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A COMPARISON OF EMOTIONAL INTELLIGENCE AND PERSONALITY FACTORS: TWO CONCEPTS OR ONE?

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By

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A DISSERTATION APPROVED FOR THE
GRADUATE COLLEGE

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GLOSSARY OF VARIABLES

The following variable definitions apply to the questionnaire listed in parentheses directly following the variable name.

Abstractedness (16PF):
Low Scorers: "Grounded, practical, down-to-earth. They tend to focus on practical, observable data and outer realities of their environment and may be better at implementing a specific solution than at generating possible solutions."
High Scorers: "Abstracted, imaginative, idea-oriented, contemplative. They are more oriented toward abstract internal mental processes than to external facts and practicalities. Being preoccupied with thinking, imagination and fantasy, high scorers generate many ideas and theories and are often creative."
(Cattell, 2001, p. 190)

Accommodation (16PF): See Independence (*Low Scorers*).

Adaptability EQ Scale (EQ-i): "The Adaptability EQ score helps reveal how successfully one is able to cope with environmental demands by effectively 'sizing up' and dealing with problematic situations. High scores on this composite scale identify people who are generally flexible, realistic, effective in understanding problematic situations, and competent at arriving at adequate solutions. High scores indicate people who can generally find good ways of dealing with everyday difficulties."
(Bar-On, 2004, p.44)

Anxiety (16PF):
Low Scorers: "Tend to be unperturbed by most events and less easily upset than most people. They can be: emotionally stable, facing life's challenges with calm and stability; trusting of others; unworried and self-assured; and/or relaxed and placid."
High Scorers: "Tend to be more easily upset by events; they are more perturbed, both by internal thoughts and feelings as well as by external events. This may be characteristic or may be due to current life stress. Anxious people can experience one of the following: feeling overwhelmed and unable to cope with day-to-day living; being suspicious or doubting of others; worrying and self-doubting; feeling tense, driven, or frustrated."
(Cattell, 2001, p. 192)

Apprehension (16PF):
Low Scorers: "Self-assured, unworried, complacent. They tend to be self-confident and untroubled by self-doubt."
High Scorers: "Apprehensive, self-doubting, guilt-prone. They tend to worry about things and to feel anxious and insecure. These feelings may be in response to current life events or they may be characteristics."
(Cattell, 2001, p. 190)

Assertiveness (EQ-i): "The ability to express feelings, beliefs, and thoughts and defend one's rights in a nondestructive manner. Assertive people are not over-controlled or shy – they are able to outwardly express their feelings (often directly), without being aggressive or abusive."
(Bar-On, 2004, p.15)

Dominance (16PF):
Low Scorers: "Deferential, modest, submissive. They tend to accommodate others' wishes, and are cooperative and agreeable. They are likely to avoid conflict by acquiescing to the wishes of others, and they are willing to set aside their own wishes and feelings."
High Scorers: "Assertive, forceful, competitive. They tend to be vocal in expressing their opinions and wishes."
(Cattell, 2001, p. 189)

Emotional Self-Awareness (EQ-i): "The ability to recognize one's own feelings. It is not only the ability to be aware of one's feelings and emotions, but also to differentiate between them, to know what one is feeling and why, and to know what caused the feelings."
(Bar-On, 2004, p.15)

Emotional Stability (16PF):
Low Scorers: "Reactive, easily upset, temperamental. They tend to feel a lack of control over life's challenges and to react to life rather than making adaptive or proactive choices."
High Scorers: "Calm, stable, mature, unruffled. They tend to take life in stride and to cope with day-to-day life and its challenges in a balanced, adaptive way."
(Cattell, 2001, p. 189)

Empathy (EQ-i): "The ability to be aware of, to understand, and to appreciate the feelings of others. It is 'tuning in' (being sensitive) to what, how, and why people feel the way they do."
(Bar-On, 2004, p.16)

Extraversion (16PF):
Low Scorers (Introversion): "Tend to value time spent alone or in solitary pursuits, being generally less inclined to seek out interactions with others. The introvert can have one or several of these qualities: personal aloofness and a tendency to make few close connections; caution, restraint, and a tendency to take life seriously; an inclination to be shy or fearful about reaching out to others; discomfort about revealing personal information; and/or a preference for working alone and functioning autonomously."
High Scorers (Extraversion): "Tend to be people-oriented, to seek interaction with others, and to value time spent with others in social pursuits. The extrovert can have one or several of these qualities: warmth and a wish to feel close connections with other people, a lively social energy, and seeking of social stimulation; comfort in the company of others; bold gregariousness; and/or an interest in being forthright and self-disclosing."

(Cattell, 2001, p. 192)

Facilitating (MSCEIT): Short for "Emotional Facilitating of Thought (Using Emotional Intelligence)" and is defined as the "ability to redirect and prioritize thinking on the basis of associated feelings; to generate emotions to facilitate judgment and memory; to capitalize on mood changes to appreciate multiple points of view; to use emotional states to facilitate problem-solving and creativity."
(Mayer et al., 2002, p. 65)

Flexibility (EQ-i): "The ability to adjust one's emotions, thoughts, and behavior to changing situations and conditions. This component of emotional intelligence refers to one's overall ability to adapt to unfamiliar, unpredictable, and dynamic circumstances."
(Bar-On, 2004, p.17)

General Mood EQ Scale (EQ-i): "This component of the inventory measures one's ability to enjoy life as well as one's outlook on life and overall feeling of contentment. High scores generally indicate cheerful, positive, hopeful, and optimistic individuals who know how to enjoy life. In addition to being an essential element in interacting with others, this attribute in an influential motivational component in problem solving and stress tolerance."
(Bar-On, 2004, p.44)

Happiness (EQ-i): "The ability to feel satisfied with one's life, to enjoy oneself and others, and to have fun. Happiness combines self-satisfaction, general contentment, and the ability to enjoy life."
(Bar-On, 2004, p.18)

Impulse Control (EQ-i): "The ability to resist or delay an impulse, drive, or temptation to act. It entails a capacity for accepting one's aggressive impulses, being composed, and controlling aggression, hostility, and irresponsible behavior."
(Bar-On, 2004, p.18)

Independence (EQ-i): "The ability to be self-directed and self-controlled in one's thinking and actions and to be free of emotional dependency. Independence is essentially the ability to function autonomously versus needing protection and support – independent people avoid clinging to others in order to satisfy their emotional needs."
(Bar-On, 2004, p.16)

Independence (16PF):
Low Scorers (Accommodation): "Tend to be accommodating to other people and external influences rather than being self-determining. They may be uncomfortable in situations that call for independence or assertiveness. Low scorers have varying degrees of deference, cooperation, shyness, trust, and satisfaction with the status quo. Their ability to accommodate others' wishes often comes at their own expense, and may alienate others who desire more active participation."

High Scorers (Independence): "Tend to be 'take-charge' people who influence rather than being influenced. Their active stance on life can include these elements: dominance and unwillingness to acquiesce; social boldness and fearlessness; being skeptical of others, especially about being controlled; and willingness to question and improve on the status quo. High scorers can be seen as disagreeable by others who feel controlled or dominated. They may find it hard to accommodate others when it is important to do so." (Cattell, 2001, p. 192)

Interpersonal EQ Scale (EQ-i): "This scale taps interpersonal skills and functioning. High scores in this domain signify responsible and dependable individuals who have good social skills – they understand, interact, and relate well with others." (Bar-On, 2004, p.44)

Interpersonal Relationship (EQ-i): "A skill that involves the ability to establish and maintain mutually satisfying relationships that are characterized by intimacy and by giving and receiving affection." (Bar-On, 2004, p.16)

Intrapersonal EQ Scale (EQ-i): "This scale assesses the inner self. High scores on this composite scale indicate individuals who are in touch with their feelings, feel good about themselves, and feel positive about what they are doing in their lives. These people are able to express their feelings, and they are independent, strong, and confident in conveying their ideas and beliefs." (Bar-On, 2004, p.44)

Introversion (16PF): See Extraversion (*Low Scorers*).

Lack of Restraint (16PF): See Self-Control (*Low Scorers*).

Liveliness (16PF):
Low Scorers: "Serious, quiet, cautious, reflective. The quiet attentiveness of low scorers can make them reliable and mature, though they may not be the life of the party or the most entertaining person in the group."
High Scorers: "Carefree, enthusiastic, spontaneous, energetic. They are high-spirited and stimulating and drawn to lively social situations."
(Cattell, 2001, p. 189)

Managing (MSCEIT): Short for "Emotional Management" and is defined as the "ability to be open to feelings, both pleasant and unpleasant; to monitor and reflect on emotions; to engage, prolong, or detach from an emotional state; to manage emotions in oneself; to manage emotions in others." (Mayer et al., 2002, p. 65)

Negative Impression (EQ-i): "This scale was designed to detect simulation or malingering. Greatly elevated negative impression scores may indicate atypically low self-esteem, instead of an attempt to malinger."

(Bar-On, 2004, p.70)

Openness to Change (16PF):
Low Scorers: "Traditional, attached to the familiar, resistant to change. They tend to stick to traditional ways of doing things. They prefer what's predictable and routine, and so they don't tend to challenge the status quo."
High Scorers: "Open to change, experimenting, free-thinking. They tend to be open-minded and innovative and see ways to improve the status quo. They enjoy experimenting and tend to think critically or question authority. They may find it hard to 'leave well enough alone.'"
(Cattell, 2001, p. 190)

Optimism (EQ-i): "The ability to look at the brighter side of life and to maintain a positive attitude, even in the face of adversity. Optimism assumes a measure of hope in one's approach to life. It is a positive approach to daily living."
(Bar-On, 2004, p.18)

Perceiving (MSCEIT): Short for "Emotional Perceiving and Expression" and is defined as the "ability to identify emotion in one's physical and psychological states; to identify emotion in other people; to express emotions accurately and to express needs related to them; to discriminate between accurate/honest and inaccurate/dishonest feelings."
(Mayer et al., 2002, p.65)

Perfectionism (16PF):
Low Scorers: "Tolerates disorder, unexacting, casual, lax. They tend to be comfortable leaving things to chance, tending to "go with the flow" rather than be planful and structured. While they can seem flexible and spontaneous, they may seem unorganized, unprepared, or undisciplined."
High Scorers: "Perfectionistic, self-disciplined, goal-oriented. They tend to be organized, plan ahead, persevere, and work conscientiously. They are most comfortable in organized and structured situations and may find it hard to deal with unpredictability."
(Cattell, 2001, p. 191)

Positive Impression (EQ-i): "This scale was designed to detect dissimulation or the feigning of enhanced emotional functioning."
(Bar-On, 2004, p.70)

Privateness (16PF):
Low Scorers: "Forthright, self-revealing, transparent. They tend to be open and willing to talk about themselves readily. They tend to "put all their cards on the table" and to be genuine and unguarded."
High Scorers: "Private, discreet, nondisclosing. They tend to be reluctant to disclose personal information, and 'play their hand close to their chest.' They may be tactful, diplomatic, and insightful regarding others' motives."
(Cattell, 2001, p.190)

Problem Solving (EQ-i): The ability to identify and define problems as well as to generate and implement potentially effective solutions. Problem solving is associated with being conscientious, disciplined, methodical, and systematic in persevering and approaching problems.
(Bar-On, 2004, p.17)

Reality Testing (EQ-i): "The ability to assess the correspondence between what is experienced and what objectively exists. Reality testing involves a search for objective evidence to confirm, justify, and support feelings, perceptions, and thoughts."
(Bar-On, 2004, p.17)

Reasoning (16PF):
Low Scorers: "Less able to solver verbal and numerical problems of an academic nature. This can indicate lower intellectual ability but it is also related to educational level."
High Scorers: "More able to solve verbal and numerical problems of an academic nature. This is often indicative of intellectual ability, but is also related to educational level."
(Cattell, 2001, p. 189)

Receptivity (16PF): See Tough-Mindedness (*Low Scorers*).

Rule Consciousness (16PF):
Low Scorers: "Expedient, non-conforming, weak superego. They tend to eschew the rules and regulations, either because they lack internalized standards or simply because they follow unconventional values."
High Scorers: "Rule-conscious, dutiful, scrupulous, strong superego. They tend to conform to conventional cultural standards."
(Cattell, 2001, p. 189)

Self-Actualization (EQ-i): "Pertains to the ability to realize one's potential capacities. This component of emotional intelligence is manifested by becoming involved in pursuits that lead to a meaningful, rich, and full life."
(Bar-On, 2004, p.16)

Self-Control (16PF):
Low Scorers (Lack of Restraint): "Are unrestrained and tend to have fewer resources for controlling their behavior. They may find it hard to place limits on their own urges or to focus their attention. They may be spontaneous, carefree or impulsive; nonconforming, or inattentive to rules and regulations; so caught up in internal mental processes that they don't focus on practicalities; or so undisciplined that they "go with the flow" and do not plan. While perceived as flexible, playful and casual, low scorers can also be seen as unreliable, expedient, or careless."
High Scorers (Self-Control): "Have resources upon which they can call for controlling their behavior and meeting their responsibilities. These resources include being cautious, restrained, and taking matters seriously; placing importance on following rules and meeting expectations; being grounded, practical, and realistic; being self-disciplined and

organized. While they tend to be seen as conscientious and reliable, high scorers can also be seen as overly controlled, that is, too serious or moralistic or compulsive."
(Cattell, 2001, p. 193)

Self-Regard (EQ-i): "The ability to respect and accept oneself as basically good. This conceptual component of emotional intelligence is associated with general feelings of security, inner strength, self-assuredness, self-confidence, and feelings of self-adequacy."
(Bar-On, 2004, p.15)

Self-Reliance (16PF):
Low Scorers: "Group-oriented, affiliative, group-dependent. They tend to prefer being around other people and enjoy social groups and working in teams."
High Scorers: "Self-reliant, solitary, individualistic. They enjoy spending time alone and prefer to rely on their own thinking and judgment."
(Cattell, 2001, p. 191)

Sensitivity (16PF):
Low Scorers: "Tough, realistic, logical, unsentimental. They attend more to how things work than to aesthetics or refined sensibilities, and may be so concerned with utility and objectivity that they exclude feelings from consideration."
High Scorers: "Emotionally sensitive, intuitive, culture sentimental. They tend to be refined in their interests and tastes, and to be empathic and more attuned to emotions than their low-scoring counterparts."
(Cattell, 2001, p. 190)

Social Boldness (16PF):
Low Scorers: "Shy, socially timid, threat-sensitive, easily embarrassed. They find speaking in front of groups to be difficult, and may feel intimidated when facing stressful situation of an interpersonal nature."
High Scorers: "Socially bold, outgoing, gregarious, adventuresome. They tend to initiate social contacts and be fearless in the face of new or intimidating social settings."
(Cattell, 2001, p. 189)

Social Responsibility (EQ-i): "The ability to demonstrate oneself as a cooperative, contributing, and constructive member of one's social group. This ability involves being able to act in a socially responsible manner even though one may not benefit personally."
(Bar-On, 2004, p.16)

Stress Management EQ Scale (EQ-i): "Respondents with high scores on this composite scale are able to withstand stress without 'falling apart' or losing control. They are generally calm, rarely impulsive, and work well under pressure. People who receive high scores on this component can handle tasks that are stressful or anxiety provoking or that involve an element of danger."
(Bar-On, 2004, p.44)

Stress Tolerance (EQ-i): "The ability to withstand adverse events and stressful situations without 'falling apart' by actively and positively coping with stress. It is the ability to weather difficult situations without getting too overwhelmed."
(Bar-On, 2004, p.17)

Tension (16PF):
Low Scorers: "Relaxed, placid, tranquil, patient. They are laid back, composed, and slow to become frustrated."
High Scorers: "Tense, driven, high energy, impatient. They tend to have a lot of drive, to be high strung, and to be fidgety when made to wait."
(Cattell, 2001, p. 191)

Tough-Mindedness (16PF):
Low Scorers (Receptivity): "Tend to be open to people, feelings, imagination, and new ideas. Their focus is on: emotional and aesthetic sensibilities; ideas and thoughts, especially imaginative ones; caring connections with people; or experimenting and trying new approaches. They may overlook the need to be practical, objective, or realistic in dealing with the world."
High Scorers (Tough-Mindedness): "Tend to prefer known, concrete, familiar territory. They focus on: objectivity (as opposed to sentimentality); practical, concrete things rather than abstract ideas or theories; keeping thinks on an impersonal level; or valuing methods and traditions that are tried-and-true."
(Cattell, 2001, p. 192)

Understanding (MSCEIT): Short for "Emotional Understanding" and defined as the "ability to understand relationships among various emotions; to perceive the causes and consequences of emotions; to understand complex feelings, emotional blends, and contradictory states; to understand transitions among emotions."
(Mayer et al., 2002, p.65)

Vigilance (16PF):
Low Scorers: "Trusting, unsuspecting, forgiving, accepting. They tend to expect fair treatment and good intentions from others, and to have trusting relationships."
High Scorers: "Vigilant, suspicious, distrustful, wary. They tend to be suspicious about others' motives and intentions, expecting to be misunderstood or taken advantage of."
(Cattell, 2001, p. 190)

Warmth (16PF):
Low Scorers: "Reserved, impersonal, distant, formal. They tend to be reserved and cautious about involvement and attachment. They tend to like solitude, often focusing attention on mechanical, intellectual or artistic pursuits, where they can be quite effective."
High Scorers: "Warm, caring, soft-hearted, generous. They tend to have intrinsic interest in people, and they often seek situations that call for closeness with other people. Their friends describe them as comforting."
(Cattell, 2001, p. 189)

ABSTRACT

Emotional intelligence (EI) has become an active topic among researchers (e.g., Ciarrochi, Chan, Caputi & Roberts, 2001). Such attention has increased awareness of EI but also fueled controversy. Much of the conflict has focused on the multiple definitions of EI. This dilemma introduces issues of convergent validity and questions about discriminant validity between EI and similar constructs such as personality. The purpose of this study was to explore some of these controversial issues. Data were obtained over two semesters, primarily from undergraduate students taking a testing course at the University of Oklahoma, with additional subjects collected from University of Oklahoma graduate students in Europe. These students provided responses on three instruments: the MSCEIT, EQ-i, and 16PF. Eighty-nine students participated, from whom a small amount of demographic information was also obtained. Discriminant validity between EI and personality factors was examined by comparing results from the two EI questionnaires with the personality inventory. Convergent validity of the two EI measures was also assessed, and gender differences were explored. Finally, the predictability of EI based on personality was examined. The MSCEIT was found to measure components of EI separate from personality, whereas the EQ-i was determined to measure EI competencies that are related to and influenced by personality. The MSCEIT and EQ-i were also found to measure entirely different concepts from each other, and no gender differences were detected. Finally, certain personality factors were suggested as having a predictive relationship with EI competency. Implications of these findings, difficulty with questionnaire accessibility and scoring, and suggestions for future research are discussed.

A COMPARISON OF EMOTIONAL INTELLIGENCE AND PERSONALITY FACTORS: TWO CONCEPTS OR ONE?

CHAPTER I: Introduction

The Problem

Emotional intelligence (EI) has become an increasingly popular topic in research and theoretical domains (Ciarrochi, Chan & Caputi, 2000; Davies, Stankov & Roberts, 1998; Dulewicz & Higgs, 2000; Emmerling & Goleman, 2003; Petrides & Furnham, 2001; Zeidner, Matthews & Roberts, 2004) as well as in popular media (Caruso & Salovey, 2004; Cherniss & Goleman, 2001; Gibbs, 1995; Goleman, 1995, 1998; Goleman, Boyatzis & McKee, 2002; Ryback, 1998). Daniel Goleman first introduced the concept to the general public through his 1995 book *Emotional Intelligence* in which he defined EI as the ability to recognize, understand, and manage one's own feelings and emotions, as well as those of others. However, Salovey and Mayer initiated research into emotional intelligence in 1990 when they defined it as the ability to monitor feelings and discriminate among them in oneself and others. Although there have been other attempts to define emotional intelligence (e.g., Bar-On, 1997), as well as discussion about concepts similar to emotional intelligence, such as social intelligence (Thorndike & Stein, 1937) and personal intelligence (Gardner, 1983), the definitions by Goleman and Mayer and Salovey have been the impetus for controversy over the theoretical foundation of emotional intelligence. Areas of dispute among these and other authors are not limited to theoretical matters and the composition of emotional intelligence but also include issues related to the application of emotional intelligence and psychometrics. Although this

controversy has touched all models of emotional intelligence, most of the criticism has focused on Goleman's model.

Theoretical Foundation of Emotional Intelligence

The theoretical underpinnings of emotional intelligence were established by Mayer and Salovey who built their model based on the relationship between emotion and cognition. Emotional intelligence, according to Mayer and Salovey (1997), should be conceptualized as an actual intelligence or ability rather than as a personal trait. Their definition, revised in 1997, incorporated this relationship and focused on the cognitive processing of emotion, including the ability to perceive and express emotions, assimilate emotions in thought, understand emotions, and, ultimately, the ability to reflect on and regulate emotions. They argued (Mayer & Salovey, 1997) that other definitions, for instance Goleman's (1995), blend aspects of motivation and personality, such as zeal and persistence, and that "if emotional intelligence is to be of value, it must measure something unique and distinct from standard personality traits" (Caruso, Mayer & Salovey, 2002, p. 306).

Distinguishing emotional intelligence from traits and talents has been an important point of contention. According to Mayer and Salovey (1997), traits (behavioral tendencies and personal characteristics) and talents (skills unrelated to intellect) are different from mental abilities and, therefore, should be eliminated from a definition of emotional intelligence. Other authors have likewise brought attention to the overlap between Goleman's definition of emotional intelligence and personality. For example, Matthews, Zeidner, and Roberts (2004) have expressed their concerns over Goleman's definition and other personality-based theories of emotional intelligence, such as Bar-

On's (1997), because "…it is unclear that they have adequate discriminant validity with respect to existing theories and measures of personality, especially those that derive from five-factor theory" (p. xii). Others agree that if emotional intelligence is to meet the standards of an actual intelligence, then it must be shown to be independent from traits related to personality (Caruso et al., 2002; Davies, et al., 1998; Matthews et al., 2004).

Goleman's definition of emotional intelligence is rooted in his theory of performance. Unlike Mayer and Salovey's focus on abilities, Goleman's focus is on competencies that contribute to success in leadership and the workplace. Goleman (2001) argued that emotional intelligence is composed of four clusters each consisting of various competencies that influence performance and success: self-awareness, self-management, social awareness, and relationship management. As Goleman (2001b) stated,

> Although emotional *intelligence* determines our potential for learning the practical skills that underlie the four EI clusters, our emotional *competence* shows how much of that potential we have realized by learning and mastering skills and translating intelligence into on-the-job capabilities (p. 28, italics in original).

Bar-On's (1997) conceptualization of emotional intelligence was similar to Goleman's in that its focus was directed at clusters of personality traits (Matthews et al., 2004). In an attempt to identify and define the key factors involved in effective emotional and social functioning, Bar-On developed the Emotional Quotient Inventory (EQ-i). From his research with the EQ-i, Bar-On has categorized emotional intelligence capabilities into five clusters: intrapersonal, interpersonal, stress management, adaptability, and general mood. Bar-On described EI as "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (1997, p. 14).

These differing views have resulted in the divide between ability and mixed models of emotional intelligence (Mayer, Salovey & Caruso, 2000). Mayer and his colleagues classified the growing number of emotional intelligence models into two categories: models based on mental abilities fall under the title *ability* models whereas all other models are labeled *mixed* models. Mayer et al. (2000) classified Goleman and Bar-On's adaptations of emotional intelligence as mixed models since they incorporate non-ability traits. However, Goleman (2001a) contended in rebuttal to Mayer and colleagues that his model meets the criteria for an ability model because it is "competency-based, comprising a discreet set of abilities that integrate effective and cognitive skills but are distinct from abilities measured by traditional IQ tests" (p. 20).

Although many researchers have studied the overlap between emotional intelligence and personality using emotional intelligence instruments created by authors other than Goleman (see Caruso et al., 2002; Davies et al., 1998; Dulewicz & Higgs, 1999; Higgs, 2001; Petrides & Furnham, 2001; Schulte, Ree & Carretta, 2004; Van der Zee, Thijs & Schakel, 2002), few studies have looked at this relationship using the measure based on Goleman's model, the Emotional Competence Inventory (ECI; Boyatzis, Goleman & Rhee, 2000). The ECI, a self-report, 360-degree measure of emotional intelligence, was designed to assess 20 different competencies of emotional intelligence. The competencies are clustered into four domains similar to those described in Goleman's model. Found to have relatively good reliability (Sala, 2002), the ECI has been used primarily by Goleman and his colleagues for studies centered on leadership and organizational performance (Murenski, 2000; see also Sala, 2004a; Sala, 2004b). The

instrument is difficult to obtain for educational research, which may explain its lack of use by other than members of Goleman's research team.

There has been some research examining the relationship between emotional intelligence and personality using Bar-On's (1997) EQ-i as the measure of emotional intelligence. The EQ-i has been linked with existing personality constructs (Bar-On, 2000; Newsome, 2000), and there is some evidence that it has predictive capabilities for other constructs such as academic success (a cognitive ability), clinical disorders, and treatment responses (Mathews et al., 2004). A majority of the evidence indicates that emotional intelligence, as measured by the EQ-i, is indistinguishable from established traits of personality.

Application of Emotional Intelligence

Another area of controversy has been Goleman's claims regarding the power of emotional intelligence in success and performance. For example, Goleman (1995) has stated that emotional intelligence is "as powerful and at times more powerful than IQ" (p. 34) for predicting success in life, thus implying that a single psychological entity can predict success across all aspects of life (Mayer et al., 2000). Because many of Goleman's claims have little substantiation in empirical research, they have been a cause for concern (Caruso, 2004; Davies et al., 1998; Matthews et al., 2004; Mayer, Salovey & Caruso, 2000; Salovey, Mayer & Caruso, 2002). In addition, the excitement generated by emotional intelligence has resulted in unsubstantiated claims about the importance of emotional intelligence in various aspects of life (see Gibbs 1995; Goleman, 1998; Ryback, 1998).

More recently, Goleman's assertions have shifted toward the influence of emotional intelligence on leadership and success in organizations. His ideas have been articulated in works such as *Promoting Emotional Intelligence in Organizations* (Cherniss & Adler, 2000), *The Emotionally Intelligent Workplace* (Cherniss & Goleman, 2001), and *Primal Leadership* (Goleman et al., 2002). For example, in *Primal Leadership*, Goleman and his colleagues spoke of *resonant* leadership as the ability to tune into others' feelings, to be on synchronized emotional wavelengths with followers, and to move people positively and emotionally. They claimed that the ability to resonate with subordinates is a natural trait for emotionally intelligent leaders.

Psychometrics of Emotional Intelligence

A third area of discussion has centered on methods measuring emotional intelligence. Given the varying models that exist, three types of instruments have evolved. The first type, self-report, asks individuals to rate themselves according to statements describing different possibilities of their behavior. This method relies on the person's self-knowledge, and the test's accuracy depends on the accuracy of the self-reporter. This format is used primarily to measure a person's tendencies or self-concept rather than actual abilities. Self-report measures have garnered some criticism (Davies, et al., 1998; Matthews et al., 2004) because there are several ways to bias and confound the data (e.g., faking, poor self-concept, inaccuracy, etc.).

The second method of measurement uses peer report and is typically referred to as a 360-degree measure because it is used in conjunction with self-report and provides an overall view of the person. The measure provides results that detail the person's self-concept as well as others' perceptions of that person. Peers, co-workers, supervisors, and

subordinates within the individual's network can complete the measure. Criticism of this type of measure centers on the likelihood of obtaining information about the individual's reputation rather than on traits or abilities, and the possibility for peer respondents to be inaccurate as well.

Self reports and 360-degree measures are used primarily for mixed models of emotional intelligence, whereas performance-based measures are used for ability models. Seen as valuable in assessing actual abilities, performance measures require individuals to solve problems and answer questions about how they would react in specific situations.

Although Mayer's and Goleman's research teams each talk about concepts labeled emotional intelligence, it is likely they are referring to similar yet separate constructs that look at different aspects of the person. Caruso (2004) recognized that these differences exist and proposed different terminology for the varying approaches toward emotional intelligence. He argued that the Mayer and Salovey ability model should retain the title of e*motional intelligence* since it comprises cognitive abilities and emotional information. Otherwise, he stressed, models incorporating acquired skills and competencies should be labeled the c*ompetency approach*. Thus far this proposal has not yielded any changes in the literature. Related to this argument is criticism that Goleman's definition of emotional intelligence includes under a single entity (i.e., emotional intelligence) traits that, if examined alone, are functionally independent (Matthews et al., 2004; Mayer, Salovey & Caruso, 2000). Matthews et al. (2004) provide the example:

> …consider hope and impulse control. It seems illogical to assume that these are in any way related. Thus, one can hope and still control one's impulses, or one can hope and have poor impulse control – that is, hope and impulse control appear unrelated and it is questionable whether they form part of the same, unitary construct (p. 12).

Packaging these single entities under one concept, according to Mayer, Salovey, and Caruso (2000) is misleading, especially when the claim is made that as a package these traits can be acquired and learned as a whole.

Statement of Purpose

Given the interest in separating the constructs of emotional intelligence and personality, research in this area has experienced a recent surge of activity. However, according to Matthews et al. (2004), more research examining the overlap between emotional intelligence and personality measures is needed. Much of the recent attention has focused on discriminating between ability models of emotional intelligence and aspects of personality (e.g., Caruso et al., 2002) or demonstrating the overlap between trait versions of emotional intelligence and personality factors (e.g., Davies, et al., 1998; Wolfradt et al., 2002). Little attention has been given, however, to emotional intelligence competencies or behaviors and their relationship with personality traits.

Another gap in emotional intelligence research is attention to the convergence among multiple instruments measuring emotional intelligence. There appears to be no study to date that compares emotional intelligence measures against each other to determine whether they are measuring the same construct. Given this gap in the research and the controversy surrounding the theoretical foundation and definitions of emotional intelligence, such a comparison seems warranted for determining convergent validity among emotional intelligence measures. Results from such a comparison, if found to be divergent, could elicit findings challenging the ability and validity of the main emotional intelligence instruments to measure what they all purport to measure - emotional intelligence.

The main purposes of the current study were to 1) assess the relationship between emotional intelligence abilities, as measured by the MSCEIT, and competencies, as measured by the EQ-i, and personality factors, and 2) to examine the relationship between measures of emotional intelligence in an effort to determine the level of convergent validity. With the former, the objective was to determine the degree to which the two constructs overlap. To achieve the latter purpose, the researcher compared two popular instruments for measuring emotional intelligence, one based on abilities and another based on traits. This comparison shed light on the convergent validity of the two measures. Furthermore, the researcher assessed whether there were any group differences based on gender and whether there are predictors of emotional competency based on personality; that is, can an individual's level of emotional competence be predicted based on certain personality traits that are manifested in the measure of personality?

CHAPTER II: Review of the Literature

Introduction

The concept of emotional intelligence (EI) increasingly has become a topic of interest in the media (see TIME, Gibbs, 1995), popular press (Caruso & Salovey, 2004; Cherniss & Goleman, 2001; Goleman, 1995, 1998; Goleman et al., 2002; Ryback, 1998), and among researchers (Ciarrochi et al., 2000; Davies et al., 1998; Dulewicz & Higgs, 2000; Emmerling & Goleman, 2003; Petrides & Furnham, 2001; Zeidner et al., 2004). Its conception was rooted in various types of intelligence, such as social intelligence (Sternberg, Conway, Ketron & Bernstein, 1981; Thorndike & Stein, 1937) and personal intelligence (Gardner, 1983). It was formally introduced by Salovey and Mayer (1990) as a form of intelligence based purely on mental abilities associated with understanding and managing emotions and separating the construct from other domains of intelligence such as motivation. Emotional intelligence was later popularized by Goleman (1995, 1998) whose definition incorporated aspects of personality and motivation, thus creating a discrepancy among definitional approaches and bringing to the surface questions about its discriminant validity in relation to similar concepts such as personality. This lack of a uniform definition of emotional intelligence has plagued the research arena, causing some to label emotional intelligence as a fleeting fad (Davies et al., 1998; Matthews et al., 2004), fueling continuing controversy over the theoretical make-up of the construct (Caruso, 2004; Cherniss, 2001; Davies et al., 1998; Emmerling & Goleman, 2003; Goleman, 2001a; Matthews et al., 2004; Mayer & Salovey, 1997; Mayer, Salovey & Caruso, 2000; Salovey, Mayer & Caruso, 2002), and stimulating several recent studies that looked at the overlap of emotional intelligence and personality traits (Caruso et al.,

2002; Lopes, Salovey & Straus, 2003; McCrae, 2000; Petrides & Furnham, 2001; Schulte et al., 2004; Van der Zee et al., 2002; Wolfradt, Felfe & Köster, 2002).

Emotions and Intelligence

A discussion of emotional intelligence necessitates an understanding of the relationship between *emotions* and *intelligence*. Cognition, motivation, and emotions (or affect) comprise the three divisions of mental abilities (Mayer, 1995a, 1995b). Motivation drives the satisfaction of basic survival and reproductive needs. Such needs are satisfied with simple and specific acts (e.g., hunger is satisfied by obtaining and consuming food). Emotions developed as response processes that assist individuals in coping with changes in their relationship with the environment. These response signals are more flexible than motivations. Finally, cognition allows individuals to learn from and reflect on aspects of the environment and, therefore, to solve problems that arise in a more creative fashion. Cognition also serves to improve the satisfaction of motivations and help individuals remain positive in their emotions. Cognition is the most flexible of the three spheres of mental operations. These three spheres interact with each other and form the basic components of personality. The intersection of cognition and emotion gives rise to emotional intelligence (Mayer, Salovey & Caruso, 2000).

Wechsler (1944) defined intelligence as "…the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his [sic] environment" (p. 3). This often-referred-to yet broad definition leaves room for inclusion of commonly accepted domains of intelligence such as E.L. Thorndike's (1920) distinction among abstract intelligence, mechanical intelligence, and social intelligence (Salovey & Mayer, 1990). Social forms of intelligence, as outlined by theorists such as

Thorndike (1920), Gardner (1983), and Sternberg et al. (1981), are the focus of the relationship between emotion and intelligence and have been the catalyzing area of thought that has led to the emergence of the term *emotional intelligence*. According to Mayer, Caruso, and Salovey (1999), there are several criteria that must be met before a construct can be considered an actual intelligence: 1) a specific intelligence must represent actual mental abilities and performance as opposed to typical or preferred behaviors or traits; 2) an intelligence must be related to already existing intelligences but distinct enough to measure a new ability; and 3) an intelligence should develop with age and experience.

Social Intelligence

Social intelligence, an intelligence construct well established among researchers (Walker & Foley, 1973) and seen as overlapping with emotional intelligence (Mayer, Salovey & Caruso, 2000), has been defined by Thorndike (1920) as "the ability to understand and manage men and women, boys and girls - to act wisely in human relations" (p. 228) or more simply, “the ability to understand and manage people” (Thorndike & Stein, 1937, p. 275). While this form of intelligence is rife with potential for explaining social behaviors, it has raised various issues regarding its substantiation (Walker & Foley, 1973). Research on social intelligence has been plagued by disagreement about how it should be operationally defined and complaints that an adequate form of measurement is lacking (Cronbach, 1960; Thorndike & Stein, 1937; Walker & Foley, 1973). In the early eighties, however, attempts to operationalize and measure the construct (Sternberg et al., 1981; Sternberg & Smith, 1985) resulted in a renewed interest in social intelligence (Mayer & Geher, 1996). According to Salovey and

Mayer (1990), social intelligence, an outwardly directed skill, might also be applied inwardly to include the ability to understand and manage oneself, a critical ability incorporated into emotional intelligence.

Personal Intelligence

Another form of social intelligence is Gardner's (1983) concept of personal intelligence that distinguishes aspects internal to the person from those external to the person. Closely related to emotional intelligence (Salovey & Mayer, 1990), for instance, is Gardner's (1983) depiction of *intrapersonal intelligence*:

> The core capacity at work here is *access to one's feeling life* – one's range of affects or emotions: the capacity instantly to effect discrimination among these feelings and, eventually, to label them, to enmesh them in symbolic codes, to draw upon them as means of understanding and guiding one's behavior. In its most primitive form, the intrapersonal intelligence amounts to little more than the capacity to distinguish a feeling from pleasure from one of pain and, on the basis of such a discrimination, to become more involved in or to withdraw from a situation. At its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings (p. 239).

Gardner contrasts intrapersonal intelligence with *interpersonal intelligence*, one's ability to use these personal intelligence skills outwardly in application with others, that is, to distinguish among others' "moods, temperaments, motivations, and intentions" (p. 239). This interpersonal intelligence can range from the basic ability to determine differing moods among individuals to the ability to monitor and read others' temperaments, act upon that knowledge, or influence others based on one's mood.

Emotional intelligence is considered to be either overlapping with, or a subset of, social and personal intelligences, but it does not include Gardner's general sense of self (Salovey & Mayer, 1990). The conceptualization of emotional intelligence is broader in that it encompasses internal, personal emotions critical to interpersonal growth rather

than intrapersonal growth, yet it is more focused, particularly in terms of its attention to the emotional component of problems (Mayer, Salovey & Caruso, 2000).

Models of Emotional Intelligence

There has been much contention in the field over the numerous conceptualizations of emotional intelligence, the lack of consensus for a common operational definition of the construct (Davies et al., 1998; Emmerling & Goleman, 2003; Matthews et al., 2004; Mayer, Salovey & Caruso, 2000), and the question of whether convergent/discriminant validity can be demonstrated (Ciarrochi et al., 2000; Mayer, Salovey & Caruso, 2000; Schutte, Malouff, Hall, Haggerty, Cooper, Golden & Dornheim, 1998; Van der Zee et al., 2002). Equally contentious are measurement issues related to the varying adaptations of the construct (Caruso, 2004; Davies et al., 1998). This has led to the distinction between *ability* models and *mixed* models of emotional intelligence (Mayer et al, 1999; Mayer, Salovey & Caruso, 2000). Ability models focus on the connection between cognition and emotion and the ability to process affective information, whereas mixed models additionally incorporate various aspects of emotion and personality such as motivation, traits, and dispositions (Mayer, Salovey & Caruso, 2000).

Ability Models. Currently the most highly recognized ability model of emotional intelligence is one conceptualized by Salovey and Mayer in 1990 that they later revised and refined in 1997 (see Table 1). Mayer and Salovey's (1997) definition of emotional intelligence focuses on the interaction between emotion and mental abilities and 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 (p. 35).

Table 1. Mayer and Salovey's Emotional Intelligence Framework

Emotional Perception and Expression
Ability to identify emotion in one's physical and psychological states.
Ability to identify emotion in other people.
Ability to express emotions accurately and to express needs related to them.
Ability to discriminate between accurate/honest and inaccurate/dishonest feelings.
Emotional Facilitation of Thought
Ability to redirect and prioritize thinking on the basis of associated feelings.
Ability to generate emotions to facilitate judgment and memory.
Ability to capitalize on mood changes to appreciate multiple points of view.
Ability to use emotional states to facilitate problem-solving and creativity.
Emotional Understanding
Ability to understand relationships among various emotions.
Ability to perceive the causes and consequences of emotions.
Ability to understand complex feelings, emotional blends, and contradictory states.
Ability to understand transitions among emotions.
Emotional Management
Ability to be open to feelings, both pleasant and unpleasant.
Ability to monitor and reflect on emotions.
Ability to engage, prolong, or detach from an emotional state.
Ability to manage emotions in oneself.
Ability to manage emotions in others.

Source: Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3-31). New York: Perseus Book Group.

Mayer and Salovey (1997) expand their definition to incorporate four hierarchical *branches* of abilities that range from basic psychological processes to more complex processes integrating emotion and cognition: perceiving, facilitating, understanding, and managing. At the lower end of the hierarchy, *perceiving*, individuals are able to identify emotions in themselves and others; they are able to express accurately these emotions and the needs associated with them as well as to discriminate between accurate and inaccurate feelings in others. This level is essential for emotional intelligence. At the second level,

facilitating, emotions help people determine and reflect upon important information thus aiding in prioritizing thinking. In addition, emotions help facilitate judgment and memory, and assist in the consideration of others' perspectives as well as stimulate creative problem solving. The second level focuses on how emotions can be used productively by the cognitive system. *Understanding* is the key component of the third level where emotions aid individuals in analyzing more complex moods and feelings and utilizing this emotional knowledge. The ability to label and organize emotions is critical at this level. At the highest level of psychological processing of emotions, *management*, individuals are able to reflect on mood and emotions, manage emotions in themselves and others, and actively manipulate their own emotional state.

Key components of Mayer and Salovey's (1997) definition that distinguish it from other versions of emotional intelligence are that (a) the definition incorporates the idea that "emotion makes thinking more intelligent and that one thinks more intelligently about emotion" (p. 5); (b) it is purely ability-based focusing on heightened emotional and mental abilities and does not incorporate other spheres of intelligence such as motivation (Mayer & Salovey, 1997); (c) it does not incorporate influence in relationships with others, unlike other common definitions of emotional intelligence; (d) as an intelligence, it is separate from characteristics such as traits, or typical behavior responses, and talents, such as innate skills (Mayer & Salovey, 1997); and (e) it is developmental; therefore, it can be developed through age and experience (Salovey & Mayer, 1990, Mayer & Salovey, 1997).

Mayer, Caruso, and Salovey's (1999) Multifactor Emotional Intelligence Scale (MEIS) was the first attempt to develope a measure of the ability-based model. Mayer,

Salovey, & Caruso (2002) later revised the MEIS into a similar, yet more reliable, performance-based measure, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT).

Mayer and Salovey's (1997) model of emotional intelligence is perhaps the most widely accepted and has received relatively little negative attention. While Matthews et al. (2004) note the existence of measurement problems due to ambiguity of how items should be scored (i.e., distinguishing between right and wrong answers) and the lack of predictive validity so far in the research, they go on to say that Mayer and Salovey's model of emotional intelligence "constitutes the most workable contemporary definition of EI" (p. 373).

Mixed Models. Although there are several conceptualizations of emotional intelligence that fall under the mixed-model category, by far the most widely visible models are Bar-On's (1997) and his popularization of the term *Emotional Quotient*, and Goleman's (1995; 2001b) highly popular competency-based adaptation. Bar-On's (1997) conceptualization of emotional intelligence encompasses a variety of traits, skills, and abilities unrelated to cognition yet connected to emotional and social knowledge that help individuals cope effectively with daily demands and pressures from their environment. His model is rooted in personality theory and focuses on personal psychological well-being and adaptability. According to Bar-On (1997), emotional intelligence is divided into five components that facilitate emotionally and socially intelligent behavior (see Table 2).

Table 2. Bar-On's Emotional and Social Intelligence

Intrapersonal
Emotional Self-Awareness
Assertiveness
Self-Regard
Self-Actualization
Independence
Interpersonal
Empathy
Social Responsibility
Interpersonal Relationship
Adaptability
Reality Testing
Flexibility
Problem Solving
Stress Management
Stress Tolerance
Impulse Control
General Mood
Optimism
Happiness

Source: Bar-On, R. (1997). *Bar-On Emotional Quotient Inventory (EQ-i): Technical manual*. Toronto, Canada: Multi-Health Systems.

The first component, *intrapersonal intelligence*, is composed of emotional self-awareness, assertiveness, self-regard, self-actualization, and independence. Second is *interpersonal intelligence*, which is composed of empathy, social responsibility, and personal relationships with others. The third component, *adaptability*, incorporates flexibility and problem solving. The fourth, *stress management*, includes tolerance of stress and control of impulses. The final component, *general mood*, is composed of happiness and positive outlook. Bar-On's instrument for measuring emotional intelligence, the EQ-i, is a self-report measure of emotionally and socially competent behavior rather than a measure of personality traits or cognitive capacity (Bar-On, 2000).

Bar-On's definition of emotional intelligence has been criticized for its significant overlap with personality traits and, therefore, lack of discriminant validity (Matthews et al., 2004; Zeidner et al., 2004). Furthermore, as Zeidner et al. (2004) state, Bar-On "makes no direct reference to the acquisition, retrieval, and instantiation (through approximate behavior) of emotional information" (p. 374). In addition, although Bar-On incorporates aspects of cognitive functioning within his model (e.g., problem solving), he excludes the role of cognitive ability in his definition of emotional intelligence (Zeidner et al., 2004).

Daniel Goleman's popularized version of emotional intelligence was first introduced to the public in 1995 in *Emotional Intelligence*. He subsequently revised his model of emotional intelligence in *The Emotionally Intelligent Workplace* (Cherniss & Goleman, 2001). Goleman's formulation of emotional intelligence differs from ability models in that it focuses on abilities *distinct from* cognitive or academic intelligence, and it is concerned with how talent or competency in emotional intelligence can impact success, work life, organizations, and leadership (Emmerling & Goleman, 2003; Goleman, 1995, 1998, 2001b; Goleman et al., 2002). In fact, one of Goleman's more controversial and often-cited claims is that emotional intelligence can be more powerful than IQ in determining success (Goleman, 1995). Goleman (1998) defines emotional intelligence as "…the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" (p. 317). Table 3 shows the current adaptation of the model which divides emotional intelligence into four domains, each consisting of several competencies.

Table 3. Goleman's Emotional Competence Framework

Self-Awareness
Emotional self-awareness
Accurate self-assessment
Self-confidence
Self-Management
Emotional self-control
Trustworthiness
Conscientiousness
Adaptability
Achievement drive
Initiative
Social Awareness
Empathy
Service orientation
Organizational awareness
Relationship Management
Developing others
Influence
Communication
Conflict management
Visionary leadership
Catalyzing change
Building bonds
Teamwork and Collaboration

Source: Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books.

According to Goleman (1998), an emotional *competence* is "a learned capability based on emotional intelligence that results in outstanding performance at work" (p. 24). To further clarify the difference between emotional intelligence and emotional competence and to stress that competencies can be learned, Goleman (2001b) states

> Although our emotional intelligence determines our potential for learning the practical skills that underlie the four EI clusters, our emotional competence shows how much of that potential we have realized by learning and mastering skills and translating intelligence into on-the-job capabilities (p. 28).

Goleman's domains of emotional competence are self-awareness, self-management, social awareness, and relationship management. Competencies within the *self-awareness* domain include emotional self-awareness, accurate self-assessment, and self-confidence. Individuals who are self-aware are able to recognize and understand their own emotions, and they have the essential abilities that contribute to strong empathy skills. *Self-management* consists of emotional self-control, transparency, adaptability, achievement, initiative, and optimism. Control of impulses and flexibility are key aspects for those who are able to manage their own emotions. Those with high *social awareness* display empathy, organizational awareness, and service (i.e., recognizing follower needs). Socially aware individuals are in tune with other's feelings and are able to react to them appropriately. The final domain, *relationship management*, includes the competencies of inspirational leadership, influence, developing others, catalyst of change, conflict management, building bonds, teamwork, and collaboration. Strong relationship managers are able to problem solve, use persuasion effectively, and handle the social aspects of their relationships.

Similar to Mayer and Salovey's hierarchical structure of emotional intelligence, certain domains within Goleman's model serve as foundations for more complex competencies (Goleman, 2001b). In particular, there are two pathways; one begins with self-awareness as a necessary competency for effective self-management, which in turn results in greater *social skill*. The other pathway is formulated by self-awareness serving as a prerequisite for social awareness, or more specifically *empathy*, which then leads to effective self-management.

Goleman has constructed an instrument that measures emotional intelligence per his definition. The Emotional Competence Inventory (ECI), now in its second version, is designed to assess the emotional competencies of individuals and organizations (Sala, 2002).

Goleman's popularized version of emotional intelligence has received extensive criticism. Much of the debate has focused on Goleman's claims about the contribution of emotional intelligence over IQ in terms of success and its predictive validity for workplace performance (Matthews et al., 2004; Mayer, Salovey & Caruso; 2000; Salovey, Mayer & Caruso, 2002), its overlap with motivational and personality characteristics (Mayer & Salovey, 1997; Mayer, Salovey & Caruso; 2000), and his failure to have his work peer reviewed, a practice that would likely reduce the overall criticism (Caruso, 2004; Matthews et al., 2004). Furthermore, Matthews et al. (2004) outline several other questionable aspects of Goleman's work. For instance, they argue that Goleman "seems to define EI by exclusion; that is, EI represents all the positive qualities that are *not* IQ" (p. 12). They also point out that under Goleman's definition, functionally independent traits seemingly are lumped together under one construct. Such a generalization assumes all traits are somehow related to each other, and it confuses the role of emotional intelligence competencies (Matthews et al., 2004, Zeidner et al., 2004). Finally, Matthews and his colleagues (2004) complain that Goleman's model is based on popular theory for mass public consumption rather than on legitimate scientific theory, and that it is too "open-ended" and "loosely specified" to be considered good scientific theory (p. 15). Critics also believe that many of Goleman's claims are lacking empirical, scientific backing (Davies, et al., 1998; Matthews et al., 2004; Mayer, Salovey & Caruso,

2000; Zeidner et al., 2004) and that there is little research supporting the reliability and validity (e.g., predictive and discriminant validity, in particular) of the ECI (Matthews et al., 2004).

Summary of the Models. In a summary of the differences among the three main models of emotional intelligence, Emmerling & Goleman (2003) state

> Where Bar-On seeks to develop a general measure of social and emotional intelligence predictive of emotional well-being and adaptation, and Mayer and Salovey seek to establish the validity and utility of a new form of intelligence, the model of Goleman seeks to develop a theory of work performance based on social and emotional competencies (p. 17).

In his response to Emmerling and Goleman's (2003) *Emotional Intelligence: Issues and Common Misunderstandings*, Caruso (2004) proposed a more clarified breakdown of emotional intelligence and suggested new terminology. His suggestion divides emotional intelligence into three approaches: the trait approach, the competency approach, and emotional intelligence. He proposes that only models combining emotion and intelligence be considered *emotional intelligence*, whereas models dealing with personality and dispositional traits should be considered within the *trait approach,* and models dealing with leadership competency and performance be considered under the *competency approach*.

Measurement Issues

Parallel to the discussion on definitions of emotional intelligence is the discussion on how it should be measured. Since there are varying models of emotional intelligence, methods of measurement are based on whether the model is founded in ability theory or in trait theory. According to Mayer, Caruso, and Salovey (2000), there are three methods of measurement used in assessing emotional intelligence: self-report, informant report,

and performance measure. Self-report measures ask individuals to rate themselves according to statements that describe different possible aspects of the self. One drawback to this format is that it relies on the individuals' accurate understanding of themselves (Matthews et al., 2004). The accuracy of the test results depends on the accuracy of the individual. Another criticism of this format is that it measures a person's self-concept or tendencies rather than actual abilities or traits.

A second type of measure uses the report of acquaintances surrounding the individual in question, for example, peers, co-workers, superiors or subordinates, etc. These informant-type individuals provide information about how a person is perceived. Critics of this method highlight its tendency to obtain information about reputation rather than traits or abilities, in particular for its use in measuring emotional intelligence abilities, In addition, accuracy is dependent on the rater, and some behaviors that contribute to reputation may be more visible than others thus yielding questionable results.

Performance measures ask individuals to solve problems or answer questions about how they would react in certain situations. This method is seen as the most valuable in yielding accurate information about one's mental abilities since it taps into actual capacity rather than beliefs about those abilities (Mayer & Salovey, 1993).

Current measurements of mixed models of emotional intelligence are either self-report or combine self-report with informant ratings to create a more well-rounded view of the individual. Measurements of ability models have focused primarily on performance-based measures. Ciarrochi, Chan, Caputi, and Roberts (2001) describe five differences between self-report and performance-based measures of emotional

intelligence: 1) self-report assesses one's self-perceived level of emotional intelligence whereas performance-based measures assess actual emotional intelligence ability; 2) self-report methods are less time consuming since they obtain a summary of emotionally intelligent tendencies from relatively few questions; 3) self-report measures require the individuals to be accurate in their self-assessment; 4) individuals' responses to self-report questions may be distorted due to impression management; and 5) self-report measures tend to measure well-established traits such as personality, whereas performance measures overlap slightly with traditional intelligence measures.

Petrides and Furnham (2001) make the case that different approaches to measuring a single construct such as emotional intelligence can be problematic since they likely yield different information and results. As an example they state

> …a self-report measure of the model of Mayer and Salovey (1997) will have different properties and will produce different results from a maximum-performance measure simply because the former will be assessing behavioral tendencies and self-perceived abilities whereas the latter will be assessing actual abilities (p. 426).

Petrides and Furnham (2001) differentiate between *trait* emotional intelligence (i.e., emotional self-efficacy) and *ability* emotional intelligence (i.e., cognitive-emotional ability) to further clarify types of emotional intelligence for the purpose of measurement and operationalization. Trait emotional intelligence incorporates behavioral tendencies across situations and abilities as perceived by the individual and is measured through self-report inventories. Since trait emotional intelligence encompasses dispositions and self-perceived abilities, Petrides and Furnham state that research under this category should be conducted within a personality framework. In contrast, ability emotional intelligence, formerly referred to as information-processing emotional intelligence

(Petrides & Furnham, 2000), encompasses actual abilities, and, therefore, should be measured with maximum-performance tests within the area of psychometric intelligence rather than self-report. Based on this distinction, Petrides and Furnham (2001) further contend that one would expect trait emotional intelligence to be correlated with personality factors but not with ability. Conversely, ability emotional intelligence should be related to cognitive factors such as general intelligence as well as personality factors that are, in particular, related to affect (e.g., extraversion and neuroticism). Research on emotional intelligence and personality has been relatively consistent with this distinction (Ciarrochi et al., 2000; Mayer et al., 1999).

Personality

Although the emergence of the trait theory of personality has its roots in Hippocrates' theory of humours (blood, phlegm, black bile, and yellow bile) and Galen's temperaments (melancholic, choleric, phlegmatic, and sanguine), contemporary work on traits and types of personality gained momentum in the early 20th century (Matthews, Deary & Whiteman, 2003). The 'lexical hypothesis,' which served as the impetus for several studies resulting in the establishment of trait psychology (Matthews et al., 2003), originated from Galton's (1884) premise that individual differences in personality could be understood by looking at common terminology representing aspects of personality.

R.B. Cattell (1971) was one of the early and most widely known researchers to use the lexical hypothesis for furthering his own research on traits. Proceeding with the idea that the important features of personality were "encoded" in common language, and using Allport's (1937) list of all English-language adjectives describing traits of personality, Cattell used factor analysis to derive his 16 traits called "primary factors"

(H.E.P. Cattell, 2001). Personality traits may be defined as "stable, dispositional characteristics that influence behavior across a variety of different situations" (Matthews et al., 2004, p. 63). Table 4 lists R.B. Cattell's 16 factors.

R.B. Cattell had a unique approach to creating his personality measure, the Sixteen Personality Factor Questionnaire (16PF). According to H.E.P Cattell (2001),

> Rather than measuring preconceived dimensions of interest to a particular author, the test was developed from the perspective of trying first to discover all the basic structural elements of personality and then to construct scales to measure these fundamental dimensions (p. 188).

Table 4. Cattell's 16 Primary Personality Factors

Factor		Low End Descriptor	High End Descriptor
A	**Warmth**	Reserved	Warm
B	**Reasoning**	Concrete	Abstract
C	**Emotional Stability**	Reactive	Emotionally Stable
E	**Dominance**	Deferential	Dominant
F	**Liveliness**	Serious	Lively
G	**Rule consciousness**	Expedient	Rule-Conscious
H	**Social Boldness**	Shy	Socially Bold
I	**Sensitivity**	Utilitarian	Sensitive
L	**Vigilance**	Trusting	Vigilant
M	**Abstractedness**	Grounded	Abstracted
N	**Privateness**	Forthright	Private
O	**Apprehension**	Self-Assured	Apprehensive
Q1	**Openness to Change**	Traditional	Open to Change
Q2	**Self-Reliance**	Group-Oriented	Self-Reliant
Q3	**Perfectionism**	Tolerates Disorder	Perfectionistic
Q4	**Tension**	Relaxed	Tense

Source: Cattell, H.E.P. (2001). The sixteen personality factor (16PF) questionnaire. In W.I. Dorfman & M. Hersen (Eds.), *Understanding psychological assessment* (pp. 187-215). Dordrecht, Netherlands: Kluwer Academic Publishers.

R.B. Cattell's emphasis on the inter-correlated primary factors is a unique approach to trait theory and has sparked some criticism due to the difficulty in replicating

the original 16 factors (Eysenck & Eysenck, 1985; Matthews et al., 2003). However, they serve an important role since their correlated nature results in five second-order factors as listed in Table 5. R.B. Cattell discovered these broader dimensions when analyzing the primary factors, thus revealing a hierarchical structure to his model (Cattell, 2001). The second-order factors include continua for introversion/extraversion, low anxiety/high anxiety, receptivity/tough-mindedness, accommodation/independence, and lack of restraint/self-control. R.B. Cattell's research and discovery of these "global factors," as he labeled them, led to the establishment of the "Big Five" personality types (Cattell, 2001).

Costa & McCrea (1992) are responsible for most of the research on The Big Five or the Five Factor Model, which has become the most widely accepted trait theory model. Although it has several variations, the most common versions, including that of Costa and McCrea, include the domains of Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Neuroticism is characterized by traits such as anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability. Extraversion is composed of warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions. Openness includes traits such as fantasy, aesthetics, feelings, actions, ideas, and values. Agreeableness is the tendency to be trusting, straightforward, altruistic, compliant, modest, and tender-minded. Finally, conscientiousness is characterized by competence, order, dutifulness, striving for achievement, self-discipline, and deliberation (Costa & McCrea, 1992). A comparison of R.B. Cattel's (H.E.P Cattell, 2001) higher order factors with Costa and McCrea's (1992) Big Five can be found in Table 6.

Table 5. Cattel's Global Scales and Contributing Primary Factors

Introversion/Extraversion
Warmth (A)
Liveliness (F)
Social Boldness (H)
Privateness (N)
Self-Reliance (Q2)
Low Anxiety/High Anxiety
Emotional Stability (C)
Vigilance (L)
Apprehension (O)
Tension (Q4)
Receptivity/Tough-Mindedness
Warmth (A)
Sensitivity (I)
Abstractedness (M)
Openness to Change (Q1)
Accommodation/Independence
Dominance (E)
Social Boldness (H)
Vigilance (L)
Openness to Change (Q1)
Lack of Restraint/Self-Control
Liveliness (F)
Rule-Consciousness (G)
Abstractedness (M)
Perfectionism (Q3)

Source: Cattell, H.E.P. (2001). The sixteen personality factor (16PF) questionnaire. In W.I. Dorfman & M. Hersen (Eds.), *Understanding psychological assessment* (pp. 187-215). Dordrecht, Netherlands: Kluwer Academic Publishers.

Table 6. 16PF Global Factors as Compared to the Big Five

Global Factors	**Big Five**
Introversion/Extraversion	Extraversion (E)
Low Anxiety/High Anxiety	Neuroticism (N)
Receptivity/Tough-Mindedness	Openness (O)
Accommodation/Independence	Agreeableness (A)
Lack of Restraint/Self-Control	Conscientiousness (C)

While various personality theorists have claimed the existence of 3 to 35 important traits (Matthews et al., 2003), the main competition for Costa and McCrea's (1992) Five Factor Model proves to be H.J. Eysenck (1967) three-factor model. Eysenck's theory of personality proposes the three dimensions of Neuroticism (N), Extraversion (E), and Psychoticism (P). Traits associated with Eysenck's version of Neuroticism include anxiety, depression, guilty feelings, low self-esteem, tension, irrationality, shyness, moodiness, and emotion. Extraverts are social, lively, active, assertive, sensation seeking, carefree, dominant, surgent, and venturesome. Slightly different but arguably incorporating aspects from the Big Five is Psychoticism, which includes traits such as aggression, coldness, egocentrism, being impersonal, impulsive, antisocial, unempathetic, creative, and tough-minded (Eysenck, 1967).

Set assumptions about personality traits and states (i.e., which mediate the effects of traits on behavior) remain relatively certain. As outlined by Eysenck (1982), 1) traits are individually dependent; 2) traits can be identified using correlational studies; 3) traits are determined by heredity factors; 4) traits can be measured using questionnaire methods; 5) the interaction of traits and environmental situations results in states; 6) states are measurable using questionnaire methods; 7) if incorporated in a meaningful theoretical framework, traits and states can be useful in explaining behavior; and 8) the

relationship between traits/states and behavior is usually indirect and affected by the interactions among traits, states, and other factors.

Emotional Intelligence and Personality

Examining the relationship between personality and emotional intelligence has taken front stage with many researchers in recent years. Proponents of *ability* emotional intelligence have striven to demonstrate discriminant validity with personality, and, as critics of *trait* emotional intelligence, have focused on highlighting its lack of discriminant validity. Most research looking at this relationship has examined it in the context of the Big Five model of personality. It has been said of the models that overlap with the five factors of personality that "emotional intelligence should be associated with low scores of neuroticism and high scores for extraversion, openness, agreeableness, and conscientiousness" (McCrae, 2000, p. 166). In addition, McCrae (2000) discusses the developmental trend of personality traits in the context of the Big Five and its relation to emotional intelligence. For example he states,

> Although individual differences are strongly preserved over most of the adult life span, there are maturational trends that affect everyone. Between late adolescence and age thirty, neuroticism, extraversion, and openness decline, whereas agreeableness and conscientiousness increase (McCrae et al., 1999). After age thirty, changes are much slower but apparently continue in the same direction. The fact that neuroticism decreases while agreeableness and conscientiousness increase suggests that emotional intelligence should increase with age. On the other hand, extraversion and openness to experience decline with age (Sapolsky, 1998), which suggests a decrease in emotional intelligence (p. 266).

While examining the relationship between emotional intelligence and personality is not a novel idea, as many studies have been published in the last few years, it is the combined use of the instruments in this study (i.e., MSCEIT, EQ-i, and 16PF) that was new. The search for correlations between aspects of personality and emotional

intelligence has taken many directions, which is understandable considering personality inventories are even more numerous than measures of emotional intelligence. In addition, some findings have been contradictory. Most studies have investigated the relationship specifically between ability emotional intelligence and dispositional traits related to personality for the purpose of distinguishing between the two constructs. These studies have used measures such as the MEIS (Mayer, Caruso & Salovey, 1999; see Caruso et al., 2002; Ciarrochi et al., 2000), the MSCEIT (Mayer et al., 2002; see Lopes et al., 2003; Schulte et al., 2004), and others (see Dulewicz & Higgs, 1999, 2000; Higgs, 2001; Van der Zee et al., 2002; Wolfradt et al., 2002). In the cases where trait emotional intelligence was compared to aspects of personality, the measure of choice has been the EQ-i (Bar-On, 1997; see Buford, 2001, Petrides & Furnham, 2001).

In general, several studies have found a relationship between emotional intelligence and factors within the Big Five model of personality as well as Eysenck's three-factor model. For example, using the MEIS, Ciarrochi et al., (2000) found a positive correlation between emotional intelligence and extraversion, empathy, openness to feelings, and self-esteem. Schulte et al. (2004), using the MSCEIT, found a moderate relationship between cognitive intelligence, or 'g,' and emotional intelligence as well as a correlation between agreeableness and emotional intelligence. Overall, they found positive correlations with the Big Five factors and emotional intelligence. They concluded that it is questionable whether emotional intelligence is a unique construct.

Conducting three studies using a variety of emotional intelligence and personality measures, Davies et al. (1998) found correlations between Eysenck's psychoticism factor and impulsivity and empathy. They linked neuroticism and emotional stability with

regulation of emotion and found a relationship between extraversion and expression of emotion. Davies and colleagues also found a relationship between self-report measures of emotional intelligence and agreeableness and concluded in general that the construct of emotional intelligence is not new. However, contrary to these findings, Petrides and Furnham (2001) found emotional intelligence, using the EQ-i, to be a distinct trait factor different from Eysenck's P, E, and N factors.

Van der Zee et al. (2002) examined academic intelligence with personality and emotional intelligence. While they found little relationship between academic and emotional intelligence, they did find a strong correlation between emotional intelligence and the Big Five, particularly with extraversion and emotional stability. Similarly, Wolfradt et al. (2002) found no relationship between emotional intelligence and verbal intelligence and concluded that emotional intelligence fits within a framework of personality traits rather than existing as a distinct construct. This was based on findings that correlated neuroticism and openness to experience with emotional self-efficacy and emotional empathy. Finally, they also found all dimensions of emotional intelligence to be correlated with extraversion, conscientiousness, life satisfaction, and intuitive and rational thinking.

Comparing scores on the MEIS with those from the 16PF in a sample of 183 participants, Caruso et al. (2002) found only a few significant correlations. The correlation with Sensitivity was explained as resulting because emotionally intelligent people are more sentimental. Another correlation was with the 16PF global factor, Extraversion. The authors attributed this to emotionally intelligent people being more outgoing. Finally, there was a correlation with the Reasoning factor in the 16PF. As a

measure of ability emotional intelligence, it is understandable that the MEIS would be correlated with Reasoning, a cognitive ability.

The above study was one of the few found that used the 16PF as the measure for personality in direct comparison with emotional intelligence; however, in Caruso et al.'s (2002) study, it is used with a performance-based measure of ability emotional intelligence which likely yields findings different from those found when comparing the 16PF with Bar-On's model. For the purpose of exploring research more relevant to the proposed study, the examination of studies comparing mixed models of emotional intelligence with the 16PF is of more importance. No studies were found comparing Goleman's model of emotional intelligence (i.e., using the ECI) with the 16PF; however, there has been some research examining the relationship between Bar-On's EQ-i (which assesses trait emotional intelligence) and the 16PF.

Examining the relationship among emotional intelligence, cognitive ability, and personality with 180 psychology students, Newsome (2000) found no evidence that emotional intelligence (as measured with the EQ-i) predicts academic achievement (i.e., cognitive ability). Using the 16PF to measure personality, he found that other than the Tough-Mindedness score, all 16 primary factors were significantly correlated with the EQ-i total score and the five EQ-i composite factors. He also noted that the total EQ-i score was negatively correlated with the Anxiety factor of the 16PF indicating that low emotionally intelligent individuals have a tendency to be highly neurotic. Newsome suggests that emotional intelligence, as measured by the EQ-i, is indistinguishable from established traits of personality.

Bar-On (2000) reviewed various correlations between the EQ-i subscales and factors from other instruments including the 16PF. Self-Regard was negatively linked with Apprehension (r = -.56) and Tension (r = -.34). This finding suggests that Self-Regard is related to self-confidence. Assertiveness was highly correlated with Dominance (r = +.60), and Empathy was found to be correlated with Warmth (r = +.31). The Interpersonal Relationship subscale was positively linked to Social Boldness (r = +.56). Stress Tolerance was negatively highly correlated with the following anxiety predicting factors: Emotional Stability (r = +.67), Apprehension (r = -.60), and Tension (r = -.39). Impulse Control was significantly correlated with several 16PF factors including Dominance (r = +.38), Perfectionism (r = +.44), and Tension (r = -.51). Reality Testing was highly correlated with Emotional Stability (r = +.58) indicating that the ability to identify accurately what one perceives and feels is vital. Problem Solving was positively connected with Rule Consciousness (r = +.36). The following subscales are considered to be facilitators of emotional and social intelligence rather than actual components. Optimism had moderately high correlations with Dominance (r = +.48); Happiness was significantly correlated with Liveliness (r = +.50) and Independence had a moderate correlation with Dominance (r = +.44) and Emotional Stability (r = +.46). Finally, Social Responsibility was linked with Rule-Consciousness (r = +.40). The subscales of Self-Actualization and Emotional Self-Awareness were not mentioned due to a lack of significant correlation with any factors from 16PF. These results corroborate Newsome's conclusion and demonstrate that there are several noteworthy correlations between components of emotional intelligence and personality. The question of whether there are too many strong correlations between the two concepts has yet to be answered.

For the purpose of the current study, the researcher compared emotional intelligence competencies as measured by the EQ-i with personality factors measured by the 16PF. The researcher also included a measure of ability emotional intelligence by use of the MSCEIT to assess further the complex relationship among the three concepts (i.e., trait EI, ability EI, and personality). Based on the reviewed literature, a proposed 16PF profile of a hypothetical individual is offered in Figure 1. This profile provides a graphic view of an emotionally intelligent individual's 16PF profile. The author suggests that predictors of high emotional intelligence potentially could be drawn from such a profile. Using the profile in Figure 1 as an example, factors such as warmth, emotional stability, sensitivity, vigilance, apprehension, openness to change, and self-reliance might be considered strong predictors of emotional intelligence since the score for each of those factors would likely fall closer to the poles. In addition, there should be no correlation with the reasoning factor as that is thought to be a distinct construct from emotional intelligence.

Restatement of Purpose and Research Questions

Although numerous complaints have been launched at Goleman's model and the ECI (Boyatzis et al., 2000), their focus has been on the overlap of the model with personality factors. This is the central theme of criticism of trait versus ability emotional intelligence in comparison with personality. Some overlap between trait emotional intelligence and the Big Five has been found in previous research, and this is to be expected. According to Matthews, et al. (2004), some overlap is acceptable since emotional intelligence does incorporate aspects related to personality such as emotional stability. However, key questions of the debate include: Which approach to emotional

	Factor	Low End Descriptor	1	2	3	4	5	6	7	8	9	10	High End Descriptor
A	*Warmth**	Reserved								X			Warm
B	Reasoning	Concrete						X					Abstract
C	*Emotional Stability*	Reactive									X		Emotionally Stable
E	*Dominance*	Deferential								X			Dominant
F	*Liveliness*	Serious							X				Lively
G	*Rule Consciousness*	Expedient						X					Rule-Conscious
H	*Social Boldness*	Shy							X				Socially Bold
I	Sensitivity	Utilitarian					X						Sensitive
L	Vigilance	Trusting				X							Vigilant
M	Abstractedness	Grounded					X						Abstracted
N	Privateness	Forthright				X							Private
O	*Apprehension*	Self-Assured		X									Apprehensive
Q1	Openness to Change	Traditional					X						Open to Change
Q2	Self-Reliance	Group-Oriented						X					Self-Reliant
Q3	*Perfectionism*	Tolerates Disorder								X			Perfectionistic
Q4	*Tension*	Relaxed			X								Tense

* Italicized factors coordinate with findings reviewed by Bar-On (2000)

Figure 1. Theoretical 16PF Profile of an Emotionally Intelligent Individual

intelligence is the more accurate one, and at what point does overlap of emotional intelligence concepts with factors of personality become too much?

It was the aim of the current study to examine this threshold and determine what emotional competencies are related to established personality factors. Important to this discussion is the question of whether the EQ-i and MSCEIT are each measuring a construct unique and separate from personality. Based on evidence from previous research, it was expected that results from each emotional intelligence instrument would demonstrate different correlations with results from the personality measure, thus suggesting that they measure different concepts. Given the lack of research comparing instruments that purport to measure emotional intelligence against each other, a significant goal of this study was to provide data on the comparison of the MSCEIT and

the EQ-i. It was also expected that the EQ-i results would be more closely related to the 16PF results indicating that there is a more similar relationship between the concept the EQ-i measures and personality than with the concept the MSCEIT measures and personality.

Research Question One. What is the relationship between emotional intelligence competencies or abilities and personality factors?

Research Question Two. Do the EQ-i and MSCEIT measure something new and unique from established personality traits?

Research Question Three. Is there convergent validity between the two measures of emotional intelligence (the EQ-i and MSCEIT)?

Matthews et al. (2004) stated that, due to the relative newness of the study of emotional intelligence, few studies have examined group differences in emotional intelligence. Therefore, an additional aim of the current study was to evaluate group differences based on gender.

Research Question Four. Are there any differences between males and females in emotional intelligence competencies or abilities?

Given the use of the 16PF in career counseling and development (Cattell, 2001; Stanton & Matthews, 1995), personnel selection and development, and team building (Stanton & Matthews, 1995), as well similar uses for emotional intelligence (Cherniss & Goleman, 2001; Goleman, 1998; Goleman et al., 2002), the researcher investigated the specific predictive relationship between the 16 factors and Bar-On's emotional intelligence subscales. Due to the use of sten ("standardized ten") scores in the scoring of the 16PF (Cattell, 2001), each person is represented by an iceberg-like profile that gives a

pictorial view of their personality. If there are certain predictors of emotional intelligence competency within the 16PF, then there should be certain parts of the profile that remain the same for those with high emotional intelligence competency and vice versa. For example, if individuals high in emotional competency score, in general, about an 8 on the emotional stability factor, a 7 on the warmth factor, a 7 on sensitivity, and a 3 on the apprehension factor, we might call those factors "predictors" of emotional competency. Finding predictors suggests that the 16PF could be used to determine whether individuals may have certain competencies involved in emotional intelligence. This may be helpful for the purpose of personnel selection. For personnel development and career counseling purposes, predictors of emotional competency within the 16PF could be used to determine what competencies, as predicted by the 16PF, need improvement.

Research Question Five. Are there predictors of emotional intelligence competencies or abilities within the 16PF?

CHAPTER III: Methodology

Participants

Participants for this study were male and female students from the University of Oklahoma (OU) recruited from two undergraduate psychology testing courses during spring and fall 2006. In addition, ten graduate students attending OU classes on U.S. military installations in Europe were administered the set of instruments during pilot testing. Because the pilot testing did not reveal any problems in instrument administration, these graduate student respondents were combined with the undergraduate responses for the overall study. Differences between the graduate and undergraduate participants were evaluated. There were 89 participants in this study, including 79 undergraduate students on campus in Norman and 10 graduate students in Europe. The average age of the graduate students in Europe was 35 years versus 23 years for undergraduate participants on campus. Sixty percent of the graduate participants were female; 73% of the undergraduate participants were female. Means for each questionnaire and their subscales were compared with no significant differences between the graduate participants in Europe and the undergraduate participants in Norman.

Instrumentation

Data for this study were obtained from the following inventories: 1) the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey & Caruso, 2002), used to evaluate emotional intelligence abilities according to the Mayer and Salovey (1997) model of emotional intelligence; 2) the Emotional Quotient Inventory (EQ-i; Bar-On, 1997), used to evaluate emotional intelligence competencies according to Bar-On's model of emotional intelligence; and 3) Cattell et al.'s (1993) Sixteen

Personality Factor Questionnaire, Fifth Edition (16PF), used to measure and categorize participants' personality.

Mayer-Salovey-Caruso Emotional Intelligence Test. The MSCEIT (Mayer et al., 2002) is an ability-based measure of Mayer and Salovey's (1997) four-branch model of emotional intelligence that includes perceiving emotions, facilitating thought, understanding emotions, and managing emotions. The test contains 141 items and takes approximately 30-45 minutes to complete. It is designed for individuals 17 years and older. An overall score for emotional intelligence is generated plus scores for each of the four subscales as well as eight task scores and two area scores.

Mayer, Salovey, Caruso, and Sitarenios (2003) reported reliability measures based on split-half reliability coefficients listed in terms of general and expert consensus scoring. Whereas general consensus scoring compares the respondent's answer to the proportion of the participants that responded the same way, expert consensus scoring evaluates scores according to the proportion of expert responses that match the respondents score. Mayer et al. found full test reliability scores at .93 for general and .91 for expert, with test-retest reliability for the total MSCEIT score at .86. The four branches of the test (Perceiving, Facilitating, Understanding, and Managing) are separated into two areas: Experiencing and Strategic. Experiencing Area reliability scores were reported as .90 for both general and expert, and Strategic Area reliability was computed at .88 for general and .86 for expert. The four branch scores ranged from .76 to .91 for both types of reliability. Finally, the individual task (Faces, Pictures, Facilitation, Sensations, Changes, Blends, Emotion management, and Emotional relationships) reliabilities ranged from .55 to .88.

Emotional Quotient Inventory. The EQ-i (Bar-On., 1997) is a self-report measure designed to assess behavior competence of an emotional and social nature, thus providing an estimate of a person's emotional and social intelligence. It is composed of 133 items using a five-point Likert scale which ranges from "very seldom or not true of me" to "very often true of me." (Bar-On, 2000). It is appropriate for individuals 17 years and older who read English at a 6th grade level. The instrument takes approximately 40 minutes to complete and produces a total EQ score and five composite EQ scores: intrapersonal EQ, interpersonal EQ, stress management EQ, adaptability EQ, and general mood EQ. To help reduce biases resulting from self-report questions and improve overall accuracy, the instrument contains four validity indicators (Omission Rate, Inconsistency Index, Positive Impression, and Negative Impression) and a "built in correction factor that automatically adjusts the scale scores based on the Positive Impression and Negative Impression Scale scores" (p.366). The five composite EQ scores consist of 15 subscales: self-regard, emotional self-awareness, assertiveness, independence, self-actualization, empathy, social responsibility, interpersonal relationship, stress tolerance, impulse control, reality testing, flexibility, problem solving, optimism, and happiness. Bar-On (2000) reports an interscale correlation average of .50 for the 15 subscales. Cronbach Alpha lower-bound reliability coefficients range from .69 to .86 with an overall average of .76 for internal consistency. Stability reliability is reported to be .73 (Bar-On 1997).

Sixteen Personality Factor Questionnaire. The 16PF Fifth Edition (Cattell et al., 1993) is a comprehensive self-report measure of the basic traits that make up normal adult personality. It contains 185 multiple-choice questions assessing personality traits across 16 bipolar factors (warmth, reasoning, emotional stability, dominance, liveliness,

rule-consciousness, social boldness, sensitivity, vigilance, abstractedness, privateness, apprehension, openness to change, self-reliance, perfectionism, and tension) and five global factors (extraversion, anxiety, tough-mindedness, independence, and self-control). It is designed for individuals 16 years and older and takes approximately 35-50 minutes to complete. The questionnaire yields scores for each of the 16 factors, the 5 global factors, and 3 validity scales (impression management, infrequency, and acquiescence). According to Cattell (2001), coefficient alpha reliabilities of the primary factor scales average .74 with a range from .64 to .85. Test-retest reliability after a two-week period range from .69 to .87, with an average of .80.

Procedure

Data were collected from students in courses taught on the University of Oklahoma Norman campus by the researcher's major professor. The major professor explained the reasoning for completing the questionnaires and gave instructions on how to complete them. All participants completed the 16PF first, then, at a later date within the semester, completed the EQ-i followed by the MSCEIT. A few participants who were absent from class the day the questionnaires were given were allowed to take them home for completion. To ensure confidentiality, participants wrote a self-created code name on each of the questionnaire answer sheets. Response feedback was made available to those who requested it.

Design and Analysis

The researcher used SAS for analyzing the data. These analyses occurred in four phases.

Phase 1. In Phase 1, the researcher conducted an analysis of descriptive information and confirmation study of the psychometric properties and structure of the EQ-i and MSCEIT instruments. She examined the inter- and intra-correlations of the two emotional intelligence instruments and verified the reliability of these instruments on this sample. All data were examined for outliers and non-normality. Finally, an Exploratory Factor Analysis (EFA) was conducted on the two emotional intelligence instruments and the personality measure to verify construct validity.

Phase 2. During Phase 2, the researcher conducted a multiple regression of the emotional intelligence constructs on the personality instrument. She examined the extent to which personality constructs predict emotional intelligence. Again, all models were examined for violations of assumptions (e.g., outliers, multi-collinearity, and normality) with corrective actions taken as necessary.

Phase 3. Using multiple regression, the researcher added gender information to the models to assess possible effects. This analysis was contingent upon the nature of the data collected. For example, if data from enough males and females were collected, then the researcher could assess how the multiple regression in Phase 2 varied by gender.

Phase 4. In Phase 4, the researcher conducted a Latent Profile Analysis. Using the data for all emotional intelligence construct scales, the researcher assessed the possibility that a small number of latent profiles (or clusters) exist. These latent profiles are composed of individuals who share a homogeneous pattern of scores on these emotional intelligence scales. Likewise, the researcher used the personality scales to examine the possibility of latent profiles on levels of emotional intelligence.

CHAPTER IV: Results

Descriptive Statistics

The current study had a sample size of 89. There were 22 males, 55 females, and 12 who did not provide their gender. Of this sample, 10 participants were a pilot group of University of Oklahoma graduate students located in Europe and the remaining 79 were in on-campus University of Oklahoma psychology courses. Data from the Europe-based participants were collected between December 2006 and January 2007. On-campus data were collected during spring 2006 (January 1-April 30, 2006) and fall 2006 (August 15-December 31, 2006).

Date were collected from 89 of the 91 individuals contacted about participating in the study for a response rate of 98%. In the graduate pilot group, 11 students were contacted with 10 completing the questionnaires, a response rate of 91%. Of the undergraduate participants, 80 students were given the opportunity to participate for class credit and there were 79 respondents, a response rate of 99%. Eighty-three participants completed the 16PF and EQ-i Questionnaires, a completion rate of 93%, and 84 completed the MSCEIT Questionnaire, a completion rate of 94%.

The age of the subjects ranged from 20 to 52 with a mean of 24, median of 22, and mode of 21. Twenty-three subjects did not report their age. Subjects came from the following ethnicities: White (N = 50), Black (N = 5), Asian (N = 5), Hispanic (N = 3), Native American (N = 2), and African (N = 1). Twenty-three subjects did not report their ethnicity.

Instrument Scoring and Reliabilities

The author used the standard hand-scoring procedure for scoring the 16PF. The hand-scoring key cards were provided with the manual for the questionnaire. Sten scores for each of the 16 personality factors, an impression management score, and scores for the five global scales were calculated.

Scoring options for the EQ-i and MSCEIT questionnaires were not as straightforward. Having the testing companies score the exams would not have produced the information required for analytical purposes since the companies would provide overall scores, but not complete subscale scores and item-level information. Therefore the author developed a method of personal hand-scoring.

In the case of the EQ-i, the questionnaire response options are based on a 5-point Likert scale ranging from "Very seldom true or not true of me" to "Very often true of me or true of me." When coding the responses, each answer on the scale was given a number from 1 through 5. A response of "Very untrue or not true of me" was assigned a score of 1 continuing through to a response of "Very often true of me or true of me" which was given a score of 5. Certain items within the questionnaire required reverse scoring and those were determined by calculating Cronbach's Coefficient Alpha on each subscale and testing the reversal for suspected items to see if the alpha level would improve. The reverse-scale items were further validated by factor analysis. The scores for each EQ-i subscale, global scale, and total EQ were then calculated by summing the appropriate items.

Because the MSCEIT questionnaire items used a different response format and more than one response could be acceptable, expert ratings were used to determine item

scoring. Five professional clinicians/psychometricians, each with a graduate degree in psychology, and working professionally in the field of Psychology in Norman, OK, were recruited to complete the MSCEIT questionnaire. These expert raters filled out the MSCEIT, giving the responses they felt were most appropriate for someone with high emotional intelligence. They were provided the instructions located in Appendix A. Frequencies were run on the expert raters' scores, and weights for each possible response on each item were calculated. Thus, if alternative A was identified by 40% of the expert raters as indicative of emotional intelligence, respondents who chose alternative A received .40 on this item. If the remaining 60% of the expert raters identified alternative B as indicative of emotional intelligence, respondents who chose alternative B received a score of .60 on this item. Respondents who chose alternative C, D, or E received a zero. The weights were then multiplied by the binary raw scores to create an actual score. The scores for each MSCEIT global scale and for the total MSCEIT were then calculated for each respondent by summing the appropriate weighted items.

Cronbach's Coefficient Alpha was used to measure reliability. Coefficient alphas were run for the EQ-i subscales and the MSCEIT overall score, and are listed in Table 7 with the alphas reported by Bar-On (2004). See Appendix B for a listing of the variables and their abbreviations. The reliabilities from the current study are consistently within the range reported by Bar-On (2004) and Mayer, Salovey, and Caruso (2002). Comparisons of coefficient alphas could not be calculated for the 16PF and MSCEIT subscales because subscale item listings were not available. In addition, factor analyses results provide coherent internal validation which suggest that the scoring methods used in this study were sound.

Table 7. Coefficient Alphas for each measure

EQ-i Subscale	Bar-On	Current Study/ Freeland
ES	.80	.84
AS	.81	.85
SR	.89	.90
SA	.80	.78
IN	.79	.78
EM	.75	.62
IR	.77	.86
RE	.70	.69
PS	.80	.78
RT	.75	.74
FL	.77	.84
ST	.84	.78
IC	.79	.82
HA	.81	.86
OP	.82	.82
Total Score	.76	.75

16PF Subscale	Cattel
A	.69
B	.77
C	.78
E	.71
F	.73
G	.74
H	.86
I	.79
L	.74
M	.74
N	.77
O	.78
Q1	.71
Q2	.78
Q3	.73
Q4	.75

MSCEIT Global Scale	Mayer & Salovey	Current Study/ Freeland
Perceiving	.91	
Facilitating	.79	
Understanding	.80	
Managing	.83	
Total Score	.93	.85

Source: Bar-On, R. (2004). *Bar-On Emotional Quotient Inventory (EQ-i): Technical manual*. Toronto, Canada: Multi-Health Systems; Cattell, R.B., Cattell, A.K., & Cattell, H.E.P. (1993). *16PF Fifth Edition*. Champaign, IL: Institute for Personality and Ability Testing; Mayer, J.D., Salovey, P., & Caruso, D.R. (2002). *Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) User's Manual*. Toronto, Canada: MHS Publishers.

Research Question I

Correlations. Research Question I stated: What is the relationship between emotional intelligence competencies or abilities and personality factors? For all research questions, 'abilities' is represented by the scores on the MSCEIT questionnaire and personality factors represented by scores on the 16PF questionnaire. Table 8 illustrates that Tough Mindedness was significantly negatively correlated with the MSCEIT global scales of Perceiving (r = -.27) ($p < .05$), Understanding (r = -.23) ($p < .05$), and Total MSCEIT (r = -.24) ($p < .05$). Otherwise there was little to no correlation between emotional intelligence competencies or abilities and personality factors.

Emotional competencies were measured by the EQ-i questionnaire. According to Table 8, there were several correlations between the EQ-i global scales and the 16PF global factors. Extraversion correlated positively with Intrapersonal EQ (r = .42) (p < .01), Interpersonal EQ (r = .47) (p < .01), General Mood (r = .48) (p < .01), and Total EQ (r = .44) (p < .01). Anxiety correlated negatively with Intrapersonal EQ (r = -.36) (p < .01), Interpersonal EQ (r = -.51) (p < .01), Adaptability EQ (r = -.39) (p < .01), General Mood EQ (r = -.56) (p < .01), and Total EQ (r = -.53) (p < .01). Independence was positively correlated with Stress Management (r = .37) (p < .01), Interpersonal EQ (r = .23) (p < .05), and Total EQ (r = .27) (p < .05). Self Control was negatively correlated with Stress Management EQ (r = -.27) (p < .05).

Factor Analysis. A principal axis factor analysis was run with the MSCEIT and 16PF to assess whether two clear factors were present. In this factor analysis, the intercorrelations between the four MSCEIT subscales and the five 16PF subscales were combined. Table 9 shows the rotated factor pattern matrix, with two factors explaining the variance. Fifty-one percent (51%) of the variance was explained by Factor 1, and 48% by Factor 2. The large loadings for Factor 2 are five 16PF subscales (Extraversion, Tough Mindedness, Anxiety, Independence, and Self Control) and those for Factor 1 are four MSCEIT subscales (Perceiving, Facilitating, Understanding, and Managing). These findings suggest that the two instruments are empirically separate.

Table 8. Pearson Correlation Coefficient for the 16PF, MSCEIT and EQ-i

		16PF Global Factors				
		Extraversion	Tough Mindedness	Anxiety	Independence	Self Control
MSCEIT Global Scales	Perceiving	.14	**-.27***	-.10	.07	-.04
	Facilitating	.00	-.11	.01	.05	.11
	Understanding	-.10	**-.23***	.05	.07	-.09
	Managing	-.05	-.02	.04	-.03	.05
EQ-i Global Scales	Intrapersonal EQ	**.42****	.02	**-.36****	**.23***	.22
	Interpersonal EQ	**.47****	-.06	**-.51****	.20	.18
	Stress Management EQ	.14	-.05	-.07	**.37****	**-.27***
	Adaptability EQ	.17	-.15	**-.39****	.16	.10
	General Mood EQ	**.48****	-.08	**-.56****	.18	.19
	Total EQ	**.44****	-.14	**-.53****	**.27***	.14
	Total MSCEIT	.03	**-.24***	-.01	.07	-.02

** $\underline{p} < .01$, * $\underline{p} < .05$

A principal axis factor analysis was also run with the five global scales of the EQ-i and the five global scales of the 6PF. Table 10 shows the rotated factor pattern matrix, with three factors explaining the variance. The variance explained by Factor 1 was 58%, Factor 2 was 27%, and Factor 3 was 14%. The large loadings within the factors are more spread out across the subscales, and not as clearly defined. Factor 1 seems to account mostly for the variance in the EQ-i (raeq, ereq, smeq, adeq, and gmeq), and is overlapping with Extraversion and Anxiety from the 16PF. The large loadings for Factor 2 are for three of the 16PF subscales (Tough Mindedness, Independence, and Self

Control). Factor 3 seems to combine Independence with two of the EQ-i global scales: Intrapersonal EQ and Stress Management EQ.

Table 9. Factor Analysis Varimax Rotation for 16PF and MSCEIT Global Scales

	Factor 1	Factor 2
Extraversion	-.01100	**-0.43679**
Tough Mindedness	-.21006	**0.71418**
Anxiety	0.02110	**0.25188**
Independence	0.03947	**-0.61980**
Self Control	0.01764	**0.66523**
Perceiving	**0.61763**	-0.15602
Facilitating	**0.61591**	0.02941
Understanding	**0.77922**	-0.05346
Managing	**0.55438**	0.06323

Table 10. Factor Analysis Varimax Rotation for 16PF and EQ-i Global Scales

	Factor 1	Factor 2	Factor 3
Extraversion	0.48978	-0.23985	0.22320
Tough Mindedness	-0.12293	0.72769	-0.06067
Anxiety	-0.61939	0.16985	0.10081
Independence	0.16682	-0.50203	0.48690
Self Control	0.17406	0.72949	-0.24506
raeq	0.77931	0.21484	0.35623
ereq	0.90888	0.11123	0.24117
smeq	0.06016	-0.15321	0.47112
adeq	0.54717	-0.07819	-0.06614
gmeq	0.90596	0.07101	0.16509

Research Question II

Correlations. Research Question II asked: Do the EQ-i and MSCEIT measure something new and unique from established personality traits? Tables 11 and 12 provide

a more in-depth view of the correlations among the MSCEIT, EQ-I, and 16PF as they show the correlations among all the subscales for each instrument.

Table 11, which displays the correlations between the 16PF primary factors and the MSCEIT global scales, reinforces the lack of relationship between the two instruments. There were some positive correlations between Warmth (r = .25) (p < .05), Sensitivity (r = .23) (p < .05), and Openness to Change (r = .24) (p < .05) with Perceiving. Not surprisingly, Reasoning positively correlated with Facilitating (r = .22) (p < .05) and Understanding (r = .33) (p < .01); Openness to Change was also positively correlated with Understanding (r = .26) (p < .05). These few significant correlations suggest that MSCEIT is indeed measuring a concept relatively separate from personality.

Table 12, which shows the correlations between the EQ-i subscales and 16PF primary factors, suggests the 16PF has a very different relationship with the EQ-i than with EI as measured by the MSCEIT. Warmth correlated positively with Emotional Self-Awareness (r = .29) (p < .01), Self-Regard (r = .33) (p < .01), Empathy (r = .28) (p < .01), Interpersonal Relationship (r = .45) (p < .01), Social Responsibility (r = .36) (p < .01), Happiness (r = .44) (p < .01) , Optimism (r = .36) (p < .01), and negatively with Negative Impression (r = -.28) (p < .01). Not surprisingly there were no significant correlations with Reasoning. Emotional Stability had the most correlations with EQ-i subscales. It was positively correlated with Assertiveness (r = .29) (p < .01), Self-Regard (r = .60) (p < .01), Interpersonal Relationship (r = .43) (p < .01), Flexibility (r = .30) (p < .01), Stress Tolerance (r = .41) (p < .01), Happiness (r = .63) (p < .01), and Optimism (r = .49) (p < .01). It had negative correlations with Impulse Control (r = -.33) (p < .01) and

Table 11. Pearson Correlation Coefficient for MSCEIT and all 16PF Factors

		16PF Subscales							
		Warmth - A	Reasoning - B	Emotional Stability - C	Dominance - E	Liveliness - F	Rule Consciousness - G	Social Boldness - H	Sensitivity - I
MSCEIT Global Scales	Perceiving	**.25***	.17	.14	.03	.10	-.07	-.02	**.23***
	Facilitating	.00	**.22***	.05	.03	.05	-.03	-.03	.21
	Understanding	.02	**.33****	-.08	.05	-.08	-.20	-.14	.15
	Managing	.17	.20	.03	-.01	.09	.05	-.08	.01
		16PF Subscales cont.							
		Vigilance - L	Abstractedness - M	Privateness - N	Apprehension - O	Openness to Change - Q1	Self Reliance - Q2	Perfectionism - Q3	Tension - Q4
MSCEIT Global Scales	Perceiving	-.06	-.11	-.02	.02	**.24***	.13	.08	.09
	Facilitating	-.01	-.21	.08	.02	.12	-.07	.14	.08
	Understanding	.02	.01	.02	.03	**.26***	.16	-.02	-.00
	Managing	-.00	-.07	.02	.10	-.00	-.01	.04	.03

** $\underline{p} < .01$, * $\underline{p} < .05$

Negative Impression (r = -.33) ($\underline{p} < .01$). Dominance was positively correlated with Assertiveness (r = .55) ($\underline{p} < .01$) and Independence (r = .38) ($\underline{p} < .01$). There were positive correlations between Liveliness and Self-Regard (r = .31) ($\underline{p} < .01$), Interpersonal Relationship (r = .43) ($\underline{p} < .01$), Happiness (r = .34) ($\underline{p} < .01$), and Optimism (r = .28) ($\underline{p} < .01$). Rule-Consciousness was positively correlated with Assertiveness (r = .28) ($\underline{p} < .01$), Self-Actualization (r = .36) ($\underline{p} < .01$), Social Responsibility (r = .43) ($\underline{p} < .01$), and Happiness (r = .28) ($\underline{p} < .01$) and was negatively correlated with Negative Impression (r = -.38) ($\underline{p} < .01$). Social Boldness correlated positively with Assertiveness (r = .38) ($\underline{p} <$

.01), Self-Regard (r = .31) (p < .01), Interpersonal Relationship (r = .44) (p < .01), Flexibility (r = .32) (p < .01), Stress Tolerance (r = .31) (p < .01), and Optimism (r = .32) (p < .01). There was a negative correlation with Independence (r = -.32) (p < .01).

Table 12. Pearson Correlation Coefficient for EQ-i and all 16PF Factors

		16PF Subscales							
		Warmth - A	Reasoning - B	Emotional Stability - C	Dominance - E	Liveliness - F	Rule Consciousness - G	Social Boldness - H	Sensitivity - I
EQ-i Subscales	Emotional Self-Awareness	**.29****	-.06	.07	.07	.03	.21	.20	-.00
	Assertiveness	.18	-.10	**.29****	**.55****	.22	.10	**.38****	-.00
	Self-Regard	**.33****	-.04	**.60****	.20	**.31****	**.28****	**.31****	-.05
	Self-Actualization	**.23***	-.03	**.26***	.13	.07	**.36****	.16	.05
	Independence	-.03	.02	**-.24***	**-.38****	-.07	-.17	**-.32****	.01
	Empathy	**.28****	-.07	.21	-.00	.04	.21	.14	.02
	Interpersonal Relationship	**.45****	.02	**.43****	.14	**.43****	**.26***	**.44****	.08
	Social Responsibility	**.36****	.01	.21	-.04	.07	**.43****	.03	-.05
	Problem Solving	.04	.16	.19	.15	.06	.18	.11	.10
	Reality Testing	.10	.10	.22	.05	-.07	.20	-.06	-.00
	Flexibility	.13	.03	**.30****	.04	**.25***	-.17	**.32****	.21
	Stress Tolerance	.06	.07	**.41****	.10	.14	-.10	**.31****	.06
	Impulse Control	-.18	-.19	**-.33****	**.22***	.02	.-.11	.18	**-.24***
	Happiness	**.44****	.00	**.63****	.13	**.34****	**.28****	**.25***	.04
	Optimism	**.36****	.13	**.49****	.22	**.28****	**.25***	**.32****	.05
	Positive Impression	-.18	-.17	**.23***	-.04	-.05	.01	.13	.10
	Negative Impression	**-.28****	.07	**-.33****	.01	-.01	**-.38****	-.00	.09

** p < .01, * p < .05

Table 12 cont. Pearson Correlation Coefficient for EQ-i and all 16PF Factors

		16PF Subscales cont.							
		Vigilance - L	Abstractedness - M	Privateness - N	Apprehension - O	Openness to Change - Q1	Self Reliance - Q2	Perfectionism - Q3	Tension - Q4
EQ-i Subscales	Emotional Self-Awareness	-.11	**-.29****	-.19	.02	-.04	-.05	.21	.10
	Assertiveness	-.01	-.11	-.12	**-.39****	.12	**-.24***	-.07	-.11
	Self-Regard	-.21	**-.31****	**-.27***	**-.49****	.05	**-.24***	.05	**-.27***
	Self-Actualization	-.10	-.15	-.11	-.18	-.05	-.14	.17	-.09
	Independence	.13	.09	-.10	**.49****	-.15	-.04	.00	.13
	Empathy	**-.24***	-.02	-.18	.08	.03	-.06	-.04	-.20
	Interpersonal Relationship	-.18	-.18	**-.26***	**-.24***	.10	-.22	.05	-.20
	Social Responsibility	-.18	**-.24***	-.06	-.05	-.05	-.13	.17	-.11
	Problem Solving	.10	-.13	.03	-.22	.18	-.06	.13	-.21
	Reality Testing	-.16	**-.40****	-.03	**-.22***	.09	-.07	**.27***	-.06
	Flexibility	**-.28****	.01	-.19	**-.27***	**.23***	-.07	-.22	**-.37****
	Stress Tolerance	**-.23***	-.05	**-.25***	**-.41****	**.23***	-.09	-.16	**-.34****
	Impulse Control	**.31****	**.37****	.05	.07	-.09	.08	-.01	**.38****
	Happiness	**-.34****	**-.31****	**-.30****	**-.38****	.02	**-.31****	.07	**-.26***
	Optimism	**-.24***	-.10	**-.26***	**-.35****	.13	-.18	.08	**-.24***
	Positive Impression	-.17	-.08	-.07	**-.29****	.20	-.02	-.-2	**-.27***
	Negative Impression	**.30****	**.54****	.10	.17	.21	.20	**-.24***	.01

** $\underline{p} < .01$, * $\underline{p} < .05$

The continuation of Table 12 includes the second half of the variables from the 16PF. In this half there are many more negative correlations. Vigilance is negatively correlated with Flexibility (r = -.28) ($\underline{p} < .01$) and Happiness (r = -.34) ($\underline{p} < .01$) but positively correlated with Impulse Control (r = .31) ($\underline{p} < .01$) and Negative Impression (r = .30) ($\underline{p} < .01$). Abstractedness correlated negatively with Emotional Self-Awareness (r = -.29) ($\underline{p} < .01$), Self-Regulation (r = -.31) ($\underline{p} < .01$), Reality Testing (r = -.40) ($\underline{p} < .01$), and Happiness (r = -.31) ($\underline{p} < .01$). It had positive correlations with Impulse Control (r = .37) ($\underline{p} < .01$) and Negative Impression (r = .54) ($\underline{p} < .01$). Privateness was negatively

correlated with Happiness (r = -.30) (p < .01). Apprehension had negative correlations with Assertiveness (r = -.39) (p < .01), Self-Regulation (r = -.49) (p < .01), Stress Tolerance (r = -.41) (p < .01), Happiness (r = -.38) (p < .01), Optimism (r = -.35) (p < .01), and Positive Impression (r = -.29) (p < .01) but was positively correlated with Independence (r = .49) (p < .01). Self-Reliance had a negative correlation with Happiness (r = -.31) (p < .01). Finally, Tension was negatively correlated with Flexibility (r = -.37) (p < .01) and Stress Tolerance (r = -.34) (p < .01) but had a positive correlation with Impulse Control (r = .38) (p < .01). The number of correlations between the EQ-i and 16PF suggests a strong relationship between emotionally intelligent behavior and personality; however, there are few extremely high correlations, and there are many areas between the two that do not overlap.

GLM Model Comparisons. Model comparisons using PROC GLM in SAS were completed to find the best fitting model for the MSCEIT and EQ-i Total Scores using 16PF subscales (i.e., primary factors). R^2 for the MSCEIT was .21, and for the EQ-i it was .48. Table 13 shows the best fitting model statements. The MSCEIT model suggests that certain personality factors and reasoning ability are influential for emotional intelligence ability. The EQ-i model reinforces the notion that the EQ-i and 16PF share enough variables to measure the same concept, although many personality variables are related to emotionally intelligent behavior.

Table 13. Best Fitting Model Statements for the MSCEIT and EQ-i Total Scores

Total MSCEIT Score = f(Reasoning, Social Boldness, Abstractedness, Openness to Change)
Total EQ-i Score = f(Emotional Stability, Rule-Consciousness, Social Boldness, Openness to Change, Perfectionism, Tension)

Model comparisons were also completed with the EQ-i and MSCEIT to find the best fitting model to predict each of the 16PF global factors (see Table 14). In these analyses, the significant subscales of the MSCEIT and EQ-i were added a step at a time in a forward selection procedure until there were no further significant subscales. The alpha-level to include a subscale was the SAS default of .15, which errs on the side of including a variable rather than excluding it, compared to the usual alpha of .05. There were no good fitting models from the MSCEIT, only models derived from the EQ-i.

Table 14. Best Fitting Model Statements for the 16PF Global Factors

Anxiety = f(Emotional Self-Awareness, Happiness, Independence, Impulse Control, Positive Impression)
Tough Mindedness = f(Interpersonal Relationship, Negative Impression)
Self Control = f(Emotional Self-Awareness, Flexibility, Negative Impression)
Extraversion = f(Assertiveness, Self-Actualization, Interpersonal Relationship, Positive Impression)
Independence = f(Assertiveness, Self-Actualization, Social Responsibility, Interpersonal Relationship, Negative Impression)

Research Question III

Correlations. Research Question III stated: Is there convergent validity between the two measures of emotional intelligence (the EQ-i and MSCEIT)? Table 15 shows the correlations between the MSCEIT and EQ-i global scores. As can be seen, there are very few correlations and those that exist are marginal, suggesting no real relationship between the MSCEIT and the EQ-i; that is, they measure completely different concepts. The only correlations that exist are within the MSCEIT Perceiving scale which had low positive correlations with Interpersonal EQ (r = .24) ($p < .05$), General Mood EQ (r =

.23) (p < .05), and Total EQ (*r* = .25) (p < .05). In addition, there was no correlation between the Total MSCEIT score and the Total EQ score.

Factor Analysis. A principal axis factor analysis was run combining the intercorrelations of the MSCEIT and EQ-i to assess whether two clear factors were present. Table 16 shows the rotated factor pattern matrix with two factors explaining the variance. The variance explained by Factor 1 was 64% and by Factor 2 was 36%. Factor 1 contains the large loadings for the EQ-i (raeq, ereq, smeq, adeq, and gmeq), and Factor 2 contains the large loadings for the MSCEIT (Perceiving, Facilitating, Understanding, and Managing). This factor analysis shows there are two different factors present, suggesting the EQ-i and MSCEIT are measuring different skills and abilities.

Table 15. Pearson Correlation Coefficient for the MSCEIT and EQ-i Global Scales

		MSCEIT Global Scales				
		Perceiving	Facilitating	Understanding	Managing	Total MSCEIT
EQ-i Global Scales	Intrapersonal EQ	.18	.08	-.05	.11	.10
	Interpersonal EQ	**.24***	.12	.02	.10	.16
	Stress management EQ	-.09	-.21	-.13	.02	-.13
	Adaptability EQ	.19	.11	-.04	.08	.10
	General Mood EQ	**.23***	.13	-.00	.07	.14
	Total EQ	**.25***	.08	-.03	.09	**.13**

** p < .01, * p < .05

GLM Model Comparisons. Model comparisons using PROC GLM in SAS were completed to find the best fitting model for the MSCEIT using EQ-i Subscale Scores and

for the EQ-i using MSCEIT global scores. There was only one significant relationship (see Table 17) which was for the EQ-i Total score indicating that the Perceiving scale is the best and only variable from the MSCEIT.

Table 16. Factor Analysis Varimax Rotation for the EQ-i and MSCEIT Global Scales

	Factor 1	Factor 2
Perceiving	0.21420	**0.60112**
Facilitating	0.09501	**0.59332**
Understanding	-0.04586	**0.77179**
Managing	0.08175	**0.52651**
raeq	**0.87648**	0.00719
ereq	**0.94448**	0.05772
smeq	0.09773	-0.18517
adeq	**0.53654**	0.06248
gmeq	**0.91314**	0.04941

Table 17. Best Fitting Model Statement for the EQ-i Total Scores using MSCEIT Global Scales

Total EQ-i Score = f(Perceiving)

Research Question IV

GLM Model Comparisons. Research Question IV was based on group differences and asked: Are there any differences between males and females in emotional intelligence competencies or abilities? Using the same model comparisons that were shown and described in Research Question II (see Table 14), the dummy variable coding for gender was added to see if any gender differences were present. There was no significant gender difference present in either the EQ-i or the MSCEIT.

Research Question V

Profile Analysis. The final research question (Research Question V) asked: Are there predictors of emotional intelligence competencies or abilities within the 16PF? To explore this question, a profile analysis was conducted to show how different respondents tend to respond in the same way by factor analyzing the correlations between subjects rather than the correlations between variables. This approach identified clusters of subjects on the EQ-i and MSCEIT questionnaires; then scores on the 16PF were examined for each of the clusters identified to see if there were similarities. All 16PF variables were examined for each emotional intelligence questionnaire. With the EQ-i, the focus was on variables found by Bar-On (2000) to be connected with the EQ-i: Warmth, Emotional Stability, Dominance, Liveliness, Rule Consciousness, Social Boldness, Apprehension, Perfectionism, and Tension. Openness to Change was also examined as it appeared in the GLM model statement for the Total EQ-i Score (see Table 13) along with the others that are included in the aforementioned list. For the MSCEIT, the focus was on 16PF variables of Reasoning, Social Boldness, Abstractedness, and Openness to Change as they were listed in the GLM model statement for the Total MSCEIT Score (see Table 13).

The Profile Analysis for the MSCEIT did yield two clusters of subjects but neither with any significant information, which implies there are no predictors of emotional intelligence abilities within the 16PF. This is consistent with the findings from this study and other research which indicate a lack of relationship between the two instruments.

The Profile Analysis for the EQ-i showed one cluster of 10 subjects when using a factor pattern coefficient cutoff of .85. The mean Total EQ-i score of the cluster was 428, which is in the top 75th percentile of scores. From this cluster there seems to be a similarity of responses on the following 16PF variables: Warmth, Emotional Stability, Liveliness, Social Boldness, Sensitivity, Openness to Change, and possibly Perfectionism. On the Warmth scale most subjects scored either a 5 (2) or 6 (5) on the sten scale, and all scores were between 4 and 8 indicating that these respondents have above average warmth. Similar results were found on the Emotional Stability scale with all scores falling between 4 and 8, and 9 out of 10 between 5 and 8, again indicating high emotional stability among these subjects. On the Liveliness scale, 8 out of 10 respondents scored a 6 (4) or 7 (4) with the total range between 4 and 8. Again, these subjects scored slightly above average in liveliness. The Social Boldness scale had 9 out of 10 subjects scoring a 6 (4), 7 (2), 8 (3), or 9 (1) suggesting above average social boldness. Sensitivity was a surprise variable as it was not one of the variables Bar-On found to be related to the EQ-i. All of the subjects in the cluster scored between a 5 and 8 (above average with half of them scoring an 8). Thus this cluster of individuals appears to be a highly sensitive group. Bar-On did not find Openness to Change related to the EQ-i, however, it did appear in the GLM model statement for the Total EQ-i score in the current study. Again all subjects were above average with all scores falling in the upper half of the range (between 6 and 10) and 8 of 10 scoring a 7 (4), 8 (2), or 9 (2). Finally, Perfectionism appears to have a similarity of scores with 7 out of 10 falling at average (5) or just below. Four subjects scored a 3 and 2 scored a 4. This is the only variable that showed lower than average scores indicating that this cluster of individuals is slightly more flexible

Table 18. 16 PF Response Frequency Comparisons for High and Low EQ-i Scorers

	High EQ-i Scorers	Low EQ-i Scorers
A (Warmth)		
Sten Score	%	%
1	0	5
2	0	10
3	0	5
4	0	10
5	27	10
6	18	20
7	18	25
8	14	5
9	14	10
10	9	0
B (Reasoning)		
Sten Score	%	%
1	0	0
2	0	0
3	0	10
4	0	20
5	27	10
6	32	5
7	14	25
8	0	15
9	5	5
10	23	10
C (Emotional Stability)		
Sten Score	%	%
1	0	5
2	0	5
3	9	25
4	5	20
5	14	25
6	32	20
7	23	0
8	5	0
9	14	0
10	0	0

	High EQ-i Scorers	Low EQ-i Scorers
H (Social Boldness)		
Sten Score	%	%
1	0	0
2	5	25
3	9	10
4	9	25
5	9	10
6	5	5
7	36	20
8	23	5
9	5	0
10	0	0
I (Sensitivity)		
Sten Score	%	%
1	9	5
2	5	0
3	0	0
4	5	15
5	9	20
6	0	30
7	32	5
8	36	20
9	0	0
10	5	5
L (Vigilance)		
Sten Score	%	%
1	0	0
2	9	0
3	9	0
4	18	10
5	27	15
6	18	30
7	5	15
8	5	10
9	9	20
10	0	0

	High EQ-i Scorers	Low EQ-i Scorers
O (Apprehension)		
Sten Score	%	%
1	0	0
2	5	0
3	9	0
4	14	5
5	27	20
6	23	15
7	9	10
8	9	30
9	5	20
10	0	0
Q1 (Openness to Change)		
Sten Score	%	%
1	0	0
2	9	0
3	0	5
4	5	10
5	23	20
6	9	40
7	14	5
8	18	5
9	18	10
10	5	5
Q2 (Self-Reliance)		
Sten Score	%	%
1	0	0
2	23	0
3	5	10
4	18	5
5	27	25
6	0	40
7	23	15
8	5	5
9	0	0
10	0	0

Table 19 cont. 16 PF Response Frequency Comparisons for High and Low EQ-i Scorers

E (Dominance)		
Sten Score	%	%
1	0	15
2	5	5
3	5	0
4	23	20
5	18	25
6	32	10
7	9	10
8	0	10
9	0	0
10	9	5

M (Abstractedness)		
Sten Score	%	%
1	0	0
2	9	0
3	23	15
4	14	5
5	23	30
6	5	5
7	14	5
8	5	20
9	9	10
10	0	10

Q3 (Perfectionism)		
Sten Score	%	%
1	0	0
2	5	5
3	23	20
4	9	20
5	23	25
6	14	20
7	14	0
8	0	5
9	14	5
10	0	0

F (Liveliness)		
Sten Score	%	%
1	0	0
2	0	5
3	0	5
4	14	15
5	9	25
6	18	25
7	18	10
8	18	10
9	23	5
10	0	0

N (Privateness)		
Sten Score	%	%
1	0	0
2	14	0
3	23	5
4	27	25
5	14	20
6	9	20
7	5	10
8	0	15
9	9	5
10	0	0

Q4 (Tension)		
Sten Score	%	%
1	5	0
2	9	0
3	9	0
4	27	5
5	14	25
6	9	40
7	23	20
8	0	5
9	5	5
10	0	0

G (Rule-Consciousness)		
Sten Score	%	%
1	5	5
2	5	10
3	0	20
4	9	25
5	18	10
6	36	10
7	5	15
8	23	5
9	0	0
10	0	0

and less structured. More research replicating these findings is needed to investigate the extent to which these variables are predictors of emotional intelligence competencies, however, the findings of this study indicate interesting trends in the data that might be studied.

Finally, the difference of response frequencies was compared between subjects with high and low EQ-i scores. These differences are shown in Table 18. Subjects whose Total EQ-i score was in the top 75th percentile of the interquartile range were considered high EQ-i scorers (N = 22). Likewise, subjects in the bottom 25th percentile of the interquartile range were considered low EQ-i scorers (N = 20).

Although these findings are non-conclusive, some items are worth noting. Bar-On found Warmth to be related to EQ-i, and in this study, the high EQ-i subjects scored 5 and above on Warmth, whereas low EQ-i subjects were more spread out. Although the reasoning scale was not expected to be related to the EQ-i, none of the high EQ-i subjects scored less than a 5 on Reasoning. Given the lack of relationship found between the MSCEIT and the EQ-i and the 16PF, it is unlikely that there is a connection with emotional intelligence abilities. It could be evidence of a significant but low correlation between the MSCEIT and 16PF. Bar-On found Emotional Stability to be related to the EQ-i, and it is one of the factors listed in the best fitting model of the Total EQ-i in this study. When compared to the low EQ-i subjects, there is a slight shift toward higher emotional stability for high EQ-i scorers, and the low EQ-i subjects did not score higher than 6.

Bar-On also found a relationship between Dominance and the EQ-i. In the current study, there is a slight shift toward more dominance among low EQ-i scorers while the

high EQ-i scorers are average. Otherwise, the score frequencies are quite spread out in both columns. Also found to be related to EQ-i, the Liveliness section shows a trend toward higher liveliness among high EQ-i subjects. Rule-consciousness is one of the factors listed in the best fitting model for the Total EQ-i Score (see Table 13) and was found by Bar-On to be related to EQ-i, however, in this analysis, the relationship is not very clear. There is a slight shift toward higher rule-consciousness among high EQ-i scorers, but the response frequencies for both columns are spread out making this relationship less obvious. Social Boldness was also listed in the best fitting model for the Total EQ-i Score as well as reported to be related to EQ-i. A majority of the high EQ-i subjects scored a 7 or 8 on this factor whereas the low EQ-i subjects scored significantly lower. It must be noted, however, that both columns of frequency scores are spread out across the continuum.

Sensitivity was not reported to have a relationship with the EQ-i; however, in this analysis, there appears to be a slight trend toward higher sensitivity scores among the high EQ-i subjects although the frequencies are quite spread out. The Vigilance factor was not expected to be related to the EQ-i, and while there is little difference between high and low EQ-i scorers, there is a slight shift toward strong vigilance among low EQ-i subjects. Abstractedness and Privateness are also not thought to be related to the EQ-i, and in this analysis show quite a spread of scores. Although there does not seem to be a noteworthy difference in the Abstractedness column, there is perhaps a slight trend toward more privateness among high EQ-i scorers.

Bar-On found Apprehension to be correlated with the EQ-i. Table 18 shows that low EQ-i scorers tend to be more strongly apprehensive. Openness to Change is listed in

the best fitting model of Total EQ-i and was listed by Bar-On as related to the EQ-i. Table 18 does show a trend toward strong openness to change among high EQ-i subjects. The Self-Reliance factor is not very noteworthy with the exception of perhaps a slight shift toward lower self-reliance among high EQ-i scorers, which is consistent with their being more group-oriented and people-oriented. Otherwise, Bar-On does not expect Self-Reliance to be related to EQ-i. Finally, Perfectionism and Tension are listed in the best fitting model for Total EQ-I but do not show any noteworthy differences in this analysis. There is strong evidence from the above observations that using the best fitting model as a suggestion for predictors would not be appropriate, as some of those variables do not show much influence on EQ-i scores. This may be because the variables in the model have influence on each other, which would be different than taking each variable into consideration individually.

CHAPTER V: Discussion

Overview

The discussion chapter of this dissertation contains a summary of the findings, interpretation of the findings for each research question, implications of the study, limitations, and direction for future research. The purpose of the study was to examine the relationship between different instruments of emotional intelligence and personality, to determine whether the instruments used to measure emotional intelligence assess a concept unique from personality, to establish whether there is convergent validity between two commonly used measures of emotional intelligence measures, to examine gender differences in emotional intelligence, and finally, to explore whether there are any predictors of emotional intelligence based on scores from the 16PF measure. It is hoped that these findings will contribute to the limited but quickly growing body of knowledge about emotional intelligence.

Interpretation

Research Question I. Findings from correlation and factor analyses indicate there is no noteworthy relationship between emotional intelligence abilities as measured by the MSCEIT and personality factors. Although this is the first time the MSCEIT has been examined in conjunction with the 16PF, there is research that supports this finding. Caruso et al. (2002) found very few correlations with the 16PF using a previous version of the MSCEIT called the Multifactor Emotional Intelligence Scale (MEIS). The low negative correlations that were found between the 16PF global factor Tough Mindedness and the Perceiving and Understanding global scales from the MSCEIT (Table 8) suggest that one's tendency toward practical, concrete thinking and objectivity might hinder the

ability to identify emotions in others (perceiving) and comprehend emotional information (understanding) thus also lowering the total score on the MSCEIT. In particular with the Perceiving scale, as seen on Table 11 with the 16PF expanded to include the subscales, it has a low correlation with warmth, sensitivity, and openness to change indicating these traits have a relationship with one's ability to identify emotions. The likely direction of this relationship is that a person who is a strong emotional perceiver tends to have those personality traits. The 16PF Reasoning scale, included in the instrument as a general measure of ability, does show low positive correlation with Facilitating and Understanding. This is not surprising as it is expected that an ability measure of emotional intelligence would have some correlation with an ability scale of another instrument. The Facilitating and Understanding scales of the Mayer and Salovey model of emotional intelligence are strongly cognitively oriented. Finally, Openness to Change, or innovative and open-minded thinking, seems to be an important personality trait that enhances one's ability to perceive and understand emotional information as illustrated by the correlations in Table 11. A factor analysis of the 16PF and MSCEIT global scales (see Table 9) confirms the notion that the two are separate from each other, as there were two clear and distinct factors present.

As for emotional intelligence competencies, as measured by the EQ-i, and personality, there appears to be a relationship between the two constructs. Table 8 shows two 16PF global factor scales, in particular, which have several correlations with the EQ-i Total score and global scales. The Anxiety scale is moderately and negatively correlated with Intrapersonal and Interpersonal EQ, Adaptability EQ, and General Mood EQ. Low anxiety individuals are more emotionally stable, relaxed, and self-assured (Cattell, 2001)

thus enabling better competency to assess their own emotions and empathize with others. They are able to adapt easily to their environment and problem solve, and they are content and enjoy life. Lower anxiety, in general, can increase one's overall EQ score as a result. There appears to be a similar relationship with the Extraversion scale. It also has moderate correlations with Intrapersonal and Interpersonal EQ and General Mood EQ. Those who are people-oriented and enjoy interacting with others tend to have a stronger competency understanding the emotional behavior of themselves and of others and, in general, are happier, more optimistic people, according to the results of this study. In addition, this study found that more highly independent, socially bold individuals are better stress managers.

Table 12 breaks down the relationship between emotional competencies and personality traits even further. Correlations with EQ-i subscales were frequent (i.e., with 50% or more of the EQ-i subscales) with the 16PF Primary scales of Warmth, Emotional Stability, Social Boldness, and Apprehension. That is, those with higher emotional intelligence competency tend to be caring, generous, calm, mature, social, outgoing, self-assured, and resilient to stress. Emotional stability was correlated with the most EQ-i subscales and had two of the strongest correlations of the table with Self-Regard ($r = .60$) ($\underline{p} < .01$) and Happiness ($r = .63$) ($\underline{p} < .01$). This indicates that individuals who are more emotionally stable tend to be more satisfied with themselves and their life. The model comparison in Table 13 shows the personality factors of Emotional Stability, Rule-Consciousness, Social Boldness, Openness to Change, Perfectionism, and Tension as being the best fitting model of Total EQ-i score. The inclusion of some of these factors in the best fitting model seems counterintuitive (Perfectionism and Tension). On the other

hand, the factors listed above as having the strongest and most frequent correlations with EQ-i subscales appear more representative of an emotionally competent individual. Also notable was the lack of any significant correlations between the EQ-i subscales and the Reasoning scale. This demonstrates that, unlike the MSCEIT, the EQ-i is not measuring anything related to reasoning and is based more on behaviors and competencies related to personality traits.

As mentioned in the literature review, Bar-On (2000) reviewed various correlations between the EQ-i subscales and factors from personality instruments including the 16PF and the NEO Five-Factor Inventory. The current study found several correlations similar to those found by Bar-On. Self-Regard was negatively linked with Apprehension and Tension, indicating that self-regard is related to self-confidence. In the current study, Self-Regard was also found to be negatively correlated with Abstractedness, Privateness, and Self-Reliance and positively correlated with Warmth, Emotional Stability, Liveliness, Rule Consciousness, and Social Boldness. With so many correlations between personality traits and Self-Regard, it is clear that this EQ-i subscale is highly influenced by personality.

Bar-On found Assertiveness to be highly correlated with Dominance. In addition, the current study found this subscale to be positively correlated with Emotional Stability and Social Boldness and negatively correlated with Apprehension. It appears Assertiveness is also linked with a strong self-confidence. Empathy was found to be correlated with Warmth, which was also the case in the current study. Stress tolerance was highly correlated with the following anxiety predicting personality factors: Emotional Stability, Apprehension (negative correlation), and Tension (negative

correlation). In the current study, it was also found to be correlated with Social Boldness, a low-anxiety trait.

Bar-On found Impulse Control to be significantly correlated with several 16PF factors including Dominance, Perfectionism, and Tension. The current study found this trait to be correlated with Emotional Stability, Vigilance, Abstractedness, and Tension. There was a low correlation with Dominance but no relationship was found with Perfectionism. It appears that individuals who are calm-natured, cautious, imaginative, yet driven are better able to control impulsive behavior. In Bar-On's findings, Reality Testing was highly correlated with Emotional Stability indicating that the ability to accurately identify what one perceives and feels is vital. No such correlation was found in the current study. Rather, a moderately strong negative correlation was found with Abstractedness suggesting that good reality testers are well grounded and practical. In addition, Bar-On found Problem Solving to be positively connected with Rule Consciousness. The current study found no correlations with Problem Solving implying that personality traits are not related to problem solving ability or behavior.

Bar-On reported that Optimism had a moderately high correlation with Dominance. This was not found in the current study. Rather, Optimism was found to be positively correlated with Warmth, Emotional Stability, Liveliness, and Social Boldness and negatively correlated with Apprehension. These findings suggest that optimism plays an important role in facilitating many behaviors of emotional intelligence and is strongly connected with personality. A similar deduction can be made regarding Happiness. Bar-On found Happiness to be significantly correlated with Liveliness and Dominance. While in the current study the same result was found with Liveliness, there was no correlation

with Dominance. In addition to Liveliness, Happiness was found to be strongly correlated with Warmth, Emotional Stability, and Rule-Consciousness. It was also found to be negatively correlated with Vigilance, Abstractedness, Privateness, Apprehension, and Self-Reliance. General mood and satisfaction seem to be fairly dependent upon one's personality traits. According to Bar-On, Independence had a moderately negative correlation with Dominance and Emotional Stability. The current study adds Social Boldness as well as a positive correlation with Apprehension. Finally, Social Responsibility was linked with Rule-Consciousness, and in the current study, Warmth as well. The subscales self-actualization and emotional self-awareness were not mentioned due to a lack of significant correlation with any factors from the 16PF.

Research Question II. As mentioned by Matthews et al. (2004), in the comparison of two instruments measuring emotional intelligence and personality, one would expect some amount of overlap. The overlap is a sign that some aspects of personality contribute to skills that are measured by the emotional intelligence instrument but are not necessarily the direct concept that is being measured.

In the case of the MSCEIT and 16PF, given the lack of correlation between the two as discussed in the previous section, as well as the results from the factor analysis, it appears that the MSCEIT is measuring a concept separate from personality. This is consistent with the findings of previous research with the MEIS (Caruso et al., 2002).

The case between the EQ-i and 16PF is slightly more complicated. In the discussion of Research Question I, the correlations found in Table 12 were discussed in terms of the 16PF primary factors. Additional insights are gained by examining the relationships from the viewpoint of the EQ-i subscales rather than the personality factors.

First, only three of the EQ-i subscales are correlated with 50% or more of the personality factors: Self-Regard, Happiness, and Optimism. In addition, several of the EQ-i subscales are correlated with only three or fewer of the personality factors: Emotional Self-Awareness, Self-Actualization, Empathy, Social Responsibility, Problem Solving, and Reality Testing. In fact, Problem Solving has no correlations with any of the personality factors, which indicates that problem solving behavior is entirely separate from personality. It may be that a certain type of personality *contributes* to higher emotional competence but that the EQ-i does not measure personality traits. Given this perspective, it appears that the two instruments are not measuring overly similar concepts.

The factor analysis of the EQ-i and the 16PF (see Table 10) demonstrates that the two measures clearly overlap in some interesting ways. Three factors were found. A closer look shows the variance of Factor 1 to be spread among the global scales of the two instruments. Most of the variance of Factor 1 is explained by the EQ-i global scales, but also overlaps with Extraversion and Anxiety from the 16PF. This implies a relationship between those two personality-related traits and Intrapersonal and Interpersonal EQ, Adaptability EQ, and General Mood EQ, with high anxiety negatively affecting these areas of emotional competency. Factor 2 shows most of the variance being explained by the 16PF. Factor 3 variance also overlaps across the two measures indicating that Independence is related to Intrapersonal EQ and Stress Management EQ. Three of the five 16PF global factors are related to the EQ-i (Extraversion, Anxiety, and Independence), whereas two of the factors appear to be unrelated (Tough-Mindedness and Self Control). This is also displayed in the correlation matrix of Table 8 and the GLM Model Comparisons reported in Table 14 which shows that Tough-Mindedness and

Self-Control have the fewest correlations with EQ-i variables and the fewest EQ-i variables within their models. Interestingly, Independence shows up strongly on both Factors 2 and 3, as does Intrapersonal EQ on Factors 1 and 3. The EQ-i includes its own Independence Subscale within the Intrapersonal EQ global scale. These similarities may be strong indicators of the importance of an independent personality in its influence on emotional intelligent behavior. The implication of these findings is consistent with the finding from the current study that there are some strong similarities in what is being measured by the two instruments (Factor 1 and Factor 3): however, it is not clear whether the similarity is due to personality simply contributing to emotional intelligence competency or because it is actually measuring personality. Because two other factors have been found suggests that personality contributes to emotional intelligence.

Research Question III. With respect to whether there is convergent validity between the EQ-i and MSCEIT, the answer is clear: there is no convergent validity. Not only did correlations between the two subscales show few notable inter-scale correlations, there was also no correlation between the total scores for both measures. The only relationship found was a low correlation between MSCEIT Perceiving and the EQ-i global scales of Interpersonal EQ, General Mood, and Total EQ suggesting that one's happiness, optimism, social skill, and empathy are helpful toward the ability to identify emotions. In addition to the correlations, factor analysis showed a clear divergence between the two instruments.

There has been no known research comparing two emotional intelligence measures to assess convergent validity, so these findings are new. These findings are congruent with the literature. For example, Petrides and Furnham (2001) differentiated

between *trait* and *ability* emotional intelligence. They contend that trait emotional intelligence incorporates behavioral tendencies across situations and is measured through self-report inventories. Petrides and Furnham state that research under that category should be conducted within a personality framework since trait emotional intelligence encompasses dispositions and self-perceived abilities. In contrast, ability emotional intelligence encompasses actual abilities and should be measured with maximum-performance tests rather than self-report. The EQ-i and MSCEIT each fit these descriptions, respectively. Based on this distinction, Petrides and Furnham (2001) expect that trait emotional intelligence is correlated with personality factors but not with ability. The findings from the current study bear out this expectation.

Research Question IV. There was no significant gender difference present in either the EQ-i or the MSCEIT. Bar-On (2000) reported no significant gender differences in Total EQ-i score from a number of studies using his instrument over the last 17 years. The Technical Manual for the EQ-i also reports no gender effects from its sample (Bar-On, 2004). Some minimal gender differences were reported in the Technical Manual for the MSCEIT with women scoring slightly higher than men on all the scales. However, even the largest difference between the two genders was minimal and downplayed since men can also score higher than women (Mayer et al., 2002).

Research Question V. The findings of this study are insufficient to support personality factors as predictors of emotional intelligence abilities and competencies. Further research is necessary to replicate and expand upon the findings from this study. The relationships between 16PF factors and emotional intelligence competencies found in this study can be utilized as a basis and stimulus for further research.

Regarding the predictors of emotional intelligence abilities, the results of this study indicate that there is less of a relationship between personality factors and cognitive ability when it comes to emotional intelligence. There were few significant correlations between the MSCEIT global factors and traits from the 16PF. Nevertheless, there is some relationship between the two as reflected in the model statement in Table 13 for the Total MSCEIT Score. This model statement describes the best fitting model with the variables working together. When analyzing each 16PF variable individually, however, no variables were found to have predictive value for the MSCEIT. This makes sense because the few relationships that have been found between emotional intelligence abilities and personality traits are said to be acceptable because there will always be some overlap with personality (Caruso et al., 2002).

Because of the strong correlations between certain personality factors and emotional intelligence competencies as measured by the EQ-i, the assumption that these personality factors also have a strong predictive relationship appears to be valid. That is, a person's 16PF scores for these particular personality traits may contribute some information about that person's emotional intelligence competency. The results suggest some 16PF personality variables that may be predictors of emotional intelligence competency. For instance, the Profile Analysis conducted on the EQ-i data yielded a cluster of individuals whose mean score on the EQ-i was in the upper 75th percentile of overall EQ-i scores indicating high emotional intelligence competency. A review of 16PF scores for this cluster of individuals indicates a consistency of responses for the following variables: Warmth, Emotional Stability, Liveliness, Social Boldness, Sensitivity, Openness to Change, and Perfectionism. This finding is consistent with current and

previous research (Bar-On, 2000) that indicates strong correlations between emotional intelligence competency and these 16PF variables. These findings were further corroborated by the review of response frequencies comparing high and low EQ-i scorers (see Table 18). The same variables listed above had the strongest differences as revealed by the comparisons. There were some tendencies noticed among some of the other personality variables; however, the relationships were not as strong and the data were more spread over on the sten score continuum. These data may suggest a predictive value of the aforementioned variables (Warmth, Emotional Stability, Liveliness, Social Boldness, Sensitivity, Openness to Change, and Perfectionism); however, too little is known to solidify that statement, and more research is needed to investigate these relationships further.

Implications

Many of the findings from this study were expected given the results of previous research. Nevertheless, they have some interesting and somewhat controversial qualities. The findings of Research Questions I and II together confirm that there is a unique relationship between emotional intelligence and personality. Ability emotional intelligence, measured with a maximum performance instrument, has no direct relationship with personality. This study demonstrated that the MSCEIT measures a construct separate and unique from personality which supports the assumption that the MSCEIT taps into the cognitive processing of emotional information as it was designed to do. Trait emotional intelligence, on the other hand, has a dependent relationship with personality. Having certain personality traits contributes to higher EQ scores, but EQ has no impact on personality per se. The existence of this relationship has not been

questioned in the literature; rather, the issue is whether the overlap between the two concepts is too large. Critics of emotional intelligence (e.g., Matthews et al., 2004) believe that trait emotional intelligence is not distinct enough from personality traits. The findings from this study do not answer whether or not the overlap between emotional intelligence competencies and personality traits is too great. It is clear, however, that emotional intelligence competencies, as measured by the self-report test EQ-i, are not one and the same with personality. These findings might influence critics to focus on a more precise understanding of the relationship between emotional intelligence competencies and personality. This study attempted to do that by looking for predictors of emotional intelligence within the 16PF framework as discussed under Research Question V below.

The findings from Research Question III corroborate the notion that there is a difference between trait and ability emotional intelligence. That no relationship was found between the two types of emotional intelligence has significant implications. The MSCEIT and EQ-i are purported to measure emotional intelligence and marketed as useful assessment tools, not just for scholarly researchers, but also for consultants, leaders, and organizations. While scholars and clinicians who are familiar with research on emotional intelligence know that there are multiple types (trait and ability), the majority of individuals exposed to these questionnaires, such as organizational leaders, employees, and clients, may not be aware of these differences. Although the publishers of the technical manuals attempt to make it clear what their instruments measure (see Bar-On, 2004; Salovey et al., 2002), it is very problematic to have multiple instruments that claim to measure emotional intelligence when they clearly measure completely different concepts. Mayer and Salovey's MSCEIT has been praised as a decent representation of

an ability emotional intelligence measure (Matthews, et al., 2004), and it is the closest measure of actual emotional intellect. Bar-On coined the term Emotional Quotient (EQ), which has become quite popular because of its similarity to Intelligence Quotient (IQ) and what that implies. However, the term is deceptive in that regard because it implies his model of emotional intelligence incorporates actual cognitive abilities. On the contrary, Bar-On's model is much more trait and behavior based (Matthews et al., 2004). It is hoped that the findings from this study will encourage publishers to specify more overtly the construct measured by their emotional intelligence questionnaires and assessment tools.

Findings related to Research Question IV indicate that there is no difference between genders on emotional intelligence ability or competency. This is consistent with the findings from the developers of the measures used in this study and suggests that emotional intelligence is in no way gender-dependent. The assumption is that, given the relationship between trait emotional intelligence and personality, the EQ-i is robust to any gender-specific personality differences that might exist.

Finally, Research Question V took a closer look at the relationship between personality variables and emotional intelligence scores by looking for predictors of emotional intelligence. No predictive relationship was found between emotional intelligence ability and personality, but relationships were found between emotional intelligence competencies and personality. Because emotional intelligence competency functions within a personality framework, dependency on personality traits is obvious and may indicate a predictive relationship. While a predictive relationship between certain personality factors and competencies of emotional intelligence was not found

beyond a doubt, certain personality traits exhibited unique aspects that suggest them as potential predictors of emotional intelligence competency. These traits were Warmth, Emotional Stability, Liveliness, Social Boldness, Sensitivity, Openness to Change, and Perfectionism. Further research is needed, however, to examine these relationships more thoroughly.

Limitations

The limitations of this study are related to four categories: measurement issues, scoring, questionnaires, and participants. The focus of the study was on internal validity rather than external validity. The goals were more related to correlational relationships and, ultimately, causal implications than to generalizing to the population. Given that subjects in this study were recruited from university testing courses and were not randomly selected, results from this study cannot be generalized to the population at large and, at most, can be weakly applied to college-level students. Consequently, the internal validity of this study is stronger as a result of the homogeneity of the subjects which assisted in controlling confounding variables.

The subject pool was much smaller than originally planned. However, the number of participants was adequate to conduct analyses with sound results. The gender analysis from Research Question IV might have been stronger if the gender data from all subjects had been available (12 of 89 subjects did not provide gender). Enough gender information was available to do the comparison, however, and the results are consistent with previous research. In addition, it would have been useful to conduct analyses on other group differences such as age and, ethnicity; however, there was not enough information to warrant these analyses.

As described in the Results section, each questionnaire was scored by hand and, in the case of the MSCEIT and EQ-i, researcher-created scoring methods were used. In addition, expert ratings were used for the MSCEIT. While these methods were sound, it is possible that errors could have occurred because the scoring was not done by the publishers as is the usual scoring method. Great efforts were taken to ensure scoring accuracy and data entry.

Regarding the limitations of the questionnaires, it is assumed, as with all self-report methods, that respondents are answering honestly and openly and have accurate enough self-knowledge to ensure appropriate responses. In addition, to help ensure that there was less uncertainty in question interpretation among the participants, participants were recruited to include native English speakers and individuals who have spent at least four years in English-language countries or schools.

The participants for the study were limited to volunteers from the University of Oklahoma. These students were used because they are an accessible population that encompasses the necessary characteristics required to represent the general population of college students. To combat potential participant bias, most participants received course credit for their involvement in the study, and they were offered the opportunity to receive feedback from the questionnaires to use for personal or career information

Future Research

Emotional intelligence is a rapidly growing area of interest among researchers, especially given the public interest generated by the claims Daniel Goleman and others have made about the role of emotional intelligence in life and work. Research on nearly every aspect of emotional intelligence is being undertaken which is commendable as it

can provide further evidence to substantiate or refute the claims that have been made. In addition, the “fad” label attached to emotional intelligence will disappear gradually if research solidifies it as a term and validates it as a concept.

Given the prominence of Daniel Goleman and the controversy surrounding his model of emotional intelligence, it is necessary to replicate and expand upon his research using his measure, the Emotional Competence Inventory. There are some significant challenges future researchers might face when attempting this. Access to the MSCEIT and, in particular, the ECI is rather difficult and costly. The publishers of these questionnaires have imposed obstacles which increase the difficulty of obtaining and using the questionnaires in a research setting. These include lengthy training sessions to become administrators of the questionnaires, high costs for obtaining the measures and scoring the results, and difficulty in obtaining detailed enough scores that can be used in a research setting. One of the main criticisms within the field of emotional intelligence is the semantics of the concept and the fact that multiple questionnaires claim to measure a single concept when they are clearly measuring different concepts. For future research to be successful in validating the construct of emotional intelligence, these measures must be made more accessible. The difficulties in obtaining the questionnaires and scoring that were encountered in this study appear to be related to issues of branding and the very controversy within emotional intelligence this study was designed to explore. It is understandable that researchers in emotional intelligence who are not connected with the authors of the popular models of emotional intelligence have had difficulty replicating and expanding on previous research; the questionnaires for those models of emotional intelligence are simply not easily accessible to researchers in educational institutions who

have limited resources. It is hoped that, in the interest of improving the understanding of emotional intelligence through quality research, the authors and publishers of emotional intelligence measures will make access to the questionnaires and detailed scoring easier, in particular to those at research and educational institutions.

Several areas of needed research are indicated by the current study. First, there has been little research on the convergent validity of emotional intelligence inventories. It is imperative that future studies look further at the relationship between these different instruments to determine why they are measuring different concepts. It is conceivable that one's emotional intelligence competency would be higher if they have high emotional intelligence ability, implying that the two concepts are somewhat related. However, the two instruments used to measure ability and trait emotional intelligence in this study had no significant correlation suggesting that not only are the two instruments measuring separate concepts, the two concepts are also completely unrelated. Hopefully, a focus of research in this area will encourage emotional intelligence authors to be even more specific about what their theories of emotional intelligence include and what their instruments measure.

Labeling is an important issue, and researchers need to look at how the labeling of emotional intelligence measures influences the perceptions and criticisms of emotional intelligence itself. If scholars can come to a consensus about what the different instruments actually measure (trait vs. ability), the next step would be to label the instruments more appropriately so it is clear that they measure rather different aspects of emotional intelligence.

Group differences continue to be overlooked in research on emotional intelligence (Matthews et al., 2004). Because of data limitations, the current study was not able to address group variables other than gender. Researchers are encouraged to look further at possible differences based on ethnicity, culture, class, and other population variables. Age is of particular interest with trait emotional intelligence given the relationship that exists between age and personality with personality traits tending to stabilize between the ages of 25 and 30 (McCrea et al., 1999). There have been some findings, as well, that emotional intelligence changes with age (Bar-On, 2000; Goleman, 1998).

Finally, researchers are encouraged to examine potential predictors of emotional intelligence within the personality framework. If research is able to determine more accurately which personality traits at what strength contribute to higher emotional intelligence competency, it would open a new area of personality assessment. For example, when the 16PF is used as an assessment tool for hiring or job placement purposes, it could also predict emotional intelligence competency based on the personality profiles that emerge. Given the visibility of the claims regarding the importance of emotional intelligence in leadership and work success, having empirical data could assist organizations in using tools to guide more accurate placement. This is a controversial direction, but it is a practical next path for emotional intelligence.

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APPENDIX A: Instructions to Expert Raters

Please fill out the entire booklet. Your responses should correspond to how an emotionally intelligent person would respond to each question. Since clinical psychologists are thought to be among the most emotionally intelligent, we wish to use the answers given to come up with a method of scoring the test based on clinical consensus.

It is important that you do not discuss your answers with each other prior to filling out the booklet.

Also, you may write your response directly in the booklet.

APPENDIX B: Variable List and Abbreviations

Abbreviation	Scale
16PF Subscales	
A_PF	Warmth
B_PF	Reasoning
C_PF	Emotional stability
E_PF	Dominance
F_PF	Liveliness
G_PF	Rule-consciousness
H_PF	Social boldness
I_PF	Sensitivity
L_PF	Vigilance
M_PF	Abstractedness
N_PF	Privateness
O_PF	Apprehension
Q1_PF	Openness to change
Q2_PF	Self-reliance
Q3_PF	Perfectionism
Q4_PF	Tension
16PF Global Scales	
Extraversion	Extraversion
Anxiety	Anxiety
Tough_mind	Tough Mindedness
Independence	Independence
Self_control	Self Control
MSCEIT Global Scales	
Perceiving	Perceiving Emotions
Facilitating	Facilitating Thought
Understanding	Understanding Emotions
Managing	Managing Emotions
tot_MSCEIT	Total MSCEIT Score
EQ-i Subscales	
es	Emotional Self-Awareness
as	Assertiveness
sr	Self-Regard
sa	Self-Actualization

APPENDIX B: Variable List and Abbreviations cont.

EQ-i Subscales cont.

in	Independence
em	Empathy
ir	Interpersonal Relationship
re	Social Responsibility
ps	Problem Solving
rt	Reality Testing
fl	Flexibility
st	Stress Tolerance
ic	Impulse Control
ha	Happiness
op	Optimism
pi	Positive Impression
ni	Negative Impression

EQ-i Global Scales

raeq	Intrapersonal Composite
ereq	Interpersonal Composite
adeq	Adaptability Composite
smeq	Stress Management Composite
gmeq	General Mood Composite
tot_eq	Total EQ-i Score

Other Variables

gender	Gender
age	Age
ethn	Ethnicity