriculating student-athletes have other prominent differences in personal characteristics from their peers that impact the potential of a successful collegiate experience (Aries et al., 2004). Various aspects of their experience including time demands from participation in athletics and social patterns have also been noted (Emerson et al., 2009). For that reason, it cannot be said that the higher EI in student-athletes increases the likelihood of a more successful collegiate experience compared to non-athletes.

However, scholars have discovered differences in post-collegiate salaries of the two groups, with student-athletes reporting higher earnings when initially joining the workforce (Sauer et al., 2013) and stronger career earnings over time in various sectors (Shulman & Bowen, 2001). The present study serves to illuminate a potential cause as to why. Individuals with higher levels of EI are more likely to portray themselves in a positive manner throughout a professional interview process and more likely to get hired (Nelis et al., 2011). Once on board, such individuals are more engaged and satisfied with their work (Schutte & Loi, 2014) and demonstrate less workplace incivility (Kirk et al., 2011). If an overarching concern of the liberal arts is to produce graduates prepared for success in a rapidly changing and complex world (Durden, 2009), student-athletes might just be the graduates most likely to fulfill such an objective.

**Future Research**

Based on results of the present study and the proposed conceptual model, the following are recommendations for continued investigation:
1. As part of the current exploration, the researcher requested an additional three years of data storage for all first year students. Retesting study participants that agreed to additional data storage towards the completion of their college experience would allow for the current investigation to become longitudinal. This will provide a more complete assessment regarding the development of EI over both the course of a college experience and the complete experience of participation in collegiate athletics.

2. Designing and implementing an EI intervention within a department of athletics will serve as the most promising way to test the conceptual model presented in this document. The current study design could be recreated around a designed intervention.

3. Additional inquiry could be undertaken to assess the feasibility of implementing the designed intervention as well as its pragmatic usage.

4. It would be interesting to utilize the designed intervention on a population of head coaches and determine its effects on athletes under their direction.

5. Within the confines of the present study, the researcher collected additional unused data (e.g., class year, major(s), and co-curricular activities). Conducting a cluster analysis of EI on a specific campus could be particularly useful in determining additional areas of future exploration.

Instrument

Because of the disjointed nature of EI research that has combined a host of varying instruments and conceptualizations of the construct, it is imperative to fully articulate how the instrument used in the present study impacted results. The Assessing Emotions Scale (AES) is best labeled as self-report measure constructed from an ability model (Ashkansay & Daus, 2005). The instrument was initially designed from the four-
branch model of Mayer and Salovey intending to represent one’s behavioral dispositions concerning their ability to recognize, process, and utilize emotion-laden information (Petrides et al., 2004). The AES does not encompass the broader definition of EI that has been operationalized in such measures as Bar-On’s EQi and Boyatzis’ ECI. The EI measured in Schutte’s AES therefore more closely defines a quality of mind as opposed to a mixed assessment that includes additional skills (e.g., assertiveness or impulse control: Ashkansay & Daus). In other words, participation in collegiate athletics could very well impact a number of skills that might be measured in instruments that employee a broader definition of the construct. Additional research would need to be preformed to examine such a relationship.

Additionally, some scholars have recently proposed more comprehensive models of EI. Mikolajczak (2009) advocated for a unified model that incorporates the breadth of one’s emotional knowledge, their ability to apply such knowledge into a problem solving situation, and the likelihood of that individual to utilize such abilities. Schutte and Malouff (2013) developed a model of EI that combined one’s abilities, dispositions, and beliefs in their abilities to exhibit positive behavior in particular situations. Results stemming from the present study therefore potentially only explain a particular aspect of EI – the self-perceptions of participant’s ability and propensity to perceive, utilize, understand, and manage emotions.

**Study Limitations**

As discussed above, many instruments to measure EI are available. Using alternate instruments could therefore alter results. The present study was conducted in the rather unique environment of the selective, residential, liberal arts. It is unlikely that the
result pertaining to the development of EI over time is generalizable to other types of institutions throughout higher education.

The timeframe in which the study was conducted limited the scope of the project. Ideally, pretest data collection would have occurred as the academic year commenced in the fall. Obtaining a baseline at this juncture would have allowed the posttest assessment to include EI development that could have occurred through team interactions outside of the competitive season such as community service projects, captain’s practices, or other team social activities. The timeframe also precluded the inclusion of fall and spring sports. Generating data on additional groups of athletes would have added to the understanding of what was transpiring.

The timing of the posttest data collection appeared to adversely affect the response rate within the experimental group (winter-sport athletes). The last month of the academic year is often a very busy time for students and faculty alike. While the researcher was able to communicate frequently with athletic directors at participating institutions throughout the fall, several were quite difficult to reach leading up to the posttest. The researcher is uncertain as to the extent that athletic directors were able to remind their coaches to encourage participation. At the point in time posttest data was collected, coaches were not able to see athletes under their direction on a daily basis at practice and were therefore unlikely to generate as much interest in participating. Several groups (a specific team at a particular institution) ended up with zero participants having completed the posttest. Other groups such as Men’s Swimming and Diving and Women’s Track at Institution 5 only had one team member complete both the pretest and posttest. Due to the small sample sizes of individual groups, study results lacked the ability to
clearly determine if a particular team was facilitating the development of EI more effectively than others.
References


Appendix A: Assessing Emotions Scale

Instructions: Indicate the extent to which each item applies to you using the following scale:

1 = strongly disagree
2 = disagree
3 = neither disagree nor agree
4 = agree
5 = strongly agree

1. I know when to speak about my personal problems to others.
2. When I am faced with obstacles, I remember times I faced similar obstacles and overcame them.
3. I expect that I will do well on most things I try.
4. Other people find it easy to confide in me.
5. I find it hard to understand the nonverbal messages of other people.
6. Some of the major events of my life have led me to re-evaluate what is important and not important.
7. When my mood changes, I see new possibilities.
8. Emotions are some of the things that make my life worth living.
9. I am aware of my emotions as I experience them.
10. I expect good things to happen.
11. I like to share my emotions with others.
12. When I experience a positive emotion, I know how to make it last.
13. I arrange events others enjoy.
14. I seek out activities that make me happy.
15. I am aware of the nonverbal messages I send to others.
16. I present myself in a way that makes a good impression on others.
17. When I am in a positive mood, solving problems is easy for me.
18. By looking at their facial expressions, I recognize the emotions people are experiencing.
19. I know why my emotions change.
20. When I am in a positive mood, I am able to come up with new ideas.
21. I have control over my emotions.
22. I easily recognize my emotions as I experience them.
23. I motivate myself by imagining a good outcome to tasks I take on.
24. I compliment others when they have done something well.
25. I am aware of the nonverbal messages other people send.
26. When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself.
27. When I feel a change in emotions, I tend to come up with new ideas.
28. When I am faced with a challenge, I give up because I believe I will fail.
29. I know what other people are feeling just by looking at them.
30. I help other people feel better when they are down.
31. I use good moods to help myself keep trying in the face of obstacles.
32. I can tell how people are feeling by listening to the tone of their voice.
33. It is difficult for me to understand why people feel the way they do.

Source: Schutte et al. (1998: See references)
Appendix B: Requested Demographic Information

1. Class Year:
   - Freshman
   - Sophomore
   - Junior
   - Senior

2. Institution: (The names of institutions have been removed to protect anonymity)
   - Institution #1
   - Institution #2
   - Institution #3
   - Institution #4
   - Institution #5

3. Current Team:
   - Men’s Basketball
   - Women’s Basketball
   - Men’s Swimming & Diving
   - Women’s Swimming & Diving
   - Men’s Indoor Track and Field
   - Women’s Indoor Track and Field
   - Other
   - I do not participate in varsity athletics

4. Number of seasons you have participated in your sport at the college level:
   - 0
   - 1
   - 2
   - 3
   - 4

5. Please select any additional extra-curricular activities in which you are currently involved.
[a drop down list of all listed extra-curricular activities offered at any of the five research sites will be available]

6. Please select your declared academic major

[a drop down list of all available majors offered at any of the five research sites will be available as well as a choice for undeclared]
Appendix C: Prenotification E-mail

[DATE]

Subject Line: Upcoming Campus-wide Research Project

Dear Student,

We are requesting your help with a study conducted in conjunction with The Ohio State University aimed at understanding emotional and social competency adaptations that naturally occur throughout aspects of your college experience. Within the next few days, you will receive an e-mail inviting you to participate in the web-based study. Completing the study instrument should take you approximately 10 minutes and can be completed on your personal computer. A few moments of your time can help contribute to the understanding of how certain aspects of the college experience contribute to development of such competencies – competencies that have been deemed integral to scholastic achievement, student retention, various health indicators, athletics achievement, and post-collegiate success. We thank you in advance for your participation.

Sincerely,

Gregory H. Lott
The Ohio State University
315 W. 17th Avenue
Columbus, OH 43210
717.386.1601
Lott.74@osu.edu

Brian A. Turner
The Ohio State University
315 W. 17th Avenue
Columbus, OH 43210
614.247.8374
Turner.409@osu.edu
Appendix D: Invitation to Participate in the Study

[DATE]

Subject Line: Assessing Emotions Research – Campus-wide Project

Dear Student:

I am a doctoral candidate at The Ohio State University studying emotional and social competency development in the collegiate environment, specifically examining such development due to participation in college sport. A further understanding of how such development occurs is necessary to further examine the rhetoric surrounding sport participation and provide empirical evidence as to if such participation is indeed enhancing the education mission of liberal arts institutions. This study is being conducted as a requirement for my Doctor of Philosophy degree in Sport Management at The Ohio State University. Significant time and dedication has been put towards the study, yet I am in need of your help for completion.

The study sample includes all students, athletes and non-athletes alike, that are members of the North Coast Athletic Conference (NCAC). We request your assistance by completing the survey instrument, Assessing Emotions Scale. The web-based instrument contains 33-items and typically takes 5 minutes to complete. In order to ascertain how your answers evolve throughout your college experience, you are requested to take the survey instrument on two occasions this year (once in the fall and once in the spring). The instrument will ask you to use a Likert Scale to indicate the extent to which each item applies to you. An additional section will request minimal demographic information that will let us know more about your collegiate experience.

There are no known physical or psychological risks associated with completing the survey. You may refuse to answer any questions and may withdraw from completing the survey at any time. By completing this survey, you consent to participate. No personally identifiable information will be associated with your responses in any published and reported results of this study.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251. We would sincerely appreciate if you would complete the first survey by [DATE].
Feel free to contact either of us if you have any questions. Thank you very much for your assistance.

Sincerely,

Gregory H. Lott  
The Ohio State University  
315 W. 17th Avenue  
Columbus, OH 43210  
717.386.1601  
Lott.74@osu.edu

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The Ohio State University  
315 W. 17th Avenue  
Columbus, OH 43210  
614.247.8374  
Turner.409@osu.edu
Appendix E: Reminder Email

[DATE]

Subject Line: Reminder: Assessing Emotions Research – Campus-wide Project

Dear Student,

The study aimed at understanding emotional and social competency adaptations that naturally occur throughout aspects of your college experience is still open and in need of your response. Providing us just 10 minutes of your time can help contribute to the understanding of how certain aspects of the college experience contribute to development of such competencies – competencies that have been deemed integral to scholastic achievement, student retention, various health indicators, athletics achievement, and post-collegiate success. We thank you in advance for your participation.

Sincerely,

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Appendix F: Debrief Email

[DATE]

Subject Line: Thank You for Your Participation

Dear Student,

We sincerely appreciate your participation in our research. The purpose of the study is to use the construct of Emotional Intelligence (EI) to attempt to quantify competency development that naturally occurs in student athletes through participation in college sport and over time throughout your college experience. The study instrument is designed to measure emotional and social competencies such as intrapersonal and interpersonal skills, leadership abilities etc.

Academic literature has shown significant benefits to developing Emotional Intelligence (EI) that are of great concern to institutions of higher education. Schutte, Malouff, and Hine (2011) provided evidence that high EI decreases heavy episodic drinking and other alcohol problems. EI has been shown to have a positive relationship with student retention (Parker, Hogan, Eastabrook, Oke, & Wood, 2006) and academic achievement (Vela, 2007). In short, gaining a baseline understanding of how sport participation can help develop EI, can help institutions to develop an environment that leads to a happy, healthier and more productive existence for a greater portion of their student bodies.

We encourage you to reflect on the surveys that you took and engage in conversations with coaches, faculty, and advisors about how the topic. Such conversations could lead to positive environmental changes. Thank you again for your participation and best of luck as you finish out the academic year.

Sincerely,

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