

THE IMPACT OF EMOTIONAL INTELLIGENCE ON SUBSTANCE ABUSE AND  
DELINQUENCY IN A COLLEGE SAMPLE: THE COMPARISON OF  
EMOTIONAL INTELLIGENCE TRAITS VERSUS ABILITIES

by

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## ABSTRACT

Substance abuse and delinquent behavior are prevalent behaviors on college campuses that negatively affect many students each year (Presley, Leichliter, & Meilman, 1999; Lonfhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004). Researchers have investigated causes and correlates of these behaviors, including personality (Quinsey, Harris, Rice, & Cormier, 1998; Raynor & Levine, 2009), contextual variables (White & Koss, 1991; U.S. Department of Health and Human Services, 2007), and cognitive factors (Berkowitz, 2002).

The current study investigated the impact of two prominent models of emotional intelligence (ability model and trait models) on substance abuse and reactive/immature delinquency in a college population. Emotional intelligence is generally defined as the capacity to understand and manage emotions (Barchard & Hakstian, 2004). Trait emotional intelligence is described as self-perceptions, abilities, competencies, and personality traits (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). Ability emotional intelligence is described as a combination of emotional-reasoning skills and abilities (Lam & Kirby, 2002).

193 students from the University of Alabama participated in the current study. Results indicated that both trait and ability emotional intelligence (as measured by the Emotional Quotient-Inventory (EQ-i) and Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT), respectively), were significantly correlated with substance abuse and reactive/immature delinquency (as measured by the Measure of Delinquency-Revised (MOD-R)). In multiple regression models, the EQ-i and the MSCEIT remained significant predictors of substance abuse, but not of reactive/immature delinquency, which was significantly predicted by the personality

traits of Openness and Agreeableness. Gender was also a significant predictor of substance abuse but not of reactive/immature delinquency. These results reflect the distinct, yet related, nature of ability and trait emotional intelligence constructs and the usefulness of both models in predicting substance abuse. Future directions include further exploration of gender differences and the inclusion of contextual factors in the predictive models.

The current study also addressed the creation and predictive ability of the Emotional Intelligence Behavior Scale (EIBS). The EIBS was significantly correlated with trait, but not ability, emotional intelligence and was a significant predictor of reactive/immature delinquency. Future directions include further development of this scale and exploration of its predictive ability.

## DEDICATION

This dissertation is dedicated to everyone who has been with me through my graduate school years, especially my family and friends who supported me, encouraged me, and made me laugh during even the most stressful hours.

## LIST OF ABBREVIATIONS AND SYMBOLS

$p$	Probability associated with occurrence under which the null hypothesis of a value at least as extreme as the observed value
$r$	Pearson product-moment correlation
F	Fisher's F ratio
t	Computed value of t-test
$\alpha$	Cronbach's alpha
<	Less than
=	Equal to

## ACKNOWLEDGEMENTS

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## CONTENTS

ABSTRACT.....	ii
DEDICATION.....	iv
LIST OF ABBREVIATIONS AND SYMBOLS.....	v
ACKNOWLEDGEMENTS.....	vi
LIST OF TABLES.....	viii
LIST OF FIGURES.....	x
INTRODUCTION.....	1
METHODOLOGY.....	39
RESULTS.....	47
DISCUSSION.....	77
REFERENCES.....	89
APPENDIX A.....	101
APPENDIX B.....	102
APPENDIX C.....	107

## LIST OF TABLES

1. Self-Reported Delinquency in a College Sample (Longhinchsen-Rohling, et al, 2004).....	14
2. MSCEIT Branches and Tasks (Mayer, Salovey & Caruso, 2004).....	27
3. Five Dimensions of the Bar-On Emotional Quotient Inventory (EQ-i) (Bar-On, 1997).....	29
4. EIBS Items and the Corresponding MSCEIT Branch and EQ-i Dimension.....	45
5. Mean Scores and Standard Deviations for NEO-FFI Personality Factors.....	47
6. Correlations Between Personality Factors Measured by the NEO-FFI.....	48
7. Items Composing the MOD-R Factors.....	50
8. Mean, Standard Deviation, and Range for Adjusted MOD-R Items.....	52
9. Percentage of Sample Endorsement by Item (Across College Years).....	53
10. Correlation of Middle School, High School, and College Delinquency.....	54
11. Correlation of MSCEIT Total Scores with Gender, Age, IQ, and Personality.....	55
12. Correlation of EQ-i Total Scores with Gender, Age, IQ, and Personality.....	56
13. Substance Abuse Score Correlation with Predictor Variables.....	58
14. Reactive/Immature Delinquency Score Correlation with Predictor Variables.....	59
15. MSCEIT Branch Scores – Means and Standard Deviations.....	64
16. Inter-Branch and Total Score Correlations.....	65
17. EQ-i Dimension Scores – Means and Standard Deviations.....	65
18. Correlation of EQ-i Dimensions and Personality Factors (NEO-FFI).....	66

19. Inter-Dimension and Total Score Correlations.....	67
20. Correlation of MSCEIT Branches and EQ-i Dimensions.....	68
21. Correlation of MSCEIT Branches, Substance Abuse, and Delinquency.....	69
22. Correlation of EQ-i Dimensions with Substance Abuse and Delinquency.....	71
23. Correlation Between Item and Total Score for the EIBS.....	74

## LIST OF FIGURES

1. Hierarchical Representation of the Ability Emotional Intelligence Branches.....	101
2. Distribution of IQ Scores.....	102
3. Distribution of Emotional Intelligence Behavior Scale (EIBS) Total Scores.....	108
4. Distribution of MOD-R Total Scores (Untransformed).....	109
5. Distribution of MOD-R Total Scores (Transformed).....	110
6. Distributions of Composite 1 and Composite 2 Scores.....	111
7. Distribution of MSCEIT Total Scores.....	112
8. Distribution of EQ-i Total Scores.....	112

## CHAPTER 1: INTRODUCTION

Understanding human behavior is at the core of the field of psychology. Therefore, it is not surprising that much of psychological research has focused on identifying correlates and predictors of specific behaviors (Gazzaniga, Heatherton, & Halpern, 2010). Researchers have investigated a wide variety of topics such as the influence of maternal addiction on parenting behaviors (Suchman & Luthar, 2000), which offenders are most likely to recidivate (Jennings, 2006), what factors predict academic success (Newton, Smith, Moore & Magnan, 2007) and what factors predict health-promoting behaviors such as flossing, wearing seatbelts, good diet, and exercise (Schwarzer, Schüz, Ziegelmann, Lippke, Luszczynska, & Scholz, 2007). In the area of risk assessment, psychologists seek to predict future harm to self and others by identifying those factors which are likely to influence a person's decision to engage or abstain from harmful behaviors.

Human behavior is rarely caused by a single factor, and the causal pathways for a specific behavior pattern may differ by person and situation. In the areas of risky or maladaptive behaviors such as substance abuse and delinquency, even studies that identify significant predictors of a behavior rarely claim to have accounted for all such instances. Predictors as varied as intelligence, personality, peer relations, situational demands, parental practices, thinking styles, emotional regulation, and learning history have all been identified as risk or protective factors in the unfolding of maladaptive behaviors.

The goal of the current study was to investigate one such predictor, emotional intelligence, with regard to substance abuse and delinquency in a college population. These

behaviors are of interest given their prevalence and negative personal and societal effects.

Understanding the factors that contribute to substance abuse and delinquency may assist in the development of interventions aimed at reducing the incidence of each.

### *Substance Abuse: Significance of the Problem*

Substance use and abuse has been and continues to be a significant problem in the United States. According to a survey by the National Institute on Drug Abuse (NIDA), 10.8 million individuals under the age of 21 reported using alcohol within the past month (Johnston, O'Malley, Bachman, and Schulenberg, 2007). The statistics for illegal substance use also indicate widespread use. The survey reported that 14.8% of high school students and 16.3% of young adults aged 18-25 reported using marijuana within the past month, and 2.4 million individuals admitted to using cocaine. Misuse of prescription drugs was endorsed by 6.4% of the population and is significantly influenced by the growing popularity of pain relieving narcotics such as OxyContin and Vicodin as well as the availability of various prescription medications.

The negative consequences of alcohol and drug use have been well-established. Acute health effects associated with high levels of alcohol use include nausea, sleep disturbances, hangovers, and accidental injuries (Maistro, Galizio, & Connors, 2004). Chronic high levels of alcohol use are related to damage of the mouth, esophagus, digestive organs, liver, pancreas, heart, and brain (National Health and Medical Research Council, 2001), sexual dysfunction, and depression (Doweiko, 2006). Marijuana, which is often viewed as a relatively harmless drug, has been linked to numerous negative outcomes such as problems with psychomotor functioning, attention, memory, and learning which affect those who are moderate or occasional users.

In addition to the direct negative effects of alcohol and drug use on individuals, substance use has been associated with risk-taking behaviors and crime. NIDA reported that 30.5 million

individuals reported driving under the influence of alcohol at least once during the past year (Johnston, O'Malley, Bachman, and Schulenberg, 2007). There has been a consistent documentation of the relation between alcohol consumption and violence (U.S. Department of Health and Human Services, 2000) and with violent crime at both the level of the individual and at the level of the population (Boles & Miotto, 2003). Martin, Maxwell, White, and Zhang (2004) found high rates of recent alcohol use by persons arrested for violent offenses. Similar results have established the relation between illicit drug use and crime (U.S. Department of Health and Human Services, 2000). In 2006, there were 93,751 drug-related offenses (Sabol, Minton, & Harrison, 2007). In addition to violence and crime occurring as the result of, or in conjunction with, substance use, violence and criminal acts are also committed for the purpose of obtaining money for future drug use. Substance abusers tend to report having more extensive criminal careers, often including multiple convictions since their early adolescence.

Use of illicit drugs and alcohol is associated with high social costs that extend beyond damage to the individual user (Reuter, 2006). The cost of substance abuse includes health-related costs, crime-related costs, and loss in productivity. Harwood (2000) reported that approximately \$181 billion was spent on services related to illicit drug use and \$185 billion was spent on services related to alcohol abuse in 2000. The U.S. Department of Health and Human Services (2000) estimated that the 1999 bill for crimes related to alcohol and other drugs exceeded \$205 billion. These costs included medical bills for the victims, property damage and theft, loss of productivity, and court and correctional costs.

In addition to the financial burden created by substance use, there exist many negative non-financial consequences including domestic violence, child abuse and neglect and

disintegration of the family (Harwood, 2000). Collectively, it can be stated that substance use has the potential to affect everyone, either directly or indirectly.

### *Substance Use on College Campuses*

Culturally, the college years are characterized as a transitional period of time, marked by experimentation and risk-taking, especially with regard to substance use (Quintero, Peterson, & Young, 2006). Research suggests that substance use increases during adolescence and peaks during young adulthood (ages 18-25) (Akers & Lee, 1999; Harford, Grant, Yi & Chen, 2005). This peak coincides with many students' arrival on college campuses and Bronfenbrenner (1979) suggested that first-year college students are at an increased risk for substance abuse (especially alcohol abuse) due to the significant ecological transition, including a change in setting and role. Increased freedom in choices regarding behavior and the emotional challenges of making the transition from high school to college may contribute to the significant number of college students who engage in alcohol use (Schulenberg & Maggs, 2002). O'Hare (2001) describes a "drinking context" of college, including social, emotional, and situational factors that affect the probability of a student drinking heavily.

Alcohol use among college students has received significant attention in recent years (Presley, Leichliter, Meilman, 1999). One prevalence study found that 63% of college students reported drinking in the past 30 days (Wechsler, Kuo, Lee, & Dowdall, 2000). A national survey conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA, 2006) estimated that 21.2% of individuals aged 18-24 meet criteria set forth by the Diagnostic and Statistical Manual of Mental Disorders – IV-Text Revision (DSM-IV-TR) for an alcohol or illicit drug use disorder. Other studies report estimates as high as 38% of college students meeting criteria for alcohol abuse or dependence (Knight, et al., 2002) and almost half (46.8%)

of college students meeting criteria for a substance use disorder involving either alcohol or marijuana (Caldiera, Kasperski, Sharma, Vincent, et al., 2009).

### *Binge Drinking on College Campuses*

Binge drinking, which is defined as five or more drinks for men and four or more drinks for women on one occasion (Presley, Meilman, Cashin, & Lyerla, 1996; Wechsler & Isaac, 1992), is a specific drinking pattern which has received increased attention in recent years. The 1993 Harvard School of Public Health College Alcohol Study (CAS) found that in the preceding year 15.6% of the sample abstained from alcohol during the past year, 40.3% drank alcohol but did not engage in binge drinking, 24.6% engaged in occasional (less than three times in the past two weeks) binge drinking, and 19.5% participated in frequent (three or more times in the past two weeks) binge drinking (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998). The CAS was conducted again in 1999 and the results indicated an increase in the number of students who abstained from alcohol (from 15.6% in 1993 to 19% in 1999) and who engaged in frequent binge drinking (from 19.5% in 1993 to 23% in 1999). Wechsler, et al., (2002) found similar results, noting that rates of binge drinking in their college sample increased from 20% in 1993 to 23% in 2001. The Monitoring the Future Study (Johnston, et al., 2006) found that 40% of full-time college students reported binge drinking at least once in the past two weeks. This number was greater than the percentage of non-college peers (35%) and high school seniors (31%) who engaged in binge drinking at least once in the past two weeks. These and related findings lend support to the conclusion that college students “outdrink” their non-college peers (O’Malley, Johnston, Bachman, Schulenberg & Kumar, 2002; SAMHSA, 2006; Wechsler, et al, 2000).

Decreasing rates of alcohol consumption, and binge drinking in particular, is important because alcohol use has been consistently related to other negative outcomes on college

campuses. Although the issue of drinking in college is often minimized, the consequences can be quite severe (Caldeira, et al, 2008; Pope, Ionescu-Pioggia, & Pope, 2001; Wechsler, Lee, Kuo, and Lee, 2000). Underage college drinking is associated with negative health consequences such as burns, drowning, falls, acute alcohol poisoning, suicide, and violent crime (Jones, Peiper, Robertson, 1992) In 2001 it was estimated that 600,000 students were injured unintentionally while drinking, 25% drove under the influence of alcohol, more than 1,700 students died in unintentional alcohol-related deaths, and 696,000 students were assaulted or hit by another drinking college student (Hingson, Heeren, Winter, and Wechsler, 2005). College students (31.4%) were found to have higher rates of driving under the influence of alcohol in the previous year compared to their non-college peers (23.7%) (Hingson et al, 2005). Additionally 8% of college students reported engaging in unprotected sex and 2% reported being the victim of alcohol-related sexual assault (Hingson, et al, 2005).

Since the mid-1990's, when the recognition that alcohol use on college campuses had reached an alarming level, college presidents have become actively involved in the attempt to formulate a plan to decrease the level of drinking, especially underage drinking, on their campuses by participating in statewide and regional coalitions to address the problem (Wechsler, Lee, Kuo, & Lee, 2000). Even the United States government has recognized the significance of alcohol and alcohol-related problems in the college student population. The United States House of Representatives and Senate has passed a resolution to address binge drinking on college campuses, and the National Institute on Alcoholism and Alcohol Abuse created a special task force to address college drinking. Drinking alcohol, which is often viewed as a normal part of the college experience, has clearly evolved into a national health problem.

## *Use of Illegal Substances on College Campuses*

Second only to the use of alcohol, marijuana is the most used drug by college students and the most prevalent illicit drug on college campuses (Core Institute, 2004). Rates of marijuana use have risen steadily in the past 15 years. Young adults, in general, have the highest rates of marijuana use and cannabis-use disorders of any age group (SAMHSA, 2006) and the number of cannabis-related problems significantly increases as individuals transition from high school to college (White, Labouvie, and Papadaratsakis, 2005). Approximately 30% of college students report using marijuana in the past year (Johnston, O'Malley, Bachman, and Schulenberg, 2007; Mohler-Kuo, Lee & Wechsler, 2003) and 18.9% report using marijuana in that previous month (Johnston, et al., 2007)

Similar to alcohol use, marijuana use by college students is associated with many negative outcomes, particularly with respect to unsafe driving practices, such as driving under the influence (Everett, Lowry, Cohen & Dellinger, 1999; Hingson et al, 2005) and unsafe sex practices (Hingson, et al, 2005). Marijuana users are at an increased risk for any substance-related problems (Shillington & Clapp, 2001) and tend to have higher rates of polysubstance use when compared to individuals who do not smoke marijuana (Gledhill-Hoyt, Lee, Strote, & Wechsler, 2000).

Although alcohol and marijuana are the primary substances used by college students, there are a variety of other illicit drugs used on college campuses. The trends in specific drug use change over time given the availability and popularity of individual drugs. Drugs such as MDMA ("Ecstasy") have grown in popularity and MDMA is now reported to be the second most used illicit drug (Pope, Ionescu-Pioggia, & Pope, 2001). Nonmedical prescription drug use, which is defined as the use of prescription medication without a prescription from a doctor or for

the feeling or experience caused by the drug (Ford, 2008) has also increased in popularity.

Possible reasons for the increase in non-medical prescription drug use are that prescription drugs may be easier to obtain, pose a lower likelihood of arrest, and are often perceived as not being as physically dangerous as other illicit drugs (Ford, 2008).

### *Correlates of Binge Drinking and Substance Use*

Several correlates and risk factors of binge drinking have been explored. At the university level, campuses where Greek systems and athletics are prominent tend to have higher rates of substance abuse in general, and of alcohol use especially (Presley, Meilman, & Leichliter, 2002). Another identified risk factor is the ease with which alcohol is obtained. Wechsler, Kuo, Lee and Dowdall (2000) found that almost all the students in their sample reported that it was either “easy” or “very easy” to obtain alcohol. 1 in 4 of the students in that sample reported that they bought alcohol by themselves, either using a false ID card or purchasing alcohol at locations where they know their ID will not be checked. The majority of the students stated they obtained alcohol from older students. Significantly reduced price per drink and frequent drink discounts at bars has also been associated with frequency of heavy drinking (Wechsler, et al, 2000). Rates of heavy drinking tend to be higher at the beginning and end of the academic year and tend to be highest during the freshman year before declining over subsequent years (Jackson, Sher, & Wood, 2003). Being a male is a significant risk factor for heavy drinking (Wechsler, Kuo, Lee, & Dowdall, 2000) as is the use of beer as one’s alcoholic beverage of choice (Rogers & Greenfield, 1999; Wechsler, et al., 2000).

Stress has also been shown to be a reliable correlate of substance use (Bruns & Geist, 1984). This is supported by finding that juveniles who experience trauma are at risk for substance use and delinquency (Spooner, 1999). Some studies have suggested that it is not the

mere presence of stress which leads to the negative outcome of substance abuse, but rather it is how the individual manages the situation and his/her level of perceived stress that will influence the outcome (Spooner, 1999). For the purpose of this study, this hypothetical pathway is important because individuals who are low in emotional intelligence may have significantly more difficulty managing their stress and therefore have higher rates of substance use.

In addition to the ability to manage stress, the relation between personality characteristics and alcohol use has been investigated. Various theories of personality exist, but for the purpose of this study, the focus will be on the Big Five theory of personality, also known as the Five-Factor Model. The Big Five theory posits five core dimensions of personality, including extraversion, neuroticism, conscientiousness, openness to experience, and agreeableness (Gazzaniga, Heatherton, & Halpern, 2010). Findings on the relation between these five factors and alcohol use have been inconsistent in the literature; however, some general trends to exist. A relatively robust negative correlation between conscientiousness and substance abuse has been documented (Flory, et al, 2002; Trull & Sher, 1994, Mann, Wise, Trinidad, & Kohanski, 1995, Kashdan, Vetter, & Collins, 2005; Ruiz, Pincus, & Dickinson, 2003, Raynor & Levine, 2009). Individuals who have been diagnosed with an alcohol-related disorder have been found to score lower on conscientiousness than individuals without an alcohol-related disorder (Hopwood et al, 2007). Friedman and colleagues (1995) hypothesized that the greater level of self-regulation of individuals who are high in conscientiousness protects them against risky health behaviors, including substance use. Neuroticism has also been related to alcohol use, with many studies reporting a positive correlation between neuroticism and alcohol use (Walton & Roberts, 2004; Comeau, Stewart & Loba, 2001; Martin & Sher, 1994; Hopwood et al, 2009). The results for extraversion, agreeableness, and openness to experience have had markedly

inconsistent findings, but the general trend is that individuals who are higher in extraversion tend to have higher levels of alcohol use (Raynor & Levine, 2009). High levels of agreeableness are associated with decreased alcohol use disorders (Martin & Sher, 1994; Ruiz et al, 2003). Openness has been shown to have the weakest (and often non-significant) relation with alcohol use (Ruiz et al, 2003). The dominant view regarding the relation of personality and substance use is that personality acts, either directly or indirectly, as a predisposing factor for substance use (Flory, Lynam, Milich, Leukfeld & Clayton, 2002).

#### *Delinquency: Significance of the Problem*

Similar to the problem of substance abuse in the United States, the issue of delinquent behaviors, including property and violent crimes, appears to be a national problem. The Department of Justice's Uniform Crime Report indicates that in 2008, more than 9.7 million property crimes, 2.2 million burglaries, 6.5 million thefts, and 1.3 million violent crimes (of which over 800,000 were classified as aggravated assaults) were reported to the authorities. These numbers are likely underestimates given that not all crimes are reported. Nationally, the rates of violent crimes and reported acts of aggression have been on the decline. According to the National Crime Victimization Survey, Violent Crime Trends, 1973-2005 (Bureau of Justice Statistics, 2006) rates of violent crime peaked in 1981 with a rate of 51.2 victims per 1,000 people. In 2005, the rate was 21.0 victims per, 1,000, indicating a more than 50% reduction. This trend was seen in all areas of violent crime, including simple and aggravated assault.

Although the rates of specific delinquent behaviors have been declining, the costs associated with delinquency continue to be substantial. The negative consequences of delinquent behaviors include personal injury, monetary loss (including the cost of replacing damaged or

stolen items and the loss of productivity due to injury) and negative psychological consequences including fear and lack of trust in others in the community (Garcia, Taylor, & Lawton, 2007).

### *Delinquency on College Campuses*

College campuses in the United States have traditionally been thought of as being relatively free of many types of delinquent behaviors (Flannery & Quinn-Leering, 2000). However, college campuses are now recognized as environments in which a wide variety of delinquent and violent behaviors do take place (Nicholson, Wang, Maney, Yuan, Mahoney, & Adame, 1998; Fisher, Sloan, Cullen & Lu, 1998). It is estimated that approximately one third of all college students will be victimized at some point during their college career, and the vast majority of the perpetrators are fellow students (Fisher, 1995).

Accurate statistics regarding delinquent behaviors on college campuses are difficult to find. Colleges may be reluctant to publish statistics on such behaviors because they fear it will negatively influence successful recruitment of prospective students. Additionally, assessing college crime rates is complicated by the fact that many institutions are in dual-reporting systems (Fombry & Sigler, 1982), meaning that some crimes are reported to city police agencies, while others are reported to college police agencies. The issue of unreported crime also hinders accurate estimation of crime in college. In a study conducted by Luckey (1999), 30% of the college sample reported they had been victims of at least one type of victimization in the past year. However, only 10% of those victimizations were reported to the police or to housing/residential officers.

### *Violence on College Campuses*

Self-reports of interpersonal violence on college campuses suggests that interpersonal aggression is commonplace (Marcus & Reio, 2002). Of the various types of delinquent behavior

that take place on college campuses, interpersonal violence has received the most attention in the literature. One such study (Marcus & Reio, 2002) found that 40.5% of males and 17.3% of females in a college sample reported being involved in at least one physical altercation in the previous six months. Of these, 8.5% of the males and 2.2% of the females reported that the altercation resulted in injuries which required medical attention. The frequency of interpersonal aggression was found to be higher among college freshmen (relative to upper-classmen), males, and those individuals who drank alcohol more frequently (Wechsler & Buthen, 2003). Luthra and Gidycz (2006) found that perpetration of interpersonal aggression within the context of a romantic relationship, often referred to as intimate partner violence, was reported by 10% of the college males sampled in their study. These males acknowledged perpetrating physical aggression against their partner in their most recent relationship.

### *Causes and Correlates of Violence*

Why interpersonal aggression and violence occur is a complex question. Berkowitz (2002) proposed the Cognitive Neo-Associationist theory, which states that an aversive event causes the individual to experience negative affect, which contributes to non-sophisticated processing of the event, which can lead to impulsive behaviors or incorrect appraisal of the situation. This theory is partially supported by the finding that, of individuals in a college sample who reported being involved in a physical altercation, 73% noted that they had experienced negative affect prior to the fight. According to Berkowitz's theory, the response to an aversive event will depend partially on past learning experiences with similar situations and on current situational circumstances. In the study conducted by Gidycz and colleagues (2007), acts of aggression were reportedly associated with perceived verbal and/or physical victimization in the past. This finding would indicate that individuals use prior experiences in which they have felt

victimized to assist in processing their current situation and in deciding on a course of action in the present situation. Other theories, such as Bandura's social-cognitive approach (1973), conceptualize aggression as a goal-directed, instrumental behavior which is performed in order to achieve a specific desired outcome, including the possible discharge of negative emotional states.

Distal influences, which include pre-existing personality characteristics, have an effect on whether aggression occurs in a given situation. Argumentativeness (also conceptualized as having a low level of agreeableness) has been positively correlated with acts of aggression (Quinsey, Harris, Rice, & Cormier, 1998). Hines and Saudino (2007) found that neuroticism and agreeableness were the strongest predictors of intimate partner violence, with high levels of neuroticism and low levels of agreeableness being associated with higher levels of intimate partner violence.

Although studies have been generally unable to establish a causal relationship between substance abuse (especially alcohol) and interpersonal aggression, several studies have demonstrated an association between the two. Marcus and Reio (2002) found that alcohol was reportedly involved in 40% of the physical altercations in their sample of college students. Of those altercations, the reporting party stated his/her belief that alcohol was the cause of the altercation in 14.6% of the incidents. Additionally, Gidycz et al (2007) reported that, of the incidents of aggression perpetrated by the men in their sample, 52% of these incidents involved alcohol use by the perpetrator and 48% involved alcohol use by the victim. Other studies have found that alcohol was used by either the victim, the perpetrator, or both parties in approximately 35-70% of violent crimes (Galanter, 1997; Greenfield, 1998).

### *Delinquency Other Than Violence on College Campuses*

Much of the research on delinquency on college campuses has focused on interpersonal aggression and violent crimes. Little research has been conducted on other forms of delinquent behavior, including vandalism, theft, and trespassing. Although the negative effects of violent crime may be believed to be more significant, the negative effects of even “low level” crime (such as vandalism and minor theft) should not be overlooked. Low level crime has negative consequences for its victims, including powerful emotional reactions, feelings of personal loss, financial loss, and disruption of academic progress (Pastore & Maquire, 2003)

Longhinrichsen-Rohling and colleagues (2004) conducted one of the few studies to investigate the prevalence of self-reported delinquency (including property, drug, and violent crimes) by college students in the past 12 months. The results are summarized in Table 1.

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Table 1  
*Self-Reported Delinquency in a College Sample (Longhinrichsen-Rohling, et al., 2004)*

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<b>Delinquent Behavior</b>	<b>% Males</b>	<b>% Females</b>
Stolen or tried to steal something worth less than \$50	41.7	21.3
Stole or tried to steal something worth more than \$50	15.7	6.4
Stole or attempted to steal a car	4.3	1.1
Entered a building to steal something	14.8	6.0
Illegally spray painted	13.0	3.4
Purposely damaged property	43.0	12.7
Carried a hidden weapon	28.0	9.8
Hit someone to hurt them	50.4	21.0
Attacked someone with a weapon	11.3	4.9
Sold marijuana	22.6	6.8
Sold illegal drugs	14.8	3.4

Results from this study indicate that college males, in general, are more delinquent than college females, with a greater percentage of males endorsing each delinquent behavior. This study also sheds light on the wide variety of delinquent behaviors occurring on college campuses. Over half

of the males sampled and almost a quarter of the females sampled reported hitting another person with the intent to harm that person. Both genders also reported relatively high rates of theft under \$50 as well as property damage.

### *Causes and Correlates of Delinquency*

Little research has been dedicated to the causes and correlates of non-violent, non-drug-related, delinquent behavior. Turner and Cashdan (1988) conducted one of the few studies investigating college students' motives for shoplifting. Previous research by Klemke (1982) found that many adolescents and young adults who engage in shoplifting report that they shoplifted for the fun and excitement that it provided and that many shoplifted simply to see if they could "get away with it." Turner and Cashdan found that 63.9% of their sample reported that one of the reasons they stole was because they did not have the money needed to purchase a desired item. 39.9% reported they stole because it was "challenging" and "fun," and 18.9% stated that one of their motives of the "thrill" and "risk" involved in stealing. In an early study of personality as it relates to stealing behaviors, Beck and McIntyre (1977) found that repeat shoplifters scored higher on the Psychopathic Deviance and Mania scales of the Minnesota Multi-Phasic Personality Inventory, reflecting their poor judgment, shallow superficial relationships, high activity levels, and strong anti-establishment attitudes. Moore (1983) rebutted Beck and McIntyre's 1977 findings, stating that there is little relation between stealing/shoplifting and emotional problems. He classified 21.8% of sample of shoplifters as non-conforming and prone to acting out, 4% as stealing for the purpose of peer acceptance, and 6% as stealing as the result of financial difficulties.

Similar to aggression findings, studies have not been able to establish a causal link between substance use and delinquent behavior. This, however, does not mean that there is no

relation between delinquent behavior and substance use (especially alcohol). West, Drummond and Eames (1990) found that 20% of males and 6% of females in their college sample admitted to having caused at least some level of property damage after drinking alcohol. Interestingly, 50% of males and 36% of females admit to having witnessed damage to property by others who had been drinking. The authors hypothesized that the disparity in endorsement rates may reflect the unwillingness of the participants to admit to engaging in socially unacceptable behaviors.

The prevalence and negative consequences associated with substance use and delinquency on college campuses warrants further investigation of possible causes and correlates. Once such variable that may contribute to the understanding and prediction of these problematic behaviors is the construct of emotional intelligence.

### *Emotional Intelligence*

Although emotional intelligence is a relatively new empirical construct, the role of emotions and their impact on the lives of humans has been debated for centuries. The ancient Greeks viewed logic and reason as being superior to emotions (Payne, 1986) while the Romantic Movement embraced emotions and promoted emotional expression through the arts (Solomon, 2000). Today, researchers recognize the importance of emotions and have conducted various studies to investigate how emotions affect thinking and behavior.

The construct of emotional intelligence is important because it provides a framework to understand how emotional states affect social functioning and other variables (Mayer & Salovey, 1997), and it may prove to have predictive value above and beyond that of cognitive intelligence with regard to real life outcomes (Schulze, Roberts, Zeidner, & Matthews, 2005). Emotional intelligence may be able to account for some of the variance in effective functioning that cannot

be explained purely by an individual's level of cognitive intelligence or personality characteristics.

### *The Role of Emotions in Emotional Intelligence*

To understand emotional intelligence requires an understanding of emotions and their effect on human behavior and thought. Emotions are distinguished from moods in that they are transient, related to a specific stimulus, and involve cognitions. Moods tend to be free floating, not related to any specific stimulus, and longer-lasting than emotions (Ortony, Clore, & Collins, 1988).

Some adaptive functions of emotions include focusing the individual's attention on important aspects of the environment (e.g., the experience of fear may alert the individual to danger), giving internal cues regarding current and future status with the environment (e.g., feeling sad lets one know that someone has done something to hurt him or her), priming the body to respond (e.g., initiating the "fight or flight" response), and motivating facial and bodily expressions in order to communicate important information nonverbally to others (e.g., frowning in order to indicate displeasure) (Schultz, Izard, & Abe, 2005). In essence, emotions allow individuals to rapidly process and organize internal and external stimuli and subsequently to use this knowledge in similar situations (Schultz, Izard, & Abe, 2005). Tooby and Cosmides (1990) described emotions as "evolutionary best guesses" in how to respond to certain situations. For example, if an individual was bitten by a dog he will likely experience fear the next time he encounters a dog. The experience of fear alerts the individual to the threat in his environment (in this scenario, the dog) and this information will influence his behavior (escape or avoidance).

While the experience of emotion can have adaptive value, having emotional knowledge is also important. Emotional knowledge can be divided into declarative knowledge and emotional

processing patterns (Schultz, Izard, & Abe, 2005). Declarative emotional knowledge includes the ability to accurately assign an emotional label (e.g., happiness or anger) to a given stimulus (e.g., vocal tone or facial expression). Emotional processing patterns involve the tendency to assign specific emotional states to others (Schulze, Izard, & Abe, 2005). The importance of declarative emotional knowledge has been demonstrated in several studies. One study found a direct and indirect (mediated) effect of a child's level of declarative emotional knowledge after kindergarten on the level of aggression measured when the child was in the 3<sup>rd</sup> grade (Dodge, Laird, Lochman, & Zelli, 2002). The results of this study suggest that anger-proneness in children is related to lower levels of declarative emotional knowledge. The implication is that interventions that increase a child's level of declarative emotional knowledge may be effective in decreasing the level of anger-proneness.

Emotion recognition, which is subsumed under the label of declarative emotional knowledge and has been incorporated into the construct of emotional intelligence, is one of the few components of emotional intelligence that reliably predicts social and behavioral adjustment, even after controlling for temperament and cognitive intelligence (Schulze, Izard, & Abe, 2005). The importance of being able to recognize emotions in others can be inferred from the early appearance of this ability. By ten weeks of age, infants have demonstrated the ability to distinguish happiness, sadness, and anger (Haviland & Lelwica, 1987). The ability of young children to not only recognize emotion but to base decisions on this recognition was demonstrated in a study conducted by Sorce, Emde, Campos, and Klinnert (1985). Here, infants were placed in a situation in which they had to rely on the facial expressions of their mothers in order to determine whether to crawl across a visual cliff (designed to create the illusion of being at the edge of a table) or to remain where they were seated. When the mothers smiled and

expressed positive emotions by way of facial expressions, the infants crawled across the apparatus. However, when the mothers frowned or conveyed fear in their facial expressions, the infants did not. Even though evidence suggests the importance of emotion recognition, effective social adjustment does not simply rely on the presence of this knowledge, but it also depends on the consistent application of emotional knowledge (Schulze, Izard, & Abe, 2005).

Emotional processing patterns (also referred to as social information-processing patterns (Coyne, 2005) or recognition bias (Barth & Bastiani, 1997)) involves the tendency to assign specific emotional states to others (Schulze, Izard, & Abe, 2005). The relation between the experience of an emotion and the processing and interpretation of a situation is circular. Just as the interpretation and appraisal of specific situations gives rise to specific emotions (Lazarus, 1994) the presence of emotions can influence how situations are interpreted. Children who are more prone to anger also tend to interpret emotional cues as representing anger on a more frequent basis than children who are not prone to anger (Schultz, Izard, & Ackerman, 2000).

In addition to the varying degree of emotional knowledge among individuals, people differ in their degree of emotional reactivity and intensity with which emotions are experienced; this is referred to as one's level of emotionality (Schulze, Izard, & Abe, 2005). While individuals differ on their level of emotionality, a person's level of emotionality tends to remain stable over time and has been shown to influence behavioral and social functioning (Schulze, Izard, & Abe, 2005). An individual's level of emotionality is significantly influenced by environmental stimuli as well as by intrapersonal factors (Tellegen, Lykken, Bouchard, Wilcox, Segal, & Rich, 1988), including factors such as prenatal stress on the mother and postnatal maternal separation or deprivation, both of which have been shown to increase the level of negative emotionality (Schulze, Izard, & Abe, 2005). Although emotionality and declarative emotional knowledge are

two distinct concepts, positive emotionality (i.e., positive affect and an eager approach to novel situations) can facilitate the acquisition of declarative emotional knowledge. By contrast, negative emotionality causes the individual to focus his attention on relieving the cause of the negative emotion and therefore the individual focuses on the self, rather than on the environment where declarative emotional knowledge is modeled by others (Eisenberg, Fabes, and Bernzweig, 1993).

The theory of emotional intelligence does not simply focus on differences in emotional experiences but rather takes into account factors such as how an individual deals with emotions once they are activated (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). Emotions have demonstrated the ability to affect cognitive processes, and these effects can be positive (facilitative) or negative (disruptive). However, it appears that the interpretation and regulation of emotions, and not simply the presence of emotions, is likely to facilitate or hamper task performance (Lam & Kirby, 2002). These benefits include being able to ignore distracting emotions (buffering emotions) while harnessing and enhancing facilitative emotions (personal engagement of emotions). Emotions can hamper task performance when they result in intense arousal that causes one to be distracted from the task at hand and focused on reducing their subjective emotional intensity. The theory of emotional intelligence asserts the belief that cognition and emotions are integrated - a process that allows emotions to make thinking more “intelligent” (Damasio, 1994).

#### *The Role of “Intelligence” in Emotional Intelligence*

Just as recognizing the role of emotions in the conceptualization of emotional intelligence is important, it is essential to acknowledge theories of intelligence in the definition of emotional intelligence. Sometimes the “intelligence” aspect of emotional intelligence is neglected because

emotions and intelligence are often seen at opposite ends of the spectrum with seemingly little connection (Matthews, Zeidner, & Roberts, 2002). Emotional intelligence has taken much criticism for its lack of one comprehensive definition; however, general cognitive intelligence has received the same criticism in the past. Even today, there exist various definitions and theories of intelligence, and these influence the development of various intelligence assessment instruments. Structural theories of intelligence sought to identify the components of cognitive intelligence. Some of the influential structural theories of cognitive intelligence include Sir Francis Galton's belief that genetic attributes contribute significantly to intelligence (Gazzaniga, Heatherton, & Halpern, 2010), Spearman's theory of psychometric *g*, (Schulze, Roberts, Zeidner, & Matthews, 2005), Thurston's model of primary mental abilities (Schulze, et al., 2005) and Horn and Cattell's structural theory of crystallized and fluid intelligence .

As structural theories of intelligence evolved, so did systems models of intelligence. These theories tend to be broader than structural theories and include cognitive abilities that structural models would not consider as a form of intelligence (Matthews, Zeidner, & Roberts, 2002). The two main systems models of relevance here are Gardner's theory of multiple intelligences and Sternberg's triarchic theory of intelligence.

Understanding the history and evolution of the construct of intelligence is essential if one wants to comprehend emotional intelligence. Some of the theories of emotional intelligence that will be detailed below follow the same patterns as established theories of cognitive intelligence. Other theories of emotional intelligence are nested within these theories of intelligence. Regardless of which theory of emotional intelligence one adopts, one cannot ignore the parallels in the cognitive intelligence literature nor the role of intelligence theories in setting the context for the study of emotional intelligence.

### *Defining Emotional Intelligence*

Given that the definitions and exact structures of emotions and intelligence have been debated, it is not surprising that a core debate regarding emotional intelligence centers on its definition (Mayer, Salovey, & Caruso, 2004). Emotional intelligence can be generally defined as the capacity to understand and manage emotion; however, the content and boundaries of this construct remain unsettled (Barchard & Hakstian, 2004). The lack of one, all-encompassing definition should not undermine the viability of emotional intelligence as a construct as it has been noted that the construct of intelligence has a long history of evolving definitions and boundaries. Indeed, emotional intelligence is one of those expanding definitions.

One often-cited definition was proposed by Peter Salovey and John Mayer, who are frequently credited with coining the term “emotional intelligence.” Their original definition, proposed in 1990, stated that emotional intelligence is the ability to monitor the emotions of one’s self and others, to discriminate between those emotions, and to use emotional information to guide one’s behavior and cognitions (Salovey & Mayer, 1990). They identified three branches of emotional intelligence: appraisal and expression of emotion, regulation of emotions, and utilization of emotions. Mayer and Salovey developed the Multifactor Emotional Intelligence Scale (MEIS) to assess individuals’ abilities in these areas.

Interest in the construct of emotional intelligence grew in the 1990s, and in 1995 Daniel Goleman described a functional view of emotional intelligence (Goleman, 1995) stating that the benefits of emotional intelligence are to motivate individuals, assist with impulse control and regulation of mood, and allow individuals to persist in situations in which they encounter barriers to success. Collectively, these factors help individuals function effectively on a daily basis and, in this respect, emotional intelligence can be conceptualized as a person’s “success-oriented

traits” (Harrod & Scheer, 2005). Goleman focused primarily on the work environment and sought to explain why some individuals who score high on traditional IQ tests do not necessarily excel in the “working world.” Likewise, he sought to describe factors other than verbal-quantitative IQ that help individuals succeed in the work environment. In essence, he proposed that cognitive IQ could not account entirely for such occupational success and that additional factors, such as emotional intelligence, explain the remaining variance. Goleman took his hypothesis one step further in proposing that emotional intelligence actually may be more important than cognitive intelligence in predicting occupational success. Unfortunately, Goleman’s conceptualization was not based on empirical data, and, as a result, his description has generally fallen out of favor (Neubauer & Freudenthaler, 2005). His contribution did promote significant interest by the general population in emotional intelligence, and set the stage for an increase in researchers’ efforts to define and study emotional intelligence empirically.

Unlike Goleman’s non-empirical description of emotional intelligence, Mayer and Salovey spent several years examining the validity of their 1990 definition using the MEIS. In 1997 they proposed a revised definition based on cumulative data. This revised definition described emotional intelligence as “the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (Mayer & Salovey, 1997, p.10). It appears to be the only definition of emotional intelligence that incorporates emotions and cognitions equally (Lam & Kirby, 2002). This definition also describes emotional intelligence as a combination of emotional reasoning abilities and not just as a single ability or trait.

Subsequent to Mayer's and Salovey's 1997 definition, Reuven Bar-On proposed an alternative. He described emotional intelligence as "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (Bar-On, 1997). Bar-On's definition is fairly distinct from that of Mayer and Salovey, especially in his mention of emotional intelligence being "non-cognitive." The difference in their respective assessment instruments further emphasizes the differences between these two perspectives of emotional intelligence. Mayer, Salovey, and their colleague, David Caruso, developed the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT), which measures an individual's ability to perform tasks related to their definition of emotional intelligence. These tasks focus on the cognitive processes involved in emotional intelligence, such as the ability to perceive emotions in the faces of others and the ability to interpret the meanings emotions convey regarding relationships (e.g., the association of sadness and experiencing a loss) (Mayer & Salovey, 1997). By contrast Bar-On's assessment instrument, the Emotional Quotient-Inventory (EQ-i), reflects his non-cognitive definition of emotional intelligence and poses questions that tap into an individual's behavioral dispositions and self-perceptions.

Emotional intelligence has been likened to several other psychological constructs including social intelligence (the ability to understand others and act wisely in relationships) (Thorndike, 1920, as cited in Petrides, Frederickson, & Furnham, 2004), practical intelligence (one's ability to deal with real-life problems) (Sternberg & Grigorenko, 2000), and the condition of alexithymia (characterized by difficulty identifying one's emotions, difficulty describing emotions to others, constricted imaginal processes, and an externally-focused, stimulus-specific cognitive style) (Ciarrochi & Godsell, 2005; Taylor, Bagby, & Parker, 1997). Although these

constructs are related, they are not entirely overlapping and represent distinct aspects of functioning.

### *Mayer and Salovey's Ability Model of Emotional Intelligence*

Mayer and Salovey's ability model reflects their assertion that any theory of emotional intelligence should provide a unified framework for studying the role of emotions in social situations by incorporating both cognitive and emotional mechanisms (Mayer & Salovey, 1997).

Mayer and Salovey's 1997 revised model of emotional intelligence includes four interrelated emotional abilities, which they referred to as "branches": perceiving emotions, using emotions, understanding emotions, and managing emotions. These abilities are theorized to be hierarchical in nature (i.e., perceiving emotions being the most basic ability and managing emotions being the most complex ability and somewhat dependent upon successful acquisition of the more basic abilities) (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). A pictorial representation of this hierarchy is displayed in Figure 1.

Perceiving emotions consists of the ability to identify emotions in oneself and in others. Recognizing the emotion portrayed in verbal expressions (such as words spoken or tone of voice) and in nonverbal expressions (such as facial expression or body language) are included in this branch (Nowicki & Mitchell, 1998; Scherer, Banse, & Wallbott, 2001; Lam & Kirby, 2002).

The second branch in Mayer and Salovey's model is using emotions. This ability includes being able to harness emotions to facilitate cognitive activities such as problem solving and reasoning (Brackett, et al., 2006). This ability includes knowledge of the relation between emotions and cognitions that can be used to direct one's planning (Mayer, Salovey, & Caruso, 2004). Therefore, individuals who are aware of which emotions will facilitate their thinking process in a given situation are more likely to use that emotion under the given circumstances.

Additionally, using emotions to attend to what is important and to assist seeing things from a different perspective may foster creative thinking (Mayer & Salovey, 1997).

The third ability is understanding emotions, which includes being able to analyze emotions using language and propositional thought (Brackett, et al., 2006). Understanding that complex emotions are the combination of two or more basic emotions, how external experiences affect emotions, and how likely various emotions are to occur in different situations are included in this branch (Lam & Kirby, 2002). Being able to analyze emotions, understand their probable trends over time and understand their outcomes are also components in understanding emotions (Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990). This branch has demonstrated the highest correlations, relative to the other three branches, with other measures of intelligence (Mayer, Salovey, & Caruso, 2004).

The final ability in Mayer and Salovey's model, managing emotions, includes the ability to appropriately decrease, enhance, and alter emotions in one's self and others given the situation (Gross, 1998; Lam & Kirby, 2002). Similar to the Understanding Emotions branch, this branch has shown a relation to cognitive performance. Those high in this ability are less likely to be frozen by fear and anxiety, both of which negatively affect cognitive performance (Lam & Kirby, 2002). Successful management of emotions will likely neither minimize nor eliminate emotion completely and should not be thought of as the repression or rationalization of emotions.

#### *Assessment of Ability EI*

Based on their revised definition, the Mayer Salovey Caruso Emotional Intelligence Scale (MSCEIT) includes two tasks in each of the four branches. These tasks are detailed in Table 2.

Table 2  
*MSCEIT Branches and Tasks (Mayer, Salovey, & Caruso, 2004)*

<b>Branch</b>	<b>Task Description</b>
Perceiving Emotions	Identifying emotions in faces
	Identifying emotions reflected in landscapes and designs
Using Emotions	Comparing emotions to other tactile and sensory stimuli
	Identifying emotions that would best facilitate a type of thinking
Understanding Emotions	Identifying which situations increase or decrease emotional intensity
	Identifying how emotions evolve and change over time, and how basic emotions blend to form more complex emotions.
Managing Emotions	Explaining how to maintain or change one's feelings in a hypothetical situation
	Explaining how to manage others' emotions so that a desire outcome is achieved

Items on the MSCEIT have been operationalized so that answers are scored as either correct or incorrect. Two methods for keying the items have been developed: the consensus scoring method and the expert scoring method. For the expert scoring method, 21 emotions experts from the International Society of Research on Emotions examined each stimulus and used their best judgment to determine the best answer to each item (e.g., the facial expression seen here is “sadness”). The correlation between the experts’ scores was very high ( $r = .91$ ) (Mayer, Salovey, & Caruso, 2004). For consensus scoring, the test developers administered the test to a large number of people and identified as the “correct” response those answers that were the most popular. Studies have shown a high correlation between test scores calculated by consensus and expert scoring ( $r = .96-.98$ ) and as a result, both scoring methods are considered acceptable (Mayer, Salovey, Caruso, & Sitarenios, 2003).

The MSCEIT has demonstrated good reliability ( $r = .91$  to  $.93$ ), but the test manual emphasizes that the test’s reliability is high only at the total score and branch scores level, but

not at task or item score level (Mayer, Salovey, & Caruso, 2002, p. 14, 19, 35). Test-retest reliability is also good ( $r = .86$ ) (Mayer, Salovey, & Caruso, 2004).

Unlike the criterion of reliability, the criterion of validity has been significantly more difficult to meet given the numerous existing definitions of emotional intelligence (Matthews, Zeidner, & Roberts, 2002). However, content validity has been achieved primarily because items directly reflect the authors' conceptualization of the construct. Regarding predictive validity, the MSCEIT has been previously associated with variables such as the quality of relationships among romantic partners (Brackett, Warner, & Bosco, 2005). In addition, scores on the managing emotions branch were positively correlated with quality of relationships among friends (Lopes, Salovey, & Staus, 2003).

Performance on the MEIS and the MSCEIT has also shown a relation to crime and delinquency outcome variables. For example, emotional intelligence has been shown to negatively correlate with student-rated aggression, bullying, violence, and drug problems (Rubin, 1999, as cited in Mayer, Salovey, & Caruso, 2004). Males who scored higher on measures of emotional intelligence were found to have lower levels of drug and alcohol consumption and fewer deviant behaviors (Brackett, Mayer, and Warner, 2004). Hypotheses for the proposed study are based in part on the literature's documentation of the negative correlation of emotional intelligence and variables of substance abuse, delinquency, deviance, and aggression.

#### *Bar-On's Trait Model of Emotional Intelligence*

Trait models of emotional intelligence (also referred to as "mixed" models) differ from ability models in both their definition of emotional intelligence and the method of measurement. Trait models tend to view emotional intelligence as a varied cluster of personality traits related to

emotions that might predict successful functioning in professional and daily situations (Neubauer & Freudenthaler, 2005).

Trait models include three classes of constructs: self-perception of emotional abilities, self-reported competencies, and personality traits (Brackett et al., 2006). One prominent trait model, constructed by Reuven Bar-On's (1997), identifies five distinct dimensions of emotional intelligence which may help explain, beyond cognitive ability, why some individuals are successful and others are not. These five dimensions are detailed in Table 3

Table 3  
*Five Dimensions of the Bar-On Emotional Quotient Inventory (EQ-i) (Bar-On, 1997)*

<b>Dimensions</b>	<b>Abilities/Description</b>
Intrapersonal	Awareness of one's own emotions
	Capacity to express one's emotions
Interpersonal	Capacity to maintain relationships with others
	Capacity to recognize emotions in others
Stress Management	Capacity to tolerate stress
	Capacity to control one's impulses
Adaptability	Capacity to solve problems and test reality
	Capacity to be flexible in the face of change
General Mood	Presence of general happiness
	Overall optimism

Bar-On originally identified 15 abilities that are subsumed under the five dimensions which he then narrowed to ten abilities in 2000. The abilities include self-regard, emotional self-awareness, assertiveness, empathy, interpersonal relationship, stress tolerance, impulse control, reality testing, flexibility, and problem solving. He also cited five additional abilities that he believed facilitated emotional intelligence: self-actualization, independence, social responsibility, optimism, and happiness (Neubauer & Freudenthaler, 2005).

The assessment instrument based on this sweeping definition of emotional intelligence, the Bar-On Emotional Quotient Inventory (EQ-i), is designed to measure five dimensions: intrapersonal, interpersonal, adaptability, stress management, and general mood. The EQ-i is a self-report instrument that consists of 133 items. The subject, using a five-point Likert scale, rates the degree to which the item describes him or her. Scores can be calculated for each dimension, as well as a total score reflecting a person's overall level of emotional intelligence (Neubauer & Freudenthaler, 2005). Unlike the MSCEIT, there are no "correct" answers on the EQ-i; however, ratings that reflect a high level of emotional intelligence are desirable.

Trait models and their companion assessment instruments have received significant criticism. Mayer, Salovey, and Caruso (2004), not surprisingly, discount self-report measures of emotional intelligence as having inadequate overlap with both emotion *and* intelligence. They assert that such self-reports measure more than emotional intelligence. By contrast, Bar-On views as an advantage that, assessment instruments based on trait models of emotional intelligence tend to have small to zero correlation with measures of general intelligence (Derkson, Kramer, & Katzko, 2002). The fact that the MSCEIT and the EQ-i tend to differ in their correlation with measures of personality and general intelligence underscores the claim that the models on which these instruments are based are distinct.

Another criticism of trait models and self-report measures is that they overlap too much with measures of personality and therefore account for little unique variance in outcome variables (Bastian, Burns, & Nettlebeck, 2005; Brackett & Mayer, 2003; Davies, Stankov, & Roberts, 1998). Barchard and Hakstian (2004) have proposed that self-report measures, such as the EQ-i, are more of a measure of individuals' self-perception of their own level of emotional intelligence than their actual ability level. The proponents of trait models assert, however, that

personality dimensions are indeed relevant to emotional intelligence because these dimensions affect not only the abilities that comprise emotional intelligence, but also how the individual might utilize the abilities that he possesses.

### *Ability versus Mixed Models*

In 2001, Petrides and Furnham proposed a specific conceptual distinction between trait and ability emotional intelligence. They referred to trait emotional intelligence as “emotional self-efficacy” and described it as a “constellation of behavioral dispositions and self-perceptions” regarding one’s recognition, processing, and utilization of emotional information. In contrast, they referred to ability emotional intelligence as “cognitive-emotional ability” and described it as one’s measured ability to recognize, process, and use emotional information. In addition to explaining the conceptual differences between the two models, their descriptions also explain why trait emotional intelligence measures typically take the form of self-report questionnaires and ability measures are most often maximum-performance tests that consist of correct and incorrect responses.

Past studies suggest that although ability and trait models do overlap to some degree (as evidenced by small, positive correlations), there is significant support for the hypothesis that ability model instruments and trait model assessment instruments are measuring different things. Brackett and Mayer (2003) compared the MSCEIT with the EQ-i and found that correlations between the ability and the trait measure were low ( $r = .22$ ). The weak correlation between the instruments may be due in part to the method of assessment and may suggest that individuals are not good judges of their own emotional intelligence ability (Brackett, et al., 2006). Additionally, individuals who are low in emotional intelligence may overestimate their level because they lack the metacognitive skills needed to make an accurate estimation. By contrast, individuals who are

high in emotional intelligence may provide inaccurate self-reports because they underestimate how their emotional intelligence compares to others (Ehrlinger & Dunning, 2003)

The difference between how mixed model and ability model instruments differentially relate to cognitive intelligence and personality traits has already been addressed; however, there are other variables with which ability model and mixed model instruments have different relations. Brackett and colleagues (2006) found that the MSCEIT, but not the Self-Rated Emotional Intelligence Scale (SREIS), was incrementally valid in that it predicted one's level of social competence. For more information regarding the SREIS, please refer to Brackett, et al, (2006). This finding, however, only held true for men but not for women. This discrepancy suggests that emotions may play a different role in the social interactions of men and women and that emotional skills may operate differently in the social worlds of individuals depending on their gender. This finding may also suggest that social competence should be operationalized differently for women than it is for men.

#### *Emotional Intelligence, Outcome Variables, and Gender Differences*

The importance of emotional intelligence lies partly in its relation to numerous outcome variables. It has been positively correlated with leadership (Bertges, 2002) and problem solving abilities (Schutte, Schuettpelez, & Malouff, 2000). It has also been related to such variables as coping processes (Salovey, Bedell, Detweiller, and Mayer, 1990 as cited in Bastian, Burns, Nettlebeck 2005), leadership in adolescents (Charbonneau & Nicol, 2002), and life satisfaction (Ciarrochi, Chan, and Caputi, 2000).

Emotional intelligence has also been related to the outcome variables which are the focus of the current study: substance use and delinquency. Salovey, Hsee, & Mayer (1993) stated that individuals who are low in emotional intelligence (and therefore have more difficulty perceiving

emotions in themselves and others, less knowledge of when to express their feelings, and an inability to regulate moods) may be less likely to effectively handle stressful situations in general and this could be related to increased rates of substance use and aggression. As stated previously, Spooner (1999) proposed that it is not the mere presence of a stressful event, but rather the individual's method of handling that stressful event which can lead to negative outcomes. Problem-solving, a component of handling stressful events, has a well-established relationship with substance use, suggesting that individuals who engage in impulsive/careless and avoidant problem-solving styles tend to experience more problems with drugs and alcohol (Jaffee & D'Zurilla, 2009).

Preliminary evidence suggests that emotional intelligence may influence cognitive appraisal of stressful events, with higher emotional intelligence being associated with less threatening appraisals and a higher sense of self-efficacy (Mikolajczak & Luminet, 2008). Such individuals will be less likely to interpret ambiguous information as threatening which would likely decrease the probability responding in an aggressive manner. Additionally, individuals who have a higher sense of self-efficacy tend to engage in lower levels of alcohol and drug use.

The proposed relationship between emotional intelligence and substance use is supported by several studies. Riley and Schutte (2003) found that individuals lower in emotional intelligence tended to report more alcohol-related and drug-related problems. Similarly, individuals diagnosed with alexithymia (which is strongly correlated with low levels of emotional intelligence) have been found to engage in greater alcohol use (Kauhanen, Julkunen, & Salonen, 1992) and greater drug use (Helmers & Mente, 1999).

Factors related to emotions have also been shown to be correlated with delinquency in adolescence and early adulthood. Early onset of delinquent behavior (prior to the age of 12) has

been positively associated with high negative emotionality, as well as with high impulsivity and attention deficits (Taylor, 2000). This indicates that individuals who tend to interpret stimuli in a negative light, who have deficits in controlling their behavior, and have difficulty attending to stimuli tend to have higher rates of delinquent behavior. These correlates could well relate to various components of emotional intelligence such as perception and management of emotions. Leech and colleagues (2003) found that higher levels of emotional instability, along with shyness, lower IQ, and gender, was able to predict an increase in the rate of delinquent behaviors.

“Lack of control” (defined as a combination of negativism, emotional lability, restlessness, and short attention span) at ages three and five years predicted antisocial behavior at ages nine and eleven years and continued to predict antisocial behavior throughout middle adolescence (Caspi, Henry, McGee, Moffitt, & Silva, 1995). Some of the components of “lack of control” may overlap with the components of emotional intelligence in the following ways: negativism may be related to the general mood dimension in Bar-On’s model, emotional lability may be related to the management of emotions branch in Mayer and Salovey’s model and the stress management dimension of Bar-On’s model. The component of short attention span may impact the perceiving emotions branch of Mayer and Salovey’s model in that deficits in attention may hinder one’s ability to attend to, and thus perceive, emotions in others.

Gender differences in emotional intelligence have also been noted. On measures of emotional intelligence, males generally score lower than females (Harrod & Scheer, 2005). Women tend to perform better on the MSCEIT (Brackett, et al., 2006), supporting the results of past studies that women’s emotional vocabulary is more varied than men’s (Adams, Kuebli, Boyle, & Fivush, 1995) and that women are better able to read nonverbal behaviors (McClure,

2000), two abilities that are assessed with the MSCEIT. Additionally Bastian, Burns, and Nettlebeck (2005) found that women generally scored higher than men in their attention to emotions. Paradoxically, on self-report measures, men's estimates of their level of emotional intelligence were higher than women's self-estimates, a finding consistent with previous research (Roberts, 1991). A possible explanation for the difference between the results of self-report and performance tests may be related to the influence of social desirability (Paulhus, 1991).

### *Significance of the Current Study*

Although various causes and correlates of substance use and delinquency in the college population have been investigated and identified, a complete understanding of these problem behaviors remains elusive. The relation of emotional intelligence to substance use and delinquency has been noted in the literature, but the ability of emotional intelligence to predict these behaviors in a college population has not been explored.

Additionally, the structure of the emotional intelligence construct remains under debate, with two prominent models of emotional intelligence emerging: trait models and abilities models. Both models have demonstrated their strengths and weaknesses as researchers continue to explore this relatively new domain. One goal of the current study was to add to the growing literature on the differences and similarities between measures of ability models and trait models of emotional intelligence. The relation of emotional intelligence to cognitive intelligence and personality are two relations that have been shown to demonstrate model distinctiveness. Prior studies have resulted in weak correlations between ability model and trait model measures, and this study attempted to replicate those findings. Additionally, by examining the relation of emotional intelligence to important outcome variables such as substance use and delinquency,

this study provided additional insight into the predictive utility of the emotional intelligence construct in the context of other known predictor variables such as gender, IQ, and personality.

### *Hypotheses*

Based on the current literature on substance abuse, delinquency, and emotional intelligence, the following hypotheses were formulated:

#### *Hypotheses regarding the inter-relations of predictor variables:*

H1: Trait emotional intelligence and ability emotional intelligence will not be significantly correlated.

H2: Trait emotional intelligence and cognitive intelligence will not be significantly correlated.

H3: Ability emotional intelligence and cognitive intelligence will be significantly correlated in the positive direction.

H4: Trait emotional intelligence will be positively correlated with the personality traits extraversion, agreeableness, openness to experience, and conscientiousness and negatively correlated with neuroticism.

H5: Ability emotional intelligence will not be significantly correlated with personality.

#### *Hypotheses regarding the relation of predictor variables to outcomes:*

##### In bivariate analyses:

H6: Ability emotional intelligence will negatively correlate with the substance abuse and delinquency variables (reactive/immature delinquency and callous/instrumental delinquency).

H7: Trait emotional intelligence will negatively correlate with the substance abuse and delinquency variables (reactive/immature delinquency and callous/instrumental delinquency).

In multivariate regression analyses:

H8: Ability emotional intelligence will account for significant unique variance in substance abuse, above and beyond that which is accounted for by age, IQ, and personality

H9: Trait emotional intelligence will account for significant unique variance in substance abuse, above and beyond that which is accounted for by age, IQ, and personality

H10: Ability emotional intelligence will account for significant unique variance in reactive/immature delinquency and callous/instrumental delinquency above and beyond that which is accounted for by age, IQ, and personality.

H11: Trait emotional intelligence will account for significant unique variance in reactive/immature delinquency and callous/instrumental delinquency above and beyond that which is accounted for by age, IQ, and personality.

When both emotional intelligence measures are included in regression models:

H12: Trait emotional intelligence will account for significant unique variance in substance abuse above and beyond that accounted for by age, IQ, personality, and ability emotional intelligence

H13: Trait emotional intelligence will account for significant unique variance in reactive/immature delinquency and callous/instrumental delinquency above and beyond that accounted for by age, IQ, personality, and ability emotional intelligence:

## CHAPTER 2: METHODS

### *Participants*

The participants for this project were students enrolled in Psychology 101 at the University of Alabama during the Spring 2010 semester. The resulting sample of 193 participants consisted of 136 females and 57 males. The mean age of the participants was 18.99 years (range 18 to 24). Approximately half the sample (47.9%, 93 participants) was 19 years old, and 80.3% (155 participants) of the sample was age 19 or younger. The ethnic composition of the sample was 74.1% Caucasian (143 participants), 18.1% African American (35 participants), 4.1% Hispanic (8 participants), 3.1% Asian Americans (6 participants), and 0.5% “Other” (1 participant). Based on the Wonderlic, the average IQ for this sample was 110.07, with a low score of 80 and a high score of 134. Figure 2 (Appendix B) displays the distribution of IQ scores for this sample.

### *Procedure*

Participants were recruited from the Psychology 101 Subject Pool for 2-hour data collection sessions. Information regarding the time and location of each session was available on the Subject Pool website (<http://researchpool.psych.ua.edu>). The website also provided a brief description of the study, including the purpose of the study and the assessment instruments involved in the completion of the study. Participants signed up for a specific time slot via the website and were provided with an email reminding them of their appointment 24 hours before the scheduled session. A maximum of 15 participants were able to sign up for each session.

Upon arrival, participants were provided with an information sheet, detailing the purpose of the study, what would be asked of them during the study session, and their rights as a voluntary participant. The participants were instructed to read the entire information sheet and were asked if they had any questions regarding the information provided. Participants were given a number by which their assessment instruments would be identified and they were instructed not to write their name on any of the instruments.

Once all the participants arrived, the assessment packets (which included all the assessment instruments) were handed out, one to each participant. Because the Wonderlic Personnel Test (WPT) is a timed instrument, participants were instructed to start with that instrument. The researcher read through the instructions for the WPT and allowed an opportunity for participants to ask questions. Once the questions were answered, the researcher told the participants to begin and timed them using a stopwatch. Participants were given 12 minutes to answer as many items as possible.

Upon completion of the WPT, the researcher explained the instructions for the remaining instruments and provided an opportunity for the participants to ask questions. Once the questions were answered, the participants completed the remaining instruments. Upon completion, participants brought their completed assessment packet to the researcher and the researcher provided them with a written debriefing form. Participants were also verbally encouraged to contact the researcher should they have any questions about the research study or their involvement. Participants typically took 90 minutes to complete the study.

## *Measures*

### *Ability Emotional Intelligence: Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT)*

The Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT) was used as the measure of ability-based emotional intelligence. The MSCEIT is intended for use with individuals 17 years old and older and assesses four emotional intelligence abilities (perceiving emotions, using emotions, understanding emotions, and managing emotions) representing the four branches of emotional intelligence proposed by the abilities model. The MSCEIT can be taken online or using a pencil and paper version and it requires an 8<sup>th</sup> grade reading level. The instrument consists of eight sections (184 items), with two sections corresponding to each of the four branches of their model. The MSCEIT can be given individually or in a group format and generally takes 30-45 minutes to complete. For the purpose of the current study, the total emotional intelligence score was utilized in the major statistical analyses. Branch scores were examined in exploratory analyses. The MSCEIT has demonstrated excellent internal reliability ( $\alpha = .91$ ) (Mayer, Salovey, & Caruso, 2002) and a high test-retest reliability ( $r = .86$ ) (Brackett & Mayer, 2001)

### *Trait Emotional Intelligence: Bar-On Emotional Quotient Inventory (EQ-i)*

The Bar-On Emotional Quotient Inventory (Bar-On EQ-i) was used as the measure of trait emotional intelligence. The Bar-On EQ-i is a 133-item, self-report instrument that presents the subject with a statement and asks the subject to rate the degree to which the statement describes him or her. Subjects rate each item using a five-point likert scale which ranges from “Very Seldom True of Me” to “Very Often True of Me.” In addition to measuring the five dimensions of Bar-On’s model (intrapersonal, interpersonal, stress management, adaptability, and general mood), the Bar-On EQ-i contains a Positive Impression scale that assesses the

degree to which the subject is attempting to present himself in an overly positive light. For the purposes of this study participants who scored above 110 on the Positive Impression Index were deleted from the study. No participants in this study required removal due to high scores on the Positive Impression Index. Available scores include scores for each of the five dimensions, the Positive Impression index, and a total emotional intelligence score. For the purpose of the current study, the total emotional intelligence score was utilized in the major statistical analyses. Dimension scores were examined in exploratory analyses. The Bar-On EQ-i has demonstrated good internal reliability (average Cronbach's alpha = .76) and high test-retest reliability ( $r = .75$  to  $.85$ ) (Bar-On, 1997).

#### *Substance Use and Delinquency*

The dependent variables of the study was assessed using the Measure of Delinquency-Revised (MOD-R). The MOD-R is a 22-item, self-report instrument designed to measure the rate, frequency, and quality of antisocial acts in a college sample. For each of the items, individuals indicate the number of times they have engaged in that specific behavior in a given time period. As proposed for the current study, the time periods included the following: Middle School, High School, College Freshman, College Sophomore, College Junior, and College Senior. Ultimately, only college data were used as described in the Results section. Approximately half of the items of the MOD-R were derived from the Self-Report of Delinquency (SRD), an instrument created by Elliott, Huizinga, and Ageton in 1985 to measure delinquency. Despite the criticisms of self-reports in terms of accuracy and impression management, Huizinga & Elliott (1986) found self-reports of delinquency to be quite accurate. A factor analysis of the items revealed three factors, including Reactive/Immature, Callous/Instrumental, and Substance Abuse. It should be noted that the Substance Abuse factor is

not indicative of a clinical diagnosis of Substance Abuse. The reliability of the MOD-R is very good ( $\alpha = .86$ ) and the measure has been correlated with relevant outcome variables such as jail exposure ( $r = .37, p < .01$ ) (Brannen & Clements, 2004). Brannen and Clements (2004) also correlated the MOD-R with the Antisocial Scale of the Personality Assessment Inventory (PAI) and found that it correlated significantly with all the subscales of the Antisocial scale (antisocial behavior, stimulus seeking, and egocentricity) as well as with the total score for the Antisocial Scale, suggesting good convergent validity for the MOD-R. The measure has also demonstrated good divergent validity and has been poorly correlated with variables such as mental illness ( $r = .04$ ) (Brannen & Clements, 2004). The MOD-R is presented in Appendix B.

*Personality: NEO-Five Factor Inventory (NEO-FFI)*

Personality was assessed using the NEO-Five Factor Inventory (NEO-FFI), a 60-item, self report instrument. The NEO-FFI consists of five 12-item scales which measure the five personality dimensions included in the “Big Five” model: Neuroticism, Extroversion, Openness, Agreeableness, and Conscientiousness (Austin, Deary, & Egan, 2006). Individuals respond to each questionnaire item using a 5-point Likert scale which ranges from “Strongly Disagree” to “Strongly Agree.” The NEO-FFI is a short form of the Revised NEO Personality Inventory (NEO-PI-R) (Costa & McCrae, 1992). For each domain of the NEO-PI-R, the 12 items with the highest loadings on their respective factors were chosen for inclusion in the NEO-FFI. The NEO-FFI has demonstrated good test-retest reliability, ranging from  $r = .75$  (for the Openness scale) to  $r = .88$  (for the Neuroticism scale), with an average test-retest reliability of  $r = .82$ . Due to its brief administration time and easily scored format, the NEO-FFI has been used extensively in research settings (Becker, 2006).

### *Cognitive Intelligence: Wonderlic Personnel Test (WPT)*

The Wonderlic Personnel Test (WPT) is a 50-item, timed instrument. Individuals are given 12 minutes to see how many items they can answer correctly. It is a self-administered pencil and paper assessment instrument which can be administered individually or in groups. The WPT includes word comparisons, disarranged sentences, sentence parallelism, following directions, number comparisons, number series, geometric figure analysis, mathematics, and logical story problems. Items begin at a moderate level of difficulty and gradually increase in difficulty. Internal consistency for the WPT reportedly ranges from  $\alpha = .88$  to  $.94$  (Wonderlic, 1992). To establish the concurrent validity of the WPT, it has been compared to the Wechsler Adult Intelligence Scale, a well-established measure of general intelligence, and the revised version of the WAIS, the WAIS-R. The WPT has been highly correlated with the Wechsler Adult Intelligence Scale (WAIS) Full Scale IQ in normal samples (Dodrill, 1981; Dodrill, 1983; Dodrill & Warner, 1988; Hawkins, Faraone, Pepple, Seidman, & Tsuang, 1990; Edinger, Shipley, Watkins, & Hammett, 1985). Hawkins, et. al. (1990) compared the WPT to the Verbal IQ and Performance IQ of the WAIS-R and found the correlations to be  $r = .86$  and  $r = .84$  respectively. Dodrill (1983) found that the WPT has test-retest reliability over a 5-year period comparable to that of the WAIS and Wonderlic (1992) reported test-retest reliability ranging from  $r = .82$  to  $.94$ .

### *Emotional Intelligence Behavior Scale (EIBS)*

#### *Scale Construction and Scoring*

An exploratory scale designed to measure the reported frequency of emotionally intelligent behaviors in the immediate past was constructed (Appendix B). The items chosen for the scale were based on the four branches of the ability emotional intelligence (MSCEIT) model

and the five dimensions of the trait emotional intelligence model (EQ-i). Table 4 displays the 9 items and the relevant MSCEIT branches and EQ-i dimensions from which these items were derived.

Table 4  
*EIBS Items and the Corresponding MSCEIT Branch and EQ-i Dimension*

Emotional Intelligence Behaviors Scale	MSCEIT	EQ-i
Remained calm in a stressful situation	Managing Emotions	Stress Management
Found it difficult to identify how I was feeling	Perceiving Emotions	Intrapersonal
Got upset easily	Managing Emotions	Stress Management
Misinterpreted how someone else was feeling	Perceiving/Understanding Emotions	Interpersonal
Hurt someone else's feelings	Understanding/Using Emotions	Interpersonal
Maintained a positive outlook	-	General Mood
Became discouraged by my inability to solve my problems	Using Emotions	Adaptability
Broke something out of anger	Managing Emotions	Stress Management
Ignored a problem, hoping it would go away	Using emotions	Stress Management

Individuals used a Likert scale ranging from zero to five (0 = Never/Rarely, 5 = Often) to rate how often they engaged in each behavior during the past two weeks. Participants were given the option of rating the items "N/A" if they felt that item did not apply to them or the given situation had not presented itself. Items 2, 3, 4, 5, 7, 8, and 9 were reverse-scored such that lower rating indicated more emotionally intelligent behaviors. Because this scale was inserted after data collection began, only 144 participants (75% of the total sample) completed it. The main goal for the construction of the Emotional Intelligence Behavior Scale was to investigate whether scores on emotional intelligence assessment instruments, such as the MSCEIT and the EQ-i, are related to emotionally intelligent behaviors occurring in daily life. Because the EIBS is an exploratory

scale, no hypotheses were made regarding its performance and all results involving the EIBS should be interpreted with caution.

## CHAPTER 4: RESULTS

The results of this study are presented below using the following organizational scheme:

Distributions, means, and data descriptions for each hypothesized predictor, as well as dependent measures, are provided to set the stage for analysis of their relations. Correlations between predictor variables and dependent variables are reported and significant correlates of the dependent variables are used in subsequent regression analyses. Lastly, results from exploratory analyses are reported.

### *Personality Descriptives: NEO-Five Factor Inventory (NEO-FFI)*

The NEO-FFI, a self-report measure of personality, reports results as t-scores which can range from 25 to 75. Table 5 displays the current sample's mean score and standard deviation for each of the five personality factors assessed by the NEO-FFI.

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Table 5  
*Mean Scores and Standard Deviation for NEO-FFI Personality Factors*

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<b>NEO-FFI Factor</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Neuroticism</b>	<b>45.46</b>	<b>10.64</b>
<b>Extraversion</b>	<b>51.07</b>	<b>11.40</b>
<b>Openness</b>	<b>47.60</b>	<b>11.14</b>
<b>Agreeableness</b>	<b>52.33</b>	<b>11.00</b>
<b>Conscientiousness</b>	<b>54.61</b>	<b>10.10</b>

The mean score for each of the five factors falls within the Average range (t-scores of 45-55), with Conscientiousness having the highest mean (average t-score = 54.61) and Neuroticism having the lowest mean (average t-score = 45.46). The distributions on each factor were approximately normal

Table 6 displays the interfactor correlations across the five personality factors.

Table 6  
*Correlations Between Personality Factors Measured by the NEO-FFI*

	<b>Neuroticism (NEO-N)</b>	<b>Extraversion NEO-E</b>	<b>Openness (NEO-O)</b>	<b>Agreeableness (NEO-A)</b>	<b>Conscientiousness (NEO-C)</b>
<b>NEO-N</b>	-				
<b>NEO-E</b>	<b>-.47**</b>	-			
<b>NEO-O</b>	<b>.19**</b>	<b>-.17*</b>	-		
<b>NEO-A</b>	<b>-.26**</b>	<b>.44**</b>	<b>-.13*</b>	-	
<b>NEO-C</b>	<b>-.49**</b>	<b>.39**</b>	<b>-.20**</b>	<b>.25**</b>	-

\*  $p < .05$

\*\*  $p < .01$

All the personality factors were significantly correlated with each other.

*Measure of Delinquency – Revised: Calculation of Composite and Total Scores*

All participants completed the Measure of Delinquency – Revised (MOD-R). The MOD-R records the self-reported frequency of delinquent behaviors occurring during middle school, high school, and college. However, reports of behaviors occurring during middle school and high school were not used for this project. Given what is known about the stability of the emotional intelligence construct and the desire to focus on delinquent behavior during a relatively recent timeframe, only college behaviors were used in scoring

An average score was calculated for each individual on each item by adding the frequency score under the college columns (“Freshman”, “Sophomore”, “Junior”, and “Senior”). The sum for each item was then divided by the number of years (1, 2, 3, or 4) over which the data spanned. This step yielded an average score per year of each for the 22 specific behaviors irrespective of class levels. Scores averaged over the number of years in the reporting timeframe will be referred to as “adjusted” MOD-R item scores. An adjusted MOD-R total score for each participant was then calculated by summing the adjusted score across the 22 items.

### *Normalizing the Data*

The adjusted total scores, plotted on a histogram displayed in Figure 4 (Appendix C) proved to be skewed and non-normal, with several outliers occurring at the extreme upper-end of the distribution and a large number of scores at the very low end of the distribution (Skewness = 2.28, Kurtosis = 5.29). To compensate, a square root transformation was performed on the MOD-R scores by taking the square root of each of the data points in the college-related columns of the MOD-R. The transformed data for each item was then summed and divided by the number of years in the reporting timeframe. These transformed scores were plotted in Figure 5 (Appendix C) and the resulting distribution, while still not normal, was more normally distributed than the untransformed distribution (Skewness = 1.37, Kurtosis = 1.29)

Using the square-root transformed data, MOD-R composite scores, based on the previously-established three-factor structure (Brannen & Clements, 2004), were computed for each individual. This three-factor structure includes a substance abuse factor (5 items), a reactive/immature delinquency factor (11 items), and a callous/instrumental delinquency factor (6 items). A list of the items in each factor is displayed in Table 7.

Table 7  
*Items Composing the MOD-R Factors*

<b>Factor</b>	<b>MOD-R Item</b>
<b>Factor 1 Substance Abuse</b>	<b>Become intoxicated from beer or liquor</b>
	<b>Bought or provided liquor for a minor</b>
	<b>Smoked marijuana</b>
	<b>Taken drugs or pills other than marijuana (non-prescription)</b>
	<b>Been drunk in a public place</b>
<b>Factor 2 Reactive/Immature Delinquency</b>	<b>Gone onto someone's land when they didn't want you to be there or without their permission</b>
	<b>Threatened to hurt someone</b>
	<b>Been told to bring your parents to school for something you did wrong</b>
	<b>Hurt someone badly enough for him/her to need bandages or a doctor</b>
	<b>Hit or threatened to hit a member of your family (or spouse) in anger</b>
	<b>Taken something not belonging to you worth less than \$5.00</b>
	<b>Purposely damaged or destroyed property belonging to your parents or other family members</b>
	<b>Been sent to the principal's office or to student affairs for bad behavior</b>
	<b>Beaten up on somebody or fought someone (physically)</b>
	<b>Taken something worth more than \$5.00 but less than \$50.00</b>
	<b>Damaged or messed up something not belonging to you</b>
<b>Factor 3 Callous/Instrumental Delinquency</b>	<b>Taken something not belonging to you worth over \$50.00</b>
	<b>Bought or gotten something that was stolen by someone else</b>
	<b>Participated in sexual activity with an unwilling partner</b>
	<b>Gotten "kicked out" of the house by your parents</b>
	<b>Used someone's credit card without permission</b>
	<b>Intentionally done something to cause great injury or death to another person</b>

Composite scores were also set to a common base by dividing them by the number of items in each factor. Not surprisingly, there was a very low level of endorsement for items on the callous/instrumental factor. 87% of the sample failed to endorse a single item in this factor. Because of this invariance and low level of endorsement, the callous/instrumental composite was

not included in the subsequent analyses. The distributions of the Composite 1 and Composite 2 scores are displayed in Figure 6 (Appendix C).

Even after performing a square root transformation, the issue of outliers remained. Because these outliers represented meaningful data (as opposed to extreme scores that are the result of carelessness or a misunderstanding of the questions) they were retained in the data sample. The outliers were winsorized - a process of identifying extreme scores that are separate from the distribution curve and setting them equal to the highest point that is part of the remaining distribution curve (Ruppert, 1988). The distributions and frequencies of Composite 1 and Composite 2 were examined to determine which, if any, data points needed to be winsorized. For Composite 2, 0.89 was determined to be the highest data point on the distribution curve, and the two outlier data points higher than 0.89 (1.29 and .95) were set equal to .89. Total score were recalculated using Composite 1 and the winsorized Composite 2.

### *Delinquency Statistics*

MOD-R data were examined to explore the level of substance abuse and reactive/immature delinquency in the current sample. 11.5% of the sample (22 out of 191 participants) reported neither substance use nor delinquency in college. Conversely, 88.5% (n = 169) reported instances of substance use or delinquency as a college student. Of these 169 students, 146 (76.4% of the total sample) reported substance use and 115 (60.2%) reported acts of reactive immature delinquency in college. The mean adjusted MOD-R total score was 45.12, signifying that, on average, participants were engaging in approximately 45 incidences of substance use or delinquency per year during college as measured across the 16 remaining MOD-R reporting categories. Table 8 includes the mean adjusted score, standard deviation and

range for each of the items in Composite 1 and Composite 2. (Note that these are raw reports averaged across reporting years in college).

Table 8  
*Mean, Standard Deviation, and Range for Adjusted MOD-R Items*

<b>Factor</b>	<b>Item</b>	<b>Mean</b>	<b>St. Dev.</b>	<b>Range</b>
<b>Substance Abuse</b>	<b>Become intoxicated from beer or liquor</b>	<b>32.65</b>	<b>60.90</b>	<b>0-400</b>
	<b>Bought or provided liquor for a minor</b>	<b>2.90</b>	<b>13.75</b>	<b>0-140</b>
	<b>Smoked marijuana</b>	<b>16.54</b>	<b>56.76</b>	<b>0-429</b>
	<b>Taken drugs of pills other than marijuana (non-prescription)</b>	<b>1.96</b>	<b>8.64</b>	<b>0-95</b>
	<b>Been drunk in public</b>	<b>14.58</b>	<b>32.21</b>	<b>0-225</b>
<b>Reactive/Immature Delinquency</b>	<b>Gone onto someone’s land when they didn’t want you to be there or without their permission</b>	<b>1.02</b>	<b>2.70</b>	<b>0-25</b>
	<b>Threatened to hurt someone</b>	<b>0.96</b>	<b>2.43</b>	<b>0-15</b>
	<b>Been told to bring your parents to school for something you did wrong</b>	<b>0.01</b>	<b>0.10</b>	<b>0-1</b>
	<b>Hurt someone badly enough for him/her to need bandages or a doctor</b>	<b>0.03</b>	<b>0.16</b>	<b>0-1</b>
	<b>Hit or threatened to hit a member of your family (or spouse) in anger</b>	<b>0.39</b>	<b>1.98</b>	<b>0-20</b>
	<b>Taken something worth less than \$5</b>	<b>0.74</b>	<b>2.13</b>	<b>0-17</b>
	<b>Purposely damaged or destroyed property belonging to your parents or other family members</b>	<b>0.04</b>	<b>0.30</b>	<b>0-3</b>
	<b>Been sent to the principal’s office or student affairs for bad behavior</b>	<b>0.02</b>	<b>0.14</b>	<b>0-1</b>
	<b>Beaten up on somebody or fought someone (physically)</b>	<b>0.15</b>	<b>0.57</b>	<b>0-5</b>
	<b>Taken something worth more than \$5.00 but less than \$50.00</b>	<b>0.52</b>	<b>3.83</b>	<b>0-50</b>
<b>Damaged or messed up something not belonging to you</b>	<b>0.53</b>	<b>1.63</b>	<b>0-15</b>	

All the items in the Substance Abuse composite had higher mean adjusted scores than all of the items in the Reactive/Immature Delinquency composite, indicating that students in this sample engaged in substance use behaviors more frequently per year than they engaged in acts of reactive/immature delinquency. Table 9 lists the percentage of the sample that endorsed each

item in Composite 1 and Composite 2. The items in Table 9 are arranged in descending order of endorsement percentage.

Table 9  
*Percentage of Sample Endorsement by Item (Across College Years)*

<b>Factor</b>	<b>Item</b>	<b>% Endorsement</b>
<b>Substance Abuse</b>	<b>Become intoxicated from beer or liquor</b>	<b>74.09</b>
	<b>Been drunk in public</b>	<b>59.69</b>
	<b>Smoked marijuana</b>	<b>38.90</b>
	<b>Bought or provided liquor for a minor</b>	<b>21.24</b>
	<b>Taken drugs or pills other than marijuana (non-prescription)</b>	<b>16.75</b>
<b>Reactive/Immature Delinquency</b>	<b>Gone onto someone's land when they didn't want you there or without their permission</b>	<b>31.09</b>
	<b>Threatened to hurt someone</b>	<b>23.83</b>
	<b>Damaged or messed up something not belonging to you</b>	<b>20.94</b>
	<b>Taken something not belonging to you worth less than \$5.00</b>	<b>19.17</b>
	<b>Hit or threatened to hit a member of your family (or spouse) in anger</b>	<b>9.33</b>
	<b>Beaten up on somebody or fought someone (physically)</b>	<b>8.81</b>
	<b>Taken something worth more than \$5.00 but less than \$50.00</b>	<b>8.38</b>
	<b>Hurt someone badly enough for him/her to need bandages or a doctor</b>	<b>2.59</b>
	<b>Been sent to the principal's office or students affairs for bad behavior</b>	<b>2.59</b>
	<b>Purposely damaged or destroyed property belonging to your parents or other family members</b>	<b>2.07</b>
<b>Been told to bring your parents to school for something you did wrong</b>	<b>1.01</b>	

For the substance abuse composite, the highest rate of endorsement (74.09%) was for the item “Become intoxicated from beer or liquor” and the lowest rate of endorsement (16.75%) was for the item “Taken drugs or pills other than marijuana (non-prescription)”. For the reactive/immature delinquency composite, the highest rate of endorsement (31.09%) was for the

item “Gone onto someone’s land when they didn’t want you there or without their permission” and the lowest rate of endorsement (1.01%) was for the item “Been told to bring your parents to school for something you did wrong”.

Although the data provided for the middle school and high school time periods was not used in the subsequent analyses, a correlation analysis was conducted to better understand the relation of middle school, high school, and college delinquency. Total adjusted MOD-R scores for each of these time periods were used in the analyses. The results are displayed in Table 10.

Table 10  
*Correlation of Middle School, High School, and College Delinquency*

	<b>Middle School</b>	<b>High School</b>	<b>College</b>
<b>Middle School</b>	-		
<b>High School</b>	<b>.69**</b>	-	
<b>College</b>	<b>.40**</b>	<b>.59**</b>	-

**\*\* p <.001**

The results indicated a significant relation between delinquency in middle school, high school, and college. Higher scores in any of these time periods was associated with higher levels of delinquency in the other two time periods.

*Emotional Intelligence Descriptives*

*Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT)*

Participants completed the MSCEIT as a measure of *ability* emotional intelligence. Results indicate the total MSCEIT scores for the current sample ranged from 54 to 144. The mean total MSCEIT score was 105.05 (Average range) with a standard deviation of 15.39. The distribution of MSCEIT total scores is displayed in Figure 7 (Appendix C). The data for the current sample resulted in a normal distribution, centered in the “Average” range; thus, the current sample appears to be similar to the normative sample.

### *Bar-On Emotional Quotient Inventory (EQ-i)*

Participants completed the Bar-On Emotional Quotient Inventory (EQ-i) as a measure of *trait* emotional intelligence. Results indicate that total EQ-i scores for the current sample ranged from 67 to 137. The mean total EQ-i score was 99.27 (Average Range) with a standard deviation of 15.40. The distribution of the EQ-i total scores is displayed in Figure 8 (Appendix C). The data for the current sample resulted in a normal distribution, centered in the “Average” range; thus, the current sample appears to be similar to the normative sample.

### *Correlates of Emotional Intelligence*

Correlation analyses were run between ability emotional intelligence (MSCEIT total scores) and gender, age, IQ, and personality factors and the zero-order correlations are reported in Table 11. All correlations between the categorical variable of gender and a continuous variable were point-biserial correlations ( $r_{pb}$ ).

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Table 11  
*Correlation of MSCEIT Total Scores with Gender, Age IQ, and Personality*

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	<b>MSCEIT (<math>r</math>)</b>
<b>Gender</b>	$r_{pb} = .13$
<b>IQ</b>	<b>.44**</b>
<b>NEO-N</b>	<b>-.28**</b>
<b>NEO-E</b>	<b>.09</b>
<b>NEO-O</b>	<b>-.01</b>
<b>NEO-A</b>	<b>.24**</b>
<b>NEO-C</b>	<b>.28**</b>

**\*\*  $p < .01$**

*Ability* emotional intelligence was not significantly correlated with gender ( $r_{pb} = .13$ ,  $p = .067$ ). As hypothesized, *ability* emotional intelligence was positively correlated with IQ ( $r = .44$ ,  $p < .001$ ). This result indicates that individuals who are more cognitively intelligent tend to also be higher in *ability* emotional intelligence.

It was hypothesized that ability emotional intelligence would be uncorrelated with personality. The results were varied. Individuals who scored higher on ability emotional intelligence tend to be less neurotic and more agreeable and conscientious. On the other hand, MSCEIT scores were uncorrelated with Openness, Extraversion. This pattern of results is consistent with some findings in the literature (Livingstone & Day, 2005; Zeidner & Olnick-Shemesh, 2010).

Correlation analyses were run between trait emotional intelligence (EQ-i total scores) and gender, IQ, and personality factors and the zero-order correlations are reported in Table 12.

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Table 12  
*Correlation of EQ-i Total Scores with Gender, IQ, and Personality*

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	<b>EQ-i (<i>r</i>)</b>
<b>Gender</b>	$r_{pb} = .24^{**}$
<b>IQ</b>	<b>.02</b>
<b>NEO-N</b>	<b>-.34<sup>**</sup></b>
<b>NEO-E</b>	<b>.29<sup>**</sup></b>
<b>NEO-O</b>	<b>-.08</b>
<b>NEO-A</b>	<b>.32<sup>**</sup></b>
<b>NEO-C</b>	<b>.40<sup>**</sup></b>

**\*\*  $p < .01$**

As hypothesized, *trait* emotional intelligence was not significantly correlated to IQ ( $r = .02$ ,  $p = .757$ ). Contrary to MSCEIT findings, trait emotional intelligence was significantly correlated with gender ( $r_{pb} = .24$ ,  $p = .001$ ) females scored higher than males on this self-report measure.

It was hypothesized that trait emotional intelligence would be significantly correlated with personality. The results were generally supportive. Individuals who scored higher in trait emotional intelligence tend to be less neurotic ( $r = -.34$ ,  $p < .001$ ), more extraverted ( $r = .29$ ,  $p < .001$ ), more agreeable ( $r = .32$ ,  $p < .001$ ) and more conscientious ( $r = .40$ ,  $p < .001$ ).

The only personality trait not significantly related to trait emotional intelligence was Openness ( $r = -.08$ ,  $p = .260$ ).

Divergent correlations across the two measures of emotional intelligence are noted. Ability emotional intelligence (as measured by the MSCEIT) is highly related to cognitive intelligence while trait emotional intelligence (EQ-i) is not. With regard to personality, neither ability nor trait emotional intelligence was significantly related to all five personality factors; however, trait emotional intelligence was significantly related to four (of five) personality factors and the strength of these correlations were stronger than those between ability emotional intelligence and personality factors. These results are similar to the trends found in the literature.

*Correlation of Ability Emotional Intelligence (MSCEIT) and Trait Emotional Intelligence (EQ-i)*

It was hypothesized that ability emotional intelligence and trait emotional intelligence would not be significantly related. The zero-order correlation between ability and ability and trait emotional intelligence was significant ( $r = .24$ ,  $p = .001$ ). This result indicates that individuals who score higher on ability emotional intelligence are also reporting higher levels of trait emotional intelligence. Although this finding is not consistent with the general trend in the literature, it makes intuitive sense that two instruments which claim to measure the same construct would be significantly correlated with each other.

#### *Basic Correlates of Delinquency*

The proposed independent variables in the regression model were analyzed with respect to the Substance Abuse score (Composite 1). It was hypothesized that ability emotional intelligence and trait emotional intelligence would have significant negative correlations with substance abuse (Hypothesis 6). The zero-order correlations of all predictor variables with substance abuse are displayed in Table 13.

Table 13:

*Composite 1 (Substance Abuse) Score Correlation with Gender, Age, IQ, Personality, and Emotional Intelligence*

	<b>Substance Abuse (<i>r</i>)</b>
<b>Gender</b>	$r_{pb} = -.25^{**}$
<b>Age</b>	<b>.13</b>
<b>IQ</b>	<b>-.04</b>
<b>NEO-N</b>	<b>.23<sup>**</sup></b>
<b>NEO-E</b>	<b>-.01</b>
<b>NEO-O</b>	<b>.12</b>
<b>NEO-A</b>	<b>-.21<sup>**</sup></b>
<b>NEO-C</b>	<b>-.13</b>
<b>MSCEIT</b>	<b>-.34<sup>**</sup></b>
<b>EQ-i</b>	<b>-.37<sup>**</sup></b>

\*  $p < .05$

\*\*  $p < .01$

Substance abuse was not significantly correlated with age, IQ, Extraversion, Openness, or Conscientiousness. Substance abuse was significantly correlated with gender ( $r_{pb} = -.25$ ,  $p = .001$ ), Neuroticism ( $r = .23$ ,  $p = .001$ ), Agreeableness ( $r = -.21$ ,  $p = .003$ ). As predicted in Hypothesis 6 and Hypothesis 7, substance abuse was negatively correlated with ability emotional intelligence ( $r = -.34$ ,  $p < .001$ ), and trait emotional intelligence ( $r = -.37$ ,  $p < .001$ ), respectively. These results indicate that individuals who engage in higher levels of substance use tend to be male, more neurotic, less agreeable, and have lower levels of both ability and trait emotional intelligence. Given this pattern of correlations, for the regression models in which substance abuse (Composite 1) is the dependent variable, the following independent variables will be included: gender, Neuroticism, Agreeableness, and ability emotional intelligence (MSCEIT), and trait emotional intelligence (EQ-i)

Composite 2 (Reactive/Immature Delinquency) was also compared to the proposed independent variables in the regression model. It was hypothesized that ability emotional

intelligence and trait emotional intelligence would have significant negative correlations with reactive/immature delinquency (Hypothesis 6 and Hypothesis 7, respectively). The zero-order correlations of all predictor variables with reactive/immature delinquency are displayed in Table 14.

Table 14  
*Composite 2 (Reactive/Immature Delinquency) Score Correlation with Gender, Age, IQ, Personality, and Emotional Intelligence*

	<b>Reactive/Immature Delinquency (<i>r</i>)</b>
<b>Gender</b>	$r_{pb} = -.27^{**}$
<b>Age</b>	<b>-.07</b>
<b>IQ</b>	<b>.08</b>
<b>NEO-N</b>	<b>.27<sup>**</sup></b>
<b>NEO-E</b>	<b>-.11</b>
<b>NEO-O</b>	<b>.31<sup>**</sup></b>
<b>NEO-A</b>	<b>-.36<sup>**</sup></b>
<b>NEO-C</b>	<b>-.26<sup>**</sup></b>
<b>MSCEIT</b>	<b>-.18<sup>*</sup></b>
<b>EQ-i</b>	<b>-.27<sup>**</sup></b>

**\*  $p < .05$**

**\*\*  $p < .01$**

Reactive/immature delinquency was not significantly correlated with age, IQ, or Extraversion. Reactive/immature delinquency was significantly correlated with gender ( $r_{pb} = -.27, p < .001$ ), Neuroticism ( $r = .27, p < .001$ ), Openness ( $r = .31, p < .001$ ), and Agreeableness ( $r = -.36, p < .001$ ). As predicted, reactive/immature delinquency had a significant negative correlation with both ability emotional intelligence ( $r = -.18, p = .016$ ) and trait emotional intelligence ( $r = -.27, p < .001$ ) These results support the hypothesis and indicate that individuals who engage in more frequent acts of reactive/immature delinquency tend to be male, more neurotic, more open to experience, less agreeable, and have lower levels of ability and trait emotional intelligence. Given this pattern of correlations, for the regression models in which reactive/immature

delinquency is the dependent variable, the following independent variables will be included: gender, Neuroticism, Openness, Agreeableness, ability emotional intelligence (MSCEIT) and trait emotional intelligence (EQ-i).

#### *Multiple Regression Models Including Ability Emotional Intelligence (MSCEIT)*

To assess the ability of the MSCEIT to predict substance abuse after removing its overlap with other predictors, a simultaneous multiple regression was conducted. A simultaneous multiple regression model was chosen for this and subsequent analyses to ensure that all variables in the model were retained. In this model, substance abuse (Composite 1) was the dependent variable. The predictor variables included gender, Neuroticism, Agreeableness, and ability emotional intelligence (MSCEIT). Overall, the model was significant ( $F(4, 186) = 9.82$ ,  $p < .001$ ), indicating that, collectively, the predictor variables accounted for a significant amount of variance (17%) in substance abuse. Ability emotional intelligence was a significant predictor of substance abuse ( $\beta = -.27$ ,  $t(186) = -3.85$ ,  $p < .001$ ). This result supports the Hypothesis 8 and indicates that ability emotional intelligence accounts for a significant amount of unique variance in substance abuse. Lower levels of ability emotional intelligence are associated with higher levels of substance abuse. Gender was also a significant predictor ( $\beta = -.17$ ,  $t(186) = -2.45$ ,  $p = .015$ ), indicating that gender is able to account for a significant amount of unique variance in substance abuse. Males, after removing other sources of variance, remain more likely to engage in substance abuse. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

In a similar fashion, a simultaneous multiple regression analysis was conducted to examine whether the MSCEIT predicted reactive/immature delinquency (Composite 2). In this model, reactive/immature delinquency (Composite 2) was the dependent variable. The predictor

variables included gender, Neuroticism, Openness, Agreeableness, Conscientiousness, and ability emotional intelligence (MSCEIT). Overall, the model was significant ( $F(6, 184) = 9.89, p < .001$ ), indicating that, collectively, the predictor variables accounted for a significant amount of variance (24%) in reactive/immature delinquency. Gender, Neuroticism, and Conscientiousness were not significant predictors of reactive/immature delinquency. Contrary to Hypothesis 10, ability emotional intelligence was not a significant predictor in this model ( $\beta = -.05, t(184) = -.76, p = .451$ ). Although  $\beta$  indicates the appropriate trend, when other factors in the model are accounted for the MSCEIT does not account for unique variance. In this model Openness was a significant predictor ( $\beta = .23, t(184) = 3.44, p = .001$ ) indicating that Openness is able to account for unique variance in reactive/immature delinquency. Agreeableness was also a significant predictor ( $\beta = -.25, t(184) = -3.53, p = .001$ ). Higher levels of Openness and lower levels of Agreeableness were associated with more reactive/immature delinquency. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

#### *Multiple Regression Models Including Trait Emotional Intelligence (EQ-i)*

A simultaneous multiple regression analysis was conducted to examine whether the EQ-i uniquely predicted substance abuse. In this model, substance abuse (Composite 1) was the dependent variable. The predictor variables included gender, Neuroticism, Agreeableness, and trait emotional intelligence (EQ-i). Overall, the model was significant ( $F(4, 186) = 9.79, p < .001$ ), indicating that, collectively, the predictor variables accounted for a significant amount of variance (17%) in substance abuse. Trait emotional intelligence was a significant predictor of substance abuse ( $\beta = -.28, t(186) = -3.84, p < .001$ ). This result supports Hypothesis 9 and indicates that trait emotional intelligence accounts for a significant amount of unique variance in

substance abuse. Lower levels of trait emotional intelligence are associated with higher levels of substance abuse. Gender was also a significant predictor ( $\beta = -.14$ ,  $t(186) = -2.05$ ,  $p = .042$ ). Males, after removing other sources of variance, remain more likely to engage in substance abuse. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

Similarly, to assess the ability of the EQ-i to predict reactive/immature delinquency, a simultaneous multiple regression was conducted. In this model, reactive/immature delinquency (Composite 2) was the dependent variable. The predictor variables included gender, Neuroticism, Openness, Agreeableness, Conscientiousness, and trait emotional intelligence (EQ-i). Overall, the model was significant ( $F(6, 184) = 10.17$ ,  $p < .001$ ), indicating that, collectively, the predictor variables accounted for a significant amount of variance (25%) in reactive/immature delinquency. Contrary to Hypothesis 11, trait emotional intelligence was not a significant predictor in this model ( $\beta = -.10$ ,  $t(184) = -1.35$ ,  $p = .178$ ). Although  $\beta$  indicates the appropriate trend, when other factors in the model are accounted for the EQ-i does not account for unique variance. In this model, Openness was a significant predictor ( $\beta = .23$ ,  $t(184) = 3.55$ ,  $p = .001$ ), indicating that Openness is able to account for unique variance in reactive/immature delinquency. Agreeableness was also a significant predictor ( $\beta = -.24$ ,  $t(184) = -3.36$ ,  $p = .001$ ). Higher levels of Openness and lower levels of Agreeableness were associated with more reactive/immature delinquency. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

#### *Multiple Regression Models Including Both Ability and Trait Emotional Intelligence*

Given that both ability emotional intelligence (MSCEIT) and trait emotional intelligence (EQ-i) accounted for a unique variance in substance abuse, a simultaneous multiple regression

analysis was conducted to investigate whether trait and ability emotional intelligence would account for unique variance when both were placed into the model. In this model, substance abuse (Composite 2) was the dependent variable. The predictor variables included gender, Neuroticism, Agreeableness, trait emotional intelligence (EQ-i) and ability emotional intelligence (MSCIET). Overall, the model was significant ( $F(5,185) = 10.86, p < .001$ ), indicating that, collectively, the predictor variables accounted for a significant amount of variance (23%) in substance abuse. Trait emotional intelligence was a significant predictor of substance abuse ( $\beta = -.26, t(185) = -3.55, p < .001$ ). This result supports Hypothesis 12 and indicates that trait emotional intelligence accounts for a significant amount of unique variance in substance abuse with lower levels of trait emotional intelligence associated with higher levels of substance abuse. Unexpectedly, ability emotional intelligence was also a significant predictor of substance abuse ( $\beta = -.25, t(185) = -3.56, p < .001$ ), accounting for a significant amount of unique variance in substance abuse, even when trait emotional intelligence is included in the model. Lower levels of ability emotional intelligence are associated with higher levels of substance abuse. Gender was also a significant predictor of substance abuse ( $\beta = -.14, t(185) = -2.00, p = .047$ ). Males, after removing other sources of variance remain more likely to engage in substance abuse. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

Because neither ability emotional intelligence nor trait emotional intelligence was found to be a significant predictor of reactive/immature delinquency, a multiple regression including both ability and trait emotional intelligence was not warranted.

*Exploratory Analyses: MSCEIT Branch Scores – Descriptives*

The four branches of the MSCEIT (Perceiving Emotions, Using Emotions, Understanding Emotions, and Managing Emotions) were explored to further investigate the influence of ability emotional intelligence. The mean and standard deviation for each of the branches was calculated and is displayed in Table 15.

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Table 15  
*MSCEIT Branch Scores – Means and Standard Deviations*

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	<b>Mean</b>	<b>Standard Deviation</b>
<b>Perceiving Emotions</b>	<b>104.55</b>	<b>14.09</b>
<b>Using Emotions</b>	<b>108.73</b>	<b>17.23</b>
<b>Understanding Emotions</b>	<b>109.39</b>	<b>19.28</b>
<b>Managing Emotions</b>	<b>102.97</b>	<b>15.59</b>

The mean score for each branch fell within the Average range. The distributions for each of the branches were normal.

Given the significant relation of the MSCEIT total score with IQ, a correlation between the MSCEIT branches and IQ was conducted to explore this relation. IQ was significantly related to all four MSCEIT branches: Perceiving ( $r = .30, p < .001$ ), Using ( $r = .36, p < .001$ ), Understanding ( $r = .39, p < .001$ ), and Managing ( $r = .24, p = .001$ ). Higher IQ scores are associated with higher branch scores.

A correlation analysis was conducted to investigate the relation of the four branches to each other and to the total MSCEIT score. The results are displayed in Table 16.

Table 16  
*Inter-Branch and Total Score Correlations (MSCEIT)*

	<b>Perceiving</b>	<b>Using</b>	<b>Understanding</b>	<b>Managing</b>
<b>Perceiving</b>	-			
<b>Using</b>	.41**	-		
<b>Understanding</b>	.27**	.38**	-	
<b>Managing</b>	.36**	.41**	.29**	-
<b>MSCEIT Total</b>	.63**	.77**	.68**	.60**

\*\* p < .001

As expected, all MSCEIT branches significantly correlated with the other branches and the MSCEIT total score. The branches of the MSCEIT are arranged hierarchically, implying that being skilled at each branch requires that one is skilled on the branches that are lower on the hierarchy. The relation of the four branches to outcome measures will be reported in a subsequent section

*Exploratory Analyses: EQ-i Dimensions – Descriptives*

The five dimensions of trait emotional intelligence (Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood) were explored to further investigate the influence of trait emotional intelligence. The mean and standard deviation for each of the dimensions was calculated and is displayed in Table 17.

Table 17  
*EQ-i Dimension Scores – Means and Standard Deviations*

<b>EQ-i Dimensions</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Intrapersonal</b>	<b>100.23</b>	<b>16.31</b>
<b>Interpersonal</b>	<b>100.52</b>	<b>14.68</b>
<b>Stress Management</b>	<b>101.04</b>	<b>15.72</b>
<b>Adaptability</b>	<b>98.13</b>	<b>15.27</b>
<b>General Mood</b>	<b>102.70</b>	<b>13.88</b>

The mean score for each of the dimensions fell within the Average range. The distributions for each of the dimensions were normal.

Given the significant relation of the EQ-i total score with personality, a correlation between EQ-i dimensions and personality traits was conducted. The results are displayed in Table 18.

Table 18  
*Correlation of EQ-i Dimensions and Personality Factors (NEO-FFI)*

	<b>Intrapersonal</b>	<b>Interpersonal</b>	<b>Stress Management</b>	<b>Adaptability</b>	<b>General Mood</b>
<b>Neuroticism</b>	<b>-.35**</b>	<b>-.17*</b>	<b>-.20**</b>	<b>-.27**</b>	<b>-.32**</b>
<b>Extraversion</b>	<b>.25**</b>	<b>.40**</b>	<b>.03</b>	<b>.14*</b>	<b>.37**</b>
<b>Openness</b>	<b>-.07</b>	<b>-.06</b>	<b>.02</b>	<b>-.01</b>	<b>-.11</b>
<b>Agreeableness</b>	<b>.23**</b>	<b>.39**</b>	<b>.17*</b>	<b>.25**</b>	<b>.28**</b>
<b>Conscientiousness</b>	<b>.42**</b>	<b>.27**</b>	<b>.24</b>	<b>.35**</b>	<b>.32**</b>

\*  $p < .05$

\*\*  $p < .01$

With the exception of Openness, personality traits were significantly related to the EQ-i dimensions. Higher scores on Neuroticism were associated with lower EQ-i dimension scores and Higher scores on Extraversion, Agreeableness, and Conscientiousness were associated with higher EQ-i dimension scores.

A correlation analysis was conducted to investigate the relation of the five dimensions to each other and to the total EQ-i score. The results are displayed in Table 19.

Table 19  
*Inter-Dimension and Total Score Correlations (EQ-i)*

.	<b>Intrapersonal</b>	<b>Interpersonal</b>	<b>Stress Management</b>	<b>Adaptability</b>	<b>General Mood</b>	<b>EQ-i Total</b>
<b>Intrapersonal</b>	-					
<b>Interpersonal</b>	.63**	-				
<b>Stress Management</b>	.58**	.31**	-			
<b>Adaptability</b>	.75**	.53**	.70**	-		
<b>General Mood</b>	.71**	.67**	.42**	.53**	-	
<b>EQ-i Total</b>	.92**	.74**	.72**	.86**	.79**	-

\*\* p < .001

As expected, all EQ-i dimensions significantly correlated with the other dimensions and the EQ-i total score.

*Exploratory Analyses: Correlation of MSCEIT Branches and EQ-i Dimensions*

As noted earlier, the correlation between ability emotional intelligence (MSCEIT) and trait emotional intelligence (EQ-i) was significant. To better understand this relation, a correlation analyses was conducted between the four branches of the MSCEIT and the five dimensions of the EQ-i. The results are displayed in Table 20.

Table 20  
*Correlation of MSCEIT Branches and EQ-i Dimensions*

	MSCEIT Branches				
	Perceiving	Using	Understanding	Managing	MSCEIT Total
<b>Intrapersonal</b>	<b>.22**</b>	<b>.18*</b>	<b>.12</b>	<b>.04</b>	<b>.23**</b>
<b>Interpersonal</b>	<b>.11</b>	<b>.04</b>	<b>.07</b>	<b>-.12</b>	<b>.09</b>
<b>Stress Management</b>	<b>.14</b>	<b>.14*</b>	<b>.15*</b>	<b>.12</b>	<b>.21**</b>
<b>Adaptability</b>	<b>.17*</b>	<b>.16*</b>	<b>.14</b>	<b>.04</b>	<b>.22**</b>
<b>General Mood</b>	<b>.11</b>	<b>.05</b>	<b>.10</b>	<b>-.08</b>	<b>.10</b>
<b>EQ-i Total</b>	<b>.20**</b>	<b>.16*</b>	<b>.15*</b>	<b>.03</b>	<b>.24**</b>

\*  $p < .05$

\*\*  $p < .01$

Although MSCEIT and EQ-i totals are correlated with each other, their components are not strongly or intuitively related. An exception might be the logical connection between Intrapersonal (from the EQ-i) and Perceiving Emotions (from the MSCEIT). Similarly, the correlations between stress management and Using and Understanding emotions suggest that individuals who are better at handling stress and anxiety are also better at using and understanding emotions. The Adaptability was significantly related to Perceiving emotions ( $r = .17, p = .022$ ) and Using Emotions ( $r = .16, p = .026$ ) suggesting that individuals who are better at handling new situations and tasks are also better at perceiving emotions and using emotions. Finally, the General Mood dimension was not significantly related to any of the MSCEIT branches. In general, the EQ-i dimensions are related to the MSCEIT total score. Similarly, the MSCEIT branches are related to the EQ-i total score. These results indicate that, although each branch and dimension may not have counterpart on the other emotional intelligence measure, the MSCEIT branches are related to trait emotional intelligence and the EQ-i dimensions are related to ability emotional intelligence.

*Exploratory Analyses: Correlations Involving Ability Emotional Intelligence (MSCEIT) Branch Scores*

A correlation analysis was conducted to investigate the relation between the MSCEIT branches and substance abuse (Composite 1) and reactive/immature delinquency (Composite 2). The results are displayed in Table 21.

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Table 21  
*Correlation of MSCEIT Branches, Substance Abuse and Delinquency*

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<b>MSCEIT Branch</b>	<b>Substance Abuse</b>	<b>Reactive/Immature Delinquency</b>
<b>Perceiving Emotions</b>	<b>-.17*</b>	<b>-.09</b>
<b>Using Emotions</b>	<b>-.20*</b>	<b>-.16*</b>
<b>Understanding Emotions</b>	<b>-.24**</b>	<b>-.08</b>
<b>Managing Emotions</b>	<b>-.25**</b>	<b>-.12</b>

\*  $p < .05$

\*\*  $p < .01$

Substance abuse was significantly related to Perceiving Emotions ( $r = -.17$ ,  $p = .016$ ), Using Emotions ( $r = -.20$ ,  $p = .005$ ), Understanding Emotions ( $r = -.24$ ,  $p = .001$ ), and Managing Emotions ( $r = -.25$ ,  $p = .001$ ). Higher scores in each branch are associated with lower levels of substance abuse. All four branches will be included as predictor variables in exploratory regression models in which substance abuse is the dependent variable.

Reactive/Immature delinquency was not significantly related to Perceiving Emotions, Understanding Emotions, or Managing Emotions but was significantly correlated with Using Emotions ( $r = -.16$ ,  $p = .028$ ). Individuals who are better able to use emotions tend have lower levels of reactive/immature delinquency. Using Emotions will be included as a predictor variable in regression models in which reactive/immature delinquency is the dependent variable.

*Exploratory Analyses: Multiple Regression Analyses Involving Ability Emotional Intelligence (MSCEIT) Branch Scores*

The ability of the MSCEIT branches to predict substance abuse was assessed by conducting a simultaneous multiple regression in which substance abuse (Composite 1) was the dependent variable. The predictor variables included gender, Neuroticism, Agreeableness, Perceiving Emotions, Using Emotions, Understanding Emotions, and Managing Emotions. Overall, the model was significant ( $F(7, 183) = 5.67, p < .001$ ), indicating that a significant amount of variance (17%) in substance abuse was predicted by the predictor variables collectively. Managing Emotions was the only MSCEIT branch to be a significant predictor of substance abuse ( $\beta = -.18, t(183) = -2.33, p = .021$ ), indicating that Managing Emotions accounts for a significant amount of unique variance in substance abuse. Higher levels of managing emotions are associated with lower levels of substance abuse. Gender was also a significant predictor ( $\beta = -.21, t(183) = -2.93, p = .004$ ) indicating that gender accounts for a significant amount of unique variance. Males, after removing other sources of variance remain more likely to engage in substance abuse. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

Although the MSCEIT total score was not a significant predictor of reactive/immature delinquency, the Using Emotions branch was a significant correlate. A simultaneous multiple regression was conducted to explore the predictive ability of the Using Emotions branch of ability emotional intelligence as it relates to reactive/immature delinquency. In this model, reactive/immature delinquency was the dependent variable. The predictor variables included gender, Neuroticism, Openness, Agreeableness, Conscientiousness, and Using Emotions. Overall the model was significant ( $F(6, 184) = 10.21, p < .001$ ), indicating that a significant amount of variance in reactive/immature delinquency is predicted by the predictor variables collectively.

Using Emotions was not a significant predictor ( $\beta = -.094$ ,  $t(184) = -1.44$ ,  $p = .152$ ), indicating that it did not account for a significant amount of unique variance in reactive/immature delinquency. Similar to the previous regression models in which reactive/immature delinquency is the dependent variable, Openness ( $\beta = -.23$ ,  $t(184) = 3.48$ ,  $p = .001$ ) and Agreeableness ( $\beta = -.24$ ,  $t(184) = -3.49$ ,  $p = .001$ ) were significant predictors of reactive/immature delinquency. Individuals who are more open to experience and less agreeable scored higher on the composite measuring reactive/immature delinquency.

*Exploratory Analyses: Correlations Involving Trait Emotional Intelligence (EQ-i) Dimension Scores*

A correlation analysis was conducted to investigate the relation of the five dimensions and substance abuse (Composite 1), and reactive/immature delinquency (Composite 2). The results are displayed in Table 22.

Table 22  
*Correlation of EQ-i Dimensions with Substance Abuse and Delinquency*

	<b>Substance Abuse</b>	<b>Reactive/Immature Delinquency</b>
<b>Intrapersonal</b>	-.37**	-.25**
<b>Interpersonal</b>	-.18*	-.16*
<b>Stress Management</b>	-.41**	-.28**
<b>Adaptability</b>	-.33**	-.20**
<b>General Mood</b>	-.14	-.19**

\*  $p < .05$   
\*\*  $p < .01$

Substance Abuse was significantly related to the Intrapersonal dimension ( $r = -.37$ ,  $p < .001$ ), the Interpersonal dimension ( $r = -.18$ ,  $p = .014$ ), the Stress Management dimension ( $r = -.41$ ,  $p < .001$ ), the Adaptability dimension ( $r = -.33$ ,  $p < .001$ ). Higher scores on these dimensions are associated with lower levels of substance abuse. Substance abuse was not significantly related to

the General Mood dimension. All the dimensions, except General Mood, will be included as predictor variables in exploratory regression models in which substance abuse is the dependent variable.

Reactive/immature delinquency was significantly correlated with the Intrapersonal dimension ( $r = -.25, p < .001$ ), the Interpersonal dimension ( $r = -.16, p = .032$ ), the Stress Management dimension ( $r = -.28, p < .001$ ), the Adaptability dimension ( $r = -.20, p = .005$ ) and the General Mood dimension ( $r = -.19, p = .009$ ). Higher scores on these dimensions are associated with lower levels of reactive/immature delinquency. All five dimensions will be included as predictor variables in exploratory regression models in which reactive/immature delinquency is the dependent variable.

#### *Exploratory Analyses: Multiple Regression Analyses Involving Trait Emotional Intelligence (EQ-i) Dimensions*

The ability of the EQ-i dimensions to predict substance abuse was assessed by conducting a simultaneous multiple regression in which substance abuse (Composite 1) was the dependent variable. The predictor variables included gender, Neuroticism, Agreeableness and four of the trait emotional intelligence dimensions (Intrapersonal, Interpersonal, Stress Management, and Adaptability). Overall, the model was significant ( $F(7, 183) = 8.37, p < .001$ ) indicating that a significant amount of the variance (24%) in substance abuse was predicted by the predictor variables collectively. Neuroticism, Agreeableness, the Interpersonal dimension, and the Adaptability dimension were not significant predictors of substance abuse. The Intrapersonal dimension ( $\beta = -.22, t(183) = -1.98, p = .049$ ) and the Stress Management dimension ( $\beta = -.32, t(183) = -3.44, p = .001$ ) were significant predictors of substance abuse. Higher levels of these dimensions are associated with lower levels of substance use. Gender was also a significant predictor of substance abuse ( $\beta = -.15, t(183) = -2.14, p = .033$ ). Males, after

removing other sources of variance, remain more likely to engage in substance abuse. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

Although the EQ-i total score was not a significant predictor of reactive/immature delinquency, the ability of the EQ-i dimensions to predict reactive/immature delinquency was explored by conducting a multiple regression analysis. In this model reactive/immature delinquency was the dependent variable and the predictor variables included gender, Neuroticism, Openness, Agreeableness, Conscientiousness, and the five trait emotional intelligence dimensions (Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood). Overall, the model was significant ( $F(10, 179) = 7.22, p < .001$ ), indicating that a significant amount of the variance (29%) in reactive/immature delinquency is predicted by the predictor variables collectively. Gender, Neuroticism, Conscientiousness, the Intrapersonal dimension, the Interpersonal dimension, the Adaptability dimension, and the General Mood dimension were not significant predictors of reactive/immature delinquency. Stress Management was a significant predictor of reactive/immature delinquency ( $\beta = -.25, t(179) = -2.69, p = .008$ ), indicating that it accounts for a significant amount of unique variance in reactive/immature delinquency. Higher scores on this dimension are associated with lower levels of reactive/immature delinquency. Openness ( $\beta = .23, t(179) = 3.54, p = .001$ ) and Agreeableness ( $\beta = -.27, t(179) = -3.69, p < .001$ ) were also significant predictors, indicating that Openness and Agreeableness individually account for a significant amount of unique variance in reactive/immature delinquency. Higher scores on Openness and lower scores on Agreeableness are associated with lower scores on reactive/immature delinquency. The unstandardized residuals were examined for violations of the assumption of normality and no violation was found.

*Emotional Intelligence Behavior Scale (EIBS): Relation to Ability and Trait Emotional Intelligence*

The main goal for the construction of the Emotional Intelligence Behavior Scale was to investigate whether scores on established emotional intelligence instruments, such as the MSCEIT and the EQ-i, are related to emotionally self-reported intelligent behaviors occurring in daily life. A reliability analysis was conducted to examine the internal consistency of the 9-item scale. The results indicated  $\alpha = .59$ . However, the analysis indicated that the internal consistency of the scale could be improved by deleting item 1 (“Remained calm in a stressful situation”). After deleting Item 1, the internal consistency of the scale is  $\alpha = .60$ . This finding suggests that the scale’s internal consistency was not likely to be improved by the deletion of additional items.

A total score was calculated by adding together the score for each of the eight items and dividing that score by the number of items that were answered (8 items minus items rated “N/A”). The distribution of the total scores was approximately normal and is displayed in Figure 3 (Appendix B). Total scores for this sample ranged from 2.12 to 5.00, with a mean total score was 3.76 and a standard deviation of .59. Each of the eight scale items correlated significantly with the total scale score. These correlations are displayed in Table 23.

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Table 23:  
*Correlation Between Item and Total Score for the Emotional Intelligence Behavior Scale*

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<b>Emotional Intelligence Behavior Scale Items</b>	<b>Total Score (<i>r</i>)</b>
2. Found it difficult to identify how I was feeling	.54**
3. Got upset easily	.66**
4. Misinterpreted how someone else was feeling	.52**
5. Hurt someone else’s feelings	.44**
6. Maintained a positive outlook	.35**
7. Became discouraged by my inability to solve my problems	.56**
8. Broke something out of anger	.39**
9. Ignored a problem, hoping it would go away	.61**

\*\*  $p < .001$

The Emotional Intelligence Behavior Scale (EIBS) total score was compared to the MSCEIT total score and the EQ-i total score. The resulting  $r$ 's were .16 (ns) and .22 ( $p = .009$ ). The results indicate that the EIBS is significantly correlated with trait emotional intelligence ( $r = .22$ ,  $p = .009$ ) but not with ability emotional intelligence ( $r = .16$ ,  $p = .054$ ), respectively. These values are small in magnitude, but the correlation of the EIBS with trait emotional intelligence reached significant. Individuals who scored higher in trait emotional intelligence reported higher levels of emotionally intelligent behaviors.

#### *Emotional Intelligence Behavior Scale: Relation with Delinquency*

Similar to analyses with the MSCEIT and the EQ-i, the EIBS total scores were compared with the MOD-R total score, Composite 1 (Substance Abuse) and Composite 2 (Reactive/Immature Delinquency). Only the relation between emotionally intelligent behaviors and reactive/immature delinquency was significant ( $r = -.29$ ,  $p < .001$ ). Given this finding, a multiple regression was conducted to assess the ability of the EIBS to predict reactive/immature delinquency in the context of other significant correlates. In this model reactive/immature delinquency was the dependent variable and the predictor variables included gender, Neuroticism, Openness, Agreeableness, Conscientiousness, and the EIBS total score. Overall, the model was significant ( $F(6,136) = 9.72$ ,  $p < .001$ ) indicating that a significant amount of variance (30%) in reactive/immature delinquency was accounted for by the predictor variables collectively. The EIBS was retained as a significant predictor of reactive/immature delinquency ( $\beta = -.26$ ,  $t(136) = -2.72$ ,  $p = .007$ ), accounting for a significant amount of unique variance. Reports of more frequent emotionally intelligent behavior were associated with lower levels of reactive/immature delinquency. Similar to the previous analyses, Agreeableness ( $\beta = -.24$ ,  $t(136) = -3.08$ ,  $p = .002$ ) and Openness ( $\beta = .36$ ,  $t(136) = 4.67$ ,  $p < .001$ ) were

significant predictors of reactive/immature delinquency. Less agreeable and more open students reported higher levels of reactive/immature delinquency.

## CHAPTER 4: DISCUSSION

The current study explored the impact of the two prominent models of emotional intelligence (the trait model and the ability model) on substance abuse and delinquency in a college sample. The results suggested several interesting findings. First, the findings were consistent with prior studies indicating that college campuses are not environments immune to substance use and delinquency. The findings also suggested that substance abuse and reactive/immature delinquency are distinct categories, each with different causes and correlates. With regard to emotional intelligence, the utility of both models in predicting substance use was supported. Each contributed unique variance even in the context of other demographic and personality correlates. Further, the two prominent models of emotional intelligence appear related yet distinct. This finding is a departure from much of the previous research, which has sought to make a clear division between the two models and to identify the “correct” definition and model of emotional intelligence. Lastly, the importance of developing new measures of emotionally intelligent behaviors was highlighted by the construction of the Emotional Intelligence Behavior Scale (EIBS) and an analysis of its predictive ability.

### *Substance Use*

The current study supports prior research that substance use is not infrequent on college campuses, with use of alcohol being the most prevalently used substance. Although some participants in this study were of the legal drinking age at the time of participation, the majority of students under 21 (74%) reported being intoxicated at least once since arriving at college. Of those underage drinkers, 80% reported that they have been drunk in public during college. This

not only reflects the high rate of underage drinking at the college level, but it also indicates that students are not restricting this illegal behavior to private environments where the threat of detection is minimal; rather, they are drinking alcohol in public where detection by authorities and subsequent punishment is possible. The high percentage of underage students drinking in public may reflect the assumption that underage drinking is a normal part of the “college experience.” This normalization may lead to a decrease in the conscious awareness by both the underage drinkers and college authorities of the illegal nature of underage drinking. It may also increase the belief by underage drinkers that, if caught, they will be punished not at all (e.g., given a warning) or minimally (e.g., given a small fine). Unfortunately, regardless of whether underage drinking is perceived as “normal” or not, the negative consequences of substance use persist (Maistro, Galizio, & Connors, 2004; Hingson, et al, 2005; Doweiko, 2006)

The use of other substances also occurs in the college population. Almost 40% of the students reported using marijuana and 17% reported using other illicit substances. Interestingly, individuals who used marijuana did not necessarily also use other illicit drugs, but all the individuals who reported using illicit drugs other than marijuana also reported using marijuana. This pattern may reflect a difference between individuals who use illicit drugs and those who only use marijuana, which is often viewed as “less harmful” than other illegal drugs.

Substance abuse appears to be related to several personal variables. Being male, more neurotic, less agreeable, less conscientious, and less emotionally intelligent on both trait and ability measures are associated with higher levels of substance use. Age was not significantly correlated with substance abuse, contrary to other studies which have found that substance use decreases as students get older. Additionally, IQ was not significantly related to substance use. This is also contrary to previous findings which indicate that individuals with lower IQ’s are at

risk for substance use. The ranges of both age and IQ in the current sample were restricted and this may have contributed to the current findings.

Ability emotional intelligence accounted for significant unique variance in substance use, with low levels of ability emotional intelligence associated with higher levels of substance use. Not surprisingly, the Managing Emotions branch of the MSCEIT was a significant predictor of substance use. The four branches of emotional intelligence in the ability model are arranged hierarchically, with the Managing Emotions branch at the top of the hierarchy, implying that successful acquisition of abilities associated with managing emotions is at least partly contingent upon the successful acquisition of abilities related to the other three branches. Individuals who have difficulty perceiving, using, or understanding emotions are likely to struggle with managing emotions. Therefore, it is not surprising that the other branches of the ability model do not account for significant unique variance when the Managing Emotions branch is in the model. This result provides support for the hierarchical structure of the ability model.

Trait emotional intelligence also accounted for significant unique variance in substance use, with low levels of trait emotional intelligence associated with higher levels of substance use. The Intrapersonal and Stress Management dimensions were significant predictors of substance use, with lower scores on these dimensions being associated with higher levels of substance use. The Stress Management dimension measures one's perception of their ability to handle stress and anxiety. Individuals who rate themselves low indicate that they are easily overwhelmed by stress and anxiety and lack confidence in their ability to handle stressful situations. These individuals may well use substances to deal with or escape from the negative emotions they feel as a result of stressful situations. The Intrapersonal dimension measures one's interest in and ability to identify internal emotional states. This dimension also measures one's perception of his

or her ability to express emotions. Individuals who score low on the Intrapersonal dimension generally have little interest in or awareness of their emotional state. They may also have difficulty expressing their emotions to others. Individuals who lack self-awareness may be poor at monitoring their emotions, becoming aware of their emotions only when these become intense. As noted in the introduction, emotions can act as signals, informing the individual of what is going on in the environment and motivating the individual to respond in a way that increases pleasure and decreases pain. People who are “in touch” with their emotions can identify negative emotions at low levels, such as annoyance, and this can motivate them to block emotion escalation. Low scorers on the Intrapersonal dimension are less likely to notice or identify their emotions and therefore may miss the opportunity to stop the escalation of a negative emotion. Low scorers may also be especially poor at expressing their emotions and may use substances to facilitate the expression of their emotions.

Gender was the third significant predictor in the model. Being male was a significant risk factor for substance use. This finding is consistent with other research (Schulte, Ramo, & Brown, 2009; Trim, Schuckit, & Smith, 2010)

#### *Reactive/Immature Delinquency*

Although less so in the current sample than for substance abuse, participants also reported engaging in delinquent behaviors. These behaviors tended to fall into the category of “reactive/immature” delinquency which included items such as “Threatened to hurt someone,” and “Taken something worth more than \$5 but less than \$50.” Reactive/immature delinquency was related to gender, Neuroticism, Openness, Agreeableness, Conscientiousness, ability emotional intelligence and trait emotional intelligence. Being male, more neurotic and open, less

agreeable and conscientious, and less emotional intelligence were associated with higher levels of reactive/immature delinquency. This is consistent with previous findings in the literature.

Although both models of emotional intelligence were related to reactive/immature delinquency in the bivariate correlation analysis, neither trait nor ability emotional intelligence accounted for unique variance. Instead, the personality traits of Openness and Agreeableness were significant predictors of reactive/immature delinquency. Agreeableness is described as primarily a measure of interpersonal tendencies (Costa & McCrae, 1992). High scorers on Agreeableness tend to get along well with others, be altruistic, and be motivated to help others. Conversely, low scorers tend to be antagonistic and egocentric. Given the interpersonal nature of the items in the Reactive/Immature delinquency factor, it is not surprising that Agreeableness is a significant negative predictor. Disagreeable individuals are likely to have more interpersonal altercations regardless of their gender or their level of emotional intelligence and may not recognize or appreciate the effect of their actions on others.

Openness was another significant predictor of reactive/immature delinquency. High scorers on the Openness scale tend to have active imaginations, strong intellectual curiosity, and high levels of creativity. They also tend to experience emotions more intensely than others, be unconventional and willing to question and challenge authority. These individuals may be more likely to break rules simply because they can. As stated in the introduction, with regard to stealing behavior, much of the prior research has found that individuals stole for the thrill it provided and to see if they could “get away with it.” Even for individuals who stole out of necessity, individuals who hold less conventional views may be more willing to turn to the unconventional act of stealing to obtain their needs.

As noted, in regression analyses, ability emotional intelligence was not a significant predictor of reactive/immature delinquency; nor were any of the ability model branches. By contrast, the Stress Management dimension of the trait model did significantly predict reactive/immature delinquency above and beyond gender and personality. The Reactive/Immature Delinquency factor is comprised of primarily interpersonal items, and individuals who perceive themselves as not able to handle stress and anxiety may displace these negative emotions on others in the form of interpersonal aggression.

The difference in the pattern of significant predictors of substance abuse and reactive/immature delinquency suggest that these are two distinct classes of behavior. It appears that substance abuse has a strong emotional component, while reactive/immature delinquency may depend more on an individual's personality. This distinction is important for college administrators when designing prevention programs. Specialized prevention programs, aimed at the specific causes and correlates of substance abuse and reactive/immature delinquency would likely prove more effective than a general prevention program aimed at all types of delinquency. Although individuals may be engaging in both substance abuse and reactive/immature delinquency, they may be engaging in each for different reasons, each requiring a different intervention.

#### *Ability Versus Trait Models of Emotional Intelligence*

In addition to the exploration of the causes and correlates of substance use and delinquency in college, the current study sought to add to the growing literature on the two prominent models of emotional intelligence. To date, much of the research on emotional intelligence has focused on identifying the "correct" definition of emotional intelligence. Ability models and trait models have been described as completely distinct, almost to the point of mutual

exclusivity (Brackett & Mayer, 2003; Mayer, Salovey, & Caruso, 2004; Brackett et al, 2006).

Proponents of ability models have spent considerable effort in attempting to prove its superiority, claiming that trait models, and associated assessment instruments, are little more than a measure of personality. Proponents of the trait models assert that ability models rely too heavily on cognitive abilities. The current study suggests that these models are different in some ways, but more closely related than their authors have conceptualized them.

The MSCEIT might best be described as a measure of emotional intelligence abilities and knowledge. Its perceiving emotions tasks measure one's ability to recognize and identify emotions, while tasks within the using, understanding and managing emotions branches measure ask test-takers to apply emotional knowledge to scenarios and third-party vignettes. The MSCEIT does not ask participants what they would do in a certain situation, but rather, what the character in the story should do to achieve the desired outcome. Individuals may have knowledge of the correct answer, and thus a higher score, even though they may not behave in a similar manner in their daily lives. For example, an individual may be able to report that, when the person in the vignette is confronted with a hostile individual, being assertive (as opposed to responding with aggression) or walking away would be the best way to prevent the encounter from escalating into violence. However, it is possible that, when provoked in real life, the person may choose to act in an emotionally unintelligent way. However, this divergence, does not negate the importance of having abilities and knowledge associated with emotional intelligence. It appears that being emotionally unintelligent puts individuals at risk for substance abuse and is related to the commission of reactive/immature delinquency. Even though individuals who possess emotional intelligence abilities and knowledge may respond in contrary ways, individuals who do not possess emotional intelligence abilities and knowledge are not able to use

them to guide their behavior. Emotional intelligence skills and knowledge appear to be a protective factor in reducing substance abuse and reactive/immature delinquency, but behavioral choices remain open even for persons who score high on ability emotional intelligence.

In contrast, the EQ-i can best be described as a measure of one's self-perception of emotionally intelligent traits and behaviors. One of the criticisms of trait models, and the EQ-i in particular, is that it overlaps too much with personality and provides little additional information. The results from this study indicate that personality and trait emotional intelligence are related, but the results also indicate that, with regard to certain problem behaviors, trait emotional intelligence has predictive ability beyond that of personality. This finding suggests the presence of unique aspects of emotional intelligence which are useful in the prediction of substance use. Another criticism of the EQ-i is that it is a self-report instrument and subject to inherent biases. However, it has been suggested through concepts such as self-efficacy, that perception of one's self can influence behavior. With regard to trait emotional intelligence and substance use, people who perceive themselves as being unable to handle stressful events, regardless of their actual ability to handle stressful events, may turn to substance use to escape from a stressful situation. Additionally, unlike the MSCEIT which asks test-takers to answer questions about a third-party, EQ-i test-takers report their emotionally intelligent traits and behaviors. For this reason, the EQ-i may prove especially useful in predicting the actual occurrence of emotionally intelligent behaviors.

The Emotional Intelligence Behavior Scale (EIBS), which recorded the self-reported frequency of eight emotionally intelligent behaviors, was significantly related to trait emotional intelligence (EQ-i) but not ability emotional intelligence (MSCEIT), thus suggesting further support for the idea that trait and ability emotional intelligence are distinct. However, this

difference should not be overstated as differences between the MSCEIT and the EQ-i may account for the difference in correlation pattern with the EIBS. Both the EIBS and the EQ-i are self-report measures, while the MSCEIT is a maximum performance measure. This similarity in the type of measurement may have contributed to the EQ-i/EIBS relation. As noted, the MSCEIT asks test takers to respond to non-personal items and items about third parties. The EQ-i and the EIBS ask test takers about *their* traits and behaviors. Despite the common measurement issues, one cannot overlook the possibility that the lack of correlation between the MSCEIT and the EIBS reflects the contention that emotional intelligence knowledge and abilities do not necessarily translate into emotionally intelligent behavior. Further development of this emotional intelligence behavior measurement instrument is warranted.

The results of this study support the documented distinction between ability and trait models of emotional intelligence. However, both proved useful in the prediction of substance abuse and therefore the need to declare the superiority of one model over the other model may be misguided. It is possible that emotional intelligence is a construct broader than either model and that trait and ability emotional intelligence are two components of a larger construct, much in the way that Thurston believed cognitive intelligence was comprised of various primary and secondary abilities. Ability emotional intelligence may reflect more of the cognitive, knowledge-based component of general emotional intelligence while trait emotional intelligence may reflect more of a self-perception of emotional awareness, interpersonal skills, and stress management capacity. The argument over which model is “correct” is not as important as the utility of the models, and the current study suggests that both are useful in predicting the problem behavior of substance use by college students. Given the negative consequences of substance use in college,

researchers should focus on exploring how to use what is known about trait and ability emotional intelligence to inform the construction of effective prevention and treatment programs.

Although the results of this study supported the distinction between the two models of emotional intelligence, the results did not support some of the main criticisms of these models. The ability model has been largely criticized for its significant relation to IQ and some have made the argument that ability emotional intelligence is simply a measure of cognitive IQ. However, the results of this study indicate that, even though emotional intelligence and cognitive intelligence are significantly related, they remain distinct. Ability emotional intelligence was able to predict substance abuse, a variable that IQ was not significantly related to. Likewise, trait emotional intelligence has been criticized for its significant overlap with personality. However, in the substance abuse model, trait emotional intelligence was a significant predictor even after taking into account the influence of personality on substance use. These results indicate that emotional intelligence is related to other variables, but still retains a level of distinctiveness which is useful in predicting certain behaviors.

### *Clinical Applications*

The results from the current study have several potential clinical applications. First, the results suggest a need for prevention programs targeting substance use on college campuses. To increase the effectiveness of existing and future programs, the development and revision of programs should address known predictors of substance use, including ability and trait emotional intelligence. Specifically, skill and knowledge related to managing emotions and stress management would be important components of these programs. Also, assisting individuals to increase self-awareness could lead to a decrease in substance use by college students. Because gender is a risk factor for substance use, increasing efforts to reach as many college males as

possible through the prevention programs could also assist in decreasing rates of substance use in college. The prevention programs could be part of the student orientation, thus addressing the issue prior to the occurrence of substance use. For students who have already been identified as substance users, treatment programs buttressed by these same components should be implemented and treatment outcome research conducted to assess the effectiveness of these programs.

Although emotional intelligence did not account for significant amount of unique variance in reactive/immature delinquency, both models were significantly related to reactive/immature delinquency. Increasing students' level of emotional intelligence (both ability and trait) would likely contribute to a decrease in reactive/immature delinquency, although not as significant a decrease as programs which focus on personality traits such as Openness and Agreeableness. In this vein, students might be informed of personal traits that place them at additional risk.

#### *Limitations and Future Research*

The current study focused on personal characteristics (gender, IQ, personality traits, and emotional intelligence) in relation to substance use and delinquency. It is naïve to believe that, situational factors, such as availability of alcohol and illegal substances, does not affect ones level of substance use. Future prediction models should include a mixture of internal and external factors. Additionally, other factors which have been identified in the literature as being significant correlates of substance use and delinquency in college, such as Greek affiliation (being a member of a fraternity or sorority), would add to the understanding of the causes and correlates of substance abuse and delinquency.

Another limitation of the current study was the inequality of males and females in the sample, with females comprising almost 75% of the total sample. Because males tend to engage in substance use and delinquency at higher rates than females, a sample containing a higher representation of males may shed additional light on the nature of these problem behaviors. Additionally, conducting the analyses on male-only and female-only samples will allow for the exploration of gender differences regarding the relationship of the predictor variables and the dependent variables.

Questions regarding the relation of emotional intelligence to callous/instrumental delinquency remain. Due to the low response rate on items in the Callous/Instrumental factor, this factor was not able to be explored. Future research should use a more delinquent population, such as individuals who are incarcerated or on parole, in order to investigate the impact of emotional intelligence on callous/instrumental delinquency. It is possible that emotional intelligence will relate to callous/instrumental delinquency in a different way than it related to substance abuse and reactive/immature delinquency. This would have implications for prevention and treatment programs aimed at decreasing the rate of callous/immature delinquency in general. Research in this topic area would provide additional information about ability and trait emotional intelligence, in addition to adding to what is known about this type of problematic behavior.

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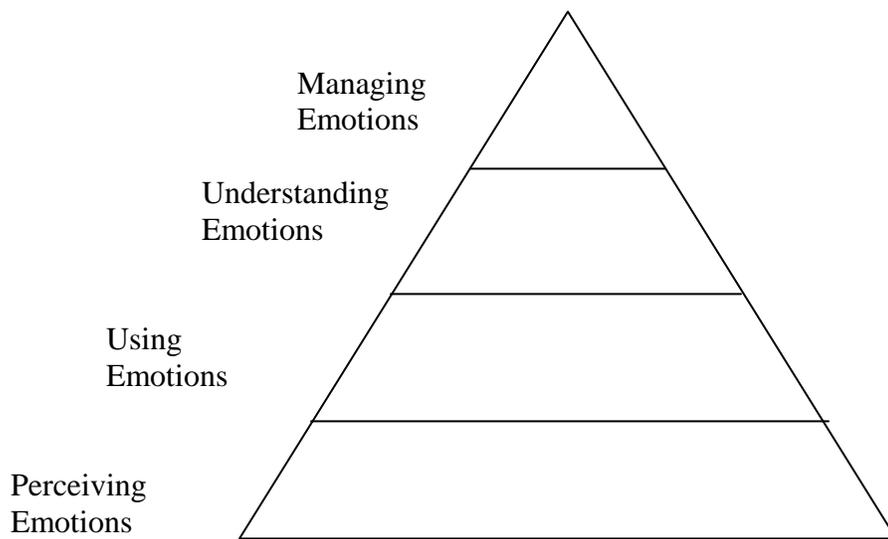
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APPENDIX A

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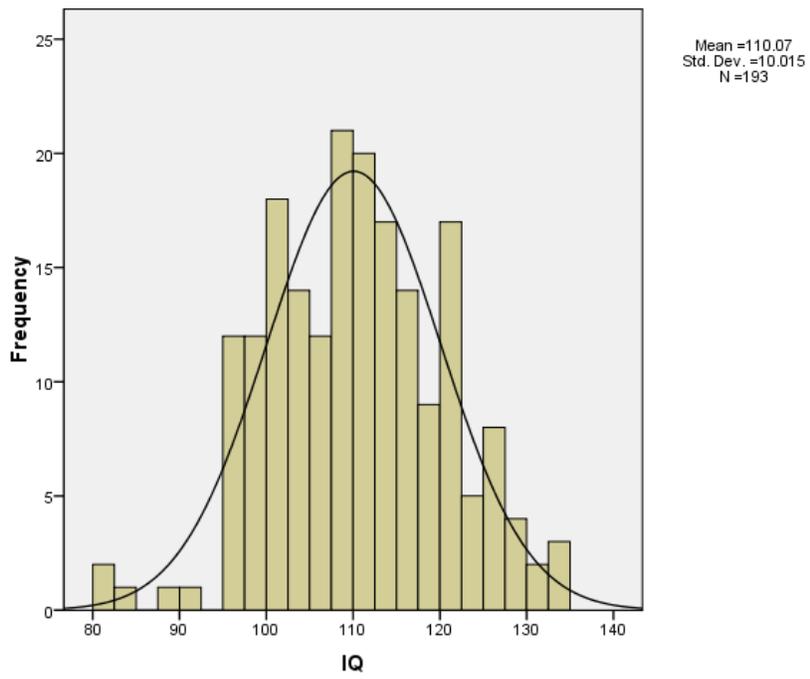
Figure 1  
*Hierarchical Representation of the Ability Emotional Intelligence Branches*

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APPENDIX B

Figure 2  
*Distribution of IQ Scores*



MOD-R – 22-item Version

Please indicate *how often* you have participated in the following behaviors by writing in the number of times you have done each activity at the specified ages (even if you didn't get caught or in trouble for it).

For example, if you are a college sophomore and you rode a roller coaster 10 times during middle school, 0 times in high school, 4 times as a college freshman and 2 times as a college sophomore, your responses would look like this:

How often have you.....?	Middle School	High School	College Freshman	College Sophomore	College Junior	College Senior
a. Ridden a roller coaster	10	0	4	2	n/a	n/a

*If you are not sure about the exact number of times you have participated in each activity please use your best approximate guess.*

*How many times?*

How often have you.....?	Middle School	High School	College Freshman	College Sophomore	College Junior	College Senior
1. Gone onto someone's land when they didn't want you to be there, or without their permission?						
2. Threatened to hurt someone?						
3. Been told to bring your parents to school for something you did wrong?						
4. Hurt someone badly enough for him/her to need bandages or a doctor?						
5. Hit or threatened to hit a member of your family (or spouse) in anger?						
6. Taken something not belonging to you worth less than \$5.00?						
7. Become intoxicated from beer or liquor?						
8. Purposely damaged or destroyed property belonging to your parents or other family members?						
9. Been sent to the principal's office or to student affairs for bad behavior?						
10. Taken something not belonging to you worth over \$50.00?						
11. Bought or provided liquor for a minor?						
12. Smoked marijuana?						
13. Beaten up on somebody or fought someone (physically)?						

<b>How often have you.....?</b>	<b>Middle School</b>	<b>High School</b>	<b>College Freshman</b>	<b>College Sophomore</b>	<b>College Junior</b>	<b>College Senior</b>
14. Taken drugs or pills other than marijuana? (non-prescription)						
15. Bought or gotten something that was stolen by someone else?						
16. Taken something worth more than \$5.00 but less than \$50.00?						
17. Damaged or messed up something not belonging to you?						
18. Participated in sexual activity with an unwilling partner?						
19. Gotten "kicked out" of the house by your parents?						
20. Used someone's credit card without permission?						
21. Intentionally done something to cause great injury or death to another person?						
22. Been drunk in a public place?						

### Emotional Intelligence Behavior Scale (EIBS)

For the following items, please rate how often each statement applied to you during the past 2 weeks using the rating scale below:

1	2	3	4	5	N/A
Never/Rarely		Sometimes		Often	Not Applicable

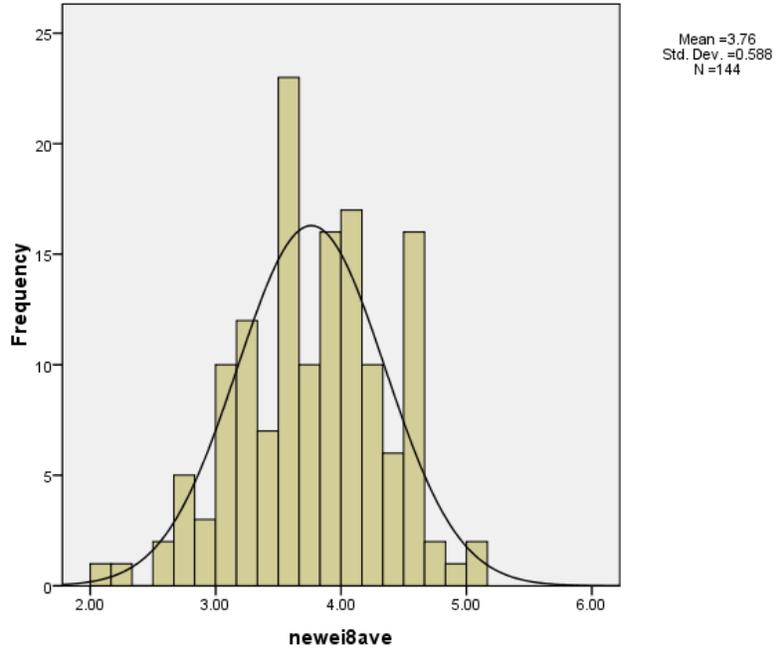
During the past two weeks, I.....

1. Remained calm in a stressful situation	1	2	3	4	5	N/A
2 Found it difficult to identify how I was feeling	1	2	3	4	5	N/A
3. Got upset easily	1	2	3	4	5	N/A
4. Misinterpreted how someone else was feeling	1	2	3	4	5	N/A
5. Hurt someone else's feelings	1	2	3	4	5	N/A
6. Maintained a positive outlook	1	2	3	4	5	N/A
7. Became discouraged by my inability to solve my problems	1	2	3	4	5	N/A
8. Broke something out of anger	1	2	3	4	5	N/A
9. Ignored a problem, hoping it would go away	1	2	3	4	5	N/A

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Figure 3  
*Distribution of Emotional Intelligence Behavior Scale (EIBS) Total Scores*

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APPENDIX C

Figure 4  
*Distribution of MOD-R Total Scores (Untransformed)*

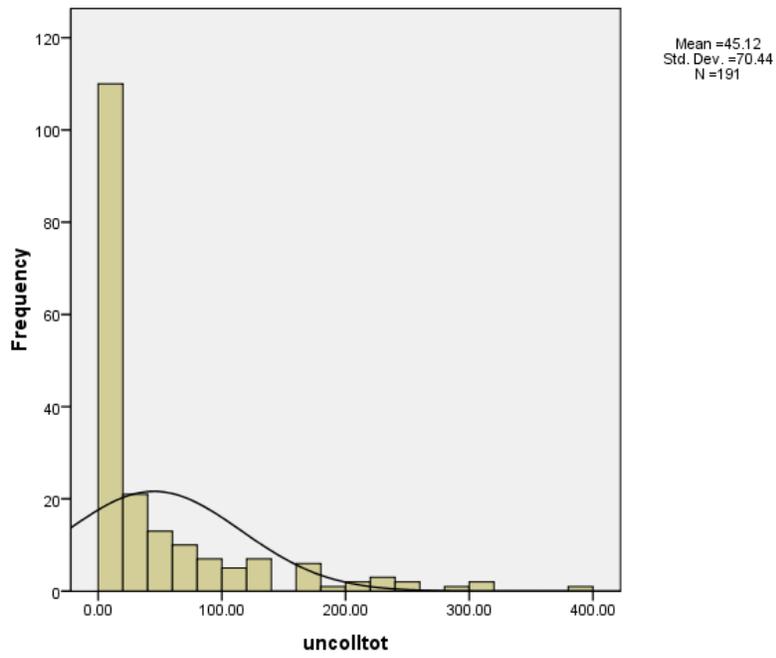


Figure 5  
*Distribution of MOD-R Total Scores (Transformed)*

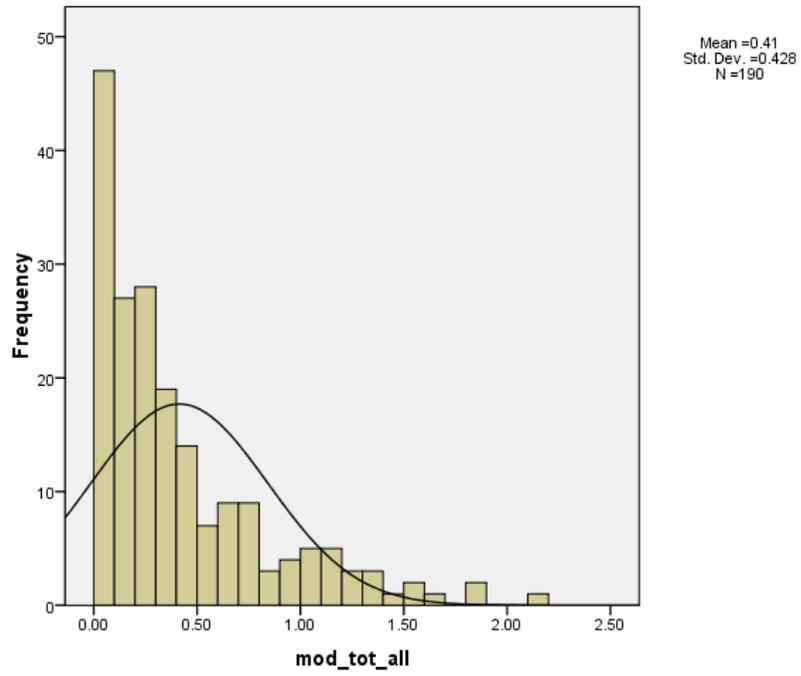
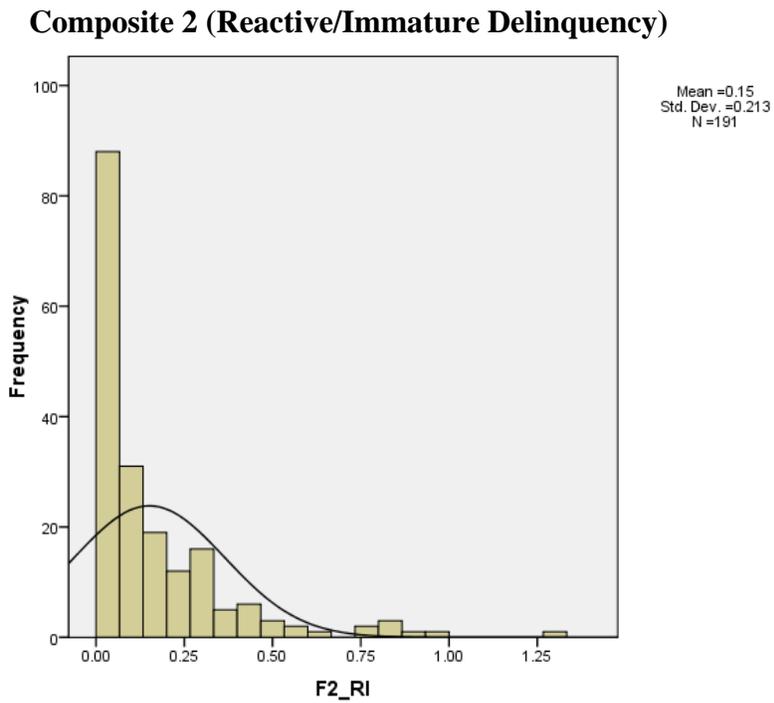
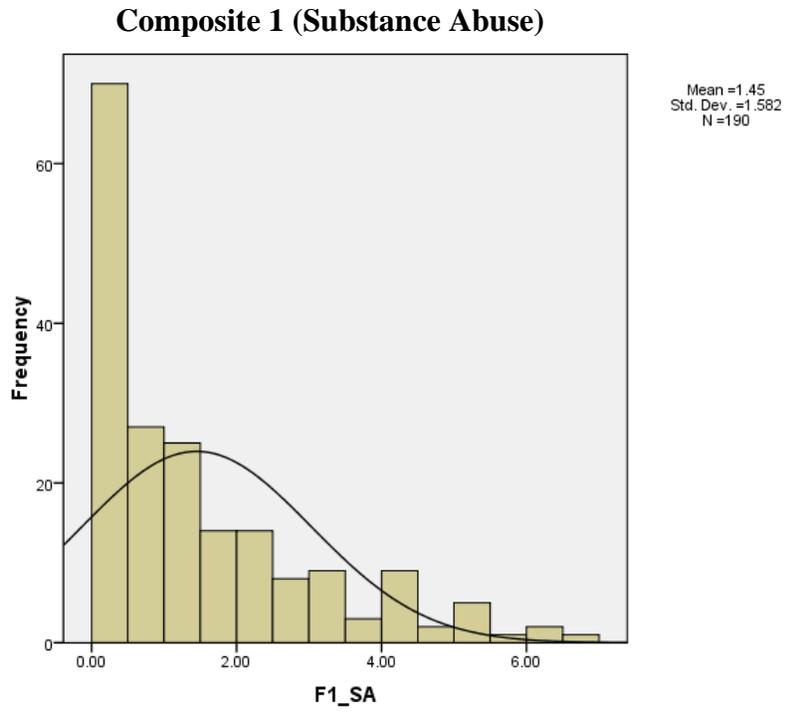


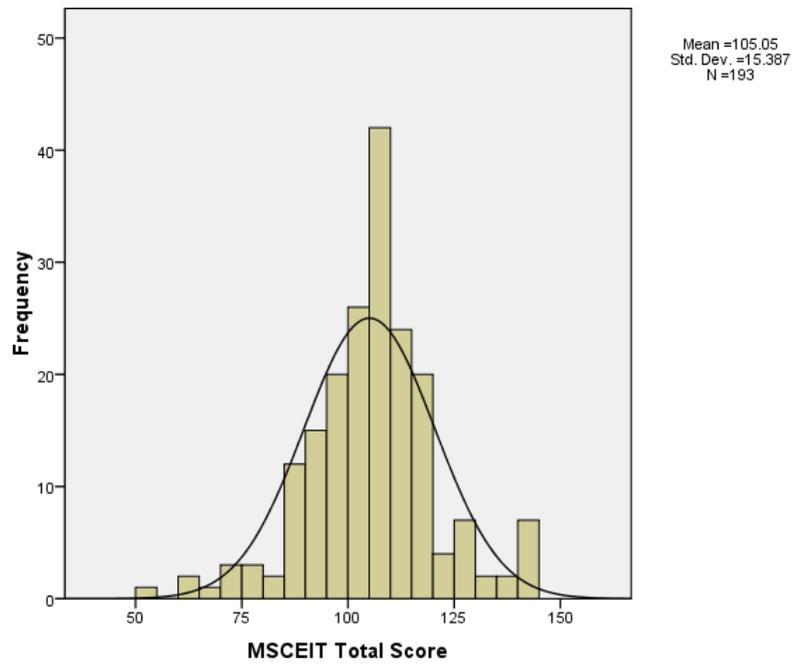
Figure 6  
*Distributions of Composite 1 and Composite 2 Scores*



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Figure 7  
*Distribution of MSCEIT Total Scores*

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Figure 8  
*Distribution of EQ-i Total Scores*

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