A PSYCHOMETRIC INVESTIGATION OF THE EMOTIONAL QUOTIENT INVENTORY IN ADOLESCENTS: A CONSTRUCT VALIDATION AND ESTIMATE OF STABILITY

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A PSYCHOMETRIC INVESTIGATION OF THE EMOTIONAL QUOTIENT INVENTORY IN ADOLESCENTS: A CONSTRUCT VALIDATION AND ESTIMATE OF STABILITY

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ABSTRACT

This study investigated the psychometric properties of the Emotional Quotient Inventory: Youth Version (Bar-On & Parker, 2000) to assess the stability of the instrument from pretest to post test and across gender. The subscales of the instrument were examined as they relate to demographic variables. Additionally, the mood scale of the instrument was studied as it relates to subscales of the School Climate Survey (Halderson, Kelley, & Keefe, 2002) and demographic variables. This study was conducted to add to the body of knowledge about emotional intelligence, its measurement, and its application for school and mental health counselors.

The data used in this investigation were collected as part of an evaluation of the Red Flags Depression Awareness Program, a school-based prevention program developed by the Mental Health Association of Summit County and adapted for the Ohio Department of Mental Health (ODMH). Participants in the study included seventh and eighth grade students from 19 schools. Of the pretest sample, 684 students reported their gender (male = 50.9%, female = 49.1%), and 604 students reported their ethnicity (Caucasian = 70.4%, African American = 16.5%, other = 13.1%). The majority of the students in this study (86.3%) attended public schools and 13.7% attended parochial schools.
The research design was ex post facto with hypotheses and tests of alternative hypotheses. Findings of Kaiser Factor Matching suggested that the factor structure of the EQ-i:YV is stable between males and females, as well as from pretest to post test. Significance was found for six of the nineteen regression analyses, indicating that there were significant differences between males and females on interpersonal subscale scores and the positive impression subscale of the EQ-i:YV. In both instances, females scored higher than males. Additionally, the interaction between gender and mood was significant in predicting the academic orientation and the behavioral values subscales of the school climate survey.

The overall results of this investigation suggest that the EQ-i:YV is a stable measure of emotional intelligence. This information may be beneficial to school counselors, mental health counselors, or other professional interested in the construct of emotional intelligence as it applies to adolescents.
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CHAPTER I

INTRODUCTION

The concept of Emotional Intelligence has become popular in both scholarly research and mainstream literature since the publication of Daniel Goleman’s 1995 book, *Emotional Intelligence*. In spite of a recent surge of interest that has spawned new definitions and conceptualizations, scholars insist that the concept of emotional intelligence is not new, and can in fact be traced as far back as the writings of Charles Darwin in 1872 (Bar-On, 2005).

Reuven Bar-On identified influences on current theories of emotional intelligence including Darwin’s (1872) premise that emotional expression is necessary for survival and adaptation to one’s environment. Additional influences arose from the research of the early to mid 1900’s: Thorndike’s (1920) suggestion of the importance of social intelligence in performance, Wechsler’s (1940, 1943) identification of other “non-cognitive” factors that might impact intelligent behavior, and Appelbaum’s (1973) concept of psychological mindedness. In addition, Gardner’s (1983) theory of multiple intelligences may also have impacted the development of theory related to emotional intelligence.

Emotional intelligence was initially conceptualized as a part of social intelligence (Salovey & Mayer, 1990), was later viewed as its own construct (Goleman,
1995; Mayer & Salovey, 1997), and most recently has been viewed as a broader construct, “emotional-social intelligence” (Bar-On, 2005). Based on historical reference, traits such as the capacity to navigate through and to adapt to one’s own environment, and the possession of social and emotional “skills” are important not only to basic survival, but have implications in the areas of relationships, work, school, and emotional and mental health (Goleman, 1995; Salovey & Mayer, 1990).

Conceptual models appearing most frequently in the literature include the Salovey-Mayer model (Mayer & Salovey, 1997), the Goleman model (1998), and the Bar-On model (1997; 2000). These models, along with the Social Emotional Learning model (SEL), whose competencies are theoretically linked to the concept of emotional intelligence, will be reviewed in Chapter Two.

The above models and researchers revealed the implications of emotional intelligence on mental and emotional health, relationships, self-motivation, adaptability, and problem solving, suggesting that without these skills or abilities, individuals will not be as successful. Elias, Wang, Weissberg, Zins, and Walberg (2002), Bar-On (2005) and others have also postulated that the skills of SEL and emotional-social intelligence can be taught and are generalizable across situations (i.e., work, school, social, etc.). It has been suggested that introduction of these skills may positively impact school climate, by infusing interventions into multiple subject areas and encouraging prosocial behavior, thus creating a more positive climate (Graczyk et al., 2000). These findings suggest that emotional intelligence is important and should be encouraged early in life. Therefore, this information will be important to community counselors, policy makers, teachers, school counselors, and parents, all of
whom are concerned with both the academic and social-emotional development of children, and with the climate of children’s learning environments.

Although the concept itself is not new, the psychometric measurement of emotional intelligence has been a more recent development. The role of accountability is becoming more prominent, specifically in school counseling and mental health counseling (Isaacs, 2003; Leibert, 2006; Steenbarger & Smith, 1996). Sound measures with good psychometric properties are necessary to determine if an intervention is successful or meaningful. This study was conducted to investigate the established psychometric properties of the Emotional Quotient Inventory Youth Version (EQi:YV) developed by Bar-On (2000), and to contribute additional psychometric information regarding its use. The EQi:YV is one of the most frequently used measures of emotional intelligence in children and adolescents, and although it has better psychometric properties than most, additional research is needed to improve and validate these properties (Ballard & Leong, 2002). The relationship between scales of EQi:YV, specifically the mood scale, and the construct of school climate will also be explored.

The EQi:YV is conceptualized by the theoretical model of emotional intelligence, the Bar-On Model of Emotional-Social Intelligence (ESI) (Bar-On, 2005). Bar-On (2005) defined emotional-social intelligence as a "cross-section of interrelated emotional and social competencies, skills, and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (p. 3). The five key components that make up the competencies include:
(a) the ability to recognize, understand and express emotions and feelings; (b) the ability to understand how others feel and to relate with them; (c) the ability to manage and control emotions; (d) the ability to manage change, adapt and solve problems of a personal and interpersonal nature; and (e) the ability to generate positive affect and be self-motivated. (p.3)

The Bar-On model is operationalized by the instrument used in this study, the EQ-i. The instrument is a self-report measure, meaning that the participants are rating themselves on their behaviors, therefore providing an estimate of emotional-social intelligence. Through test development, ten factors emerged that in combination with the five components mentioned previously, describe and predict emotionally and socially intelligent behavior. The factors are (a) self-regard, (b) interpersonal relationship, (c) impulse control, (d) problem-solving, (e) emotional self-awareness, (f) flexibility, (g) reality-testing, (h), stress tolerance, (i) assertiveness, and (j) empathy.

Bar-On (2005) examined research related to emotional intelligence and school performance and found that there was a portion of scholastic performance that was a function of emotional-social intelligence, separate from cognitive intelligence, and that successful students appeared to be more socially and emotionally intelligent. It is believed that emotionally and socially intelligent behavior can be enhanced and taught, so that children who are exposed to opportunities to better understand and express themselves, relate to others, and manage emotions are better able to adapt to school and other environments, and are more academically successful (Bar-On, 1997, 2003; Parker et al., 2004; Swart, 1996).

Similar findings have been reported by other researchers, with focus on implications for building emotional intelligence through instruction, environment, and interaction with the school counselor. Elias and Weissberg (2000) discussed the
importance of social and emotional learning (SEL) in the classroom, stating that evidence suggests that SEL is critical in helping children achieve success in school, have healthy relationships, make difficult decisions, and control impulsivity. The authors addressed the difficulties of focusing on SEL in light of the push for academic standards taking priority in the schools. Elksnin and Elksnin (2003) stated that “emotional intelligence may be as important as, or even more important than, cognitive intelligence” (p. 74).

An additional link between the concepts of SEL, emotional intelligence, and school climate can be seen when considering the concept of a “safe school.” Bucher and Manning (2005) defined a safe school as

…one in which the total school climate allows students, teachers, administrators, staff, and visitors to interact in a positive, nonthreatening manner that reflects the educational mission of the school while fostering positive relationships and personal growth. (p. 56)

This statement demonstrates the balance between focus on academics and social and emotional learning. The authors stated that in addition to physical and intellectual safety, emotional safety must be considered. It follows that additional writers describe characteristics of a positive school climate to include “warmth, tolerance, positive responses to diversity, sensitivity to others’ views, cooperative interactions among students, teachers, and school staff and an environment that expects and reinforces appropriate behavior” (Dupper & Meyer-Adams, 2002, pp. 360-361).

These ideas of tolerance and emotional safety may be of particular importance during the critical time period of adolescence. Schools are faced with increasing numbers of students with emotional concerns (Kubik, Lytle, Birnbaum, Murray, &
Perry, 2003; Masia-Warner et al., 2006; Warner et al., 2006), placing schools and school counselors in a unique position to address the mental health needs of students. Studies exploring the issues presented with SEL and emotional intelligence may provide insight to those who are addressing the emotional needs of adolescents today.

The populations studied in adolescent research of emotional intelligence are often drawn from extreme ends of the spectrum. Pfeiffer (2001) discussed the relevance of EI to the gifted field. He stated that while definitions for gifted or talented vary, common features include “outstanding ability in intellectual, creative, and academic domains, leadership, and the performing and visual arts” (p. 6). Many of the qualities mentioned in the above definition are similar to those used to define the construct of emotional intelligence.

In looking at another segment of the adolescent population, Petrides, Frederickson, and Furnham (2004) studied the role of EI in academic performance and deviant school behavior. The authors suggested that the effects of trait EI on scholastic achievement are more pronounced in vulnerable or disadvantaged groups. Their rationale is that this population experiences more stress with school and may benefit from a more positive disposition to cope with their difficulties. Their research indicated that in students with low cognitive ability, those with high EI will exhibit better school performance than those with low EI, and that conversely, students with low EI may exhibit increased deviant school behaviors (i.e., truancy, suspensions). Their findings supported these hypotheses and suggest that adolescence is a critical period for reinforcing EI and emotional well-being.
Although the research on adolescent emotional intelligence, its development, and its measurement is limited, preliminary information suggests that the field of emotional intelligence in adolescents and schools is worth pursuing. The BarOn EQ-i:YV is one of the few instruments that has been adapted for use with adolescents. A review of the scholarly literature provided few studies utilizing this instrument. The majority were unpublished research reports, mostly master’s theses or dissertations (Allen, 2000; Bond, 2003; Corso, 2001; Crick, 2002; Gerber, 2004; Herring, 2001; Johnston, 2003; Shuler, 2004). Parker et al. (2004) utilized the instrument in their study of the relationship between emotional intelligence and academic achievement in high school. They paired EQ-i:YV data with student academic records, focusing on EQ variables as they relate to groups of students with variable academic success. Their study found emotional intelligence to be a predictor of academic success, suggesting that social and emotional competency has an important impact on academic achievement. Hassan and Sader (2005) translated the instrument into Arabic for use with Lebanese youth, finding satisfactory reliability in the adapted version. Their factor analysis of the instrument scales yielded two major factors versus the four established by the instrument authors, while the performed item factor analysis generally supported factors established by Bar-On and Parker (2000). Parker et al. (2005) added to the research by investigating the generalizability of the instrument to North American Aboriginal youth, and were able to replicate the factor structure with this population.

Although literature demonstrating positive aspects of emotional intelligence theories, constructs, and measurement is increasing, there are also limitations and even
criticism of the measures of emotional intelligence. Petrides and Furnham (2000) stated that uncertainty remained regarding whether emotional intelligence measures were assessing the trait of emotional intelligence or the sum of its parts (empathy, trait happiness, etc.). They proposed that “questions that pertain to the concept’s trainability or to its application in work, educational and clinical environments are therefore premature” (p. 319). They went on to suggest that the scientific theory of emotional intelligence must be supported prior to the development of valid measures, so that the potential benefits of the construct may be explored. Although the authors’ view may have significance to those coming from a theoretical perspective, individuals with practice-orientated perspectives may be more focused on the actual measuring of emotional intelligence.

While questions about the theoretical construct of emotional intelligence have continued to emerge, Kelly, Longbottom, Potts, and Williamson (2004) highlighted the practical implications when they stated

…to lose sight of the idea of emotional competence, either because of its association with the controversy surrounding models of intelligence or because of its similarity to social skills, would be to “throw the baby out with the bath water.” (p. 224)

In other words, the potential benefits of considering emotional intelligence—its usefulness, predictability, and the ability to teach and improve it—need to be considered.

Researchers have expressed concerns about the ability of self-report measures and the level of insight required for self assessment. Self-report measures of emotional intelligence ask individuals to endorse descriptive statements, indicating to what extent
these statements depict themselves. The limitations to this method of testing, even
when working with adult subjects, include relying on the individual’s self-
understanding and self-concept. If the individual has a poor self-concept, then these
measures will provide information about the self-concept, not necessarily the actual
ability or trait (Mayer, Caruso, & Salovey, 2000). Because adolescents may have an
even greater limitation in accurately self-assessing and understanding their self-
concept, these types of measures may be associated with greater concerns when
working with young populations.

Much of the research to date has attempted to support the idea that emotional
intelligence is different from other intelligences or personality traits. Davies, Stankov,
and Roberts (1998) reported on three studies that attempted to test the status and
measurement of emotional intelligence. The authors concluded that “little remains of
emotional intelligence that is unique and psychometrically sound” (p. 1013). They
suggested that what was being evaluated in EI measures was similar to constructs
already established in personality tests, and that the concept/definition of EI was
narrower than those postulated in the research literature.

Because the literature demonstrates much debate about emotional intelligence,
including its definitions, usefulness, benefits, theories, and adequate ways to measure
the construct, there appears to be a need for further research. This study focused on
Bar-On’s EQ-i:YV, one of the few instruments that has been utilized with the
adolescent population. The implications for its use would impact providers of
adolescent services, including school counselors, community counselors, and counselor
educators.
Purpose of the Study

Although there are many arguments espousing the importance of emotional intelligence in the literature, there remains a need for reliable and valid instruments to measure the construct. The EQ-i:YV has become a popular measure for estimating emotional intelligence. While the adult version of this instrument has been used extensively, the youth version has seen less use and replication. There is little empirical validation of this instrument, in part due to its recent development. This study added to the body of knowledge regarding emotional intelligence, particularly the measurement of emotional intelligence as it pertains to school counseling and counselor education. In addition, by examining the mood scale of the instrument in relationship to demographic information and school climate, this study may provide information that has not been explored in the research of emotional intelligence.

Given that recent studies demonstrate the effectiveness of social and emotional learning programs (SEL) (Ragozzino, Resnik, Utne-Obrien, Weissberg, 2003; Elias, 2006) and the need for incorporation into educational standards, a sound measure of adolescent emotional intelligence may be useful for school counselors to demonstrate their effectiveness and maintain accountability. Historically, the link between the work of the school counselor and its impact on student achievement has been difficult to demonstrate. Effectiveness of school counselors is often measured by grades (GPA), student pass or retention, attendance, time-on-task data, and activities including student contact and guidance lessons (Stone & Dahir, 2004) but this is not an accurate reflection of what the counselors are actually accomplishing in the schools. The field of
school counseling has called for the need to demonstrate its direct benefit to the
students and their futures by assessing the impact of the school counseling program on
school improvement and connecting the work of the school counselor to student
outcome data (Stone & Dahir, 2004). Measuring emotional intelligence may provide
school counselors with an additional way to evaluate their effectiveness and, therefore,
increase demonstration of accountability. In order to be able to address emotional
intelligence and to interpret the research and literature about the construct, it is
important to know that it can be measured and is psychometrically stable.

Mental health counselors are also faced with issues of accountability and
evidenced-based practices (Leibert, 2006). While some literature has addressed the
application of emotional intelligence to school counseling, there has been less research
into the implications of emotional intelligence for mental health counseling. If
emotional intelligence can be taught, it makes sense that another arena for this
instruction to occur would be in the individual counseling session, where learning often
takes place. To determine if a client is improving her emotional intelligence “skills,”
there must be a sound measure available to assess growth or change.

In addition to school counselors and community counselors, other groups that
may benefit from this information may include policy makers in education, individuals
who develop curriculum related to emotional intelligence or SEL, educators concerned
with school climate, and researchers. Freiberg and Stein (1999) stated that “school
climate is the heart and soul of a school….It can foster resilience or become a risk
factor” (p. 11). By examining the relationship between school climate and emotional
intelligence, additional information may be provided to those working with students to
improve SEL and the climate of the school. The findings associated with the psychometrics of this study may serve to increase both awareness and information, which may translate into changes in practice as well as improved measurement of outcomes. Additionally, the complex phenomenon of emotional intelligence may be better explained by testing the theory underlying Bar-On’s instrument, as well as the previously established psychometrics. This information may provide meaning to the claims of emotional intelligence, in both science and the media.

The evaluation of the psychometrics of a measure of emotional intelligence will add to the growing body of knowledge surrounding this complicated construct, enabling constituencies that make use of emotional intelligence information to be better informed. Therefore, hypotheses regarding the stability of the psychometric properties of the factor structure will be tested. Additionally, the mood scale of the instrument was examined in its relationship to demographic information and school climate was explored.

Statement of the Problem

This study investigates the psychometric properties of the EQi in a population of middle school students, in order to assess the reliability and validity of the instrument. In addition, the researcher examined the stability of the instrument over time through the use of pretest and posttest scores. In order to measure gains from pretest to posttest, the factor structure must be stable, or the gain scores will not be accurate (I. Newman, personal communication, June 26, 2006). Furthermore, the factor structure of the instrument will be investigated to determine how the structure relates to that determined by the developer of the instrument, as well as the structure of the
instrument across groups (i.e. gender and parochial/public schools). Lastly, the mood scale was examined to determine its relationship to demographic factors and to the concept of school climate.

Assumptions of the Study

Several assumptions underlie this study. The researcher assumes that the responses of the participants were honest and sufficiently free of error, that the participants are a representative sample of middle school students across the state of Ohio, that the measurement instruments that have been established and utilized are appropriate for this population, and that the participants read and understood the instructions for completion of the instruments.

Research Questions (RQ)

RQ1: Is the factor structure of the EQi:YV stable from pretest to posttest?

RQ2: Is there a significant difference in overall EQi:YV score between males and females?

RQ3: Is there a significant difference in EQi:YV subscale scores between males and females?

RQ4: Is there a significant difference in EQi:YV scores between parochial school children and public school children?

RQ5: Is there a signification relationship between gender and school type (parochial and public) in predicting mood scale scores of the EQi:YV?

RQ6: Does the EQi:YV mood scale account for a significant amount of variance in school climate?

RQ7: Is there a significant relationship between the mood scale score of the EQi:YV and the student academic orientation subscale and student behavioral values subscale of the school climate inventory?
Delimitations

Although many advantages exist in the study, delimitations are also present. First, the time between pretest and posttest administration was limited by the setting and varied by school. Time between administrations of the instrument was often as little as several weeks. Second, the data are self-report scores based on the demographics and the EQi instrument. Finally, since the population includes only those schools that were willing to participate in this study from which this data was drawn, characteristics of these students may be different from those in schools that were not willing or able to participate in this research.

Definitions and Operational Terms

Adolescent. Appropriate age group for EQ-i:YV as reported by the instrument manual, is “young people aged 7 to 18 years” (Bar-On & Parker, 2000, p. 1). For the purpose of this study adolescent will include those students in the 7th and 8th grades, or students aged approximately 12 years old to 14 years old.

Emotional intelligence. EI as defined by Bar-On (2005) is a "cross-section of interrelated emotional and social competencies, skills, and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (p. 3).

School Climate. School Climate is the relatively enduring pattern of shared perceptions about characteristics of an organization and its members. A positive school climate would indicate positive relationships and quality interaction between administration and staff, staff and staff, students and students, and administration and
students, as measured by the NASSP School Climate Survey (Halderson, Kelley, & Keefe, 2002)

_Social Emotional Learning (SEL)._ “Socioemotional learning is the process through which children and adults develop the skills, attitudes, and values necessary to acquire social and emotional competence” (Elias et al, 1997, p.2).

_Validity._ “Validity refers to the quality of actually measuring the behaviors which the instrument is designed to measure” (Newman & Newman, 1994, p. 283).

**Summary**

There is interest in evidenced-based practices in the counseling profession (Leibert, 2006), and also in being able to accurately measure changes related to counseling interventions. This investigation was conducted to provide community counselors, school counselors, and counselor educators with information regarding the measurement of emotional intelligence with an adolescent population, so that they may determine both what they are measuring and if it is being measured accurately. By empirically validating the EQ-i:YV, the information from this investigation may be used to more accurately assess emotional intelligence, changes in emotional intelligence, and benefits of counseling interventions used to increase emotional intelligence. Information related to the mood scale of this instrument and its relationship to school climate may also provide information to constituents regarding relationships and impact of interventions. This information may be used to demonstrate effectiveness and provide a more applicable measure of accountability for school counselors and other professionals.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The following is a review of both theoretical and empirical research related to Emotional Intelligence. First, mental health issues among the adolescent population and their relationship to the school setting and both community and school counselors will be reviewed. In addition, the need to address mental health issues within the school setting will be considered, as well as the concept of Social Emotional Learning. These concepts will be tied to the theory of Emotional Intelligence.

The theory of Emotional Intelligence will be reviewed from its developmental beginnings to the three competing theories of emotional intelligence prevalent today, and the measurement of the construct according to each theorist. An increase in the interest of emotional intelligence and its measurement has led to the development of instruments to measure it and debate about the psychometrics of these instruments. Empirical research related to emotional intelligence measurement, its usefulness with adolescents, and implications for mental health and academics will also be reviewed.
Mental Health Issues and Adolescents: Implications for Community and School Counselors

Schools today are often faced with educating an increasing number of students with emotional concerns. Research indicates a high prevalence of mental health issues among children and adolescents, with approximately 21% of 9- to 17-year-olds having a diagnosable psychiatric disorder. Masia-Warner, Nangle, and Hansen (2006) stated that additional youths experience difficulties socially and emotionally that do not meet the criteria for a diagnosable disorder, yet may cause difficulties in functioning and distress for the child or adolescent.

As Cash (2003) noted, depression is often considered an invisible illness. This rings especially true to adolescents, where symptoms may appear to be a part of the ever changing mood and behaviors of this time period. In their review of statistics related to adolescent depression, Kubik, Lytle, Birnbaum, Murray, and Perry (2003) reported that the prevalence of depression during adolescence was between 15% and 20%. The prevalence of depressive symptoms that fall short of meeting diagnostic criteria, may vary in adolescent populations, from 22% to 60%, leaving many symptomatic adolescents unidentified and untreated.

Vail (2005) highlighted the link between mental health and academic success, stating that “…depressed children do not do well in school. Their grades drop from their previous levels. They stop participating in class. They lash out in anger at their classmates and their teachers….they may hurt themselves or others.” Cognitions of depressed adolescents are different from their non-depressed counterparts. According to Evans, Velsor, and Schumacher (2002), depressed adolescents often have distortions
of attributions, causing faulty self-evaluation. They tend to externalize positive events and view negative events as personal failures. This leads to feelings and thoughts of helplessness, worthlessness, and failure, which becomes the lens through which they view their world, specifically academics. Elias, Zins, Graczyk, and Weissberg (2003) stated that children who are hurting cannot learn effectively. If these children are not getting the attention that they crave, energy and potential may be diverted from the learning environment to meet these more basic needs.

Depression and suicidal ideation in middle school children often go undetected. Early identification of depression among youth is critical (Auger, 2004). According to the Surgeon General’s 1999 report on mental health, 6 to 9 million youth with emotional problems were not receiving help to address these issues (U.S. Department of Health and Human Services, 1999). Adolescents who are not identified and treated may have conditions that persist into adulthood, increased risk of co-morbid disorders, or even suicidal ideation and suicide attempts. Early-onset depression may also be predictive of school failure, teen pregnancy, and drug use (Kubik et al., 2003). School counselors and teachers who are aware of the signs of depression may be in a good position to identify symptoms of depression and provide support, as students spend a considerable amount of time in the school setting. Masia-Warner et al. (2006) reviewed research stating that of the 16% of youth receiving mental health services, 75% received those services at school. They pointed out that schools have the majority of youth time and contact, services are easily accessible in the school setting, and the stigma of mental health issues may be decreased by receiving services in the familiar
school environment. Additionally, traditional barriers to treatment such as cost and transportation are minimized.

This information places schools and school counselors in a unique position to address the mental health needs of students. This may, in turn, improve the academic development of the student by removing the negative impact of untreated mental health and emotional issues upon learning and academic success (Aviles, Anderson, & Davila, 2006). Masia-Warner et al. (2006) reported that the trend of school mental health (SMH) services is one that is still emerging and without research to support it. Brown, Dahlbeck, and Sparkman-Barnes (2006) surveyed school counselors and administrators about working collaboratively with non-school mental health professionals to address the mental health needs of students. They stated that many schools have collaborated with mental health agencies to meet the social and emotional needs of students and the issues that they bring to the classroom. Their findings suggested that although the school counselor’s role has changed from career and testing to a model more focused on prevention, the growing mental health needs of students and higher caseloads have led school counselors to utilize non-school mental health providers to attend to the often time-consuming emotional needs of students. The study stated that school counselors can provide invaluable collaboration with these professionals as they are able to impart key information on the student and their behavior in the school setting. For effective collaboration to occur, role definition would need to be established and referral systems would need to be developed among counselors, school counselors, and school administrators.
Identifying and treating social and emotional issues in adolescents is often left to school personnel. Not all schools have the resources to refer to outside mental health providers, often leaving school counselors to balance the academic and emotional needs of students. While many separate these two issues, Aviles, Anderson, and Davila (2006) found that they were interrelated, stating that social and emotional development impacts academic outcomes and that schools have the opportunity to address these issues. School performance may not be indicative of academic ability and may reflect issues in the home that are impacting achievement. The authors stated that by recognizing symptoms of underlying issues, the cause of the issue may be determined and services may be provided to the student.

While the trend exists to increase a mental health presence in schools and increase collaboration with school and mental health professionals (Masia-Warner at al. 2006; Aviles et al., 2006; Brown et al., 2006), another trend has also been developing focused primarily on school counseling. This trend is the concept called Social Emotional Learning.

Social Emotional Learning: SEL

“Socioemotional learning is the process through which children and adults develop the skills, attitudes, and values necessary to acquire social and emotional competence” (Elias et al., 1997, p. 2). The Collaborative to Advance Social and Emotional Learning (CASEL) was founded in 1994 in an effort to organize and incorporate social and emotional learning as an essential part of education (Payton et al., 2000). CASEL has based their information on extensive research about learning and instruction, brain functioning, and evaluation of SEL programs throughout the
SEL programs aim to establish environments in the school that help to generalize SEL into life outside of the classroom. CASEL has helped to develop SEL by identifying a framework of key competencies. The competencies include 17 skills and attitudes organized into four groups: awareness of self and others, positive attitudes and values, responsible decision making, and social interaction skills (Payton et al., 2000). The research of CASEL has shown that schools implementing successful SEL programs improve the academic achievement of their students, have less problem behavior, have children capable of having better relationships, and have positive classroom and school climate changes (Elias, 2006).

In an attempt to focus on essential social and emotional skills for development, CASEL members identified several key skills in 1997: (a) communicating effectively, (b) working cooperatively with others, (c) emotional self-control and the ability to express emotions appropriately, (d) having empathy and being able to see the perspective of others, (e) self-awareness of strengths, optimism, and humor, (f) goal setting and planning skills, (g) problem solving and conflict resolution skills, and (h) possession of a reflective learning approach (Elias & Weissberg, 2000).

One of the major concepts underlying SEL is that the change is in the environment of the school, in contrast to individual programs that address social issues within the school (i.e. drugs, bullying, violence, etc.). Payton et al. (2000) stated that there are implementation problems with individual programs, often leading to competition among the programs and little translation into life outside of the classroom. The goal of SEL is to not only teach the skills and have them translate into life, but for the entire school and community environment to be involved, thus
changing the climate of the school. One premise behind the movement is that human personality can be modified and improved through learning (Mayer & Cobb, 2000) and that the skills of SEL are teachable (Elias, Wang, Weissberg, Zins, & Walberg, 2002). By having a sound social and emotional development framework, schools can then accomplish educational goals (Elias & Weissberg, 2000). Proponents of SEL believe that the social and emotional aspect is directly related to academics.

Elias et al. (2002) stated that research associated with CASEL supported the use of SEL as it impacts academics and school performance. The authors believed that too much attention was placed on test scores, causing society to lose sight of interpersonal skills and character traits which are deemed important, but do not receive as much attention as academics. Their research also suggested five main characteristics of successful SEL schools: (a) themes of respect, character, values, etc. are articulated in the school climate; (b) instruction and practice in SEL skills; (c) instruction that is developmentally appropriate to prevent problems and promote health; (d) services to increase student coping skills and to provide social support; (e) systematic opportunities that are positive and widespread. Again, the focus was on incorporating educators, staff, parents, and community to promote the goals and encourage success by changing the overall climate of the educational setting.

Researchers supporting SEL have believed in its importance in relationship to academic performance and achievement and the idea that it can be used to enhance academic learning, not distract from it (Ragozzino et al. 2003; Elias et al., 2003). Elias et al. (1997) proposed that 50% of academic achievement was related to academic intelligence while the remainder was related to social and emotional issues, and
postulated that a school system that does not take these issues into account cannot be
totally effective. Elias et al. (2003) stated that schools must deal with the fact that
education requires an equal focus on EQ and IQ to be sound.

Link Between SEL and Emotional Intelligence

Elias et al. (1997) considered research in emotional intelligence as providing
the foundation for socioemotional learning, and stated that the two thus became closely
identified. Some researchers believed that Daniel Goleman (1995) provided the link
between emotional intelligence and education by expanding the idea of emotional
intelligence to include not only mental abilities, but also character and personality traits
(Mayer & Cobb, 2000). The idea that emotional intelligence was necessary for a
student to learn and behave well, and that it predicted success, was of interest to
educators. In addition, the statements made in Goleman’s 1995 book focused on the
teachable aspect of emotional intelligence versus the concept that intellectual IQ is
relatively stable, further intriguing educators about the promise of emotional
intelligence (Mayer & Cobb, 2000). Elksnin and Elksnin (2003) stated that emotional
intelligence could be taught because it was “less genetically determined than IQ” (p.
64). They also recognized that the skills of emotional intelligence overlapped, so that
when one skill was taught, other skills would improve. The authors stated that social-
emotional learning was the mechanism used to improve emotional intelligence.

Bar-On and Parker (2000) addressed SEL in the manual for their youth measure
of emotional intelligence, the EQ-i:YV (to be reviewed later in this chapter). The
authors stated that low scores on their instrument may warrant improvement in certain
areas, and that training and therapeutic interventions may be utilized for emotional
intelligence development. They provided a review of several SEL programs and contact information for CASEL. They cautioned that although the programs listed tend to be comprehensive, many still focus on specific skills that correspond to scales of the EQ-i:YV.

Cobb and Mayer (2000) differentiated between emotional intelligence curriculum and social emotional learning curriculum, adding that the two overlap and diverge. The authors stated that the emotional intelligence curriculum focused on the ability of emotional reasoning, helping students to make decisions. They acknowledged that social emotional learning incorporated emotional skills and behaviors as well as social values, while focusing on positive messages and getting along with others. The authors suggested that the focus on positivism might prove too idealistic and trite, alienating some students while promoting the idea of an ability-based emotional intelligence curriculum.

History and Development of Emotional Intelligence

The concept of intelligence has changed in recent decades with the possibility of additional categories of intelligence, beyond verbal and performance intelligences becoming an area of intrigue for researchers (Mayer, Caruso, & Salovey, 2000). Past attempts at definitions and additions to the concept of intelligence have contributed to theories of emotional intelligence currently in existence.

Social intelligence was presented as an addition to verbal and performance intelligence by Edward Thorndike (1920). His concept of social intelligence consisted of “...the ability to perceive one’s own and others’ internal states, motives, and behaviors, and to act toward them optimally on the basis of that information” (Salovey
& Mayer, 1990). Researchers were skeptical, pointing out that verbal intelligence already incorporated social thinking and that the definition was too broad, thus blending into existing intelligences. Cronbach (1960) concluded that social intelligence was not able to be distinguished from verbal intelligence and was therefore undefined and unmeasured.

Wechsler proposed a similar concept to Thorndike’s when, in 1940, he described the influence of non-intellective factors on intelligent behavior. In subsequent writing he suggested that current models of intelligence were incomplete. In order to complete these models, the non-intellective factors needed to be described (Weschler, 1943).

Bar-On (2005) summarized a variety of other influences that have followed from the concept of social intelligence and have contributed to the current theories of emotional intelligence. He highlighted concepts related to alexithymia (MacLean, 1949; Ruesch, 1948), psychological mindedness (Appelbaum, 1973), and emotional awareness (Lane & Schwartz, 1987). He also identified several earlier influences, including Darwin’s (1872) use of emotional expression and its outcome for effective adaptation.

Another popular theory of multiple intelligences was proposed by Howard Gardner (1983) which included the concepts of personal, linguistic, musical, and bodily kinesthetic intelligences (Mayer & Salovey, 1997). Gardner’s conceptualization of personal intelligence was based on intrapersonal (emotional) and interpersonal (social) intelligence (Bar-On, 2005). Gardner’s ideas were reflected in the subsequent development of theories of emotional intelligence.
Models of Emotional Intelligence


Ability Model

The ability approach to emotional intelligence follows the logic that emotions have importance because they are signals that provide us information about relationships. The focus of the ability approach is that emotional intelligence exists as an intelligence, a set of abilities that are important in processing emotional information (Cobb & Mayer, 2000). The ability model does not make claims about the predictive value of emotional intelligence, and in fact, proponents of this model suggested research be conducted prior to claims of the benefit of emotional intelligence (Mayer, Caruso, & Salovey, 2000).

Salovey and Mayer (1990) presented a framework for emotional intelligence that followed from Thorndike’s theory of social intelligence. Thorndike (1920) originally defined social intelligence as “the ability to understand men and women, boys and girls – to act wisely in human relations.” Implied in this definition was the ability to perceive internal states of ourselves and others and to act based on that information. Salovey and Mayer considered their 1990 definition of emotional intelligence to be a subset of social intelligence involving “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (p. 189). They hypothesized that
individuals would differ in their skill levels of processing affective information, but that the skills could be learned, resulting in improved mental health. They also considered their definition to be related to Gardner’s theory of personal intelligences based on inter and intrapersonal factors.

Salovey and Mayer’s 1990 model of emotional intelligence found three mental processes related to processing emotional information. The first domain included appraisal and expression of emotion in self and others. In the self, these functions may be carried out through verbal expression—the ability to speak clearly about emotions—or through nonverbal communication. The authors believed that emotionally intelligent individuals were able to accurately perceive and respond to their own emotions, to process information that is related to emotions, and to express emotions to others. This domain also included the ability to perceive and interpret emotions of others through their facial expression and body language, and to respond with empathy. In order to understand the feelings of another individual and experience empathy, one must be able to understand the perspective of others, to accurately interpret the emotions of others, and to respond appropriately to the experience.

The second domain in Salovey and Mayer’s 1990 model was regulation of emotion in self and others. Regulation in self may be an automatic response without conscious decision, whereby individuals develop theories about their emotions based on experiences and then choose situations to regulate their moods. Individuals often attempt to maintain positive moods and to avoid negative moods. The authors suggested that this may be a complicated process, related to a motivation to have emotional experiences in general. They found that individuals may seek out fictional
experiences to practice emotions with reduced consequence (i.e. watching a movie while knowing that the ending is sad). These tasks allow for feelings of empathy and may motivate individuals to then seek out pleasant experiences. This domain also discussed regulating emotions in others, i.e., the way individuals present themselves to others and the reactions of others to this presentation. The attempt to regulate emotions in others may be for the purposes of obtaining goals or motivating others towards goals, but can also be used with the intention of manipulating others.

Salovey and Mayer’s (1990) third domain was utilizing emotional intelligence, which consists of using emotion to solve problems, be flexible in planning, think creatively, redirect attention, and maintain motivation. They suggested that a positive mood may generate possible outcomes that could provide useful opportunities for individuals. Positive moods may also allow individuals to think more creatively, using memory and organization in problem solving. Emotionally intelligent individuals may be able to prioritize emotional demands, attend to daily tasks, and focus on activities without being impaired by emotions. They may also be able to channel emotions in order to motivate task completion and improved performance (i.e. anxiety).

Mayer and Salovey’s 1997 work provided a new definition and expanded model of emotional intelligence. The authors acknowledged that their initial definition was ‘vague’ and ‘impoverished’ and provided a definition that incorporated the concept of thinking about feelings.

Emotional intelligence involves the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth (Mayer & Salovey, 1997, p. 10).
The definition was conceptualized in their four-branch model, with each branch consisting of certain developing abilities. People of higher emotional intelligence were expected to move more quickly through development of the abilities. The branches started with basic psychological processes and moved through to “more psychologically integrated processes.”

The bottom branch of Mayer and Salovey’s Four Branch Model (1997) consisted of perception, appraisal, and expression of emotion. Included on this branch was the ability to understand emotions in facial expressions and pictures. Salovey and Grewal (2005) considered perception of emotion to be the most basic aspect of emotional intelligence. Eventually, individuals are able to evaluate expressed emotion, communicate their own needs and emotions appropriately, and become sensitive to dishonest expression of feelings.

The second branch of the model was the ability to use emotion to facilitate thinking, which combines the concepts of emotion and intelligence for processing of information prior to emotional action. Individuals use feelings to assist with planning, problem solving, and considering multiple perspectives (Mayer & Salovey, 1997). Higher levels of emotional intelligence allow for the use of mood to assist in tasks (Salovey & Grewal, 2005).

The third branch of Mayer and Salovey’s (1997) model was the capacity to understand emotional meanings. This branch related to the ability to distinguish between and comprehend complicated emotions and to recognize how emotions evolve in situations (Salovey & Grewal, 2005). The understanding of feelings often develops through relationships and may be taught or modeled by parents and others throughout
childhood. By experiencing patterns or chains of emotions, individuals begin to attribute reason to feelings that occur through interpersonal relationships (Mayer & Salovey, 1997).

The top branch of this model involved managing emotions to enhance personal growth and social relations (Mayer & Salovey, 1997). Emotionally intelligent individuals are able to use both positive and negative emotions in self and others to achieve goals (Salovey & Grewal, 2005). The insight obtained by understanding experiences and emotional responses may also be used by the individual to increase motivation.

Salovey and Grewal highlighted the importance of social context in considering the skills involved in emotional intelligence. In order to use the skills appropriately and accurately, one must be aware of what is considered to be appropriate within the groups with whom they interact. The conceptualization of this model was based on a set of skills allowing individuals to process information about emotions accurately. The focus was on the idea of skill versus personality trait, which the authors claimed differentiates their model from the ‘mixed models’ of emotional intelligence.

Mayer et al. (2000) further explained emotional intelligence as a ‘mental ability model’ in which individuals may differ in skill level. Like cognitive intelligence, this difference may have implications for an individual’s life. The authors predicted that emotional intelligence is a measurable intelligence because (a) their model could be measured by right or wrong scoring methods, (b) the skills that made up the model correlated with other measures of mental ability, and (c) because ability level rose with age.
Mixed Models

Mixed models are considered to be different from ability models in that they describe personality characteristics in addition to abilities in theory and definition (Mayer et al., 2000). Cobb and Mayer (2000) considered the mixed model to be “more popularly oriented” (p. 15) and were critical of the inclusion of social competencies and behaviors included in the models, as well as claims for success associated with emotional intelligence. The two models that are considered in the classification of mixed models are those of Goleman (1995) and Bar-On (1997).

Goleman’s 1995 Model of Emotional Intelligence.

Daniel Goleman published his theory of emotional intelligence in his 1995 book of the same name. Goleman (1995) stated “The abilities called here emotional intelligence...include self-control, zeal and persistence, and the ability to motivate oneself” (p. xii). He also stated that “there is an old-fashioned word for the body of skills that emotional intelligence represents: character” (Goleman, 1995, p. 28).

Goleman’s model was considered by Mayer et al. (2000) to be a mixed model of emotional intelligence due to his inclusion of other dispositions and traits outside of emotional ability. The authors were critical of mixed models, stating that they “must be analyzed carefully so as to distinguish the concepts that are a part of emotional intelligence from the concepts that are mixed in, or confounded, with it” (p. 268).

Goleman’s (1995) theory consisted of five domains. Each domain built upon skills learned in the previous domain, making this a developmental model. Goleman considered the first domain, knowing one’s emotions, to be central to his theory. The skills involved in this domain included self-awareness and recognizing a feeling while
it is happening. The second domain was managing emotions. Goleman (1996) stated that this ability built on self-awareness by increasing skills to handle various feelings and soothe one’s self.

Goleman’s third domain was motivating one’s self. This domain included being able to focus emotions toward obtaining a goal, delaying gratification, and reducing impulsivity, in order to become productive and effective (Goleman, 1995, 1996). The fourth component of Goleman’s theory was recognizing emotions in others, being attuned to the feelings of others and displaying empathy. The fifth and final domain was handling relationships. Included here were the abilities to manage emotions in others and to interact smoothly with others. Goleman (1996) stated that popularity, leadership and interpersonal effectiveness were all functions of this ability.

Goleman has been criticized for being “non-scientific” and for his claims about the predictive validity of his model (Mayer et al., 2000). Included in Goleman’s (1996) claims were success at home, school, and work; increased popularity; better learning; less rudeness and aggressiveness; and better decisions about the use of drugs and alcohol. Goleman (1995) stated that “at best, IQ contributes about 20% to the factors that determine life success, which leaves 80% to other factors” (p. 34). Mayer et al. (2000) noted that Goleman’s claims for widespread predictive ability were tentative, at best.

**Bar-On’s Model of Emotional Intelligence.**

The second mixed model is Reuven Bar-On’s model of emotional intelligence (1997). According to Mayer et al. (2000), Bar-On was cautious about his claims for his model, in contradiction to Goleman. Bar-On believed that the combination of EQ and
IQ provided a more balanced picture of intelligence, and that emotional intelligence related to potential success, rather than actual success. In that regard, the model is considered to be process-oriented rather than outcome-oriented (Bar-On & Parker, 2000).

Bar-On (1997) defined emotional intelligence as “…an array of noncognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (p. 14). By combining nonability traits with existing conceptions of emotional intelligence, Bar-On was interested in understanding why some individuals were better able to succeed than other individuals. His research led him to identify five areas of functioning related to success (Mayer et al., 2000).

The first characteristic of Bar-On’s (1997) model was intrapersonal skills. This included specific skills of emotional self-awareness, assertiveness, self-regard, self-actualization, and independence. Individuals who possessed these skills were able to recognize and understand their own feelings, express their feelings, appraise themselves accurately, realize their potential, and think and act in a self-directed manner without being emotionally dependent on others (Bar-On & Parker, 2000).

Bar-On (1997) identified a second area of focus to include interpersonal skills. Included in this category were specific skills related to interpersonal relationships, social responsibility, and empathy. Individuals with strength in this area were able to establish and maintain mutual and emotionally close relationships, be constructive and cooperative members of social groups, and be aware of, understanding of, and appreciative of the feelings of others (Bar-On & Parker, 2000).
The third characteristic identified by Bar-On’s (1997) model was adaptability. Included here were skills in problem solving, reality testing, and flexibility. Individuals with these skills could identify problems and generate solutions, validate emotions, and adjust feelings and behavior to changing situations (Bar-On & Parker, 2000).

Stress management was the fourth area of functioning identified by Bar-On (1997). This included skills related to stress tolerance and impulse control, including the ability to tolerate and cope with stress without falling apart, to control emotions, and to resist or delay impulses (Bar-On & Parker, 2000).

The last area identified in Bar-On’s (1997) model was general mood. Skills included here were happiness and optimism, including the ability to be satisfied with and enjoy one’s life, to look on the brighter side, and to maintain a positive attitude in the face of adversity. Bar-On and Parker (2000) considered this variable to be motivational in the facilitation of the other components of emotional intelligence.

In Bar-On’s (2005) article reviewing research related to emotional intelligence and his theory, he adapted his title of the construct and theory to better include the idea of social intelligence. The new title, “emotional-social intelligence” (“ESI”) was to reflect those concepts and was conceptualized with the following definition:

Emotional-social intelligence is a cross-section of interrelated emotional and social competencies, skills, and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands (Bar-On, 2005, p. 3).

The key components that are derived from this definition are:

a) the ability to recognize, understand, and express emotions…b) the ability to understand how others feel and relate to them, c) the ability to manage and
control emotions, d) the ability to manage change, adapt, and solve problems… e) the ability to generate positive affect and be self-motivated. (p. 3)

Measures of Emotional Intelligence

While the literature provides several measures of emotional intelligence, many are unpublished instruments with some being used in popular media, on the internet, etc. This review will focus on only those instruments developed by the researchers responsible for the development of the three models of emotional intelligence reviewed above. All measures reviewed, with the exception of the EQ-i:YV, are normed and intended for adult populations. To this date, the aforementioned researchers - with the exception of Bar-On - have not published an emotional intelligence instrument for use with adolescents.

Ability Measures

Ability measures are also called performance measures, and are considered to be the “gold standard” in intelligence research because they measure the actual capacity to perform a task versus an individual’s belief about their capacity to perform a task (Mayer et al., 2000).

MEIS and MSCEIT. The Multifactor Emotional Intelligence Scale (MEIS) is the original ability scale developed by Mayer and Salovey (1997) and introduced in 1998. This scale is based on four components: emotional perception, emotional facilitation of thought, emotional understanding, and emotional management, and consisted of 12 subscales (Mayer, Caruso, & Salovey, 2000). Each of the subscales consisted of tasks which when completed by the respondent provide information about the individual’s ability related to emotional intelligence.
Mayer et al. (2000) published information related to the development of the MEIS. The sample consisted of adults ages 17 to 70, with the majority of the sample being female college students. Reliability estimates provided alpha coefficients ranging from .49 to .94, with all but two subtests yielding alpha coefficients greater than or equal to .70. Factor analysis yielded a three factor solution, with intercorrelation coefficients ranging from .33 to .49. The first factor represented a general measure of emotional intelligence, the second factor represented managing and perceiving emotions, and the third factor represented managing emotions. Based on statistical findings and the limited practicality of this instrument with 402 items, the instrument was revised (Leung, Meier, & Cook Cottone, 2002). The second revision is the version that is presently published and in use.

The Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT) followed from the MEIS and was published in 2002 as an “improved and professionally published version of the MEIS, from which problematic items were eliminated.…” (Grewal & Salovey, 2005, p. 336). The MSCEIT is an ability measure of emotional intelligence producing an overall emotional intelligence score in addition to subscale scores for the four branches: perception, facilitation, understanding, and management (Mayer et al., 2000). The structure was guided by the conceptualization of the theory of emotional intelligence developed by the authors (Leung et al., 2002). This measure takes approximately 40 minutes to administer and is scored either in “consensus fashion,” with higher scores indicating overlap with answers provided by a sample of thousands of respondents, or “expert scored,” by comparing responses to those of 21 emotion researchers (Salovey & Grewal, 2005). It was designed for
individuals 17 years and older and was written at an eighth grade reading level (Leung et al., 2002).

The MSCEIT consists of two tasks devoted to each of the four branches of emotional intelligence developed by the authors, for a total of eight tasks and 141 items. Examples of tasks include viewing photographs of people and rating the level of emotion in their facial expressions, indicating the usefulness of certain moods for performing certain activities, completing sentences using emotion words and demonstrating knowledge of progression of emotion, and choosing strategies to handle emotions represented in real life situations (Grewal & Salovey, 2005)

According to Mental Measurements Yearbook Reviews (2002), test-retest reliability estimates for total MSCEIT score was .82. Split-half estimates ranged from .76 to .93, depending on type of scoring used. Internal consistency reliabilities for the eight task scores ranged from .56 to .88, again dependent on scoring method (Leung et al., 2002). Mayer, Salovey, Caruso, and Sitarenious (2003) reported that scores on each of the four branches correlate modestly and that both the branch and overall scores are reliable.

Validity estimates were determined using earlier versions of the MSCEIT (MEIS and version 1). Correlations with tests of intelligence and personality instruments were reportedly low to moderate, suggesting convergent and discriminant validity (Leung et al., 2002). Confirmatory factor analysis was supportive of the four branch model that was the conceptual framework for the MSCEIT. Summary statements from the Mental Measurements Yearbook (2002) suggested promising preliminary evidence related to reliability and validity, with recommendations for
further research related to the external validity of the instrument, examination of
general and expert scoring methods, clarification of meanings of supplemental scales,
examination of social and cultural factors, and evidence that test scores reflect actual
abilities or skills that may be utilized in real life situations (Leung et al., 2002).

*Mixed Model Measures*

Mixed model theories of emotional intelligence have generally been measured
by self-report or informant methods of measurement. According to Mayer et al. (2000),
self-report measures were asking individuals to endorse statements that may or may not
describe themselves. This required a level of self-understanding on the part of the
individual. Depending on the accuracy of the individual, the self-report then measured
an actual trait, or—in the case of an inaccurate reporter—information regarding the
individual’s self-concept. Informant methods tended to provide information about how
an individual was perceived by others, or their reputation (Mayer et al., 2000). This
information then, may not relate to actual ability.

*Emotional Competence Inventory (ECI).* The ECI was developed based on
Goleman’s (1998) model of emotional intelligence consisting of 25 competencies
spread among five clusters: (a) self-awareness, (b) self-regulation, (c) motivation, (d)
empathy, and (e) social skills (Boyatzis, Goleman, & Rhee, 2000). The ECI was
developed using the Self-Assessment Questionnaire, a competency assessment
questionnaire developed by Boyatzis as its base. Items were rewritten by Goleman and
Boyatzis to include noncognitive competencies not addressed in the original model.
The authors stated that approximately 40% of the ECI was composed of aspects of the
earlier questionnaire (Boyatzis et al., 2000).
Questionnaire format was selected due to ease of administration, comprehensiveness, and validity purposes. The instrument asked respondents to describe themselves or others based on a one to seven scale, with one indicating that the behavior is sporadic and only slightly characteristic of the individual, and seven indicating that the individual most often behaves this way (Boyatzis et al., 2000). The intended population for this instrument was adult, and it has been used primarily in business settings. The instrument was normed on managers, salespeople, and graduate students and is not available commercially at this time.

As the instrument was not published, psychometric information for its use is not well established, outside of its development and reports of the authors. The authors did report that factor analysis provided a three-factor solution consisting of self-awareness, self-management, and social skills. Following revision and reclassification of scales from Goleman’s model, a fourth factor, social awareness, was added. The authors suggested more research in order to further establish theoretical frameworks related to the impact of emotion and capability on individuals’ lives and work (Boyatzis et al., 2000).

*Bar-On EQ-i.* The EQ-i was developed by Reuven Bar-On to examine the constructs of social and emotional functioning based on his research in the 1980s. The instrument was published in 1997, reportedly as the first test of emotional intelligence to be published (Bar-On, 2000). The instrument was designed as a self-report measure of emotional and social intelligence.

The EQ-i consists of 133 Likert scale items, with responses ranging on a 5-point scale from 1 - very seldom or not true of me to 5 - very often true of me or true of
The instrument has been assessed at a fourth grade reading level, is suitable for individuals aged 17 or older, and takes approximately 40 minutes to complete (Bar-On, 1997). Items on the inventory were derived from mental health professionals and a review of mental health literature (Cox & Guion, 2004).

The EQ-i provides five EQ composite scale scores, four validity indicators, and 15 subscale scores. The first composite score is Intrapersonal EQ. It is made up of the subscales of self-regard, emotional self-awareness, assertiveness, independence, and self-actualization. The second composite score is Interpersonal EQ. The subscales that make up this score are empathy, social responsibility, and interpersonal relationships. Third is the composite score of stress management, made up of stress tolerance and impulse control. The fourth composite score is Adaptability EQ, and its subscale scores include reality testing, flexibility, and problem solving. The last composite score, General Mood EQ, is comprised of optimism and happiness. Validity indicators include omission rate, inconsistency index, positive impression, and negative impression (Bar-On 1997; Cox & Guion, 2004). The instrument has a correction factor that adjusts scale scores based on positive and negative impression scale scores. “This is an important feature for self-report measures in that it reduces the distorting effects of social response bias, thereby, increasing the accuracy of the results obtained” (Bar-On, 2000, p. 365).

Bar-On stated that average scores or above are indicative of individuals who are effective in emotional and social functioning, with higher scores indicating a more positive prediction for effective functioning and ability to meet environmental demands.
and pressures. Lower scores may indicate the existence of emotional, social, or behavioral problems, as well as an inability to succeed in life (Bar-On, 2000).

The instrument was initially normed internationally (South Africa, Israel, Argentina, Nigeria, India, and Germany) with an early version of the test. Based on information obtained from these studies, the present version was established and normed on a North American sample from the United States and Canada consisting of 3,831 individuals. Information obtained from this population indicated age and gender differences, leading to age and gender specific norms for use with this instrument (Bar-On, 2000; Cox & Guion, 2004). Older groups scored significantly higher than younger groups on scale scores, suggesting that emotional and social intelligence increases with age. There was no difference based on gender for overall emotional intelligence scores, but differences were reported in subscale scores (Bar-On, 2000).

Psychometric properties of the EQ-i have been reported by the author and reviewed in the Mental Measurements Yearbook. Internal consistency of the subscales was reported by Cronbach alpha coefficients, ranging from .69 to .86, with an average internal consistency coefficient of .76 (Bar-On, 2000; Cox & Guion, 2004). Test-retest reliability was provided for South African samples, with average coefficients of .85 and .75 for 1- to 4-month time periods, with most scales scoring in the .80s (Cox & Guion, 2004).

Exploratory factor analysis was utilized to examine the structure of the EQ-i to determine if it was theoretically justified. Principal component factor analysis was performed on 117 items (omitting the validity scale items). It was determined that a best-fit solution was for 13 factors, not the 15 factors that were initially presented (Bar-
Confirmatory factor analysis was used to answer questions related to the different factor structures. Five factors were eliminated from this analysis (optimism, self-actualization, happiness, independence, and social responsibility) as initial analysis determined them to be problematic. The result was 10 factors that had empirical and theoretical support and were considered to be the key components of emotional and social intelligence. The factors are self-regard, interpersonal relationship, impulse control, problem solving, emotional self-awareness, flexibility, reality testing, stress tolerance, assertiveness, and empathy. The five factors that were dropped are considered to be facilitators of social and emotional intelligence (Bar-On, 2000).

The Mental Measurements Yearbook review indicated adequate construct validation based on validation studies with instruments measuring personality, other emotional intelligence measures, and measures of mood and other closely related constructs (Cox & Guion, 2004). Additionally, in an attempt to examine divergent validity, the instrument was administered with various measures of cognitive intelligence, with results indicating that the two types of intelligence were not significantly related (Bar-On, 2000).

*Bar-On EQ-i:YV.* The present study will focus on the Bar-On Emotional Quotient Inventory: Youth Version (EQ-i:YV) as it is the instrument utilized in this research to measure emotional intelligence. As this instrument is the focus of this research, additional information will be included in its review related to scoring and interpretation.

The Bar-On Emotional Quotient Inventory: Youth Version (EQ-i: YV) was developed by Reuven Bar-On, Ph.D. and James D.A. Parker, Ph.D., and published by
Multi-Health Systems, Inc., in 2000. The EQ-i: YV was developed as a follow up to the EQ-i, which was designed to measure emotional intelligence in adult populations based on the theoretical basis of the Bar-On model of social and emotional intelligence. The purpose of the EQ-i: YV is to measure emotional intelligence in individuals aged 7 to 18 years. The instrument may be used by medical personnel, counselors, social workers, and teachers to assess emotional intelligence competencies of 7- to 18-year-olds who are in facilities such as schools, mental health treatment facilities, and juvenile detention centers. The reading level of the instrument is reportedly fourth grade, with completion time estimated at 20-25 minutes. The instrument is a self-report paper-and-pencil instrument, based on a 4-point Likert scale, indicating how true each item is for the respondents. The EQ-i: YV is available in both a long (60 item) and short (30 item) version. For the purpose of this instrument review, the long version will be discussed, as it is the instrument used in this study. The 60 items are comprised of seven scales: interpersonal, intrapersonal adaptability, stress management, general mood, positive impression, and inconsistency index. The first four scales are combined to yield an overall emotional intelligence score (Bar-On & Parker, 2000).

Bar-On developed the EQ-i in 1997 to measure emotional intelligence in adult samples (Bar-On, 1997, 2000). The EQ-i: YV is similar in that it is based on Bar-On’s empirical model of emotional intelligence and uses similar purpose and format. The EQ-i: YV manual describes seven stages in the development of the instrument. In the first stage, Preliminary Scale Development, experts in child and adolescent assessment reviewed the EQ-i to determine if the items were appropriate for 7- to 18-year-olds. Based on this assessment, 25% of items were retained, 25% were modified, and new
items were written to total 96 items. In Stage 2, Exploratory Factor Analysis (EFA) was used with a sample of 371 children and adolescent respondents. Through several EFA procedures, 48 items were retained. Stage 3 consisted of Scale Re-Development: the authors developed 33 new items based on the theoretical model and added these to the 48 items from the previous stage of development. An 81-item instrument was produced. Stage 4 yielded a new instrument, based on another round of exploratory factor analysis using a sample of 800 children and adolescent respondents. Based on these results, 60 items were retained. In Stage 5, Confirmatory Factor Analysis (CFA) was performed using a sample of 280 children and adolescent respondents. The four-factor model (interpersonal, intrapersonal, adaptability, and stress management), general mood scale, and positive impression scale were all empirically supported, producing the final 60-item version. Stage 6 was the development of the Inconsistency Index, and Stage 7 produced the EQ-i: YV short form (Bar-On & Parker, 2000).

Hand scoring of the forms takes approximately 10 minutes and may be completed by untrained individuals. It is then reviewed by a professional using the QuikScore form, which is part of the instrument. It is necessary to examine responses to make sure all have transferred clearly to the score sheet and that responses are unambiguous and completed. The manual provides a technique for calculating missing scores, but states that the instrument should not be scored if more than 6 items are omitted. The score sheet is set up like a grid, with answers being transcribed into appropriate boxes and summed at the bottom of each column. Formulas are provided to calculate the overall intelligence score and inconsistency index. Through the above process, raw scores are generated and then converted into standard scores on a profile
form. The instrument provides profile sheets for both males and females (due to gender norms). The scores are transferred onto the profile form and connected with solid lines to obtain a profile. On-line and computer software scoring are also available (Bar-On & Parker, 2000).

The manual states that interpretation requires a general understanding of the concept of emotional intelligence. A standard score has a mean of 100 (SD = 15). Based on this information, higher scores indicate higher levels of emotional intelligence. Scores can be compared between the different scales as they have been transformed from raw to standard scores. The manual provides a table to be used as a guideline to interpret scores (i.e. 90-109 is average, 110-119 is high, etc.) and a step-by-step guide to interpret results. The steps include checking validity (inconsistency index), assessing current mood of respondent (general mood scale), assessing overall level of emotional intelligence, assessing patterns of emotional intelligence dimensions (looking at individual scale scores to determine strengths and areas for improvement), comparing EQ-i: YV results with additional sources of information (behavioral observations, academics, other assessments, etc.), summarizing findings to make recommendations for skill improvement, and retesting to evaluate progress. The manual also provides treatment interventions by dimension to improve emotional and social skills (Bar-On & Parker, 2000).

The EQ-i:YV was reviewed in the 2002 Mental Measurements Yearbook. Reliability information was reviewed related to internal reliability and test-retest reliability. Reliability estimates were reported in terms of Cronbach’s alpha for each domain scale used in the test. Alpha ranges were from .65 to .90 with lowest reliability
coefficients on the intrapersonal scale. Most alphas were reported to be in the .80 range (Ballard & Leong, 2002; Bar-On & Parker, 2000). Test-retest reliability estimates were also discussed with reported correlation coefficients ranging from .77 to .89. Correlation estimates between the short version and long version of this instrument were reported to range from .92 to .97 indicating a high level of correlation between the two instruments (Ballard & Leong, 2002; Bar-On & Parker, 2000).

Construct validity to provide evidence for the internal structure of the instrument was established using factor analysis. During the factor analysis the five subscales discussed in relation to this instrument were captured, with items loading moderately and not cross-loading onto other scales. Intercorrelations of domain scores were low to moderate (.16 to .72), indicating that the factors are relatively distinct (Bar-On & Parker, 2000). Concurrent validity was established by evaluating the youth version with the adult version. Ballard and Leong (2002) reported that the correlations for the intrapersonal (r = .56) and adaptability (r = .63) subscales were somewhat lower than what is desired. The authors of this instrument correlated the EQ-i: YV with other instruments to find evidence for the convergent/divergent validity of the instrument. Negative correlations were expected and for the most part obtained when correlating with the various instruments listed (Bar-On & Parker, 2000; Ballard & Leong, 2002).

Overall, reviews stated that the evaluation of reliability was adequate, noting that a large N sample size was used for total standardization (N = 9,172) but the sample sizes used for reliability analyses were inadequate (i.e. N = 60 for test-retest study). Validity evidence was also reported as adequate, but not as extensive as the evidence provided for the adult version of the EQ-i. While stating that the EQ-i: YV is a
psychometrically sound instrument with good psychometric properties, it was suggested that additional validity evidence be accumulated over time to further validate the psychometrics of this instrument (Ballard & Leong, 2002).

Comparing Ability vs. Self-report Measures

In response to claims made both in popular media and scientific research realms, several studies have compared the use of ability and self-report measures of emotional intelligence. A summary of findings comparing the MSCEIT and EQ-i will be reviewed here. These comparisons were based on adult measures of emotional intelligence.

Brackett and Mayer (2003) hypothesized that ability and self-report models of emotional intelligence would produce different representations of the same individual. This idea was based on the application of ability tests versus tasks calling for endorsement of descriptive statements that require accuracy in self-concept. Comparing the instruments to each other as well as to instruments measuring personality, well-being, and academic ability, findings indicated that the way in which individuals define emotional intelligence should guide their choice of instrument. In other words, the MSCEIT, an ability measure, measured ability distinct from personality and well-being, while the EQ-i was related to measures of personality. The two measures of emotional intelligence were weakly correlated, with the highest correlated subscales (MSCEIT regulation of emotion and EQ-i interpersonal scale) having an $r = .40$.

O’Connor and Little (2003) found similar results. In their study comparing the MSCEIT and EQ-i, they addressed prediction of academic achievement measured by
GPA. They determined that EI was not a strong predictor of achievement in general, and that the MSCEIT correlated highly with cognitive intelligence, but minimally with personality, while the EQ-i correlated with personality dimensions but not cognitive ability. The measures of emotional intelligence correlated with each other (r = 0.340; p < 0.01). However, scales scores of the EQ-i related to MSCEIT total score, while some of the MSCEIT scale scores, but not all, correlated with total EQ-i score.

As part of a study comparing the two instruments in regards to personality, cognitive ability, and aspects of satisfaction with military personnel, researchers found correlations between the five EQ-i scales and the four MSCEIT scales to be low to moderate (ranging from .13 to .31.) Again, the EQ-i scores demonstrated relationships with measures of personality and satisfaction (Livingstone & Day, 2005). The researchers suggested that the instruments were measuring different constructs, making the attempt to validate one measure versus another problematic. They suggested that this study demonstrated support for both models and that future researchers need to clarify to which definition or model they are referring (ability versus mixed) (Livingstone & Day, 2005).

A meta-analysis completed by Van Rooy, Viswesvaran, and Pluta (2005) supported the findings of earlier researchers, and also suggested that different models or measures may be more appropriate in different settings. They also stated that their findings did not suggest that one model or method is superior to another, and caution researchers about using the term emotional intelligence without clarifying the definition or model being discussed.
Emotional Intelligence Research

*Emotional Intelligence in Adolescents*

Research on emotional intelligence in adolescents is new, with publications emerging within the past few years. Studies have been done utilizing the EQ-i:YV to examine the constructs of academic achievement, demographic characteristics (age, sex, household income, parent level of education, and location of residence), and to validate the instrument in different cultures (Lebanese, North American aboriginal) (Harrod & Scheer, 2005; Hassan & Sader, 2005; Parker et al., 2004; Parker et al., 2005).

Parker et al. (2004) studied 14- to 18-year-olds by administering the EQ-i:YV and matching results to GPA. A moderate association (.41) was found between EI and academic success. Students in the top 20% academically were found to have higher levels of interpersonal, adaptability, and stress management abilities than other students. The authors suggested that academic success was strongly related to emotional intelligence.

The question of whether or not emotional intelligence generalizes across cultural groups instigated a study testing its usefulness with the North American aboriginal culture, which focused on collective behavior and success as part of a group or family (Parker et al., 2005). The four-factor structure of the EQ-i:YV was found to fit the aboriginal sample, suggesting that the instrument is appropriate for this population. The researchers also found that the aboriginal population scored significantly lower than a non-aboriginal sample on total EI as well as interpersonal, adaptability, and stress management scales. The researchers suggested implications for
interventions to increase EI, without assuming that interventions appropriate for one cultural group would be appropriate for others. In Hassan and Sader’s (2005) research, the EQ-i:YV was translated into Arabic for use with Lebanese youth ages 10 to 18. This measure was selected due to its large normative base, research in various countries, history, and use with the youth population. The authors reported satisfactory reliability, while factorial validity by scale indicated two major factors. The authors suggested that cultural differences in viewing emotion in the Lebanese population may explain the differences.

Harrod and Scheer (2005) stated that nearly all EI research targeted adults and that its relationship to the adolescent population needed to be explored. Their study examined demographic characteristics of 16- to 19-year-olds as they related to the EQ-i:YV. No significant relationships were found between EI, age, or location of residence. Females did score higher than males on overall EI, and it was found that as parent education level (mother and father) increased, so did EI scores. The authors suggested future research relating EI to demographic information, stating that the information provided may provide insight into adolescent emotional and social development.

Several adolescent studies have been conducted using instruments other than the EQ-i:YV. Two were found using Schutte’s self report measure of emotional intelligence, an unpublished measure based on an ability model of EI. The authors measured EI in 13- to 15-year-olds to determine the validity of measuring EI in young adolescents, and the use of self-report measures with this population. The authors reported that adolescents could accurately report EI, and stated that females scored
higher than males. Charbonneau and Nicol (2002) used the same instrument to examine the relationship of EI to leadership in 12- to 18-year-olds in summer military camp. The authors suggested that based upon their findings, Schutte’s measure of EI may be problematic with adolescents due to its correlation with a measure of desirability. They did suggest that some aspects of EI may be related to leadership in adolescents; however, additional research is needed.

Emotional intelligence has also been explored in adolescent populations as it relates to smoking risk factors. Trinidad, Unger, Chou, and Johnson (2004) utilized the student version of the MEIS in 10- to 13-year-olds to explore the relationship between EI and health behaviors through the use of regression models. They suggested that EI is a protective factor against smoking, with high EI being associated with an increased perception of negative social consequences of smoking and a greater ability to refuse opportunities to smoke. Petrides, Frederickson, and Furnham (2004) examined academic performance, deviant behavior, and EI, utilizing a questionnaire comprised of items from established measures of EI developed to measure trait EI (versus ability). They reported quantitative findings suggesting that trait EI was “relevant to scholastic achievement and deviant behavior at school, especially for disadvantaged and vulnerable adolescents” (Petrides et al., 2004, p. 289).

Relationship between Emotional Intelligence and Mental Health

As has already been mentioned, the rise in mental health issues in adolescents is a growing concern to school counselors, community counselors, and educators. Research has revealed an increasing incidence of depression and other mental health issues among our youth (Cash, 2003; Kubik, Lytle, Birnbaum, Murray, & Perry, 2003;
Masia-Warner et al., 2006; U.S. Department of Health and Human Services, 1999). Although links between emotional intelligence and mental health have been suggested, (Elias et al., 1997; Goleman, 1995), little research has been devoted to examination of this relationship.

Summerfeldt, Kloosterman, Antony, and Parker (2006) reported that prior research had not examined the potential relationship between social anxiety and emotional intelligence. Based on the premise that social anxiety is related to interpersonal functioning, their empirical research examined these two constructs in relationship to interpersonal adjustment. They found that EI was highly related to social interaction anxiety, and was the dominant predictor in interpersonal adjustment, although it was less related to performance anxiety. One conclusion of this study was that skills may be introduced to adolescent populations to increase efficacy in social situations.

In a quantitative study completed by Fernandez-Berrocal, Alcaide, Extremera, and Pizzaro (2006), the relationship between anxiety, depression, and emotional intelligence was examined within an adolescent population. The authors reported that emotional abilities contribute to psychological adjustment. Specifically, the ability to regulate mood was positively related to self-esteem, and the abilities to discriminate among feelings and to self-regulate emotional states were associated with better psychological adjustment.

This preliminary research suggests implications for exploring emotional intelligence as it relates to mental health. If emotional intelligence can be improved and taught as has been hypothesized (Bar-On, 2000; Elias et al., 2002; Elksnin &
Elksnin, 2003; Mayer & Cobb, 2000;) then increasing such skills may have implications for treating or improving mental health symptoms, providing important information to counselors and other mental health professionals.

**Relationship between Emotional Intelligence and Academic Success**

More research has accumulated regarding the relationship between emotional intelligence and academic success than has been on EI and mental health issues. Much of the research, however, is related to the early claims made about the predictive value of emotional intelligence and success (Goleman, 1995) with little empirical evidence available to support such claims.

Newsome, Day, and Catano (2000) investigated the predictive validity of emotional intelligence, as it relates to academic achievement. Findings indicated that cognitive ability and personality factors were associated with academic achievement, although neither total EQ-i scores nor factor scores were significantly related to academic achievement. Van Der Zee, Thijs, and Schakel (2002) found little empirical evidence to suggest a relationship between emotional intelligence and academic intelligence, but did report that dimensions of emotional intelligence were better able to predict academic and social success above what was predicted by academic intelligence and personality measures. This ability—which the authors cautioned was not extremely strong—suggested incremental validity for the construct of emotional intelligence beyond cognitive intelligence and personality.

Lam and Kirby (2002) examined emotional intelligence as it related to cognitive-based performance, over and above what may have been attributed to general intelligence. Their results indicated that general intelligence predicted a significant
amount of performance on cognitive tasks, while emotional intelligence contributed positively to performance over and above general intelligence. These findings suggested that the abilities to perceive, understand, and regulate emotions impacted performance, possibly by channeling emotions to complete tasks and buffering against negative emotions such as fear and anxiety (Lam & Kirby, 2002).

Parker, Summerfeldt, Hogan, and Majeski (2004) found mixed results regarding the relationship of emotional intelligence to academic success, depending on the way academic success was operationalized. EQ-i:Short scores were not found to be adequate predictors of academic success; however, intrapersonal, stress management, and adaptability subscales were found to predict 8% to 10% of the variability in grade point average. Although the relationship found was reportedly modest, it did predict first year college GPA better than high school GPA did. Findings were substantially different when the students were divided into groups: highly successful students with a GPA of 80% or better, versus relatively unsuccessful students with a GPA of 59% or less. Academic success was found to be strongly associated with the intrapersonal, adaptability, and stress management dimensions of emotional intelligence. The variables were found to predict academically successful students, with 82% of successful students being identified, and unsuccessful students with 91% of students being identified. This information suggested the predictive ability of EI dimensions in groups with varying academic success.

The lack of consistency in findings may be related to several factors, including how the constructs of emotional intelligence, personality, and cognitive intelligence are defined, measured, or assessed. Additional research is needed to substantiate claims of
academic success or to determine the predictive validity of the dimensions of emotional intelligence.

Criticisms/Limitations of Emotional Intelligence in the Literature

It has already been noted that the field of emotional intelligence is rife with debate regarding varying definitions, theories, and measurement. There appears to be a general consensus among researchers that in order for the field of emotional intelligence to advance, there must be clarification around these issues (Matthews, Roberts, & Zeidner, 2004). Some researchers have argued that neither school of thought (ability vs. mixed) has proven to be better, and have suggested that studies and work in the field of emotional intelligence should clearly indicate which definition or theory is being used (Linvingstone & Day, 2005; Van Rooy et al., 2005).

Mayer et al. (2004) acknowledged the criticisms of EI and its measurement, but also provided guidelines for making sense of the criticisms, adding that much of the criticism is aimed at claims made in the popular press. Because the field of emotional intelligence is expanding at a somewhat rapid pace, some of the criticism may be focused on previous studies, and not on the most recent, cutting-edge research. Much of the criticism is focused on measurement and conceptualization, with researchers from various schools of thought defending their positions. The authors asked the question “How much does this matter?” (Mayer et al., 2004, p. 211) when placing criticisms into context, and cited the need for continued studies in order to advance the field.
Summary

In summary, criticisms about emotional intelligence point to gaps in both the literature and research of this construct. Several implications for future research have been addressed. One of the major points of contention appears to be measurement of the construct of EI. Pfeiffer (2001) considered the “lack of scientifically sound, objective measures of the EI construct” to be a major weakness, making it “simply impossible to know what EI is or is not” (p. 140).

Many claims have been made about the benefits of emotional intelligence; but objective, empirical evidence is yet to be established partly due to difficulties with measurement. Programs have been developed to increase EI through SEL interventions, based on the premise that social and emotional skills are beneficial and contribute to success. These programs, however, are often not based on a theory or definition of emotional intelligence, and lack measures of the effectiveness of the intervention (Zeidner, Roberts, & Matthews, 2002).

Most current measures of EI have been developed to assess skills with adult populations, with the “notable exception…[of] Bar-On’s downscaled EQ-i measure for youth” (Zeidner, Roberts, & Matthews, 2002, p. 228). Pfeiffer (2001) stated that with the exception of the EQ-i:YV, almost all self-report measures of EI “lack norms or a standardization group” (p. 140). Other measures have been used to study adolescents, but they have either not been published or have not been normed with this age group.

This review of the literature suggests a need for additional research related to emotional intelligence with the adolescent population, specifically the measurement of the construct with this age group. Since there is currently one published, available
measure for use with this population - the EQ-i:YV - its psychometric properties need to be examined in order to determine its appropriateness with this age group and to add to the body of knowledge about the measurement of EI with adolescents. Additionally, Bar-On’s use of a more broad definition of “emotional-social intelligence” may be a better fit for the adolescent educational or clinical setting by providing more information related to social and emotional skills as well as self-perception of those skills. The measurement of the mood scale, consisting of the constructs of optimism and happiness, may also provide valuable information related to mental health and overall mood to those working with this population. Lastly, the ease of administration and scoring of this self-report measure may be more useful with the often hectic schedules of adolescents and their surrounding environments.

In conclusion, we need empirical evidence if we are to accept the claims of emotional intelligence made in popular media today. The process needs to start with a valid measure of the construct. There may be potential benefits of being able to interact with others, adapt to situations, and problem solve that may enhance school performance and school climate. If these skills can be taught or augmented, then adolescence may be the time to do so. This possibility has implications for those concerned with the social and emotional well being, as well as the cognitive well being, of our youth. Further research examining the predictive validity of EI, its relationship to mental health, and its implications for community counselors, school counselors, and educators, will require a reliable and valid measure of the construct with adolescents, especially in light of the push for accountability and evidenced-based practices.
CHAPTER III

PROCEDURES

Research Design

The researcher utilized an ex post facto research design with hypotheses and tests of alternative hypotheses (Newman, Newman, Brown, & McNeely, 2006; Pedhazur & Schmelkin, 1991). In this design, previously stated hypothetical relationships are tested and included in the investigation, as they increase the validity of the design. According to Newman & Newman (1994), “ex post facto research with hypotheses and tests for alternative hypotheses is considerably more powerful in terms of internal validity than pre experimental, ex post facto designs with no hypotheses, and ex post facto designs with hypotheses.” (p. 112). The authors also stated that ex post facto designs have the potential for the most amount of external validity when compared to other designs (i.e. experimental, quasi-experimental, and true experimental research).

Three weaknesses of ex post facto design were identified by Kerlinger and Blee (2000) and included the inability to manipulate the independent variable, the lack of power to randomize, and the risk of improper interpretation. The researcher does not have control of independent variables because they have already occurred or are not manipulated for ethical or convenience reasons (Kazdin, 1992). The relationships
among variables may be demonstrated; however, cause and effect relationships cannot be demonstrated.

Ex post facto design with tests of stated hypotheses and alternative hypotheses was utilized, as it is most appropriate to maximize the internal validity and explore relationships between variables. It was utilized to eliminate as many alternative hypotheses, other than those hypothesized for this study. Variables may be included in multivariate analysis to determine their contribution, even though they may not be manipulated. Prediction of relationships is improved by the ability to statistically control for variance.

Data Collection

The data used in this investigation were collected as part of an evaluation of the Red Flags Depression Awareness Program, a school-based prevention program developed by the Mental Health Association of Summit County and adapted for the Ohio Department of Mental Health (ODMH). Researchers from The University of Akron were contracted to conduct this evaluation through a 2-year grant (2003-2005) sponsored by the ODMH. The Red Flags Program was designed to help students, parents, and school personnel recognize and respond to signs of depression and related mental illness. The impact of the program in schools across Ohio, where the program has been implemented, was the focus of this program evaluation.

Briefly, the Red Flags Depression Awareness Program consists of three parts. The first part is an in-service training for school personnel, providing facts about depression and suggestions on how to implement the program. The second part is a video-based curriculum for students called Claire’s Story: A Child’s Perspective of
Childhood Depression. Lastly, the program includes suggestions for a parent seminar and education, activities for students, and suggestions for including the community.

The Red Flags program was initiated in 1998, and is being implemented by approximately 200 middle schools in Ohio, as well as some schools in North Carolina, Idaho, and Michigan. To date, more than 656 public schools and 144 non-public schools in Ohio have requested these no-cost program kits. More than 337,320 children and adults nationwide have received the informational booklet, Red Flags in Children’s Behavior.

School personnel across Ohio who were willing to participate in the study were contacted to determine when they would present the Red Flags curriculum. The contact person was sent the research packets of forms, which included pre and posttest packets. Packets were piloted to determine how long it took various age groups to complete; estimates were determined that ranged from shortest to longest time. Allocation of longest time was one class period. Teachers in the building and student participants in the Red Flags training were asked to complete the pretest packets prior to the presentation of Red Flags curriculum. Following the delivery of the curriculum the students completed the post-test packet that contained the same instruments. Teachers completed the posttest forms at the end of the school year. Upon completion, the forms were to be mailed back to the researchers for data entry.

Several unexpected issues—which have complicated the data collection process—presented themselves as data collection began. For example, in several cases school personnel forgot to administer the pretest packets prior to curriculum presentation, and, therefore, were unable to complete the study in their school. One
school experienced a flood, resulting in several hundred ruined forms that were discarded. There have been instances in which forms were not filled out in their entirety or not completed according to directions. Some schools chose not to utilize all of the forms out of personal preference. Budgeting issues related to the expense of the forms have also played a role in data collection.

Following the start of the study, several schools that do not utilize the Red Flags program were asked to participate as comparison group schools. Packets were developed and distributed to these schools. One issue that presented itself in one of the comparison settings was students not having enough time to complete the packets in one class period. The researchers attempted to control for this by counterbalancing surveys to control for sequencing effect.

Data entry was completed primarily by three graduate assistants at The University of Akron, including this writer. Although the program evaluation used several instruments for the purpose of evaluating the Red Flags Program, only the EQi:YV, School Climate Survey, and demographic information will be used in this study. Algorithms were constructed based upon the EQi:YV manual recommendations, to analyze the data according to instrument subscales for pre and post experimental groups and pre and post comparison groups. Protocols for handling missing data were also developed.

Sampling Procedures/Strategies

Schools selected for this study were identified by the Red Flags program facilitators as those who utilize the Red Flags program. This sample was purposeful, with attempts made to represent the State of Ohio with geographic diversity.
Throughout the first year and a half of this project, researchers continually solicited schools to participate both as comparison schools or schools that utilized Red Flags. Many schools declined participation, stating that they did not have enough time or could not take away from preparation required for proficiency testing.

Comparison groups selected were those who voluntarily participated in the study. Each subject was administered the EQ-i:YV and the School Climate Survey, as well as other instruments that were part of the program evaluation. Instructions were provided in a letter to each school facilitator who administered the instruments. Instruments were numbered to ensure anonymity of the information. The sample size secured was approximately 1100 units of data for analysis, including pre and posttest scores, from schools utilizing Red Flags and from comparison schools.

Participants

Participants in the study included 14 treatment schools and 5 comparison schools (2 Catholic and 3 urban). Those who participated were middle schools throughout the State of Ohio, primarily seventh grades, with some eighth grade classes also participating. To be considered a treatment school, the school must be utilizing the Red Flags program. The program facilitators were contacted and asked if they would be willing to participate in this study. Those who were willing to do so received follow-up letters and phone calls to determine program administration dates. They were then mailed instrument packets. Comparison schools were those who do not use the Red Flags Program in their schools. The comparison group consisted of 547 students at pretest and 407 students at posttest. The treatment group consisted of 560

62
students at pretest and 652 students at posttest. There were 1,107 total pretest and 1,059 posttest scores.

There was variation in the numbers depending on the number of missing responses for variables (not all students answered all questions). As one focus of this study is on demographic information, we will include only those participants for whom that data is available. Of the 1,107 pretest participants, 684 indicated sex and 604 indicated race. Of the 1,059 posttest scores, 653 indicated sex and 584 indicated race.

Of the comparison group responses, 182 or 19% (pre and post combined) were parochial student scores. Seven hundred seventy-two, or 81% (pre and post combined), were urban school scores. Over the entire sample of pretest scores (Red Flags schools and comparison schools), 684 of 1,107 pretest scores (62%) indicated gender. Of the 684 pretest students, 348 or 51% were female, and 336 or 49% were male. Of the 1,107 total pretest scores, 423 (38%) did not report sex. Ethnicity was reported by 604 (55%) of pretest respondents, and not provided by 503 (45%) of respondents. Of the reported pretest ethnicities, 12 students (2%) identified as American Indian, 13 students (2.2%) identified as Asian American, 100 students (16.6%) identified as African American, 11 students (1.8%) identified as Hispanic, 425 students (70.4%) identified as White, and 43 students (7.1%) identified as Other.

Posttest frequencies indicated that 653 (62%) of 1,059 respondents identified gender, and 584 (55%) indicated ethnicity. Four hundred and six (38%) did not provide information regarding gender, and 475 (45%) did not provide information about ethnicity. Of the posttest respondents who indicated gender, 345 (53%) were female, 308 (47%) were male. Of the reported ethnicities, 20 (3.4%) identified as
American Indian, 14 (2.4%) identified as Asian American, 103 (17.6%) identified as African American, 11 (1.9%) identified as Hispanic, 388 (66.4%) identified as White, and 48 (8.2%) identified as Other.

Instruments

Utilized to measure emotional intelligence, the Bar-On Emotional Quotient Inventory: Youth Version (EQ-i: YV) was developed by Reuven Bar-On, Ph.D. and James D.A. Parker, Ph.D., and published by Multi-Health Systems, Inc., in 2000. The EQ-i: YV was developed to measure emotional intelligence in adolescent populations, based on the theoretical basis of the Bar-On model of social and emotional intelligence. The purpose of the EQ-i: YV is to measure emotional intelligence in individuals aged 7 to 18 years, and it is written on a fourth grade reading level. The instrument is a self-report paper and pencil instrument, based on a 4-point Likert scale, indicating how true each item is for the respondents. The 60 items are comprised of seven scales: interpersonal, intrapersonal adaptability, stress management, general mood, positive impression, and inconsistency index. The first four scales are combined to yield an overall emotional intelligence score. Cronbach’s alpha was reported for each domain scale used in the test. According to the Mental Measurements Yearbook (2002) reviews, the alpha ranges were from .65 to .90 with lowest reliability coefficients on the intrapersonal scale. Most alphas were reported to be in the .80 range. Test-retest reliability estimates were reported as .77 to .89.

In order to measure changes in school climate, the School Climate Survey published by the National Association of Secondary School Principals (1987) was utilized. This instrument was developed based on the belief that perceptions held by
stakeholder groups may influence processes and outcomes that occur in the school environment. The School Climate Survey was normed for use with 6th to 12th grade students, teachers, and parents, with readability at a 5th to 6th grade levels. Data are collected about perceptions on 10 subscales: teacher-student relationships, security and maintenance, administration, student academic orientation, student behavioral values, guidance, student-peer relationships, parent and community-school relationships, instructional management, and student activities.

During a national pilot and normative studies, the instrument was administered to 1,500 teachers, 14,600 students, and 4,400 parents. Internal consistency coefficients (Cronbach’s alpha) were calculated for each subscale based on the pilot data. The Cronbach’s alpha for students on the 10 subscales ranged from a low of .67 to a high of .87, with the medium graded at .80. For teachers it ranged from .73 to .87 with a median graded at .83. Parent scores ranged from .79 to .92 with a median of .85. High levels of content and construct validity were reported, based on literature review completed by a task force, input of an expert panel, and factor analysis (Halderson, Kelley, & Keefe, 2002).

Variable List

Following is a list of how the variables were coded in this investigation:

<table>
<thead>
<tr>
<th>EQ-i:YV</th>
<th>Total EQ</th>
<th>Raw Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal Scale</td>
<td>Raw Score</td>
<td>(Range 0-24)</td>
</tr>
<tr>
<td>Interpersonal Scale</td>
<td>Raw Score</td>
<td>(Range 0-48)</td>
</tr>
<tr>
<td>Stress Management Scale</td>
<td>Raw Score</td>
<td>(Range 0-48)</td>
</tr>
</tbody>
</table>
Adaptability Scale Raw Score (Range 0-40)
General Mood Scale Raw Score (Range 0-56)
Positive Impression Scale Raw Score (Range 0-24)

**Demographic Data**

- **Sex**
  - Male: 0-no, 1-yes
  - Female: 1-yes, 0-no

- **Ethnicity**
  - (1) Caucasian
  - (2) African American
  - (3) Other

- **School Type**
  - (0) Public
  - (1) Parochial

**School Climate**

- **Total School Climate** Raw Score (Range 55-275)
- **Student Academic Orientation Scale** Raw Score (Range 4-20)
- **Student Behavioral Values Scale** Raw Score (Range 3-15)

**Derivation of General Research Hypotheses and Specific Research Hypotheses**

Based upon a review of the literature, there is a need for further validation of the EQ-i:YV (Ballard & Leong, 2002) and the relationship between the instrument and demographic data. Additionally, the mood scale of the instrument may provide information to those working with adolescents. Research has also suggested that there may be a relationship between emotional intelligence and school climate, which have been linked conceptually through research on SEL (Graczyk et al., 2000). The research questions guiding this study were presented in Chapter I. The general research hypotheses and specific hypotheses are stated below.
General Hypothesis 1 (GH1)

GH1: Kaiser Factor matching for the pretest factor structure is consistent with the factor structures of the posttest as measured by the cosine of .7 or higher.

Confirmatory factor analysis with Kaiser Factor matching will be utilized to test this hypothesis. Specific information regarding this technique will be provided in the statistical treatment section of this chapter.

Specific Hypothesis 1a (SH1a)

SH1a: Kaiser Factor Matching for the female factor structure is consistent with the factor structure of the males as measured by a cosine of .7 or higher.

General Hypothesis 2(GH2)

GH2: There is a mean difference between males and females on overall EQ-i:YV score.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV score}) = a_0u + a_1\text{sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV score}) = a_0u + E_2 \]

Specific Hypothesis 2a (SH2a)

SH2a: There is a mean difference between males and females on overall EQ-i:YV score, independent of ethnicity.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV score}) = a_0u + a_1\text{sex} + a_2 \text{Caucasian} + a_3 \text{African American} + a_4 \text{Other} + E_1 \]

The restricted model can be represented by:
Y(EQ-i:YV score) = \( a_0u + E_2 \)

*General Hypothesis 3 (GH3)*

GH3: There is a mean difference between males and females on subscale scores of EQ-i:YV.

*Specific Hypothesis 3a (SH3a)*

SH3a: There is a mean difference between males and females on the intrapersonal score.

This hypothesis can be represented by the full model:

\[ Y(\text{intrapersonal subscale}) = a_0u + a_1\text{ sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{intrapersonal subscale}) = a_0u + E_2 \]

*Specific Hypothesis 3b (SH3b)*

SH3b: There is a mean difference between males and females on the interpersonal score.

This hypothesis can be represented by the full model:

\[ Y(\text{interpersonal subscale}) = a_0u + a_1\text{ sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{interpersonal subscale}) = a_0u + E_2 \]

*Specific Hypothesis 3c (SH3c)*

SH3c: There is a mean difference between males and females on the stress management score.

This hypothesis can be represented by the full model:

\[ Y(\text{stress management subscale}) = a_0u + a_1\text{ sex} + E_1 \]
The restricted model can be represented by:

\[ Y(\text{stress management subscale}) = a_0 u + E_2 \]

Specific Hypothesis 3d (SH3d)

SH3d: There is a mean difference between males and females on the adaptability score.

This hypothesis can be represented by the full model:

\[ Y(\text{adaptability subscale}) = a_0 u + a_1 \text{ sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{adaptability subscale}) = a_0 u + E_2 \]

Specific Hypothesis 3e (SH3e)

SH3e: There is a mean difference between males and females on the general mood score.

This hypothesis can be represented by the full model:

\[ Y(\text{general mood subscale}) = a_0 u + a_1 \text{ sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{general mood subscale}) = a_0 u + E_2 \]

Specific Hypothesis 3f (SH3f)

SH3f: There is a mean difference between males and females on the positive impression score.

This hypothesis can be represented by the full model:

\[ Y(\text{positive impression subscale}) = a_0 u + a_1 \text{ sex} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{positive impression subscale}) = a_0 u + E_2 \]
General Hypothesis 4 (GH4)

GH4: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV score}) = a_0 + a_1 \text{school type (parochial or public)} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV score}) = a_0 + E_2 \]

Specific Hypothesis 4a (SH4a)

SH4a: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of ethnicity.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV score}) = a_0 + a_1 \text{school type} + a_2 \text{Caucasian} + a_3 \text{African American} + a_4 \text{Other} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV score}) = a_0 + a_5 \text{Caucasian} + a_6 \text{African American} + a_7 \text{Other} + E_2 \]

Specific Hypothesis 4b (SH4b)

SH4b: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of gender.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV score}) = a_0 + a_1 \text{school type} + a_2 \text{gender} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV score}) = a_0 + a_3 \text{gender} + E_2 \]
General Hypothesis 5 (GH5)

GH5: There is a mean difference between parochial school children and public school children and gender on EQ-i:YV mood scale scores.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV mood scale score}) = a_0u + a_1\text{school type} + a_2 \text{gender} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV mood scale score}) = a_0u + E_2 \]

Specific Hypothesis 5a (SH5a)

SH5a: There is an interaction between school type and gender in predicting EQ-i:YV mood scale scores.

This hypothesis can be represented by the full model:

\[ Y(\text{EQ-i:YV mood scale score}) = a_0u + a_1 \text{male (parochial)} + a_2 \text{male (public)} + a_3 \text{female (parochial)} + a_4 \text{female (public)} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{EQ-i:YV mood scale score}) = a_0u + a_5 \text{male} + a_6 \text{female} + a_7 \text{parochial} + a_8 \text{public} + E_2 \]

General Hypothesis 6 (GH6)

GH6: The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate.

This hypothesis can be represented by the full model:

\[ Y(\text{school climate}) = a_0u + a_1 \text{mood scale score} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{school climate}) = a_0u + E_2 \]
Specific Hypothesis 6a (SH6a)

SH6a: The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate, independent of gender and type of school.

This hypothesis can be represented by the full model:

\[ Y(\text{school climate}) = a_0 + a_1 \text{mood scale score} + a_2 \text{school type} + a_3 \text{gender} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{school climate}) = a_0 + a_4 \text{school type} + a_5 \text{gender} + E_2 \]

General Hypothesis 7 (GH7)

GH7: There is a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale of the school climate survey.

This hypothesis can be represented by the full model:

\[ Y(\text{academic orientation}) = a_0 + a_1 \text{mood scale score} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{academic orientation}) = a_0 + E_2 \]

Specific Hypothesis 7a (SH7a)

SH7a: There is a significant relationship between the mood scale score of the EQ-i:YV and student behavioral values subscale of the school climate survey.

This hypothesis can be represented by the full model:

\[ Y(\text{student behavioral values}) = a_0 + a_1 \text{mood scale score} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{student behavioral values}) = a_0 + E_2 \]
Specific Hypothesis 7b (SH7b)

SH7b: There is an interaction between gender and mood scale score in predicting academic orientation subscale scores of school climate survey.

This hypothesis can be represented by the full model:

\[ Y(\text{academic orientation}) = a_0 + a_1 \text{ male} + a_2 \text{ female} + a_3 \text{ male (mood score)} + a_4 \text{ female (mood score)} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{academic orientation}) = a_0 + a_5 \text{ male} + a_6 \text{ mood score} + E_2 \]

Specific Hypothesis 7c (SH7c)

SH7c: There is an interaction between gender and mood scale score in predicting student behavioral values subscale scores of school climate survey.

This hypothesis can be represented by the full model:

\[ Y(\text{student behavioral values}) = a_0 + a_1 \text{ male} + a_2 \text{ female} + a_3 \text{ male (mood score)} + a_4 \text{ female (mood score)} + E_1 \]

The restricted model can be represented by:

\[ Y(\text{student behavioral values}) = a_0 + a_5 \text{ male} + a_6 \text{ mood score} + E_2 \]

Statistical Treatment

This investigation used both descriptive and inferential statistics as follows:

1. Descriptive demographic statistics for the criterion and predictor variables were provided. Descriptive statistics included means, standard deviations, and frequency distributions. According to Newman et al. (2006), descriptive statistics are “used for describing the population or sample on which one has data” (p. 5).
2. A correlation matrix was generated to explore the magnitude and direction of relationships among variables (Newman et al., 2006).

3. Confirmatory factor analysis using Kaiser Factor matching was utilized to provide an estimate of factor stability (Grimm & Yarnold, 1995; Veldman, 1967). This statistic was utilized for General Hypothesis 1 and Specific Hypothesis 1a.

   A confirmatory factor analysis using principal components (Grimm & Yarnold, 1995) procedures of the variables purported to make up the scales of the EQ-i:YV was conducted to establish internal consistency of the scales and construct validation to “the degree that the results are in the predicted directions” (Newman et al., 2006, p. 54).

   Principal components factor analysis was utilized to derive underlying principal components using varimax orthogonal rotation. In this analysis, “as many factors are initially extracted as there are variables” (Kachigan, 1991, p. 245). This analysis results in a matrix, reporting values of 1.0 in the principal diagonal. In order to be considered in the interpretation of a component for construct validation, factor loadings must be .30 or higher. “This generalization derives from the observation that a factor loading of .30 indicates that approximately 10% of the variance in a given variable has been explained by that factor” (Tinsley & Tinsley, 1987, p. 422).

   The objective of principal components analysis is to obtain a minimal set of components that best accounts for the common variance of the original variables. In order to determine the number of meaningful factors of components, two techniques will be used. Eigen values are associated with each derived factor, which are related to the amount of variance in the factor and which factors are retained. According to
“Kaiser Criterion”, the sum of the squared factor loadings of 1.0 or greater should be retained (Kaiser & Caffrey, 1965; Kaiser & Cerny, 1979). Therefore, eigen values of 1 were retained for analysis. In addition to eigen values, a scree test (Cattell, 1966) will be conducted. A scree test is, “The plot of the incremental variance accounted for by each successive factor. The idea of a scree test is that the factors along the tail of the curve represent mostly random error variance” (Kachigan, 1991, p. 246). According to Weiss (1970)

Factor analysis is concerned only with the “common” variance, or that portion of the variance which correlates with other variables in the matrix. The “unique” variance, including both specific reliable variance and “error” variance, does not correlate with other variables and hence is not analyzed in most factor-analytic methods. (p. 478)

The difference between factor analysis and principal components analysis is what is placed on the diagonal. In PCA ones are placed on the diagonal, and in factor analysis commonality estimates are placed on the diagonal to analyze the common variance. According to Nunnally (1978), the solutions are almost always identical, and the use of PCA has certain mathematical advantages.

Kaiser factor matching was used to test the similarity of the underlying principal components structure in GH1, based on components obtained in the principal components analysis. It was chosen because it tests the strength of the relationship between different factor structures. The two principal components structures are compared, with one being rotated “to maximize the degrees of overlap between corresponding test vectors in the two structures. The output represents the degrees of rotation of the space as a matrix of cosines of the angles between all pairs of factor axes in the two structures” (Newman, Dimitrov, & Waechter, 2000, p. 23). It is the
meaningful factors that are retained in the model and rotated to obtain a simple structure. Cosines are interpretable as correlations between the factors in the two structures. Veldman (1967) stated that cosines approximately .95 indicated a strong degree of similarity, cosines .75 to .95 a high similarity, and cosines .75 or below indicated dissimilarity in the two factor structures. For the purpose of this study, matching cosines of .7 or higher were utilized. This number was determined as research has indicated that Veldman’s initial estimates were too conservative (I. Newman, personal communication, September 30, 2006).

4. Multiple regression analysis using the General Linear Model (GLM) was performed to test the selected research hypotheses (Bobko, 1995; Chatterjee & Price, 1977; Cohen & Cohen, 1983; McNeil, Newman, & Kelly, 2006). This statistic was used for the remaining general and specific hypotheses in this study.

Regression models were written to reflect each research question. Full and restricted models were then tested to determine if the research hypotheses would be accepted or rejected.

Multiple linear regression procedures were used to determine the significance of the independent variables (IV) in predicting the dependent variable (DV). Multiple linear regression was chosen because it is more flexible than traditional analysis of variance. Using multiple linear regression one can test relationships between categorical variables, between categorical and continuous variables, or between continuous variables. Additional advantages of GLM include an easier way to calculate and interpret analysis of covariance, the ability to control for possible confounding effects, and its utility in discovering structural relationships among

Two-tailed tests of significance were used to test the relationships of those variables where the direction of the correlation was uncertain. According to Newman et al. (2006), the two-tailed test of significance is a nondirectional test, meaning that the relationship tested is not predicted prior to analysis. Because there is little evidence in the current research to demonstrate directionality related to the emotional intelligence hypotheses utilized in this study, two-tailed tests of significance were used. The .05 level of significance was selected because the consequences of rejecting a true null hypothesis were not so serious as to warrant a more stringent confidence level, in the opinion of this researcher.

The F test, analysis of variance, was used in this study to test the statistical significance of the proposed relationships. An F test was used to determine if the $R^2$ of the full and restricted models were significantly different at an alpha of .05. The F test was chosen as it is very robust and is the most frequently used test of significance (Newman et al., 2006; Pedhazer & Schmelkin, 1991). The assumptions of random selection of subjects and normal distribution of the variables can be violated without doing serious harm to the procedure, especially when the N is large.

A power analysis was calculated to determine the probability of detecting a significant difference when one exists (McNeil et al., 1996). Cohen (1977) defined effect size in three categories: small ($f^2 < .15$), medium ($f^2 .15$ to $.35$), and large ($f^2 >.35$). Power was estimated for this study based on the most conservative model being used for analysis (four linearly independent vectors). As the N range is from
approximately 1,100 to 584 for the smallest comparison group, power analysis was based on N = 580. Estimates of power will therefore be at least as high as or higher than indicated. The analysis was done for N = 580, alpha = .05, and for medium effect size with four linearly independent variables with power = .99+. For small effect size, power = .9. Thus, the ability to detect an $f^2$ as small as .02 = 90%; and the ability to detect an $f^2$ of .15 was greater than 99%.

Power analysis can be used to “accept” the null hypotheses within confidence intervals (Newman & Benz, 1983). This approach allows one to state the confidence such that a difference between the groups is not greater than a small amount. This procedure is effective when the sample size is large and, therefore, statistical significance is not meaningful. With large samples, nonsignificance may be meaningful. Power analysis can determine if differences are so small that one can conclude at a given level of confidence that “no meaningful differences exist” that are not greater than this small difference.

Limitations

In using a field setting when conducting research, it is extremely difficult to do control group or experimental research. When using a natural setting, researchers often do not have control over how well participants implement the research materials. All participants were provided with directions for administering instruments, but the researcher was unable to control the actual implementation. Ex post facto research poses limitations because causal relationships cannot be inferred.

Participants in this study consist of those who were willing to participate, which may make this population different from those who were not willing to participate.
This study is limited to middle schools in the State of Ohio that were willing to participate; therefore, replicability is recommended before generalization to other populations.

Summary

This chapter provided an overview of the methodology used to implement this study. The ex post facto research design was explained, and the population sample was described. After the data collection methods and variables were described, derivation of general research hypotheses and statements of general and specific hypotheses were provided. The statistical treatment was described and rationale for use of CFA and GLM was provided. Limitations of the study were also listed.
CHAPTER IV

RESULTS OF THE STUDY

Results of the research are presented in this chapter. This chapter is organized into three sections: descriptive statistics, confirmatory factor analysis, and inferential statistics. Descriptive statistics such as minimums, maximums, means, and frequencies are displayed for the demographic variables. A correlation matrix is provided to display the most salient relationships between variables. Kaiser Factor Matching was utilized to test the stability of the factor structure. Inferential statistics were utilized to test the research hypotheses. The chapter concludes with a summary of the results.

Demographic Descriptive Statistics

There were 1036 students that participated in the pretest portion of Red Flags Program Evaluation. However, not all participants filled out all of the questions so the number of students reported varies greatly across variables. Only students that filled out all variables that pertain to the hypotheses being tested were included. Only 684 students reported their gender, and of these students, 348 (50.9%) were male and 336 (49.1%) were female. There were 604 students that reported their ethnicity. The majority (70.4%) of the students that participated were white. Of the remaining participants, 16.5% identified as African American and 13.1% identified as other. The majority of the students in this study (955, 86.3%) attended public schools and 152 (13.7%) attended parochial schools (see Table 1).
Table 1

Demographic Frequencies

<table>
<thead>
<tr>
<th>Variables</th>
<th>Numbers</th>
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<tbody>
<tr>
<td>Sex</td>
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<tr>
<td>Male</td>
<td>348</td>
<td>50.9</td>
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<tr>
<td>Female</td>
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<tr>
<td>Parochial</td>
<td>152</td>
<td>13.7</td>
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There were several instruments that were utilized in this investigation. The School Climate Scale had a mean score of 6.564 and a standard deviation of 1.313. Emotional intelligence was measured with the EQ-i:YV. The EQ-i total test score ranged from 14 to 56 and had a mean of 42.306 with a standard deviation of 7.461. The General Mood Subscale ranged from 6 to 24 with a mean of 14.358 and a standard deviation of 3.253. Both Academic Orientation and Student Behavioral Values, subscales of the School Climate Survey, were measured with a mean of 3.203 and a standard deviation of .965 and a mean of 2.562 and a standard deviation of 1.044 respectively (see Table 2).

Table 2

Descriptive Statistics
<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
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<td>1</td>
<td>9</td>
<td>6.564</td>
<td>1.313</td>
</tr>
<tr>
<td>EQI Total</td>
<td>824</td>
<td>14</td>
<td>56</td>
<td>42.306</td>
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<tr>
<td>Intrapersonal</td>
<td>878</td>
<td>6</td>
<td>24</td>
<td>14.552</td>
<td>3.363</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>830</td>
<td>14</td>
<td>48</td>
<td>37.881</td>
<td>6.291</td>
</tr>
<tr>
<td>Stress Management</td>
<td>824</td>
<td>15</td>
<td>48</td>
<td>28.971</td>
<td>5.265</td>
</tr>
<tr>
<td>Adaptability</td>
<td>865</td>
<td>10</td>
<td>40</td>
<td>27.980</td>
<td>5.912</td>
</tr>
<tr>
<td>General Mood</td>
<td>900</td>
<td>6</td>
<td>24</td>
<td>14.358</td>
<td>3.253</td>
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<tr>
<td>Positive Impression</td>
<td>664</td>
<td>5</td>
<td>16</td>
<td>10.839</td>
<td>1.359</td>
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<tr>
<td>Academic Orientation</td>
<td>868</td>
<td>1</td>
<td>5</td>
<td>3.203</td>
<td>0.965</td>
</tr>
<tr>
<td>Student Behavioral Values</td>
<td>871</td>
<td>1</td>
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<td>2.562</td>
<td>1.044</td>
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<tr>
<td>Grade</td>
<td>638</td>
<td>6</td>
<td>12</td>
<td>7.389</td>
<td>0.753</td>
</tr>
</tbody>
</table>

There were several significant relationships between the most salient variables utilized in this study. First, there were significant relationships between academic orientations and intrapersonal, interpersonal, total EQ, adaptability, positive impression and general mood. These relationships had r(s) ranging from .235 to .314 and p(s) < .001. Student behavioral values were also significantly related to interpersonal, total EQ, adaptability, positive impression, general mood, and stress management. The strengths of these relationships were slightly lower and had r(s) ranging from .79 to .261 with a negative relationship with total EQ. All of these relationships were significant with a p < .001, except stress management which had a p = .004. Treatment was significantly correlated with interpersonal skills with an r = .081 and a p = .001. A person’s sex was correlated with interpersonal skills, and also with stress management.
Females scored significantly higher on interpersonal skills then males with an \( r = -0.207 \) and a \( p < .001 \). However, males scored significantly higher on stress management with an \( r = 0.067 \) and a \( p = .028 \). African American students scored higher on intrapersonal skills and stress management then all other ethnicities with \( r(s) = .086 \) and \( .131 \) and \( p(s) = .006 \) and \(< .001 \), respectively. White students scored significantly higher on interpersonal skills with an \( r = 0.027 \) and a \( p < .001 \). Lastly, school type was only significantly related to interpersonal skills with an \( r = .08 \) and a \( p < .001 \) (see Table 3). For additional information, one can see the full correlation matrix presented in Appendix B.

Research Hypotheses Results

This section reviews the statistical results and presents the findings in table form for all of the 21 research questions and hypotheses. The first two research hypotheses were tested using Kaiser Factor Matching (Veldman, 1967) to conduct a confirmatory factor analysis. The remaining 19 research hypotheses were tested using multiple linear regression with an alpha level of .05. Both full and restricted models were presented for all 19 regression analyses.

General and Specific Hypotheses

Research Question 1: Is the factor structure of the EQ-i:YV stable from pretest to posttest?
<table>
<thead>
<tr>
<th></th>
<th>Intra-personal</th>
<th>Inter-personal</th>
<th>Stress Management</th>
<th>Total EQ</th>
<th>Adaptability</th>
<th>Positive Impression</th>
<th>General Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Orientation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>.236**</td>
<td>.235**</td>
<td>-.014</td>
<td>.275**</td>
<td>.255**</td>
<td>.280**</td>
<td>.314**</td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.000</td>
<td>.603</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
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<td>1334</td>
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<td>1050</td>
<td>1415</td>
</tr>
<tr>
<td><strong>Student Behavioral Values</strong></td>
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<tr>
<td>r</td>
<td>.203**</td>
<td>.099**</td>
<td>.079**</td>
<td>-.153**</td>
<td>.140**</td>
<td>.180**</td>
<td>.261**</td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.000</td>
<td>.004</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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<tr>
<td><strong>Treatment</strong></td>
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<td></td>
</tr>
<tr>
<td>r</td>
<td>-.031</td>
<td>.081**</td>
<td>-.043</td>
<td>.015</td>
<td>-.018</td>
<td>-.007</td>
<td>-.039</td>
</tr>
<tr>
<td>p</td>
<td>.207</td>
<td>.001</td>
<td>.087</td>
<td>.554</td>
<td>.474</td>
<td>.813</td>
<td>.105</td>
</tr>
<tr>
<td>N</td>
<td>1693</td>
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<td>1561</td>
<td>1583</td>
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<td>1708</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
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<td></td>
<td></td>
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<tr>
<td>r</td>
<td>-.041</td>
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<td>.067*</td>
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<td>.049</td>
<td>-.057</td>
<td>.013</td>
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<td>p</td>
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<td>.000</td>
<td>.028</td>
<td>.662</td>
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<td>.094</td>
<td>.664</td>
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<tr>
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<td>1066</td>
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<td>1120</td>
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<td>1149</td>
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<tr>
<td><strong>White</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>.027**</td>
<td>-.121**</td>
<td>.056</td>
<td>.003</td>
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<tr>
<td>p</td>
<td>.077</td>
<td>.000</td>
<td>.000</td>
<td>.081</td>
<td>.927</td>
<td>.700</td>
<td>.145</td>
</tr>
<tr>
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<td>1021</td>
<td>962</td>
<td>958</td>
<td>982</td>
<td>995</td>
<td>755</td>
<td>1020</td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>.086**</td>
<td>-.115**</td>
<td>.131**</td>
<td>-.017</td>
<td>-.006</td>
<td>.020</td>
<td>.064*</td>
</tr>
<tr>
<td>p</td>
<td>.006</td>
<td>.000</td>
<td>.000</td>
<td>.601</td>
<td>.859</td>
<td>.582</td>
<td>.042</td>
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<td>1021</td>
<td>962</td>
<td>958</td>
<td>982</td>
<td>995</td>
<td>775</td>
<td>1020</td>
</tr>
<tr>
<td></td>
<td>Intra-personal</td>
<td>Inter-personal</td>
<td>Stress Management</td>
<td>Total EQ</td>
<td>Adaptability</td>
<td>Positive Impression</td>
<td>General Mood</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>------------------</td>
<td>----------</td>
<td>--------------</td>
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<td>--------------</td>
</tr>
<tr>
<td><strong>Other</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
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<td>-.048</td>
<td>.023</td>
<td>-.056</td>
<td>.002</td>
<td>-.002</td>
<td>-.007</td>
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<tr>
<td>p</td>
<td>.588</td>
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<td>.481</td>
<td>.081</td>
<td>.949</td>
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<td>.822</td>
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<tr>
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<td>958</td>
<td>982</td>
<td>995</td>
<td>775</td>
<td>1020</td>
</tr>
<tr>
<td><strong>School Type</strong></td>
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<td></td>
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</tr>
<tr>
<td>r</td>
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<td>.088**</td>
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<td>.033</td>
<td>.012</td>
<td>.012</td>
<td>.021</td>
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<tr>
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<td>.185</td>
<td>.614</td>
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<td>.378</td>
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<td>1561</td>
<td>1583</td>
<td>1652</td>
<td>1239</td>
<td>1708</td>
</tr>
</tbody>
</table>

** correlation is significant at the .01 level
* correlation is significant at the .05 level
General Hypothesis 1 (GHI). Kaiser Factor Matching for the pretest factor structure is consistent with the factor structures of the posttest as measured by the cosine of .7 or higher. The results of the analysis were seven viable factors in both the pretest and posttest. These seven factors all had a cosine greater than 7. The cosines ranged from .9087 to .9929 and these factors accounted for 100% of the trace variance (see Table 4). The cosine can conceptually be interpreted as a correlation (Newman et al., 2000).

Table 4

General Hypothesis 1: Kaiser Factor Matching for the Pretest Factor Structure is Consistent with the Factor Structures of the Posttest as Measured by the Cosine of .7 or Higher

<table>
<thead>
<tr>
<th>Factor Number</th>
<th>Pre</th>
<th>Post</th>
<th>Cosines</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0.9087</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0.9896</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0.9929</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
<td>0.9642</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0.9735</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>0.9726</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>7</td>
<td>0.9124</td>
</tr>
</tbody>
</table>

Note: 100% of the Trace Variance was extracted by these 7 factors

Specific Hypothesis 1a. Kaiser Factor Matching for the female factor structure is consistent with the factor structure of the males as measured by the cosine of .7 or higher. The results of the analysis were seven viable factors in both the pretest and post test. These seven factors all had a cosine greater than .7. The cosines ranged from
.8378 to .9990 and these factors accounted for 100% of the trace variance (see Table 5).

Table 5

Specific Hypothesis 1a: Kaiser Factor Matching for the male factor structure is consistent with the factor structures of the female as measured by the cosine of .7 or higher

<table>
<thead>
<tr>
<th>Factor Number</th>
<th>Female</th>
<th>Male</th>
<th>Cosines</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0.8932</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
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<td>0.999</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0.9936</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
<td>0.8551</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>5</td>
<td>0.8694</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6</td>
<td>0.9831</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>7</td>
<td>0.8378</td>
</tr>
</tbody>
</table>

Note: 100% of the Trace Variance was Extracted by these 7 factors

Research Question 2: Is there a significant difference in overall EQ-i:YV score between males and females?

General Hypothesis 2 (GH2). There is a mean difference between males and females on overall EQ-i:YV score. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{change}} = .0001$, $F_{1,561} = .058$ and a $p = .873$ (see Table 6).

Specific Hypothesis 2a (SH2a). There is a mean difference between males and females on overall EQ-i:YV score, independent of ethnicity. The result of the analysis was that this hypothesis was not found to be significant with a $R^2_{\text{change}} = .004$, $F_{1,496} = .000$ and a $p = .998$ (see Table 7).
Table 6

General Hypothesis 2: There is a Mean Difference Between Males and Females on Overall EQ-i:YV Score

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full EQI Total = 42.559 – .148(Sex + E)</td>
<td>0.0001</td>
<td>0.0001</td>
<td>.0581,561</td>
<td>0.837</td>
<td>No</td>
</tr>
<tr>
<td>Restricted EQI Total = $a_u+E$</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Table 7

Specific Hypothesis 2a: There is a mean difference between males and females on overall EQ-i:YV score, independent of ethnicity

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full EQI Total = 42.345 + .848(African American – .929 (Other) + .002(Sex) + E</td>
<td>0.004</td>
<td>0</td>
<td>.0001,496</td>
<td>0.998</td>
<td>No</td>
</tr>
<tr>
<td>Restricted EQI Total = 42.346 + .848(African American – .929 (Other) + E</td>
<td>0.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Research Question 3: Is there a significant difference in EQ-i:YV subscale scores between males and females?
General Hypothesis 3 (GH3)

There is a mean difference between males and females on subscale scores of EQ-i:YV. This hypothesis was tested in the following specific hypotheses.

Specific Hypothesis 3a (SH3a)

There is a mean difference between males and females on intrapersonal scores. The result of the analysis was that this hypothesis was found to approach significance, such that females scored higher than males with a $R^2_{\text{change}} = .006$, $F_{1,589} = 3.775$ and a $p = .052$ (see Table 8).

Table 8

Specific Hypothesis 3a: There is a mean difference between males and females on intrapersonal scores

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal</td>
<td>14.872</td>
<td></td>
<td>0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$-.505(\text{Sex}) + E$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td>0.006</td>
<td>3.775</td>
<td>0.052</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>0</td>
<td></td>
<td>3.775</td>
<td>0.052</td>
<td>No</td>
</tr>
<tr>
<td>$a_{\text{u}} + E$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is $< .05$

Specific Hypothesis 3b (SH3b)

There is a mean difference between males and females on interpersonal scores such that females scored higher than males. The result of the analysis was that this hypothesis was found to be significant with a $R^2_{\text{change}} = .066$, $F_{1,558} = 39.168$ and a $p < .0009$ (see Table 9).
Table 9

*Specific Hypothesis 3b:* There is a mean difference between males and females on interpersonal scores.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{\text{df1,df2}}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>Interpersonal = 39.707 – 3.133 (Sex) + E</td>
<td>0.066</td>
<td></td>
<td>0.066</td>
<td>39.168</td>
</tr>
<tr>
<td>Restricted</td>
<td>Intrapersonal = $a_u + E$</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha < .05

*Specific Hypothesis 3c (SH3c)*

There is a mean difference between males and females on stress management scores. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .001$, $F_{1,551} = .570$ and $p = .45$ (see Table 10).

Table 10

*Specific Hypothesis 3c:* There is a mean difference between males and females on stress management scores.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{\text{df1,df2}}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>Stress Management = 28.865 + .335(Sex) + E</td>
<td>0.001</td>
<td></td>
<td>0.001</td>
<td>.570</td>
</tr>
<tr>
<td>Restricted</td>
<td>Stress Management = $a_u + E$</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05
Specific Hypothesis 3d (SH3d)

There is a mean difference between males and females on adaptability scores. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .00001$, $F_{1,573} = .245$ and a $p = .621$ (see Table 11).

Table 11

Specific Hypothesis 3d: There is a mean difference between males and females on adaptability scores.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>28.064 + .242(Sex) + E</td>
<td>0.00001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td>$a_u + E$</td>
<td>0</td>
<td>0.00001</td>
<td>.245_{1,573}</td>
<td>0.621</td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Specific Hypothesis 3e (SH3e)

There is a mean difference between males and females on general mood scores. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .00001$, $F_{1,597} = .05$ and a $p = .823$ (see Table 12).

Specific Hypothesis 3f (SH3f)

There is a mean difference between males and females on positive impression scores, such that females scored higher than males. The result of the analysis was that this hypothesis was found to be significant with a $R^2_{\text{Change}} = .014$, $F_{1,463} = 6.611$ and a $p = .01$ (see Table 13).
Table 12

Specific Hypothesis 3e: There is a mean difference between males and females on general mood scores

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R² Change</th>
<th>F(df1,df2)</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>0.00001</td>
<td>0.00001</td>
<td>0.051,597</td>
<td>0.823</td>
<td>No</td>
</tr>
<tr>
<td>Restricted</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Table 13

Specific Hypothesis 3f: There is a mean difference between males and females on positive impression scores

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R² Change</th>
<th>F(df1,df2)</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>0.014</td>
<td>0.014</td>
<td>6.611,463</td>
<td>0.01</td>
<td>Yes</td>
</tr>
<tr>
<td>Restricted</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Research Question 4: Is there a significant difference in EQ-i:YV scores between parochial school children and public school children?

General Hypothesis 4(GH4)

There is a mean difference between parochial school children and public school children on overall EQ-i:YV score. The result of the analysis was that this hypothesis
was found not to be significant with a $R^2_{\text{Change}} = .00001$, $F_{1,822} = .001$ and a $p = .972$ (see Table 14).

Table 14

**General Hypothesis 4**: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td>0.00001</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>EQI Total = 42.302 +</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.25(School Type) + E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td>0</td>
<td>0.00001</td>
<td>.001,822</td>
<td>.972</td>
<td>No</td>
</tr>
<tr>
<td>EQI Total = a,u+E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

**Specific Hypothesis 4a (SH4a)**

There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of ethnicity. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .0003$, $F_{1,496} = .066$ and a $p = .798$ (see Table 15).

**Specific Hypothesis 4b (SH4b)**

There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of sex. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .001$, $F_{1,496} = .287$ and a $p = .592$ (see Table 16).
Table 15

Specific Hypothesis 4a: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of ethnicity

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R² Change</th>
<th>F df1,df2</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>EQI Total = 42.406 + .788 (African American - .808(Other) - .203(School Type) + E</td>
<td>0.003</td>
<td>0</td>
<td>.066,496</td>
<td>0.798</td>
</tr>
<tr>
<td>Restricted</td>
<td>EQI Total = 42.346 + .848(African American) - .788(Other) + E</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Table 16

Specific Hypothesis 4b: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of sex

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R² Change</th>
<th>F df1,df2</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>EQI Total = 42.406 - .163(Sex) + .203(School Type) + E</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td>EQI Total = 42.346 - .148(Sex) + E</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Research Question 5: Is there a significant relationship between gender and school type (parochial and public) in predicting mood scale scores of the EQ-i:YV?
General Hypothesis 5 (GH5)

There is a mean difference between parochial school children and public school children and gender on EQ-i:YV mood scale scores. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .001$, $F_{1,550} = .172$ and a $p = .842$ (see Table 17).

Table 17

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>General Mood = 42.302 - .163(Sex) - .396(School Type) + E</td>
<td>0.001</td>
<td>0.001</td>
<td>0.172</td>
<td>.560</td>
</tr>
<tr>
<td>Restricted</td>
<td>General Mood = a + E</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Specific Hypothesis 5a (SH5a)

There is an interaction between school type and gender in predicting EQ-i:YV mood scale scores. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}} = .001$, $F_{1,559} = .704$ and a $p = .402$ (see Table 18).

Research Question 6: Does the EQ-i:YV mood scale account for a significant amount of variance in school climate?
Table 18

*Specific Hypothesis 5a:* There is an interaction between school type and gender in predicting EQ-i:YV mood scale scores

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Mood</td>
<td>42.795</td>
<td>- .443(Male) - .964(Parochial) + 1.243 (Male*Parochial) + E 0.002</td>
<td>0.001</td>
<td>.704</td>
<td>0.402</td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Mood</td>
<td>42.302</td>
<td>- .163(Male) - .396(Parochial + E) 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

*General Hypothesis 6(GH6)*

The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{Change}}= .000001$, $F_{1,864}= .113$ and a $p = .736$ (see Table 19).

Table 19

*General Hypothesis 6:* The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Climate</td>
<td>6.674</td>
<td>- .004(General Mood) + E 0.000001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Climate</td>
<td>$a_{eq} + E$ 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05
Specific Hypothesis 6a (SH6a)

The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate, independent of gender and type of school. The result of the analysis was that this hypothesis was found not to be significant with a $R^2_{\text{change}} = .009$, $F_{1,577} = 1.231$ and a $p = .268$ (see Table 20).

Table 20

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td>0.009</td>
<td>0.002</td>
<td>1.231,577</td>
<td>0.268</td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td>0.007</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Research Question 7: Is there a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale and student behavioral values subscale of the school climate inventory?

General Hypothesis 7(GH7)

There is a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale of the school climate survey, such that the mood scale is positively related to the academic orientation subscale of the school...
climate survey. The result of the analysis was that this hypothesis was found to be
significant with a $R^2_{\text{Change}} = .081$, $F_{1,751} = 66.183$ and a $p < .0009$ (see Table 21).

Table 21

*General Hypothesis 7*: There is a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale of the school climate survey

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>1.968 + .085(General Mood) + E</td>
<td>0.081</td>
<td>66.183</td>
<td>&lt;.0009</td>
<td>Yes</td>
</tr>
<tr>
<td>Restricted</td>
<td>$a_{a,\text{u}} + E$</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Alpha is < .05

*Specific Hypothesis 7a (SH7a)*

There is a significant relationship between the mood scale score of the EQ-i:YV and student behavioral values subscale of the school climate survey, such that the mood scale was found to be positively related to the student behavioral values subscale of the school climate survey. The result of the analysis was that this hypothesis was found to be significant with a $R^2_{\text{Change}} = .071$, $F_{1,751} = 57.600$ and a $p < .0009$ (see Table 22).
Specific Hypothesis 7a: There is a significant relationship between the mood scale score of the EQ-i:YV and student behavioral values subscale of the school climate survey.

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R²_{Change}</th>
<th>F_{df1,df2}</th>
<th>p</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Behavioral Values = 1.321 + .084 (General Mood) + E</td>
<td>0.071</td>
<td></td>
<td>0.071</td>
<td>57.600_{1,751}</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Behavioral Values = a_{0} + E</td>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Specific Hypothesis 7b (SH7b)

There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting academic orientation subscale scores of the school climate survey. The result of the analysis was that this hypothesis was found to be significant with a R²_{Change} = .008, F_{1,536} = 4.775 and a p = .029 (see Table 23).

With this interaction there is a positive relationship for both males and females on general mood predicting academic orientation. However, on average, males have a lower academic orientation score than females when general mood is low and a higher score when general mood is high. In other words, on average, even though males have a lower starting point than females, as general mood increases their academic orientation increases faster. The intersection point where males’ general mood predicts higher academic orientation is a score of 14.3 on the general mood scale. Seventy-five
percent of all males fall below this point and 44% of females fall below this point (see Figure 1).

Table 23

*Specific Hypothesis 7b:* There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting academic orientation subscale scores of the school climate survey

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Orientation = 2.243 - .709(Male) + .065(General Mood) + .051(Male*Mood) + E 0.103</td>
<td>0.008</td>
<td>4.775_{1,536}</td>
<td>0.029</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Orientation = 1.906 + .037(Male) + .008(General Mood) + E 0.095</td>
<td>0.095</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

Figure 1. Gender by Mood Interaction of Academic Orientation
Specific Hypothesis 7c (SH7c)

There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting student behavioral values subscale scores of the school climate survey. The result of the analysis was that this hypothesis was found to be significant with a $R^2_{\text{Change}} = .011$, $F_{1,540} = 6.661$ and a $p = .01$ (see Table 24).

Table 24

Specific Hypothesis 7c: There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting student behavioral values subscale scores of the school climate survey

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2_{\text{Change}}$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Behavioral Values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$= 1.850 - 1.042$(Male)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$+ .050$(General Mood)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$+ .066$(Male*Mood) + E</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Behavioral Values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$= 1.410 - .079$(Male)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$+ .081$(General Mood + E</td>
<td>0.069</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Alpha is < .05

With this interaction there is a positive relationship for both males and females on general mood predicting student behavioral values. However, on average, males have a lower student behavioral values score than females when general mood is low and a higher score when general mood is high. In other words, on average, even though males have a lower starting point than females, as general mood increases their student behavioral values increases faster. The intersection point where males’ general mood predicts higher student behavioral values is a score of 16.56 on the general mood
scale. Ninety-one percent of all males and 70% of all females fall below this point (see Figure 2).

![Gender by Mood Interaction on Student Behavioral Values](image)

Figure 2. Gender by Mood Interaction of Student Behavioral Values

**Summary of Quantitative Research**

Chapter IV began with a review of the demographic statistics illustrated in Table 1, which listed demographic variables including sex, race, and school type. Next, descriptive statistics related to instrument scores were illustrated in Table 2. Statistics were provided for both the School Climate Survey and the EQ-i:YV. A correlation matrix of salient variable relationships was provided in Table 3. Following these presentations, research hypotheses results were reported, beginning with Kaiser Factor Matching results for General Hypothesis 1 and Specific Hypothesis 1a. Next, results were presented for the multiple regression analysis performed on the remaining hypotheses. Six of the 19 research hypotheses tested with multiple regression analysis were significant (see Table 25), indicating that there were significant differences
between males and females on interpersonal subscale scores of the EQ-i:YV and the 
positive impression subscale of the EQ-i:YV. In both instances, females scored higher 
than males. Additionally, the interaction between gender and mood was significant in 
predicting the academic orientation subscale and the behavioral values subscale of the 
school climate survey.

Table 25

*Summary Table of Regression Results*

<table>
<thead>
<tr>
<th>Hypothesis Number</th>
<th>Hypothesis</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH2</td>
<td>There is a mean difference between males and females on overall EQ-i:YV score.</td>
<td>0.0001</td>
<td>.0581,561</td>
<td>0.837</td>
<td>No</td>
</tr>
<tr>
<td>SH2a</td>
<td>There is a mean difference between males and females on overall EQ-i:YV score, independent of ethnicity.</td>
<td>0</td>
<td>.0001,496</td>
<td>0.998</td>
<td>No</td>
</tr>
<tr>
<td>SH3a</td>
<td>There is a mean difference between males and females on intrapersonal scores.</td>
<td>0.006</td>
<td>3.775,589</td>
<td>0.052</td>
<td>No</td>
</tr>
<tr>
<td>SH3b</td>
<td>There is a mean difference between males and females on interpersonal scores.</td>
<td>0.066</td>
<td>39.168,558</td>
<td>&lt;.0009</td>
<td>Yes</td>
</tr>
<tr>
<td>SH3c</td>
<td>There is a mean difference between males and females on stress management scores.</td>
<td>0.001</td>
<td>.5701,551</td>
<td>0.45</td>
<td>No</td>
</tr>
<tr>
<td>SH3d</td>
<td>There is a mean difference between males and females on adaptability scores.</td>
<td>0.0001</td>
<td>.2451,573</td>
<td>0.621</td>
<td>No</td>
</tr>
</tbody>
</table>

*(table continues)*
**Summary Table of Regression Results (continued)**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Hypothesis</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH3e</td>
<td>There is a mean difference between males and females on general mood scores.</td>
<td>0.0001</td>
<td>.051,597</td>
<td>0.823</td>
<td>No</td>
</tr>
<tr>
<td>SH3f</td>
<td>There is a mean difference between males and females on positive impression scores.</td>
<td>0.014</td>
<td>6.611,463</td>
<td>0.01</td>
<td>Yes</td>
</tr>
<tr>
<td>GH4</td>
<td>There is a mean difference between parochial school children and public school children on overall EQ-i:YV score.</td>
<td>0.00001</td>
<td>.0011,822</td>
<td>0.972</td>
<td>No</td>
</tr>
<tr>
<td>SH4a</td>
<td>There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of ethnicity.</td>
<td>0</td>
<td>.0661,496</td>
<td>0.798</td>
<td>No</td>
</tr>
<tr>
<td>SH4b</td>
<td>There is a mean difference between parochial school children and public school children on overall EQ-i:YV score, independent of sex.</td>
<td>0.001</td>
<td>.2871,496</td>
<td>0.592</td>
<td>No</td>
</tr>
<tr>
<td>GH5</td>
<td>There is a mean difference between parochial school children and public school children and gender on EQ-i:YV mood scale scores.</td>
<td>0.001</td>
<td>.1721,560</td>
<td>0.842</td>
<td>No</td>
</tr>
<tr>
<td>SH5a</td>
<td>There is an interaction between school type and gender in predicting EQ-i:YV mood scale scores.</td>
<td>0.001</td>
<td>.7041,559</td>
<td>0.402</td>
<td>No</td>
</tr>
</tbody>
</table>

(table continues)
Table 25

*Summary Table of Regression Results (continued)*

<table>
<thead>
<tr>
<th>Hypothesis Number</th>
<th>Hypothesis</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH6</td>
<td>The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate.</td>
<td>0.000001</td>
<td>0.113,864</td>
<td>0.736</td>
<td>No</td>
</tr>
<tr>
<td>SH6a</td>
<td>The mood scale of the EQ-i:YV accounts for a significant amount of variance in predicting school climate, independent of gender and type of school.</td>
<td>0.002</td>
<td>1.231,577</td>
<td>0.268</td>
<td>No</td>
</tr>
<tr>
<td>GH7</td>
<td>There is a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale of the school climate survey.</td>
<td>0.081</td>
<td>66.183,751</td>
<td>&lt;.0009</td>
<td>Yes</td>
</tr>
<tr>
<td>SH7a</td>
<td>There is a significant relationship between the mood scale score of the EQ-i:YV and student behavioral values subscale of the school climate survey.</td>
<td>0.071</td>
<td>57.600,751</td>
<td>&lt;.0009</td>
<td>Yes</td>
</tr>
<tr>
<td>SH7b</td>
<td>There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting student academic orientation subscale scores of the school climate survey.</td>
<td>0.008</td>
<td>4.775,536</td>
<td>0.029</td>
<td>Yes</td>
</tr>
<tr>
<td>SH7c</td>
<td>There is an interaction between gender and the mood scale score of the EQ-i:YV in predicting student behavioral values subscale scores of the school climate survey.</td>
<td>0.011</td>
<td>6.661,540</td>
<td>0.01</td>
<td>Yes</td>
</tr>
</tbody>
</table>
CHAPTER V
SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This final chapter focuses on analysis of the results of this investigation. The chapter is divided into four sections including the summary of the study, conclusions and discussion, implications, and suggested further research. Included in the summary of the study are a brief restatement of the problem and a brief review of the procedures utilized in conducting the research. The conclusions section includes highlights and significance of the major findings. Next, the implications of the findings are discussed. The chapter concludes with recommendations and suggestions for further research.

Summary of the Study

This dissertation is an empirical study investigating the psychometric properties of the EQ-i:YV in a population of middle school students. This study was completed to assess the reliability and validity of the instrument, examine the stability of the factor structure of the instrument from pretest to post test, and to explore the structure of the instrument across groups (i.e., gender and parochial/public schools). In order to gain additional information that may be useful to both school and mental health counselors, the mood scale of the EQ-i:YV was studied as it relates to demographic information and measures of school climate.
This ex post facto research (Newman, Newman, Brown, & McNeely, 2006) tested the stated hypotheses in Chapter III. Using multiple regression analysis (McNeil, Newman, & Kelly, 2006), full models were tested against restricted models to determine if there was any significance beyond an alpha at a .05 level of significance. Also, Kaiser Factor Matching was used in Hypothesis 1, to estimate the stability of the EQ-i:YV factor structure.

The results of this study indicate that the factor structure of the EQ-i:YV is stable both between males and females and from pretest to post test. Thirteen of the nineteen hypotheses tested with regression analysis were found to be not significant. Specific Hypothesis 3b (SH3b) and Specific Hypothesis 3f (SH3f) were found to be significant, indicating that there is a difference between males and females on the interpersonal subscale and positive impression subscale of the EQ-i:YV. Females scored significantly higher than males in both analyses. Additionally, General Hypothesis 7 (GH7), Specific Hypothesis 7a (SH7a), Specific Hypothesis 7b (SH7b), and Specific Hypothesis 7c (SH7c) were found to be significant. This indicates that there is a relationship between the mood scale of the EQ-i:YV and subscales of the School Climate Survey (student behavioral values subscale, student academic orientation subscale). The relationship must be interpreted with caution as an interaction was found between gender and mood in predicting the school climate subscale scores. This finding will be addressed in the Conclusion and Discussion section of this chapter.
Statement of the Purpose

The purpose of this study was to obtain psychometric information about a measure of emotional intelligence that may be useful to constituents including school counselors, mental health counselors, and administrators concerned with school climate and curriculum development related to social and emotional learning. While the EQ-i: YV has become a popular measure for estimating emotional intelligence, a review of the professional literature indicated a need for further support of its psychometric properties (Ballard & Leong, 2002). This study adds to the body of knowledge surrounding emotional intelligence and its measurement. Additionally, factors that have not been previously studied, including the mood scale of the instrument as it relates to demographic information and as it relates to school climate were explored.

Research has demonstrated that social and emotional learning programs have benefits for students (Elias, 2006; Ragozzino, Resnik, Utne-Obrien, Weissberg, 2003), however they are often difficult to implement due to the push for proficiency testing and academic learning. It is important that the concepts of social emotional learning (SEL) and emotional intelligence be incorporated into educational standards so that they may receive adequate focus in the educational system (Elias & Weissberg, 2000). In order to do so, there needs to be a measure of their effectiveness. The EQ-i:YV may fit this need. Additionally, school counselors may be able to demonstrate their effectiveness and the impact of the school counseling program through measuring emotional intelligence, thereby demonstrating program accountability (Stone & Dahir, 2004). Mental health counselors are also asked to demonstrate their effectiveness.
(Leibert, 2006), and measuring emotional intelligence may provide information about the effectiveness of counseling interventions.

The power of teaching emotional intelligence may provide benefits to more than just individuals; it may provide positive changes to the entire climate of the school. The premise behind SEL is that it is incorporated into the entire educational setting, not just into specific lessons (Graczyk et al., 2000). If emotional intelligence or SEL skills are developed and have the power to impact the entire climate of the school, a setting of emotional safety may be established and learning may be improved in students who feel safe and supported.

Statement of the Procedures

Participants in the Red Flags Depression Awareness Program Evaluation and participants willing to participate as a comparison group made up the sample utilized in this study. The sample included primarily seventh and some eighth grade students in the State of Ohio. Both the treatment group (those utilizing Red Flags) and the comparison group voluntarily agreed to participate in this study. The treatment group sample was purposeful, with attempts made to represent the state of Ohio with geographic diversity. The comparison group sample consisted of 547 students at pretest and 407 students at posttest. The treatment group consisted of 560 students at pretest and 652 students at posttest. In total, there were 1,107 pretest scores and 1,059 posttest scores. As demographic information was central to this study, only those participants who supplied demographic data were included in analysis. Of the 1,107 pretest participants, 684 indicated sex and 604 indicated race. Of the 1,059 posttest
scores, 653 indicated sex and 584 indicated race. Both gender and ethnicity frequencies were reported in Chapter III and Chapter IV of this study.

Data collection occurred during the Red Flags Program Evaluation from 2003 to 2005. Although the program evaluation utilized several instruments for the purpose of program evaluation, only the EQ-i:YV, the School Climate Survey, and demographic information related to sex and ethnicity were utilized in this study. Schools were sent pre and post test packets for administration. Treatment schools were instructed to administer the instruments prior to presenting the Red Flags curriculum and again following the curriculum. Comparison schools also completed pre and post test packets, however without the Red Flags curriculum. Instructions were provided to the school contact personnel on how and when to administer the instruments, and how to return the instruments to the researchers. Upon return, data were entered by graduate students at The University of Akron.

The hypotheses of this study were tested using inferential and descriptive statistics. The statistical package Relate was utilized to run the Kaiser Factor Matching, and SPSS Version 13 was used for the remaining statistical analyses. Statistics included descriptive statistics (minimums, maximums, means, and frequencies) as well as Kaiser Factor Matching and multiple regression analyses. The F test was used to test the statistical significance of the proposed relationships presented in the hypotheses. An alpha of .05 was set for two-tailed tests as the literature review did not indicate directionality.
Conclusions and Discussion

This section will review results from both General and Specific Hypotheses that guided this study. Results from General Hypothesis 1 (GH1) and Specific Hypothesis 1a (SH1a) refer to Kaiser Factor Matching utilized to test the stability of the factor structure of the EQ-i:YV. The remaining hypotheses utilized regression equations to examine the relationship between demographic information (gender, ethnicity, school type), EQ-i:YV and its subscales, and the School Climate Survey and its subscales. Six of the 19 regression analyses yielded significant results, which will be reviewed in this section. For additional information, one can see the correlation matrix that looks at relationships between the variables explored in this study, found in Appendix B.

General Hypothesis 1: Kaiser Factor Matching for the pretest factor structure is consistent with the factor structures of the post test as measured by the cosine of .7 or higher.

Conclusions related to General Hypothesis 1 indicated that the factor structure of the EQ-i:YV is stable from pretest to post test. The cosines provided through Kaiser Factor Matching ranged from .9087 to .9929 and accounted for 100% of the trace variance. This conclusion provides support for the initial research question guiding this study (RQ1); Is the factor structure of the EQ-i:YV stable from pretest to posttest?

Specific Hypothesis 1a: Kaiser Factor Matching for the female structure is consistent with the factor structure of the males as measured by a cosine of .7 or higher.

In further analyzing the factor structure of males compared to the factor structure of females, Kaiser Factor matching again suggested a consistent factor
structure with cosines that ranged from .8378 to .9990. These factors accounted for 100% of the trace variance. The results of the Kaiser Factor Matching in both General Hypothesis 1 and Specific Hypothesis 1a lend psychometric support to the stability of the EQ-i:YV.

Evidence of the stability of this measure provides practical information to proponents of emotional intelligence, particularly those attempting to demonstrate the effectiveness of interventions. Practitioners and researchers wishing to demonstrate intervention effectiveness may do so with confidence based on the above results.

General Hypotheses 2: There is a mean difference between males and females on overall EQ-i:YV score.

For the purpose of this discussion, the General Hypothesis 2 and Specific Hypotheses 2a (independent of ethnicity) were not found to be significant at an alpha of .05. This finding suggests that there is not a significant difference between males and females on overall EQ-i:YV score, and thus provides information to answer research question two guiding this study (RQ2: Is there a significant difference in overall EQ-i:YV scores between males and females?). No statistical difference remained when ethnicity was co-varied. This gender finding is not consistent with findings from Bar-On and Parker (2000) which indicated a difference between males and females on overall EQ-i:YV scores, with females scoring significantly higher than males \( F(3,9164) = 35.71, p < .001 \). Harrod and Scheer (2005) also found that females scored higher on overall emotional intelligence than males. A possible explanation for this finding may be age related, as the sample for this research consisted of only seventh and eighth grade students. Harrod and Scheer (2005) utilized an older sample
(ages 16-19 years old), while Bar-On and Parker (2000) utilized a larger age range in their study (ages 7-18 year olds).

General Hypothesis 3: There is a mean difference between males and females on subscale scores of EQ-i:YV.

Conclusions related to General Hypothesis 3 and Specific Hypotheses 3a (intrapersonal scale), 3c (stress management scale), 3d (adaptability scale), and 3e (general mood scale) were not significant at the .05 alpha level. However, Specific Hypothesis 3b (interpersonal scale) and 3f (positive impression scale) were significant at the .05 alpha level, such that females scored higher than males. Research question three (RQ3) asked: Is there a significant difference in EQ-i:YV subscale scores between males and females? These findings indicate that the answer is yes for the interpersonal and positive impression subscales, but not for the remaining subscales. These results show mixed support for Bar-On and Parker’s (2000) findings. Bar-On and Parker (2000) found females to score significantly higher than males on the intrapersonal scale \[F(1,9164) = 19.78, p < .001\] and interpersonal scale \[F(1,9164) = 48.49, p<.001\]. Males scored significantly higher than females on adaptability \[F(1,9164) = 4.36, p = .04\], and no significant difference was found on stress management, general mood, or positive impression. Therefore, the findings that were consistent with the authors’ of the EQ-i:YV were interpersonal scores with females scoring significantly higher than males; as well as stress management and general mood with no significant difference between males and females. Findings that did not support Bar-On and Parker (2000) related to the intrapersonal, adaptability, and positive impression subscales. The current research expands on research previously
done by Harrod and Scheer (2005) which examined overall emotional intelligence as it relates to gender, however did not examine differences on subscales of the EQ-i:YV. There may be several possible explanations for findings contrary to those of Bar-On and Parker (2000). Again, one explanation may be based on age differences of the sample. This study utilized seventh and eighth grade students while Bar-On and Parker’s (2000) sample consisted of 7- to 18-year-old participants. There may be developmental differences related to intrapersonal skills, adaptability, or positive impression. Another possible explanation is sample bias. This research was conducted with participants in middle schools across the State of Ohio. Bar-On and Parker’s (2000) sample consisted of elementary, middle school, and high school students in both the United States and Canada. This suggests possible cultural differences between a small Midwestern sample and a large, international sample. Lastly, the time between studies and data collection may also play a role as expectations and gender differences may have changed for males and females. Bar-On and Parker (2000) began collecting data following the publication of their 1997 adult version of the EQ-i. Data collected in this study was collected approximately 8 to 10 years later.

General Hypothesis 4: There is a mean difference between parochial school children and public school children on overall EQ-i:YV score.

For the purpose of this discussion, the General Hypothesis 4 and Specific Hypothesis 4a (independent of ethnicity) and 4b (independent of gender), were found not to be significant at an alpha of .05, answering research question four (RQ4) guiding this study (Is there a significant difference in EQ-i:YV scores between parochial school children and public school children?). While Harrod and Scheer (2005) utilized a
sample of public and private school participants, they did not identify the private
schools as parochial schools, nor did they test for differences between school types.
The analysis completed in the present research has not been previously undertaken in
the research.

General Hypothesis 5: There is a mean difference between parochial school
children and public school children and gender in predicting EQ-i:YV mood scale
scores.

Results related to General Hypothesis 5 and Specific Hypothesis 5a (there is an
interaction between school type and gender in predicting EQ-i:YV mood scale scores)
were not significant at the .05 alpha level. This suggests that there are no significant
differences in mood scale scores when co varying school type and gender, and no
significant difference in the interaction between school type and gender, answering
research question five guiding this study (RQ5: Is there a significant relationship
between gender and school type in predicting mood scale scores of the EQ-i:YV?).
These hypotheses had not been tested by the instrument authors (Bar-On & Parker,
2000) in the design of the instrument. Additionally, a review of the literature found no
other studies testing the relationship of these variables.

General Hypothesis 6: The mood scale of the EQ-i:YV accounts for a
significant amount of variance in predicting school climate.

For the purpose of this discussion, the General Hypothesis 6 and Specific
Hypothesis 6a (independent of gender and type of school), were found to be not
significant at the .05 alpha level, providing an answer to research question six guiding
this study (RQ6: Does the EQ-i:YV mood scale account for a significant amount of
This research suggests that mood does not predict overall school climate, a hypothesis that has not been previously tested through use of this instrument. A review of research related to social emotional learning suggested a relationship between social and emotional skills and school climate; however, the relationship between a measure of emotional intelligence and school climate has not been tested in the literature. One may speculate that this is related to the composition of the school climate survey, particularly the subscales. For example, subscales measuring security and maintenance, administration, instructional management, or parent and community-school relationships may diminish the potential relationship of the mood scale of emotional intelligence and school climate as the concepts measured in these subscales are not closely related to the concepts of emotional intelligence and mood. As can be seen in the subsequent discussion of General Hypothesis 7 and Specific Hypotheses 7a, 7b, and 7c, there is a relationship when the subscales of the school climate inventory more closely related to the concept of mood are studied.

General Hypothesis 7: There is a significant relationship between the mood scale score of the EQ-i:YV and the student academic orientation subscale of the school climate survey.

Specific Hypothesis 7a: There is a significant relationship between the mood scale score of the EQ-i:YV and the student behavioral values subscale of the school climate survey.

Results related to General Hypothesis 7 and Specific Hypothesis 7a indicated that results are significant at an alpha level of .05. However, these results cannot be interpreted due to findings of Specific Hypothesis 7b and Specific Hypothesis 7c,
which indicated an interaction between the mood scale of the EQ-i:YV and gender in predicting both school climate subscales, student academic orientation and student behavioral values.

Specific Hypothesis 7b stated that there is an interaction between gender and mood scale score in predicting academic orientation subscale scores of the school climate survey. Student academic orientation is defined as “perceptions about student attention to task and concern for achievement at school” (Halderson, Kelley, & Keefe, 2001, p. 3). With this interaction, there is a positive relationship for both males and females on general mood predicting academic orientation. When plotted, males have a lower starting point than females, and as general mood increases their academic orientation increases faster than females.

Specific Hypothesis 7c stated that there is an interaction between gender and mood scale score in predicting student behavioral values subscale scores of the school climate survey. Student behavioral values are defined as “perceptions about student self-discipline and tolerance for others” (Halderson et al., 2001, p. 3). With this interaction there is a positive relationship for both males and females on general mood predicting student behavioral values. However, on average, males have lower student behavior values scores than females when general mood is low, and a higher score when general mood is high. Despite a lower starting point, as general mood increases male scores on student behavioral values increase faster than females. These findings provide the information to answer research question seven which guided this study (RQ7: Is there a significant relationship between the mood scale of the EQ-i:YV and
the student academic orientation subscale and the student behavioral values subscale of the school climate inventory?) and suggests that a relationship does exist.

This hypothesis expanded on past research conducted by Parker et al. (2004), which examined relationships between emotional intelligence and academic success. Those findings suggested that students in the top 20% academically were found to have high levels of interpersonal, adaptability, and stress management abilities. The present research also focused on the mood scale of the EQ-i:YV which had not been done in past studies, as well as subscales of the school climate inventory as they relate to emotional intelligence. These subscales were based on perceptions of student achievement orientation and self-discipline at school, versus actual academic success.

Implications

This research was completed to further examine the psychometric properties of the EQ-i:YV, as the literature calls for further validation of this instrument (Ballard & Leong, 2002). Additionally, this research sought to add to the body of knowledge regarding the measurement of emotional intelligence, as it relates to school and mental health counseling. To do this, the researcher attempted to determine what relationships exist between demographic variables, overall emotional intelligence, subscales of emotional intelligence, and subscale and overall school climate scores.

School and mental health counselors both address issues of accountability in their practice. As emotional intelligence and social and emotional skills are suggested to be teachable (Elias et al., 2002), the measurement of emotional intelligence before and after an intervention may provide feedback to these professionals regarding the effectiveness of their interventions or practice. In order for the measurement to be
accurate, the instrument must be psychometrically sound. The Kaiser Factor Matching utilized in this study indicates that the factor structure of the EQ-i:YV is stable from pre to post test and between males and females. This information suggests that the EQ-i:YV is a stable measure of emotional intelligence. This information supports the purpose of this study aimed at adding to the measurement of emotional intelligence and empirically supporting the stability of this instrument. These findings are beneficial to those constituents who may measure emotional intelligence as a way of determining intervention effectiveness and demonstrating accountability. Additionally, constituents who consume and evaluate research or outcomes related to emotional intelligence may do so having additional information related to the stability of the EQ-i:YV across gender and from pretest to posttest. This aligns with the purpose of this study to provide practitioners, specifically school counselors, with ways to demonstrate their effectiveness and more accurately measure accountability.

With the exception of the interpersonal subscale and the positive impression subscale, there was no significant difference between males and females and ethnicity on overall EQ-i:YV or subscale scores. This information suggests that interventions aimed at improving the skills associated with these subscales (intrapersonal, adaptability, stress management, general mood, and total EQ) may be more easily generalized to these populations. These scales appear to have stability in terms of similar structures for males and females, suggesting they can be used diagnostically in practice and research across gender. More careful assessment may be necessary for interpreting positive impression and interpersonal subscales since significant differences were found between males and females. Females scored significantly
higher than males on both subscales. This information may be important for clinicians and researchers utilizing this instrument and interpreting results. These findings relate to the purpose of this study aimed at providing information to benefit those developing curriculums or interventions related to emotional intelligence or social emotional learning.

According to Bar-On and Parker (2000), characteristics of individuals who score high on the interpersonal scale “…are likely to have satisfying interpersonal relationships. They are good listeners and are able to understand and appreciate the feelings of others” (p. 19). The present study found that females scored higher on the interpersonal scale. Potential implications of this finding are that there are gender differences between males and females, with females being conditioned more towards listening and appreciating feelings of others. Additionally, interventions aimed at improving this skill may be beneficial for males.

Characteristics of individuals who score high on the positive impression scale, according to Bar-On and Parker (2000) “…may be attempting to create an overly positive self-impression” (p. 19). This study found females to score higher on this scale, suggesting that females may be more concerned about how others feel about them, and they may desire to create a positive impression of themselves. The information gained from this scale may provide a discussion point for counselors to determine its implications. It may be that females have a healthy desire to create a positive impression. However, discussion of this score may provide counselors with information related to the strength of this desire and if it is related to issues of self-
esteem or tendencies of co-dependency. By exploring this score through discussion with the adolescent, counselors may determine if further intervention is necessary.

This study also adds to the body of knowledge that exists on emotional intelligence in adolescence by exploring the relationship between school type and emotional intelligence scores. Implications of these findings suggest that there are no statistical differences between school types (public and parochial) when examining emotional intelligence. Therefore, the data suggests that the EQ-i:YV is appropriate and interpretable when being utilized across parochial and public school types.

Additionally, this research expanded on past research of emotional intelligence in adolescents by exploring the relationship between emotional intelligence and school climate. While there was no relationship between mood scale scores and total school climate, there was a relationship between the mood scale score of the EQ-i:YV and subscale scores of school climate. There was interaction between gender and mood scale scores of the EQ-i:YV in predicting the academic orientation and student behavioral values subscales of the school climate survey. This information must be interpreted with caution due to the mood scale score interacting with gender. According to the information obtained from plotting the interaction, practitioners and researchers may want to further examine the interaction point and take this information into consideration when developing interventions for use with this population.

According to Bar-On and Parker (2000), the mood scale is made up of the constructs of optimism and happiness. Implications from this finding suggest that there is a relationship between mood as expressed by optimism and happiness, and concern for achievement at school as well as self-discipline and tolerance for others. This
information may assist in development of interventions and treatment for those who are in need, by understanding this relationship and targeting interventions to the population. Students who are struggling with motivation in school or behavioral issues often receive interventions to improve study skills or interventions that target specific behavioral issues. It is possible that interventions aimed at males to improve feelings of optimism and happiness may have a significant impact on their desire to achieve academically, their behavior, and their tolerance for others. This may require a paradigm shift for professionals providing these interventions.

The field of positive psychology has attempted to focus on this paradigm shift, with a movement away from a medical or deficit model and towards a model with the goal of increasing happiness; leading to psychological well-being and growth (Pointon, 2006). The field consists of a focus on positive emotions and positive character traits, with happiness including both pleasure, engagement, and meaning (Seligman, Steen, Park, & Peterson, 2005). Positive psychology is said to include subjective traits including contentment, hope, optimism, and happiness (Seligman & Csikszentmihalyi, 2000) thus suggesting a relationship to the mood scale of the EQ-i:YV, said to measure optimism and happiness (Bar-On & Parker, 2000). Positive psychology research has suggested that interventions have been found to increase happiness, including such things as counting blessings each day and reflecting on why they have occurred, and identifying signature strengths and utilizing them in a different way each day. While research in the field of positive psychology interventions is new, researchers promote positive interventions as a supplement to traditional therapy, hence taking the focus
from one of trouble and weakness, to a more optimistic perspective of building strengths (Peterson, 2000; Seligman, Steen, Park, & Peterson, 2005).

Research has suggested that the number of adolescents with emotional issues is increasing and that depressed adolescents often have less academic success (Vail, 2005). Understanding that there is a link between mood and desire for academic achievement provides information to practitioners working with this population. The EQ-i:YV may be one way to identify this population for early detection and thus early intervention. These findings align with the purpose of this study related to providing information to policy makers, educators, practitioners, and researchers concerned with improving school climate.

The overall findings of this study support the original purpose underlying this research. In general, the purpose of the study was to provide empirical support for the stability of the EQ-i:YV, provide information about a sound measure of emotional intelligence for the adolescent population that is useful for practitioners as a way of demonstrating accountability and effectiveness, provide information to constituents concerned with developing emotional intelligence and social learning skills and curriculums as well as exploring the relationship to school climate, and to better explain the complex phenomenon of emotional intelligence.

Recommendations and Suggested Further Research

This study focused on emotional intelligence research, specifically through use of the EQ-i:YV, as it applies to adolescents. The following is a list of suggestions that may be of benefit to future researchers and strengthen further research utilizing the EQ-i:YV. This list is not all inclusive and is in no particular order:
1. Inclusion of additional demographic factors including items such as socioeconomic status, family make-up, birth order, etc. may provide additional information and may help to develop profiles for emotional intelligence.

2. The population utilized in this study consisted of 7th and 8th grade students in the state of Ohio. Future researchers may want to expand the population and repeat this study with various grade levels or students outside the state of Ohio.

3. As this study divided schools by public versus parochial, additional studies may want to examine school climate in different ways, including a closer look at rural/urban/suburban, same sex versus mixed sex classrooms, or large versus small schools, etc. It would be interesting to examine the effects of school size in relationship to both climate and emotional intelligence.

4. In order to further examine the relationship of emotional intelligence to other variables, expanding this study to include measures of internalizing versus externalizing behavior or various coping styles may provide information to practitioners.

5. Additionally, expanding the study to include another measure of mood (i.e. the Beck Depression Inventory) or measures of behavior (i.e. the Child Behavior Checklist) may provide information on the relationship between emotional intelligence and mental health or behavioral issues.

6. To further explore the relationship between social emotional learning (SEL) and emotional intelligence, future researchers may want to assess emotional intelligence prior to administering SEL interventions and again following the intervention.
7. A longitudinal study, perhaps measuring emotional intelligence and academic performance may provide additional information related to the relationship of these two constructs.

8. As students in this study were not identified, gain scores were aggregated. Future research may strengthen results of this study by identifying students to match scores pre to post test, thereby obtaining true gain scores for individuals.

Summary

This concluding chapter briefly summarized this investigation. A summary of the study, brief statement of the purpose and procedures employed was reviewed. The present investigation utilized descriptive statistics (minimums, maximums, means, and frequencies) as well as inferential statistics (Kaiser Factor Matching and multiple regression analysis). Findings of Kaiser Factor Matching suggest that the factor structure of the EQ-i:YV is stable between males and females as well as from pretest to post test. Significance was found for six of the nineteen regression analyses.

The conclusions and discussion section of this document provided summary information and a discussion of findings of the research. Findings were presented for each hypothesis, with tables provided to assist in interpretation of Kaiser Factor Matching and regression analysis findings. Findings that were contrary to prior research were supplemented with possible explanations for these findings. Additionally, hypotheses that had not been previously tested in the research literature were identified.

The next section identified implications of the results of this investigation. The review of the literature called for additional psychometric analysis of the EQ-i:YV,
which this study provided. Suggestions were provided for interpretation of results for those practitioners and researchers who may utilize the EQ-i:YV. The conclusions and implications were linked to the purpose and original research questions guiding this study.

Lastly, suggestions for further research were provided. These recommendations were listed in no specific order of importance. This list may provide guidance to future researchers wishing to explore a research project in a similar or related area.


APPENDICES
APPENDIX A

HUMAN SUBJECTS APPROVAL

November 7, 2006

Amanda Rovnak
426 Marvion Drive
Fairlawn, Ohio 44333

Ms. Rovnak:

The University of Akron's Institutional Review Board for the Protection of Human Subjects (IRB) completed a review of the protocol entitled "A Psychometric Investigation of the Emotional Quotient Inventory in Adolescents: A Construct Validation and Estimate of Stability". The IRB application number assigned to this project is 20061023.

The protocol was reviewed on November 7, 2006 and qualified for exemption from continuing IRB review. The protocol represents minimal risk to subjects and matches the following federal category for exemption:

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Annual continuation applications are not required for exempt projects. If you make any changes or modifications to the study's design or procedures that either increase the risk to subjects or include activities that do not fall within one of the categories exempted from the regulations, please contact the IRB first, to discuss whether or not a request for change must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to their implementation.

You are required to submit a Final Report to the IRB, upon completion of this research.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Sincerely,

[Signature]
Sharon McWhorter
Interim Director

Cc: Cynthia Reynolds, Advisor
    Rotsky Hall, IRB Chair
APPENDIX B

CORRELATION MATRIX

This appendix contains the full correlation matrix utilized in this study. Relationships can be seen between demographic variables (gender and race), subscales of the School Climate Scale (student academic orientation and student behavioral values), and subscales of the EQ-i:YV. Additionally, the Total EQ scale score is presented in this matrix.
## Correlations

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<p>| Sig. (2-tailed)          | .490      | .000  | .000             | .004   | .268                 | .081                    | .077     | .000               | .000               | .000               | .000               |
| <strong>N</strong>                   | 1337      | 1186  | 1186             | 1172   | 1178                 | 1099                    | 1149     | 1082               | 1066               | 1066               |
| <strong>Sig. (2-tailed)</strong>      | .490      | .000  | .000             | .004   | .268                 | .081                    | .077     | .000               | .000               | .000               | .000               |
| <strong>N</strong>                   | 1186      | 1188  | 1188             | 1188   | 1048                 | 1052                    | 982      | 1021               | 962                | 958                |
| <strong>Sig. (2-tailed)</strong>      | .001      | .000  | .000             | .010   | .325                 | .601                    | .006     | .000               | .000               | .000               | .000               |
| <strong>N</strong>                   | 1186      | 1188  | 1188             | 1188   | 1048                 | 1052                    | 982      | 1021               | 962                | 958                |
| <strong>Sig. (2-tailed)</strong>      | .006      | .000  | .000             | .260   | .661                 | .081                    | .588     | .135               | .481               | .415               |
| <strong>N</strong>                   | 1186      | 1188  | 1188             | 1188   | 1048                 | 1052                    | 982      | 1021               | 962                | 958                |
| <strong>Sig. (2-tailed)</strong>      | .620      | .004  | .010             | .260   | .000                 | .000                    | .000     | .000               | .000               | .000               | .603               |
| <strong>N</strong>                   | 1172      | 1048  | 1048             | 1048   | 1679                 | 1654                    | 1333     | 1413               | 1334               | 1310               |
| <strong>Sig. (2-tailed)</strong>      | .785      | .268  | .325             | .661   | .000                 | .000                    | .000     | .000               | .000               | .004               |
| <strong>N</strong>                   | 1178      | 1052  | 1052             | 1052   | 1654                 | 1687                    | 1344     | 1426               | 1343               | 1320               |</p>
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** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
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