

THE MODERATING ROLE OF EMOTIONAL INTELLIGENCE IN THE
RELATION BETWEEN PEER VICTIMIZATION AND ALCOHOL, TOBACCO,
AND OTHER DRUG USE

A Dissertation
Submitted to
the Temple University Graduate Board

in Partial Fulfillment
of the Requirements for the Degree
DOCTOR OF PHILOSOPHY

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August, 2010

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ABSTRACT

This study describes the consequences as well as risk and protective factors associated with adolescent use of alcohol, tobacco, and other drugs (ATOD) and exposure to peer victimization. Peer victimization has been shown to be a risk factor for ATOD use and it may be important to identify factors that attenuate this relationship in order to pursue and develop preventive interventions. High emotional intelligence (EI) has been found to be associated with lower ATOD use, but the research evidence is mixed. High EI may neutralize the effects of exposure to peer victimization and act as a protective factor against increased ATOD use. Results from this cross-sectional study of 376 middle school students (45% male) found that youth who were victimized were more likely to report ATOD use. Youth who were better at identifying and sharing their emotions were less likely to report ATOD use. Conversely, youth who were better at influencing and socializing with others were more likely to report ATOD use. EI was not found to be protective in the presence of peer victimization. Results are discussed in the context of prevention related to increasing EI and reducing ATOD use.

ACKNOWLEDGMENTS

A special thanks to my dissertation committee for their excellent guidance and support throughout this process. Dr. Stephen Lepore, Dr. Bradley Collins, Dr. Mark Schmitz, and Dr. Wendy Kliewer: thank you for making this a virtually painless and mostly illuminating experience for me. And thanks especially to Wendy and Steve for making this dissertation possible by allowing me to work on the Writing for Health study. I'd like to thank Steve additionally for his hugely supportive mentorship throughout my time at Temple University. Steve: you manage to make research extremely rewarding, but also a lot of fun and I thank you for that.

To my SBHI labmates: thank you for being there to offer encouragement, support, laughter, and distraction (oh LOST lunch discussions, how I miss you). Thank you Gloria Park Perin for your guidance near the end. And thank you especially to Stacy Davis, who has been on this tiring but enlightening journey with me from the very beginning. Weekends in the lab will remain my fondest/worst memories as a graduate student.

To my family and friends: I love you all for your constant support and encouragement, but especially for letting me work without feeling guilty. Dr. Kathy Meyers: thank you for pushing me forward when I thought I needed to stay in one place. Michelle Friedman: thank you for making sure I never had to go without the little luxuries in life as a grad student. Packages from you always made me smile. Rachel Reinhart: thank you for reminding me to take breaks. And thank you for making sure those breaks included a cocktail. Sandy Kray:

thank you for always being there to analyze every situation with me. And thank you for agreeing that Jane Austen most definitely knows best in every situation. To my sisters, Elif Salati and Oyku Burnett: thank you for constantly telling me how proud my work has made you and know that I am equally as proud of both of you. To my mother, Glynis Kaynak: there aren't words to express how much your support has meant to me throughout my life. You have shown me kindness and unconditional love and I could never have done this without you. You have helped shape who I am today and I thank you for that.

And finally, to Sean Mulroy: I still can't quite believe that I finally found you. Did you know I dreamed about you for 29 years before I saw you? Thank you for being the amazing, intellectual, thoughtful, funny, supportive man that you are. You talked me down when things got hard and you built me up when I needed it the most. You always listened, made me laugh, and prevented me from going hungry. Thank you for everything.

DEDICATION

This dissertation is dedicated to my father, Dr. Erdener Kaynak. Babacim: one of my most treasured memories happened a very long time ago in your office at home. I found myself pouring through the books you had written and stumbled across the countless pages you had dedicated to us. I cannot really explain what it felt like as a child to see my name in print, but I can tell you I felt pride, and of course love. On that day, I knew I would dedicate my first work to you. I hope that by following in your esteemed footsteps I have made you proud. And I hope this small dedication can in some way say thank you for all you have done for me throughout my life. You grew up with very little and worked tirelessly in order to provide us with everything. From the bottom of my heart I thank you. I am beyond grateful for you and for the example you set.

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We have all a better guide in ourselves, if we would attend to it, than any other person can be.

Jane Austen, *Mansfield Park*

English novelist (1775 - 1817)

CHAPTER 1

INTRODUCTION

Alcohol, tobacco, and other drug (ATOD) use in early adolescence (before the age of 15) is a significant public health problem. Over 40% of youth who start drinking before the age of 15 develop alcohol dependence, compared to 10% of youth who begin drinking at age 20 or older (Hingson, Heeren, Jamanka, & Howland, 2000). A lax view on drug and alcohol use combined with known risk factors can be a dangerous combination when dealing with early initiation and use.

Alcohol and drug initiation and use have been linked to various risk factors (Galea, Nandi, & Vlahov, 2004) including victimization (Berenson, Wiemann, & McCombs, 2001; O'Donnell, Schwab-Stone, & Muyeed, 2002; Sullivan, Kung, & Farrell, 2004) and past trauma (Deykin & Buka, 1997). Peer victimization is a specific type of victimization that has been connected to ATOD use in young adolescents (Sullivan, Farrell, & Kliewer, 2006; Weiner, Pentz, Chaoyang, Chih-Ping, & Dwyer, 2004).

Many young adolescents experience peer victimization on a daily basis. Between 40 and 80% of school-aged youth have been victimized by peers. Young adolescents may be particularly vulnerable as they become more independent from parents and begin to rely on peer support to a greater extent (Prinstein, Boergers, & Vernberg, 2001). Additionally, during early adolescence, there is more concern about self-presentation, inclusion, gossip, and evaluation

of others (Parker & Gottman, 1989). In an environment of heightened insecurity and dependence on peer support, peer victimization can be especially harmful.

Studies have found that peer victimization is associated with externalizing behaviors including aggression and delinquency (Khatri, Kupersmidt, & Patterson, 2000; Schwartz, Proctor, & Chien, 2001; Weiner, et al., 2004). A recent meta-analysis found that physical victimization is more strongly related to externalizing problems, poor peer relations, and low prosocial behavior, and relational victimization is related to internalizing problems and higher prosocial behavior (Card, Stucky, Sawalani, & Little, 2008). Two studies have specifically found a relation between peer victimization and ATOD use (Sullivan, et al., 2006; Weiner, et al., 2004)

While some youth who are victimized turn to drugs and alcohol to deal with the stress, others emerge unscathed. Victims who avoid ATOD use possess the ability to recognize and cope with a negative situation in a positive way. When attempting to address the complicated nature of the relation between peer victimization and drug use, the concept of resiliency may be significant. Resilience is a “dynamic process encompassing positive adaptation within the context of significant adversity” (Luthar, Cicchetti, & Becker, 2000). This implies that a person is exposed to a threat or some kind of severe adversity, but is still able to positively adapt. Resilient individuals tend to be competent, have good coping skills, and high self-efficacy, (Fergus & Zimmerman, 2005) and use these protective factors to avoid negative behaviors like ATOD use.

Researchers have identified numerous protective factors for ATOD use among adolescents in general, but it is unclear which protective factors may be relevant when dealing with the added risk of peer victimization. Effective drug prevention programs focus on the theory and research of addiction, skills training, coping strategies, and appropriate conventional norms. Bullying interventions frequently deal with the emotional distress caused by the victimization, which can include talking about thoughts and feelings, learning how to combat negative thoughts, and learning how to solve social problems. A combination of these two treatments seems ideal, however, neither will be effective if an adolescent is not able to understand and learn from the intervention. If a young adolescent is unable to understand or evaluate their fear and anxiety related to victimization, effective regulation related to stressors will not be achievable. This idea of understanding and evaluating emotions is known as emotional intelligence.

Emotional intelligence (EI) has been defined as the ability to accurately perceive, appraise, and express emotion; access and/or generate feelings when they facilitate thought; understand emotion and emotional knowledge; and manage emotions (Mayer & Salovey, 1997). EI also includes the understanding of how emotions come about and emotional management in oneself and others (Trinidad & Johnson, 2002).

The study of EI has recently become a topic of great interest and activity due to its link to various behavioral outcomes. For example, EI has been associated with both physical and psychological health outcomes (Extremera &

Fernandez-Berrocal, 2002; Salovey, Stroud, Woolery, & Epel, 2002) in that individuals with high EI have more prosocial behaviors, positive peer and family relations, empathy, life success, as well as decreased health risk behaviors (Brackett, Mayer, & Warner, 2004). On the other end of the spectrum, low EI tends to be predictive of deviant and unhealthy behavior. Specifically, there has been some support for low EI as a predictor of alcohol and drug-related abuse and problems (Limonero, Tomas-Sabado, & Fernandez-Castro, 2006; Riley & Schutte, 2003; Trinidad & Johnson, 2002).

Low levels of EI resulting in an inability to cope with and manage emotions may be a contributing factor to the onset of substance use (Goleman, 1995). Higher EI is associated with fewer alcohol and drug problems as well as strongly correlated with better coping (Riley & Schutte, 2003). There has also been some support for a connection between perceived EI and substance use but these findings have been mixed (Limonero, et al., 2006).

The moderating role of EI has previously been studied in regards to health behaviors (van Heck & den Oudsten, 2008). Managing emotions can protect people from stress, which can lead to better adaptation (Ciarrochi, Deane, & Anderson, 2002). On the other hand, those who are poor at perceiving and regulating their emotions may actually be less sensitive to the effects of stress (Ciarrochi, et al., 2002). Additionally, EI has been found to predict stress for individuals whose emotions are intense and well understood and for individuals with mild emotions that are not understood (Gohm, Corser, & Dalsky, 2005). Finally, those who perceive and manage other people's emotions are inclined to

have more social support which can lead to better stress management (Ciarrochi, Chan, & Bajgar, 2001).

Advancement of existing scientific knowledge

The moderating role of EI may be significant when considering the relation between peer victimization and ATOD use. Adolescents who are victimized often experience traumatic thoughts and feelings related to the victimization. An adolescent with high EI may be more likely to perceive and appraise those feelings as well as understand, regulate, and deal with resulting emotions. High EI may help youth understand and benefit from a bullying or ATOD use prevention program. On the other hand, an adolescent with low EI may experience the same negative feelings and emotions related to victimization, but may lack the ability to recognize or understand their fear or anxiety. This lack of understanding may prompt youth with low EI to engage in ATOD use in order to feel better. While these youth have no control over their victimization or the negative feelings that follow, using ATOD is an effective albeit maladaptive way to cope.

This research may inform bullying interventions as well as ATOD prevention and intervention. There are countless intervention and prevention programs that target thoughts and feelings related to trauma and coping. If EI plays a role in dealing with victimization and ATOD use, incorporating EI into well-established ATOD prevention programs may be important.

Specific Aims of the Present Study

Aim 1. Develop an empirically-supported theoretical model of the role of EI in ATOD use among early adolescents, especially high-risk adolescents.

Aim 2. Describe levels of peer victimization and ATOD use in a high risk population.

Aim 3. Examine the independent effects of EI and peer victimization on ATOD use in order to determine compensatory effects.

Aim 4. Statistically test whether there is an interactive effect between peer victimization and EI on ATOD use that is consistent with a resilience model.

Aim 5. Discuss how the findings from this investigation might be applied to current prevention programs.

CHAPTER 2

REVIEW OF LITERATURE

Alcohol, Tobacco, and Other Drug Use in Early Adolescence

Epidemiology of ATOD Initiation and Use. Alcohol, tobacco, and other drug (ATOD) use in early adolescence (before the age of 15) is a significant public health problem. Youth who start drinking before the age of 21 are at increased risk of academic problems, social problems, unwanted sexual activity and unprotected sex, and memory problems (NIAAA, 2004/2005). Alcohol is also a leading contributor to injury death and the main cause of death for people under the age of 21. Almost 5,000 underage youth die from alcohol-related injuries each year due to vehicle accidents, homicide, suicide, as well as unintentional injuries other than vehicle accidents like alcohol poisoning (NIAAA, 2004/2005). Early ATOD use is also dangerous due to its link to later ATOD abuse and dependence (Hingson, et al., 2000). Early onset of alcohol and marijuana initiation has been shown to be strongly linked to later drug misuse (Hawkins, Catalano, & Miller, 1992) as well as a precursor to the use of other illicit drugs (Kandel & Yamaguchi, 1993). This gateway theory of ATOD use asserts that adolescent substance users progress from experimentation with “legal” substances (e.g. beer, wine, liquor, cigarettes) to regular use of illegal drugs which starts with marijuana (Kandel & Yamaguchi, 1993). Over 40% of youth who start drinking before the age of 15, develop alcohol dependence, compared to 10% of youth who begin drinking at age 20 or older (Hingson, et al., 2000). Most youth believe there is no great risk associated with occasional

alcohol and marijuana usage, as disapproval and belief of harmfulness associated with occasional ATOD use continues to decline. (Johnston, O'Malley, Bachman, & Schulenberg, 2009). A lax view on drug and alcohol use combined with known risk factors can be a dangerous combination when dealing with early initiation and use.

There are three major sources of epidemiologic data on ATOD use among U.S. adolescents: (a) the National Survey on Drug Use and Health (NSDUH) sponsored by the Substance Abuse Mental Health Services Administration (SAMHSA), (b) the Monitoring the Future (MTF) study sponsored by the National Institute on Drug Abuse (NIDA), and (c) the Youth Risk Behavior Survey (YRBS).

The NSDUH monitors substance use among people aged 12 and older in the U.S. Each year, the NSDUH collects data from about 70,000 participants. These participants are non-institutionalized and civilian, but do include data from people living in shelters and dormitories. The NSDUH has been described as a snapshot of substance use in the United States (Griffin, 2010).

In 2008, the NSDUH estimated that 2.9 million persons aged 12 or older used an illicit drug for the first time (SAMHSA, 2009). Fifty-seven percent were younger than 18 when they first used and over half (55%) of new users were female. The average age of initiation among people aged 12 to 49 was 18.8 years. The majority of new initiators reported using marijuana as their first drug (57%). A third reported using psychotherapeutics, 10% reported using inhalants, and a small number (3%) reported using hallucinogens as their first illicit drug (SAMHSA, 2009). Illicit drug use was 9% for 12 or 13 year olds and 15% for 14

or 15 year olds. Among 12 or 13 year olds, 2% used prescription drugs, 1% used inhalants and 1% used hallucinogens. Among 14 or 15 year olds, 6% used marijuana, 3% used prescription drugs, 1% used inhalants, and 1% used hallucinogens (SAMHSA, 2009). With a young population, the use of alcohol and tobacco is also considered to be an illicit behavior. In 2008, there were 4.5 million persons aged 12 or older who used alcohol for the first time (SAMHSA, 2009). Eighty-five percent of the 4.5 million recent alcohol initiates were younger than 21. The average age of first alcohol use among recent initiates was 17 years. Current rates of alcohol use were 3% among youth aged 12 or 13 and 13% among youth aged 14 or 15. Rates of binge drinking were 2% among 12 and 13 year olds and 7% among 14 and 15 year olds. The number of people who smoked cigarettes for the first time was 2.4 million with 60% of these new initiates being under the age of 18. The average age of first initiation was 17.4 years. Among youth aged 12 to 17 years, about 6% initiated. Current rates of smoking were 2% for 12 or 13 year olds and 8% for 14 or 15 year olds (SAMHSA, 2009).

The MTF study is an ongoing survey of 8th-, 10th-, and 12th- graders, as well as some follow-up as students go to college and beyond. Each year about 50,000 adolescents and young adults complete the survey about their substance use as well as their attitudes and beliefs regarding substance use.

In the 2009 MTF study, 20% of 8th grade students reported using any illicit drug in their lifetime (Johnston, et al., 2009). Twenty percent of 8th graders reported using cigarettes and 10% used smokeless tobacco. Less than 3% used

tobacco daily and 7% smoked cigarettes in the 30 days before the survey. Sixteen percent reported using marijuana, 15% reported using inhalants, and 37% reported using alcohol. In the prior 30 days, 8% reported using any illicit drugs, 7% reported using marijuana, 4% reported using inhalants, and 15% reported using alcohol. Of those who reported alcohol use in the prior 30 days, 5% reported being drunk. By the time students reach the 12th grade, these numbers more than double (Johnston, et al., 2009). Additionally, by senior year, 25% of students report binge drinking in the prior 30 days (Johnston, et al., 2009).

The YRBS is a questionnaire that is given to high school students every other year. The survey covers risk behaviors leading to unintentional injury and violence, suicide ideation, ATOD use, sexual risk behaviors, weight control activity, physical activity, and diet. The YRBS is also given to a representative sample of over 23,000 middle school students (grades 6-8) (Shanklin, Brener, McManus, Kinchen, & Kann, 2007). Across the states sampled in 2005, lifetime cigarette use was reported at 20% for 6th grade, 27% for 7th grade, and 37% for 8th grade. Five percent of 6th graders, 6% of 7th graders and 8% of 8th graders reported smoking before the age of 11. Current tobacco use was at 6% for 6th grade, 8% for 7th grade, and 14 % for 8th grade. Reported lifetime alcohol use was at 26% for 6th grade, 37% for 7th grade, and 49% for 8th grade. Seventeen percent of 6th graders, 14% of 7th graders and 15% of 8th graders reported drinking alcohol before the age of 11. Lifetime marijuana use was reported at 5% for 6th graders, 10% of 7th graders, and 17% of 8th graders. Three percent of 6th

graders, 3% for 7th graders, and 4% of 8th graders tried marijuana before the age of 11 (Shanklin, et al., 2007).

ATOD initiation and use in early adolescence. The risk and protective factors that have been found to be related to early adolescent ATOD initiation and use are significant to prevention policy. However, protective factors are not just the opposite of risk factors, and to be useful; a protective factor must apply to differences in outcomes among individuals who are exposed to the same risk (Hawkins, et al., 1992). Protective factors have been shown to mediate or moderate the effect of exposure to risk (Garmezy, Masten, & Tellegen, 1984; Rutter, 1985; Werner, 1992). These interactive processes may be especially important when attempting to shield at-risk youth from potential negative outcomes. This idea of resilience, or the ability to escape exposure to risk unscathed, has garnered a considerable amount of support in ATOD literature – particularly pertaining to adolescents.

Risk and Resilience

When attempting to address the complicated nature of the relation between peer victimization and drug use, the concept of resilience is significant. Resilience is a “dynamic process encompassing positive adaptation within the context of significant adversity” (Luthar, et al., 2000, p. 543). This implies that a person is exposed to a threat or some kind of severe adversity, but is still able to positively adapt despite this exposure. Individuals with resilience tend to be competent, have good coping skills, and high self-efficacy. Additionally, individuals with high resilience usually have adult support, which can be in the

form of a parent, mentor, or community organization (Fergus & Zimmerman, 2005). Resilience is commonly thought to be a trait (Tarter & Vanyukov, 1999), however there is a growing assertion that resilience is a dynamic process, dependent on the context, population, risk, protective factor, and outcome (Beauvais & Oetting, 1999; Fergus & Zimmerman, 2005).

Origin of resilience. Resilience is largely influenced by the early works of Garmezy, Rutter, and Werner. Garmezy and colleagues studied 200 children and families over a 10-year period in order to look at the cumulative effects of life stressors on different aspects of competence (Garmezy, et al., 1984). Children with lower IQ, SES, and less positive family qualities were less adept and more likely to be disruptive. However, some of the disadvantaged children managed to be competent and did not have behavior problems – this led to questioning how these children managed to emerge from their environment unscathed (Garmezy, et al., 1984). Further studies highlighted the importance of high self-efficacy, the ability to deal with change and the possession of social problem-solving skills (Rutter, 1985). Subsequent research concluded that children with high resilience had a positive self-concept, felt in control of their lives, were responsible, nurturing, autonomous, and had a close bond with at least one caregiver (Werner, 1992). These discoveries led to a focus on understanding the protective factors in an individual that can be encouraged and developed in at-risk youth (Fergus & Zimmerman, 2005).

Resilience models. There are three widely-accepted models that explain the resilience process: (a) compensatory, (b) challenge, and (c) protective

(Garmezy, et al., 1984). These models explain how protective factors can alter the path from risk exposure to negative outcomes (Fergus & Zimmerman, 2005).

Compensatory model. A compensatory factor is a variable that can neutralize exposure to a risk (Zimmerman & Arunkumar, 1994). This compensatory factor does not interact with the risk factor, but instead has a direct and independent influence on the outcome. In this model, the risk factor and compensatory factor additively combine to predict an outcome (Zimmerman & Arunkumar, 1994). For example, witnessing community violence is associated with later ATOD use (Vermeiren, Schwab-Stone, Deboutte, Leckman, & Ruchkin, 2003); however a strong relationship with an adult may help compensate for the negative effects of witnessing violence. A child may be exposed to community violence and avoid taking drugs because a strong relationship with a parent offsets the effects of witnessing violence. This model is tested by studying the unique, direct effects of both factors on ATOD use (Fergus & Zimmerman, 2005).

Challenge model. In a challenge model of resilience, a risk factor or stressor is considered a possible enhancer of successful adaptation (Zimmerman & Arunkumar, 1994). In this model, too much stress can result in maladaptive behavior, but not enough stress can result in a lack of challenge and could cause helplessness. Moderate levels of stress are the most ideal in that when an individual overcomes a challenge; competence is strengthened (Zimmerman & Arunkumar, 1994). Successfully meeting a challenge prepares the individual for the next challenge. This process is known as steeling or inoculation (Rutter, 1987). For example, youth who abstain from drinking in high school and have

highly restrictive parents are much more likely to binge drink in college whereas youth who are occasional drinkers in high school remain occasional drinkers in college (Hersh & Hussong, 2006). Dealing with moderate drinking in high school can protect youth in an environment where excessive drinking is the norm. The challenge model is tested using longitudinal data and is assessed using path or structural equation modeling (Zimmerman & Arunkumar, 1994).

Protective model. In a protective model of resilience, an internal or external factor negates or reduces the effect of a risk on a negative outcome (Fergus & Zimmerman, 2005; Luthar, et al., 2000). A protective factor can have a direct effect on an outcome, but the effect is stronger when a stressor is present (Zimmerman & Arunkumar, 1994). This relationship can be stabilizing or reactive. Increasing the drinking age to 21 is seen as a protective factor. Studies have shown that raising the drinking age to 21 decreases driving while intoxicated and subsequent deaths (Hawkins, et al., 1992). Protective models are tested with interaction variables.

Protective-stabilizing. In a protective-stabilizing model, the protective factor counteracts the effects of a risk so that when the protective factor is present, the relationship between the risk and the outcome is no longer present (Luthar, et al., 2000). Essentially, a protective factor neutralizes the effect of a risk. In this case, when a protective factor is absent, higher levels of risk are associated with higher levels of a negative outcome. If the protective factor is present, there is no relationship between the risk and the outcome. For example, having deviant peers has been found to be a risk factor for ATOD use, but in a

study of Latino females, this risk was eradicated for youth who had strong family support (Frauenglass, 1997).

Protective-reactive. In a protective-reactive model, the presence of the protective factor only reduces the relation between the risk and the outcome so that when the protective factor is removed, the association becomes much stronger. For example, the risk of ATOD use posed by ATOD-using peers has been found to be reduced when a strong bond between parent and child is present (Brook & Brook, 1990). When the strong bond is removed, the relation between ATOD-using peers and subsequent ATOD use is much stronger.

Protective-protective. In a protective-protective model, a protective factor can enhance the effect of another protective factor in producing an outcome (Fergus & Zimmerman, 2005). For example, a strong bond with a parent can enhance the effect of other protective factors like positive maternal characteristics, to further reduce ATOD use (Brook & Brook, 1990). However, because there is no risk present in the protective-protective model, the model is not considered by some researchers to be a true resilience model (Fergus & Zimmerman, 2005).

Risk factors for ATOD early initiation and use. National trend data suggest ATOD use generally begins in early adolescence and continues to increase during adolescence and into young adulthood until a gradual decline begins (Griffin, 2010). Adolescence has been described as a time of change, marked by transitional events and developmental challenges (Cicchetti &

Rogosch, 2002). This includes social and environmental changes, but also biological, cognitive, and emotional changes (Kassel, et al., 2010).

Race and ethnicity. In youth aged 12 to 17, White and Latino youth have the highest incidence of alcohol use, while African American and Asian youth report the lowest (SAMSHA, 2009). However, antisocial behavior can increase early initiation of ATOD use for African American and Asian children (Wells, et al., 1992). Similarly, Caucasian and African American youth have the highest incidence of smoking while Latino and Asian youth report the lowest. Smoking initiation has also been linked to cultural factors in that nontraditional family values and linguistic acculturation among Latina women increased the risk of smoking initiation (Kaplan, Nápoles-Springer, Stewart, & Pérez-Stable, 2001).

Gender. Being male has been found to be a risk for earlier ATOD use (Sobeck, Abbey, Agius, Clinton, & Harrison, 2000). But when looking at current national trends among youth aged 12 to 17, males and females have similar rates of illicit drug use. Marijuana use is more prevalent among males, whereas, nonmedical use of psychotherapeutic and pain drugs is more prevalent among females (SAMSHA, 2009). Binge rates among males and females are similar in 12 to 17 year olds (14% and 15% respectively) (SAMSHA, 2009). For smoking, there is no difference between genders (9% for males and 9% for females).

Biological, cognitive, and emotional risk factors. Advances in neuropsychology has identified adolescence as a time of neurodevelopmental plasticity and change (Steinberg, 2007). Changes to the brain likely affect behavior and psychological functioning (Spear, 2000, 2002). Alterations in the

limbic system have been implicated in moderating the reinforcing properties of ATOD (Spear, 2002). There is also change in the prefrontal cortex and the amygdale which are involved in goal-directed behaviors, emotional processing, and emotional reactivity (Spear, 2002). Additionally, development occurs in the brain regions and systems responsible for behavior, emotion, and cognition regulation, as well as perceptions of risk and reward (Steinberg, 2007). This period of invulnerability may put adolescents at increased risk for the use and misuse of ATOD (Kassel, et al., 2010; Steinberg, 2007). Especially because research has shown that adolescence is a time of increased sensation- and novelty-seeking behavior (Kassel, et al., 2010).

Emotional instability has also been shown to rise considerably during this time with almost one-third of adolescents reporting depressed mood (Compas, Hinden, & Gerhardt, 1995). When compared to middle and late adulthood, adolescence is associated with greater negative affect (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000). These changes in mood and feelings of distress have been found to be associated with alcohol and tobacco use both cross-sectionally and longitudinally (Brown, Lewinsohn, Seeley, & Wagner, 1996; Chassin, Pillow, Curran, Molina, & Barrera, 1993). Specifically, a prospective study found that adolescents who reported higher negative affect were more likely to use ATOD one year later (Tschann, et al., 1994).

While there is still no consensus on the temporal precedence of negative emotions and ATOD use, there is some research that shows that affect may prompt in the moment ATOD use (Kassel, et al., 2010). Studies of smoking in

adolescents have found that adolescents who smoke report lower feelings of positive affect as well as heightened negative affect before a smoking episode (Mermelstein, Hedeker, Flay, & Shiffman, 2003). Additionally, there is a stronger association between negative mood and alcohol use among adolescents who also reported more depressive symptoms, lower rates of conduct problems, and less effective socialization about emotion from their parents (Hersh & Hussong, 2009; Hussong, Feagans Gould, & Hersh, 2008). Individuals presenting with negative affect also report escalated smoking behavior over time (Weinstein, Mermelstein, Shiffman, & Flay, 2008).

Developmental and environmental risk factors. Reaching puberty before peers has been tied to a number of emotional and behavioral problems including ATOD use (Kaltiala-Heino, Marttunen, Rantanen, & Rimpelä, 2003; Tschann, et al., 1994). Potential mechanisms linking early pubertal timing and problem behavior include: (a) peer rejection, distress, and low self-esteem related to changes in the body, (b) less monitoring of adolescents by parents due to their maturing physical appearance, and (c) being more likely to seek out older peers who exert more pressure to engage in adult behavior (i.e. sex and ATOD use) (Griffin, 2010).

Transitions into middle and high school have been identified as a significant turning point for youth. During these transitions, many youth have difficulty adjusting to a larger and more demanding environment (Eccles, Lord, & Midgley, 1991). Younger students tend to have anxiety related to navigating the school, becoming familiar with new policies and procedures, adjusting to bullying,

and feeling pressure to perform academically (Zeedyk, et al., 2003). School transitions have been found to be related to a decrease in GPA and attendance, less involvement in extracurricular activities, a decrease in school bonding, as well as increase and increase in psychological distress and psychosocial adjustment problems (Griffin, 2010). Although this would point towards and causal relationship between school transitions and ATOD use, there is little evidence that supports the commonly held theory (Griffin, 2010). For instance, one study found that transitioning to junior high school was associated with an increase of supportive relationships with school friends and found no negative impact (Cantin & Boivin, 2004).

Social risk factors. Early ATOD initiation and use have been linked to various social risk factors (for a review see: Galea, et al., 2004). Early cigarette smoking (14 years old) is connected to parental smoking, low school achievement, low household income, and low levels of maternal education (Conwell, et al., 2003). Early initiators of smoking have low levels of parental supervision and are more likely to leave home at the age of 18 (Juon, Ensminger, & Sydnor, 2002). Lower grades, higher levels of parental education, and being younger than cohort peers are also associated with early alcohol initiation and use (Ellickson, McGuigan, & Klein, 2001).

Peer ATOD use is associated with early ATOD use in young adolescents (Guo, Hill, Hawkins, Catalano, & Abbott, 2002; Levy & Pierce, 1990), however family social support reduces the influence of deviant peers (Frauenglass, 1997). Still, youth tend to self-report more ATOD use when they report their

peers use (Crosnoe, Muller, & Frank, 2004; Hussong, 2002). However, peers may not be the direct cause of youth ATOD use but rather, youth tend to seek substance-using peers and also tend to project their own ATOD use onto peers (Weinberg, Rahdert, Collver, & Glantz, 1998). Family conflict and a low degree of family bonding is significantly and positively associated with illicit drug initiation (Guo, et al., 2002). Parental alcoholism is related to increased ATOD use (Chassin, et al., 1993) Children of alcoholics experience an increase in negative uncontrollable life events and also tend to be monitored less. Both of these risks can lead to a greater association with ATOD-using peers which can lead to increased ATOD use (Chassin, et al., 1993). Early users (before 6th grade) have weaker decision-making skills, are more susceptible to peer pressure, have more negative perceptions of school, and possess less confidence in their skills (Sobeck, et al., 2000). New initiators (during the 6th grade) have less positive peer relations, are more likely to come from a single-parent home, and have less knowledge about ATOD than non-users (Sobeck, et al., 2000).

Low SES, neighborhood disadvantage, and community violence are connected to ATOD use (Boardman, Finch, Ellison, Williams, & Jackson, 2001; Kilpatrick, et al., 2003; Margolin & Gordis, 2000; Miller & Miller, 1997; Vermeiren, et al., 2003; Winstanley, et al., 2008). This association may be especially detrimental for young adolescents who are 5.6 times more likely to be offered cocaine and twice as likely to be offered alcohol and tobacco when they live in a very disadvantaged neighborhood when compared to youth living in a relatively advantaged neighborhood (Crum, Lillie-Blanton, & Anthony, 1996). Witnessing

violence and victimization is associated with ATOD use (Berenson, et al., 2001; O'Donnell, et al., 2002; Sullivan, et al., 2004). Samples of chronic users have a significant amount of past trauma (Deykin & Buka, 1997), especially among females (Miller & Miller, 1997). Adolescents with alcohol dependence are 6 to 12 times more likely to have histories of victimization (Clark, Lesnick, & Hegedus, 1997). Additionally, adolescents exposed to both victimization and witnessing violence report higher levels of smoking, alcohol use, marijuana use, and hard drug use (Vermeiren, et al., 2003). Further, youth who experience peer victimization are more likely to report ATOD use (Sullivan, et al., 2006; Weiner, et al., 2004).

There is growing concern about the effects of peer victimization on youth, due to recently publicized teen suicides that stemmed from bullying in school as well as through various modes of communication (e.g. internet, texting). Many youth keep their victimization to themselves. When left unreported, intrusive thoughts and feelings of anger related to the abuse can lead to ATOD use (Weiner, et al., 2004). While many, if not all youth have been victimized by peers at some point in their lives, there is a lack of understanding as to why some youth appear to be unaffected by this risk, especially in regards to subsequent ATOD use. What protects these youth from negative outcomes, specifically ATOD use? In general, there are many protective factors that have been found to be associated with decreased ATOD use in youth.

Protective factors for ATOD use. A resilient individual has personal and contextual resources that can help when dealing with problems and crises over

time and can be protective against subsequent ATOD use. For example, a youth who goes through a breakup may feel upset and rejected. These feelings may increase the chances of bonding with a deviant peer and consequently getting involved with drugs. A youth with resilience may have the resources to independently deal with the crisis, which would reduce the probability of negative consequences (Beauvais & Oetting, 1999).

Because many risk factors for ATOD use may be difficult or even impossible to change, prevention policy has made a concerted effort towards researching protective factors (Hawkins, et al., 1992). Several studies have found that the cumulative effect of protective factors can benefit an at-risk child (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Luthar & Cicchetti, 2000). This may also be the case with youth who are at-risk for ATOD use.

Environmental protective factors. Increased taxes on alcohol and tobacco has lead to decreased consumption (Hawkins, et al., 1992). Additionally, a higher drinking age has led to a dramatic drop in alcohol-related vehicle fatalities (Joksch, 1988). A lack of availability (e.g. fewer alcohol stores, bars, convenience stores) of ATOD can also protect youth from using (Hawkins, et al., 1992).

Emotional protective factors. Self-regulation of cognition, emotion, and behavior, is a protective factor for ATOD use (Wills & Dishion, 2004). Individuals with poor self-control are more likely to report using alcohol and tobacco to reduce negative affect and relieve boredom which is a predictor of problem

ATOD use. Self-control moderates the relation between level of ATOD use and number of use-associated problems (Wills & Dishion, 2004).

Social protective factors. The risk of ATOD use posed by ATOD-using peers can be lessened by a strong bond between parent and child (Brook & Brook, 1990). Additionally, a strong bond with a parent also enhances the effect of other protective factors including adolescent conventionality, positive maternal characteristics, and marital harmony in preventing ATOD use (Brook & Brook, 1990). Family support as a mediator in the relation between ATOD use and ATOD-using peers has been further supported (Frauenglass, 1997). Youth with involved parents who hold them in high regard, as well as have high expectations for them, are less likely to initiate ATOD and less likely to smoke (Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001). Additionally, youth who pray, read the Bible and attend church functions at least twice a week are less likely to initiate ATOD (Johanson, Duffy, & Anthony, 1996). Also, less exposure to pro-smoking social influences has accounted for lower rates of regular smoking in youth (Ellickson, et al., 2001). Youth who have an accurate perception of ATOD consumption of their peers use ATOD less when compared to those who believe that their peers are using ATOD at a considerably higher rate (Cameron & Campo, 2006).

Peer acceptance has been viewed as a risk factor for ATOD use due to the high association between peer ATOD use and individual use. However, this may not always be the case. If the ATOD use is strictly a social activity and there is no involvement in crime and delinquency, the peer relationship which is a risk

factor for ATOD use could also be a protective factor (Beauvais & Oetting, 1999). Peer acceptance helps with the development of self-esteem as well as learning social skills needed to deal with peer problems and relationships. Additionally, peers can be supportive in stressful times, especially as children get older and start to rely more on peers rather than their parents. This makes peer acceptance an important addition to resilience despite its possible risk for ATOD use (Beauvais & Oetting, 1999).

Resilience is related to ATOD use, however, resilience may not directly influence use (Beauvais & Oetting, 1999). Resilience takes effect when a crisis emerges, so in a situation with risk, protective factors may be able to help explain reduced ATOD use. However, if there is no crisis present, these protective factors may be more difficult to identify (Beauvais & Oetting, 1999). Many protective factors that have been tested (i.e., self-esteem, self-confidence, school attachment) may increase resilience but resilience is only relevant when there is a crisis or risk (Beauvais & Oetting, 1999). Specifically, resilience may be particularly relevant when studying the risk of peer victimization and its relation to adolescent ATOD use. There are some studies that have examined the positive association between the two (Sullivan, et al., 2006) but there is little research that explains why the relation exists.

Peer Victimization

Peer victimization is when a youth is the target of aggressive behavior of other children, who are not siblings and not necessarily the same age. Many youth experience peer victimization on a daily basis. This victimization tends to

fall under one of five categories: (a) indirect, (b) relational, (c) physical, (d) verbal, and (e) generic victimization (Hawker & Boulton, 2000). Although indirect victimization and relational victimization seem conceptually similar (i.e., inflicting harm that can cause damage to peer relationships), indirect victimization is an aggressive act done through a third party so that the aggressor cannot be identified by the victim (Crick & Bigbee, 1998). This type of aggression may be particularly salient with the recent surge of cyberbullying (Kowalski & Limber, 2007). Youth report that relational victimization is a separate construct from verbal or physical aggression and that all three types of victimization are intended to harm peers (Crick, Bigbee, & Howes, 1996). Physical victimization occurs when a victim's physical integrity is harmed whereas verbal victimization occurs when a victim is attacked with words (Hawker & Boulton, 2000). Verbal victimization is conceptually similar to relational and indirect victimization, especially since words are used to exclude or harm victims (Hawker & Boulton, 2000). Generic victimization encompasses nonspecific experiences of victimization.

Between 40 and 80% of school-aged youth have been victimized by peers and 10 to 15% of this victimization is chronic (Juvonen & Graham, 2001). Victims of peer aggression can experience psychosocial maladjustment (e.g., depression, anxiety, low self-esteem). A recent meta-analysis found an association between experiencing peer victimization and reported anxiety and depression (Hawker & Boulton, 2000). Peer victimization is also associated with externalizing behaviors including aggression and delinquency (Khatri, et al.,

2000; Schwartz, et al., 2001) as well as ATOD use (Sullivan, et al., 2006; Weiner, et al., 2004).

Peer victimization and adolescence. During adolescence, peer relationships provide the opportunity to develop adaptive coping skills as well as improve social competence (Yoon, Barton, & Taiariol, 2004). Peer relationships can also help adolescents adapt to the anonymity experienced in middle school as students no longer stay in one classroom all day, the student body greatly increases, and more bureaucracy is applied by the administration (Nansel, et al., 2001). Young adolescents may be particularly vulnerable as they become more independent from parents and begin to rely on peer support to a greater extent (Prinstein, et al., 2001). Additionally, there is more concern about self-presentation, inclusion, and gossip and evaluation of others (Parker & Gottman, 1989). Friendships become more committed and intimate and there is more disclosure of personal issues (Maccoby, 1988). Popularity becomes increasingly important as hierarchies begin to develop within peer groups (Espelage, Holt, & Henkel, 2003). As these hierarchies develop, roles begin to emerge and vulnerable peers become more evident. For instance, youth who are victimized tend to exhibit less assertive behavior when compared to non-victims (Schwartz, Dodge, & Coie, 1993). Victims often report a fear of negative evaluation and social avoidance and may therefore be more likely to go along with victimization in order to cope socially, thus perpetuating victimization in the future (Slee, 1994).

In an environment of heightened insecurity and dependence on peer support, peer victimization can be especially harmful. When dealing with peer problems, an adolescent may have less opportunity to develop appropriate social and coping skills which may increase vulnerability to victimization and its negative effects (Khatri, et al., 2000). When compared to non-victimized peers, former victims of bullying tend to report more symptoms of depression as well as lower self-esteem (Olweus, 1995).

Peer victimization and negative outcomes. Peer victimization is associated with internalizing behaviors including anxiety and depression (Hawker & Boulton, 2000). Prinstein, Boergers, and Vernberg (2001) found that in a sample of 566 high school students, relational victimization was associated with high levels of loneliness and depression and low levels of self-worth. The same study found that overt victimization was related to depression, but only in boys. Adolescents with combined relational and overt victimization experienced the most maladjustment in depression and loneliness (Prinstein, et al., 2001). A study of 600 middle school students found that victimization was stable across time and that victims (specifically girls in 6th grade) experienced greater maladaptive outcomes when compared to non-victims (Paul & Cillessen, 2003). A study of 130 predominantly Caucasian young adolescents (Vernberg, Ewell, Beery, Freeman, & Adwender, 1995) found that youth who were victimized and did not disclose their victimization were more likely to report loneliness.

Peer victimization is correlated with delinquency (Khatri, et al., 2000) and aggression (Crick, Casas, & Ku, 1999). Khatri and colleagues (2000) studied 471

early adolescents longitudinally and found that experiencing verbal victimization increased delinquency in girls. A study of 393 young adolescents found that a combined measure of verbal and physical victimization predicted increased aggression and delinquency at a one year follow-up (Hodges, Boivin, Vitaro, & Bukowski, 1999). A cross-sectional study of 225 young African American adolescents found that prior exposure to violence and victimization predicted various internalizing and externalizing behaviors including a higher frequency of fighting (DuRant, Pendergrast, & Cadenhead, 1994). Vernberg et al. (1995) found that victimized participants' mothers were more likely to report aggression, antisocial and uncontrolled behavior in their children.

Race and ethnicity differences. A study of 1,956 African American, Latino, and White children found that Latino children had the lowest victimization scores when compared to other ethnic groups (Hanish & Guerra, 2000). This relation was moderated by school context in that attending an ethnically integrated school was associated with higher victimization for Caucasian children and lower victimization for African American children. There was no moderating effect for Latino children (Hanish & Guerra, 2000). Additionally, African American children were less likely to experience chronic victimization when compared to Caucasian and Latino. A study of 350 African American and 436 Latino middle school students found that true victims (those youth that were identified by peers and by themselves as victims) were more likely to experience higher rates of depression, anxiety, and loneliness, as well as lower rates of self-esteem (Graham, Bellmore, & Juvonen, 2003). Victims also reported less school

engagement and lower GPA. Finally, a large longitudinal study of 1,469 African American and Latino students found that peer victimization predicted aggressive behavior, attention problems, delinquency, low levels of popularity, and symptoms of depression and anxiety (Hanish & Guerra, 2002).

Gender differences. While overt victimization tends to be more prevalent among boys than girls (Crick & Bigbee, 1998; Crick, et al., 1999; Sullivan, et al., 2006) relational victimization has similar prevalence rates amongst both genders (Prinstein, et al., 2001). However, social forms of victimization are more detrimental for girls when compared to boys (Crick & Zahn-Waxler, 2003). Girls tend to ruminate more about social victimization than boys which may result in worsening outcomes (Paquette & Underwood, 1999). Hanish and Guerra found that the effect of victimization was more enduring for boys than for girls (2002). Victimization may be a more harsh process for boys in that they tend to be chronically victimized in multiple ways (Hanish & Guerra, 2002). Gender differences also emerge when examining peer victimization and ATOD use.

Peer victimization and ATOD use. There is support for the positive association between violence victimization and ATOD use among adolescents (Berenson, et al., 2001; Kilpatrick, et al., 2003; Martin, Clark, Lynch, Kupper, & Cilenti, 1999; Simantov, Schoen, & Klein, 2000); however very few studies have addressed the relation between peer victimization and ATOD use (Sullivan, et al., 2006; Weiner, et al., 2004). A study of 3,922 mostly Caucasian 8th, 10th, and 12th grade students examined the association between relational victimization and ATOD use (Weiner, et al., 2004). The study found that relational victimization and

low conflict management efficacy predicted hostile anger which predicted gateway drug use as well as subsequent hard drug use and violence. These predictive relationships were supported across the grades with the exception that hard drug use in 8th grade did not predict violence (Weiner, et al., 2004).

Another study of 276 mostly African American 8th graders examined the relation between physical and relational victimization and alcohol and marijuana use and found an overall positive association between the two (Sullivan, et al., 2006). Unlike previous studies, the moderating role of gender was also examined. Because physical victimization is reported more among boys when compared to girls (Crick & Bigbee, 1998; Prinstein, et al., 2001), the authors hypothesized that physical victimization would be more strongly related to externalizing behaviors for boy than for girls. Because girls rate relational victimization as more hurtful and harmful than boys (Crick & Zahn-Waxler, 2003), the authors also hypothesized that relational victimization would be more strongly related to externalizing behaviors for girls than boys. In order to test these hypotheses, the authors created interaction terms by multiplying gender by the victimization term (relational or physical) and looking at outcomes of delinquency and ATOD use. Overall, a positive association between peer victimization and ATOD use was supported (Sullivan, et al., 2006). Higher physical victimization was associated with a greater frequency of alcohol and advanced drug use in boys but not girls. Relational victimization was associated with increased cigarette, alcohol, and advanced alcohol use for boys and girls. However, for

girls, higher levels of relational victimization were associated with a higher frequency of marijuana use (Sullivan, et al., 2006).

Stress and coping theories suggest that a stressful event like peer victimization may result in negative emotional arousal which then leads to ATOD use (Sullivan, et al., 2006). Weiner et al. (2004) demonstrated that relational victimization was associated with low levels of anger control which was related to higher levels of gateway drug use. However, not all children who are victimized end up with maladjustment problems. One study found that while 75% of students reported being victimized by peers at some point in their lives, less than 15% reported that they felt significantly affected in any particular domain of their lives (e.g. academically, emotionally, or socially) (Hoover, Oliver, & Hazler, 1992). Why is it that most youth emerge from peer victimization unscathed?

Peer victimization and protection from negative outcomes. Youth who are victimized report less anxiety/depression, and social problems if they have social support (Hodges, et al., 1999; Holt & Espelage, 2007; Kochenderfer-Ladd & Skinner, 2002; Prinstein, et al., 2001) and peer sociability skills (Paul & Cillessen, 2003). Youth with better coping strategies are also protected from the negative effects of peer victimization (Hunter & Boyle, 2004; Kochenderfer-Ladd, 2004). Other protective factors include supportive and authoritative parents and the use of problem-focused coping skills instead of emotion-focused coping skills (Baldry & Farrington, 2005). Children who are better at inferring other people's thoughts and feelings are less likely to experience peer issues including overt and relational victimization (Gleason, Jensen-Campbell, & Ickes, 2009). Finally,

youth with higher empathic accuracy and emotional intelligence may be able to respond more appropriately in social settings and therefore have better relationships and adjustment (Gleason, et al., 2009; Goleman, 1995).

While it is still unclear which emotions are triggered when peer victimization takes place, there is evidence that negative emotions are evoked when victimized. Being able to recognize and deal with these emotions may be an integral part of overcoming the risk of victimization. Thinking intelligently about emotions and using this to adapt and grow is known as the concept of emotional intelligence.

Emotional Intelligence

Intelligence has always been considered a key element when it comes to successful life outcomes. For instance, measures of general intelligence like IQ tests are predictive in job performance as well as school performance (Hunter & Schmidt, 1996). Intelligence typically accounts for 25% of the variance in academic performance (Neisser, et al., 1996). This is not surprising as IQ tests fail to take into account other predictors of academic performance and success (e.g., persistence, willingness to study, support) (Neisser, et al., 1996). For many years, there has been some question as to whether general intelligence and IQ scores cover the full spectrum of what it means to be intelligent and subsequently, successful (Ceci, 1996).

Daniel Goleman (1995) suggested that successful life outcomes may be more a function of emotional rather than cognitive intelligence. He popularized the concept of emotional intelligence (EI) by claiming it was more important than

IQ when attaining success. More importantly, Goleman proclaimed that unlike IQ, EI could be nurtured and strengthened throughout adulthood. Goleman's definition of EI included motivation, impulse control, persistence, and mood regulation. The publication of his book sparked an upsurge in research pertaining to EI including models to define the construct as well as measures to operationalize EI and predict outcomes.

Goleman's book was inspired by the work of Mayer and Salovey (1990) who defined EI as the ability to accurately perceive, appraise, and express emotion; access and/or generate feelings when they facilitate thought; understand emotion and emotional knowledge; and regulate emotions. In a sense, a person with high EI thinks intelligently about emotions, or conversely, emotions make thinking more intelligent (Salovey & Mayer, 1990). In order to get a better understanding of the models of EI, intelligence must first be addressed and defined as it served as a building block for the initial construct of EI.

Intelligence defined. Intelligence is a multi-faceted construct which includes the ability to act purposefully, to think rationally, and to deal effectively with the environment (Wechsler, 1975). Intelligence includes general mental competence as well as understanding, reasoning, problem-solving, and learning (Brody, 1992). Spearman's (1927) model of *g* studied intelligence using intercorrelations of tests of mental ability in an attempt to isolate a global general factor. This method has been used by many researchers as a way to predict intelligence. Carroll's (1993) three-stratum model attempted to synthesize the broad levels of conceptualization by creating three levels of intelligence with each

level focusing on different abilities. Carroll used correlations to take 70 primary abilities on the first stratum and define eight broad abilities on the second stratum. These broad abilities then cluster to define general intelligence (*g*) on the third stratum (Carroll, 1993). General intelligence has been studied through psychometric studies for over a century, however, there is some debate over whether this is truly the best way to measure intelligence, especially when considering real-world application (Ceci, 1996). There are some researchers who believe cultural differences in conceptions of intelligence should be taken into account (Gardner, 1983; Sternberg, 2000).

Sternberg made the distinction between analytical intelligence, creative intelligence, and practical intelligence (2000). Along these lines, Gardner's (1983) theory of multiple intelligences defined seven forms of intelligence: linguistic, musical, spatial, body, interpersonal, intrapersonal, and logico-mathematical. This theory was based on the idea that intelligence existed on the basis of an individual's cultural significance and the correspondence to human brain structures. While Gardner's theory includes such abilities as musical intelligence, there is an assumption that when it comes to measuring intelligence, there needs to be more normative criteria (Zeidner & Feitelson, 1989). Additionally, the psychometric criteria developed to measure cognitive ability may not be appropriate when applied to other domains like managing emotions (Roberts, Zeidner, & Matthews, 2001).

EI and Social Intelligence

EI was originally derived from Thorndike's (1921) division of intelligence. This theory included three classes: (a) abstract-scholastic intelligence which is the understanding and management of ideas, (b) mechanical-visuo spatial intelligence which is the understanding and manipulation of concrete objects, and (c) social intelligence which is the ability to understand and manage people and act wisely in social contexts (Thorndike, et al., 1921). Social intelligence boils down to the ability to understand others' internal states, motives, and behaviors, and act toward them optimally using this information (Thorndike, et al., 1921). In the beginning, social intelligence was largely the study of how people make judgments regarding others and the accuracy of these social judgments (Roberts, et al., 2001). Eventually, areas of study pertaining to social intelligence split into two domains: (a) an intelligence domain which focused on the abilities of person perception and (b) a social-psychological domain which was focused on the social determinants of person perception (Roberts, et al., 2001). Social intelligence was so broadly defined in Thorndike's model that it was difficult to distinguish from verbal and visual/spatial intelligence (Cronbach, 1960). While there was much interest in social intelligence, attempts to measure the construct proved to be difficult (for a review see: Kihlstrom & Cantor, 2000). This led to a decline in research that focused on social intelligence until a renewed interest came about when EI was introduced.

EI was notably influenced by social intelligence, but there are subtle differences that should be noted. Social intelligence focuses on the ability to read

others' emotional cues and use that to their social advantage. However, social intelligence ignores the understanding of one's own emotions, which is an integral part of EI. Social intelligence also directly addresses the management of other people. While EI is concerned with empathy and others' emotions, the construct does not include managing or manipulating situations based on the ability to read people. This is not to say that social intelligence does not consider empathy an important trait.

While EI deals directly with emotion (e.g., mood), it also deals with behaviors that have emotional associations (e.g., violent behavior) (Roberts, et al., 2001). The intelligence related to the understanding and significance of behavior was included in Guilford's (1959) structure of intellect model. Guilford's model included combinations of three facets of intelligence: (a) operations (i.e., cognition, memory, divergent production, convergent production evaluation), (b) content (i.e., figural, semantic, symbolic, and behavioral), and (c) products (i.e., units, classes, relations, systems, transformation, and implications) (Guilford, 1959). Behavioral content (e.g., ability to identify internal status of individuals, interpretation of consequences of social behavior, etc.) was referred to as empathic ability and closely mirrors current definitions of EI (Roberts, et al., 2001). Guilford's model uses empathy as a way to act socially appropriately. EI also uses empathy, but rather than using it as a way to progress socially, it is used as a way to interpret and develop one's own emotions.

EI and Fluid and Crystallized Intelligence

Fluid and crystallized intelligence are both discrete factors of generalized intelligence (Cattell, 1971). Fluid intelligence is the ability to draw inferences and understand the relation of varying concepts independent of acquired knowledge. This includes the ability to deal with confusion and solve problems. Crystallized intelligence is the ability to use skills, knowledge, and experience using information accessed from long-term memory (Cattell, 1971). The crystallized theory of intelligence is considered the most successful empirically-based psychometric model of intelligence (Davies, Stankov, & Roberts, 1998). EI may represent another aspect of crystallized intelligence (Roberts, et al., 2001). This is based on the idea that appraisal, expression, regulation and utilization of emotion is cultivated through experience and social interaction which is similar to psychological processes that make up crystallized intelligence (Davies, et al., 1998). EI as an aspect of crystallized intelligence supports the claim that EI is something that can change and develop as a person grows and matures.

EI and Personal Intelligence

EI overlaps with Gardner's (1983) concept of personal intelligence. The concept of personal intelligence includes: (a) intrapersonal intelligence which is the ability to access one's own feelings and identify, label, and discriminate among those feelings in order to represent them; and (b) interpersonal intelligence which is the ability to perceive and understand the moods, intentions, and desires of others (Gardner, 1983). The current construct of EI as an ability overlaps significantly with Gardner's concept of personal intelligence.

Models of EI

There are currently two predominant conceptualizations of EI: (a) mental ability models that focus on the capacity for processing affective information (Mayer & Salovey, 1997), and (b) mixed trait models that perceive EI as a diverse construct, comprised of facets of personality as well as the capacity to perceive, assimilate, understand, and manage emotions (Goleman, 1995; Matthews & Zeidner, 2000; Petrides, Pita, & Kokkinaki, 2007). Many researchers distinguish between the two EI constructs by examining operationalization (Petrides, et al., 2007). Mixed models generally use self-report measures (i.e., personality questionnaires) and ability models use maximum performance measures (i.e., IQ tests).

Mental ability model. Mayer and Salovey developed the original construct of EI borrowing heavily from Thorndike's (1921) class of social intelligence as well as Gardner's view of personal intelligence, including both inter- and intrapersonal intelligence (1983; 1921). EI is defined as a subset of social intelligence that "involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action" (Salovey & Mayer, 1990, p. 89). This abilities-based model consists of four branches.

1. *Nonverbal perception and expression of emotion in self and others.*

This component of EI is the "perception, appraisal, and expression of emotion" (Mayer & Salovey, 1997, p. 10) and deals with the identification of one's own emotions as well as the identification of

emotions in others. This includes expressing and discriminating between emotions.

2. *Using emotion to facilitate thought.* This branch of EI deals with “emotional facilitation of thinking” (Mayer & Salovey, 1997, p. 11) and is more complex in that it deals with the emotions that are involved in facilitating reasoning. This involves facilitating reasoning, judgments, and consideration of multiple points of view.
3. *Understanding and reasoning about emotions.* This component of EI involves “understanding, analyzing, and employing emotional knowledge” (Mayer & Salovey, 1997, p. 13) and deals specifically with understanding abstract reasoning when dealing with emotions. This includes recognizing and labeling emotions, interpreting their meanings, and understanding combinations and transitions among emotions.
4. *Management of emotions in self and others.* The last branch of EI is “reflective regulation of emotions” (Mayer & Salovey, 1997, p. 14) and deals with the ability to understand emotions in oneself and in others and being able to use that understanding to facilitate growth – both emotionally and intellectually.

Emotional information processing is viewed as an evolved area of communication among humans that involves understandings of relationships among people (Mayer, Salovey, & Caruso, 2004). The ability EI theory argues that EI can be considered a traditional intelligence: (a) through testing, EI can be

operationalized in such a way that there are correct answers, and (b) EI shows similar correlational patterns to known intelligences (Mayer, et al., 2004). EI should correlate with certain intelligences but should retain its independence. EI should also develop with age (like intelligence).

In order to test EI based on the abilities model, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) was developed (this measure was developed using the Multifactor Emotional Intelligence Scale (MEIS) as a basis). This series of scales has eight tasks: two which measure each of the four proposed branches of EI (Mayer, et al., 2004). Branch 1, perceiving emotions, is measured through (a) Faces: participants identify emotions in faces, and (b) Pictures: participants identify emotions conveyed in landscapes and designs. Branch 2, using emotions to facilitate thought, is measured through (c) Sensations: participants compare emotions to other sensory stimuli, and (d) Facilitation: participants identify emotions that would help facilitate a type of thinking. Branch 3, understanding emotions is measured through (e) Changes: participants are tested on their ability to know which circumstances can change emotional states from one feeling to another (e.g. frustration into aggression), and (f) Blends: participants identify emotions that are involved in complex affective states. Branch 4, managing emotions, is measured through (g) Emotion Management: participants are presented hypothetical situations and asked how they would change or maintain their feelings, and (h) Emotion Relationships: participants are asked how to manage others' feelings in order to achieve a desired outcome (Mayer, et al., 2004).

The MEIS and the MSCEIT have both received criticism. Roberts et al. (2001) found issues with measurement and scoring of the MEIS. There are three types of scoring components that can be applied to an ability-based measures: (a) consensus scoring, where the participant gets points for endorsing answers the group endorses, (b) expert scoring, where experts in the field of emotions use their judgment to determine what emotion the stimuli is evoking/expressing, and (c) target scoring, where a participant assess what a target (i.e., musician, poet) is expressing while the target is engaged in some kind of emotion-focused activity (Roberts, et al., 2001). These scoring components rely on the idea that emotions can be assessed objectively. However, situations involving different but appropriate ways to deal with emotions quickly come to mind. For instance, what is the best way to dealing with being mocked by another student in class? A response would depend on the situation, where the insult took place, previous history with being mocked by peers, cultural norms, etc. Even if the situation was very specific, there are still multiple ways to effectively cope with a situation and trying to score them objectively seems impossible. How often is it possible to get people from different disciplinary backgrounds to agree on interpretation of a child's emotions – say a therapist, psychiatrist, a social worker, a high school teacher, and a health professor? Add in differences in cultural backgrounds – a more emotionally in-touch American versus a reserved, stiff upper lip Brit. This could be why many studies have found that ability measures produce low reliabilities (Ciarrochi, Chan, & Caputi, 2000; Zeidner, Matthews, & Roberts, 2001).

The authors maintain the relevance of the MSCEIT citing content validity as well as discriminant validity when compared to other measures of intelligence and EI (Mayer, et al., 2004). A review of both the MEIS and the MSCEIT also documents their reliability and validity (Rivers, Brackett, Salovey, & Mayer, 2007). Additionally, predictive validity pertaining to academic performance, deviant behavior, prosocial behavior, and organizational leadership, has also been studied and supported (Mayer, et al., 2004).

Other measures of ability EI include the Self-Report Emotional Intelligence Scale (SREIT) (Schutte, et al., 1998) and the Swinburne University Emotional Intelligence Test (SUEIT) (Palmer & Stough, 2001). The SREIT is a 33-item self-report measure based on Salovey and Mayer's (1995) early model of EI which has since been reconceived. The SUEIT is a 64-item scale that closely mirrors the ability model of EI but has not been widely tested (Palmer & Stough, 2001).

The ability model of EI is very conceptually similar to Alexithymia, although Alexithymia is narrower in scope (van Heck & den Oudsten, 2008). The construct includes difficulties in identifying and describing one's own feelings to others and differentiating one's feelings from physiological sensations (Taylor, 2004). Alexithymic individuals also have a limited capacity for empathy. A study showed that Alexithymia is strongly inversely correlated (-.65) with the ability model of EI (Schutte, et al., 1998). In fact, the Toronto Alexithymia Scale has been used as a proxy measure for EI (Roberts, et al., 2001). Still, researchers maintain that the two are independent, but there is a possibility that the ability EI construct does not cover any new ground when it comes to using EI to succeed. Additionally,

emotions and emotional reactions may be too difficult to measure objectively as Mayer and Salovey claim to do with their model. How one person reacts to a situation may seem completely inappropriate to another person, but that does not mean it is the “wrong” way to respond. It is questionable whether a standardized performance test could measure something so subjective.

Mixed models. A mixed-model perspective of EI is based on the idea that EI consists of both abilities and aspects of personality (Matthews & Zeidner, 2000). Mixed models assert that EI can be used as a label for an assorted mix of personality characteristics that can predict success in everyday life (Bar-On, 1997; Goleman, 1995). Generally, mixed models consist of three constructs: (a) perceived emotional abilities, (b) competencies, and (c) personality traits. While Goleman has published on this model, the Bar-On (1997) mixed model has been empirically tested and is the most widely-used mixed model of EI.

Social-emotional intelligence. Bar-On’s model builds on Wechsler and Thorndike, and also references Alexithymia. Bar-On has defined EI as “an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environment demands and pressures.” (1997, p. 14). Bar-On hails from a clinical background and applies a resiliency framework to EI by attempting to figure out how some individuals can succeed in life where others fail (Neubauer & Freudenthaler, 2005). Bar-On’s model of social-emotional intelligence (SEI) contains 4 broad dimensions that determine life success beyond cognitive intelligence:

1. Intrapersonal skills which is comprised of self-regard, emotional self-awareness, and assertiveness;
2. Interpersonal skills which is comprised of empathy and interpersonal relationships;
3. Adaptability which is comprised of problem-solving, reality-testing, and flexibility; and
4. Stress management which is comprised of stress tolerance and impulse control (Bar-On, 2006)

This model required the development of a new tool, the Emotional Quotient Inventory (EQ-i). Originally developed as an experimental instrument used to examine the conceptual model of ESI, the 133-item measure asks questions pertaining to each of the four dimensions of ESI. It also assesses self-actualization, independence, social responsibility, optimism, and happiness. Criterion-related validity has been reported of up to $r=.52$ between EQ-i factors and self-report measures of job performance and work satisfaction (Bar-On, 1997). Another study using the EQ-i isolated the EI factor from personality traits by comparing it to both the Eysenck Personality Profiler as well as the Five-Factor-Model (Petrides & Furnham, 2001). Other studies have found high multicollinearity among EQ-i factors and personality traits. Dawda and Hart (2000) found high correlations between EQ-i scores and neuroticism, extraversion, agreeableness, and conscientiousness. Another study found that the EQ-i scales were not predictive of academic achievement and found high

correlations with anxiety (Newsome, Day, & Catano, 2000). The study concluded that the EQ-i was more of a measure of a lack of neuroticism.

While the Bar-On model has evolved over time from EI to SEI, there is still some question as to whether it effectively conceptualizes either (Neubauer & Freudenthaler, 2005). Some of the components only indirectly relate to emotional processes (e.g., problem-solving, reality-testing) and others refer to a preferred social behavior (e.g., social responsibility). By including abilities and traits as well as emotional and non-emotional constructs, a label of emotional intelligence or social-emotional intelligence seems unjustifiable (Neubauer & Freudenthaler, 2005). Additionally, the SEI model of EI seems to cover too broad a spectrum which is evident from its high correlations with personality measures as well as mental health measures.

Trait emotional intelligence. Building on the Bar-On model, EI has been further defined as a distinctive personality trait, or set of traits, that enlarges the personality realm in order to cover traits related to emotional functioning and regulation. Trait EI examines how personality traits can directly relate to emotional functioning (e.g., adaptability, self-awareness, assertiveness) (Petrides, et al., 2007). Petrides maintains that the ability model of EI is too difficult to operationalize because the subjectivity of emotional experience undermines the development of performance tests (2007). He believes that the operationalization of trait EI is straightforward because the construct encompasses self-perceptions and dispositions, which are more in line with the subjective nature of emotion (Petrides, et al., 2007).

Trait EI has been tested using the Trait Emotional Intelligence Questionnaire (TEIQue). The scale contains 153 items and concentrates on four factors:

1. Well-being (e.g., self-esteem, trait happiness, trait optimism);
2. Self-control skills (e.g., low impulsivity, emotion regulation);
3. Emotional skills (e.g., emotion expression, emotion management); and
4. Social skills (e.g., relationship skills, social competence) (Petrides, Furnham, & Martin, 2004).

The reliability and validity of the TEIQue has been supported and it has been deemed superior to the Trait-Meta Mood Scale, a 30-item self-report measure developed by Salovey, Mayer Goldman, Turvey, & Palfai (1995) (Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008).

The trait EI model, like the SEI model, covers a wide range of criteria. An important difference is the inclusion of only affect-laden traits (Petrides, et al., 2007). Although, items like low impulsivity and self-esteem, while important seem out of place when attempting to define EI. These items, while related to EI, appear to be outcomes of EI rather than factors that contribute to the construct. The entire category on self-control could be eliminated with the exception of emotion regulation. However, emotion regulation should be under the umbrella of emotion management, so measuring both seems redundant.

Models of EI vary, but they all include the differentiating and understanding of emotions and using that ability to facilitate growth. When trying to determine how EI affects health and unhealthy behaviors, the social aspect of

the construct is important – especially when dealing with substance use in young adolescents. This would point towards using SEI or trait EI models of EI. SEI is intriguing but measures have found mixed results and tend to correlate too highly with personality traits. Aspects of trait EI are appropriate, but like SEI, trait EI covers too broad a range. A pared down model of the two – including only regulation and management of emotions as well as social aspects of emotions would be ideal. Before moving on to outcomes related to EI, gender and ethnicity differences in EI will be explored.

Race and Ethnicity Differences

Ethnicity has been shown to affect important life outcomes that can be a predictor of success (e.g. job promotability, career satisfaction) (Greenhaus, Parasuraman, & Wormley, 1990). Ethnic group differences have been found for ability tests (Schmitt, Rogers, Chan, Sheppard, & Jennings, 1997) as well as test-taking motivation, test performance, and selection rates (Ployhart & Ehrhart, 2002) Ethnicity research in the field of EI has been neglected with very few studies reporting findings.

Roberts, Zeidner and Matthews (2001) found that when scored by Caucasian males, minority participants tended to have lower EI scores. This was not present in minority self-report EI scores. Another study found that African American and Latino participants reported higher EI than Caucasian participants (Van Rooy, Alonso, & Viswesvaran, 2005).

Gender Differences

Research on emotional abilities supports the theory that women tend to be more skilled in the emotions domain when compared to men. Women tend to use a more assorted emotions vocabulary (Fivush, Brotman, & Buckner, 2000) and are better at reading nonverbal behaviors like facial expressions of emotions (McClure, 2000). These gender differences in emotion literature have prompted numerous examinations of the relation between gender and EI.

Women tend to score higher than men on both trait EI (Bar-On, Brown, Kirkcaldy, & Thomé, 2000; Dawda & Hart, 2000; Goldenberg, Matheson, & Mantler, 2006; Schutte, et al., 1998; Van Rooy, et al., 2005) and ability EI (Ciarrochi, et al., 2000; Day & Carroll, 2004; Mayer, Caruso, & Salovey, 2000; Mayer & Geher, 1996). Although this group difference exists, there is a lack of consensus regarding which dimensions of EI favor each gender.

When measuring trait EI using the EQ-i, men scored higher on Stress Tolerance and Impulse Control subscales, while women scored higher on the Interpersonal Relationships subscale (Bar-On, et al., 2000). Another study using the EQ-i found that men scored higher on the Independence and Optimism subscales, while women scored higher on the Social Responsibility subscale (Dawda & Hart, 2000). A study using the SREIT also found that women scored higher on total EI and specifically on Appraisal of Emotions and Utilization of Emotion subscales (Goldenberg, et al., 2006). The gender differences on subscales across trait EI measures could be explained by the broad definitions of mixed model EI which include constructs like personality traits as well as

competencies. Although fewer gender differences have been found using EI ability measures, the results appear to be more consistent.

Using the MEIS, women scored higher on overall EI as well as the Perception and Understanding and the Managing Emotions subscales (Ciarrochi, et al., 2000). These findings were supported in another study in that women scored higher than men on all subscales of the MEIS measure (Mayer, et al., 2000). Using the MSCEIT to measure EI, females scored higher than males overall (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Day & Carroll, 2004; Goldenberg, et al., 2006).

Exploration of the studies examining health outcomes related to EI should also show which aspects of the construct might be important in regards to substance use.

EI and Health

EI has been linked to an enormity of outcomes related to everyday behavior, and physical and mental health (Brackett, et al., 2004; Ciarrochi, et al., 2002; Keefer, Parker, & Saklofske, 2009; Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007). A recent meta-analysis of 35 studies found that higher EI was associated with better overall health (Schutte, et al., 2007). EI had a weighted average association of $r = .29$ with mental health, $r = .31$ with psychosomatic health, and $r = .22$ with physical health. On average, EI explained between 5% and 9% of the variance in health. Trait EI was also more strongly related to mental health than ability EI with the EQ-i being the most predictive of mental health (Schutte, et al., 2007).

EI and stress. There has been considerable research examining whether people with high EI are better at recovering from acute stress by using mood induction experiments (Ciarrochi, et al., 2001; Ciarrochi, et al., 2000; Fernandez-Berrocal & Extremera, 2006; Gohm, et al., 2005; Matthews, et al., 2006; Petrides & Furnham, 2003, study 2; Ramos, Fernandez-Berrocal, & Extremera, 2007; Salovey, et al., 1995; Schutte, Malouff, Simunek, McKenley, & Hollander, 2002, study 3). Individuals with higher EI started the experiment in a better mood, which was not fully accounted for by individual differences in personality or self-esteem (Fernandez-Berrocal & Extremera, 2006; Matthews, et al., 2006; Petrides & Furnham, 2003, study 2; Salovey, et al., 1995; Schutte, et al., 2002, study 3).

Additionally, individuals with high EI experienced less immediate mood deterioration when exposed to negative stimuli (Fernandez-Berrocal & Extremera, 2006; Ramos, et al., 2007; Salovey, et al., 1995; Schutte, et al., 2002, study 3) while others found no effect of EI on induced mood changes (Ciarrochi, et al., 2001; Ciarrochi, et al., 2000), and still others found those with higher EI to have higher subjective distress (Matthews, et al., 2006; Petrides & Furnham, 2003, study 2). Another study found that degree of reactivity to mood induction was actually moderated by the ability to identify and understand emotions (Gohm, et al., 2005, studies 1 and 3). Ability to recover from lab-induced stress was more rapid for those with high EI across all the studies. The ability to regulate emotions was the critical component of EI when it came to recovery. There has been little research on whether mood regulation in individuals with high EI translates into better health over time (Mikolajczak, Roy, Luminet, Fillee,

& de Timary, 2007; Salovey, Stroud, et al., 2002, study 2). These studies monitored salivary cortisol secretions and related EI. Higher EI was associated with less mood deterioration and less emotional reactivity and less cortisol secretion following a stressor.

EI and adaptive coping. The concept of coping has been defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). This definition is process-oriented and requires action from the individual to manage, avoid, tolerate, or accept the stressful situation (Lazarus & Folkman, 1984). Various coping styles have emerged in the literature including:

1. Problem-focused coping which seeks to solve the cause of the stressor (Lazarus & Folkman, 1984);
2. Emotion-focused coping which attempts to repair negative emotions caused by the stressor (Lazarus & Folkman, 1984);
3. Avoidance coping which involves deliberate detachment from the stressor (Wills & Filer, 1995; Wills & Hirky, 1996).

Adoption of a coping strategy is thought to be influenced by an appraisal of a situation as either manageable or uncontrollable, which is determined by personal resources and competencies (Lazarus & Folkman, 1984). Confidence in coping abilities as well as a feeling of control over a situation are considered adaptive for health and well-being while confusion about stress and a sense of powerlessness in a situation are associated with maladaptive health outcomes

(Lazarus, 1993). EI-related abilities have been shown to promote adaptive coping responses in individuals (Keefer, et al., 2009). Individuals who better understand and regulate their emotions can recover from distress more quickly and are then able to concentrate their coping behaviors on dealing with the cause of the problem (Gohm & Clore, 2002). Many of the findings related to EI and coping are restricted to trait EI. There is only limited research on ability EI and coping (Gohm, et al., 2005; Matthews, et al., 2006).

Review of the coping literature suggests that individuals who have a firm understanding of their emotions as well as the ability to regulate their emotions are less likely to succumb to everyday stressors (Keefer, et al., 2009). Additionally, those with high EI may be more likely to take steps to resolve their problems positively.

EI and a healthy lifestyle. EI indirectly impacts health through positive and negative health behaviors. Individuals with higher EI have been found to exercise more (Saklofske, Austin, Galloway, & Davidson, 2007; Tsaousis & Nikolaou, 2005). Additionally, individuals who exercise regularly tend to use EI resources to do so (Saklofske, et al., 2007). Higher EI has also been associated with more time devoted to relaxation (Tsaousis & Nikolaou, 2005) and healthier dietary strategies (Saklofske, et al., 2007). A study examining physical appearance upkeep found no association with EI after controlling for gender (Brackett, et al., 2004). There is not much research regarding EI and diet and exercise, possibly because the area of EI and unhealthy behaviors has garnered much more attention.

EI and smoking. The first study of EI and smoking consisted of a series of studies conducted by Trinidad and colleagues (Trinidad & Johnson, 2002; Trinidad, Unger, Chou, & Johnson, 2004; Trinidad, Unger, Chou, Azen, & Johnson, 2004). These studies examined associations between ability EI (using the MEIS), smoking intentions and behaviors, as well as smoking-related risk factors among 6-8th grade adolescents while controlling for general demographics as well as perceived social norms of smoking and perceived peer attitudes toward smoking.

Trinidad and Johnson (2002) looked at a sample of 205 multi-ethnic adolescents with a mean of 12.63 years of age. EI was negatively correlated with overall tobacco and alcohol use. Adolescents who were good at identifying and understanding their emotions smoked less frequently than their peers with low EI (Trinidad & Johnson, 2002). High EI was also correlated with greater perceptions of negative social consequences related to smoking as well as a lower likelihood of intending to smoke (Trinidad, Unger, Chou, & Johnson, 2004; Trinidad, Unger, Chou, Azen, et al., 2004). Additionally, youth who had high EI reported a higher perceived ability to refuse cigarettes (Trinidad, Unger, Chou, & Johnson, 2004). Youth with higher EI may be more confident in a refusal response that would not hurt their social standing or the feelings of the refused person. Possibly, adolescents who feel more comfortable speaking with their friends about their emotions may also feel more comfortable refusing drugs. Additionally, high EI youth may better understand the possible anxiety related to having to refuse an offer of a cigarette (Trinidad, Unger, Chou, & Johnson, 2004). So youth who are

not confused about their feelings and understand that their problems can relate to their feelings may be more likely to accept that negative feelings can come along with the pressures associated with drug use and their peers.

The protective effects of EI were especially relevant for adolescents with high-risk characteristics. In adolescents with high EI, hostility level did not increase intentions to smoke (Trinidad, Unger, Chou, Azen, et al., 2004).

Adolescents with low EI and high hostility were more likely to smoke.

Additionally, adolescents with low EI were more likely to intend to smoke if they had low perceived ability to refuse smoking when compared with low EI peers who had a high perceived ability to refuse smoking. This interaction was not found for youth with high EI (Trinidad, Unger, Chou, Azen, et al., 2004). These findings suggest that adolescents with low EI may be more susceptible to refusal skills training when compared to same age peers with high EI.

Attempts to replicate the associations found by Trinidad and colleagues using the MSCEIT in an older population have been unsuccessful (Brackett & Mayer, 2003; Brackett, et al., 2004). Studies using measures of trait EI rather than ability EI have also been inconsistent. Brackett and Mayer (2003) found that smoking frequency was not related to EI (when using the SREIT and the EQ-i to measure EI) while Tsaousis and Nikolau (2005) found that smoking was inversely related to EI scores (using the TEIQue). Using the SREIT, there were no significant differences found between smokers and non-smokers (Saklofske, et al., 2007) while another study found students who smoked everyday had lower EI as assessed with the TMMS (Limonero, et al., 2006).

EI and alcohol use. A study by Riley and Schutte (2003) found that lower EI scores on the SREIT predicted alcohol-related problems in adults. This relation was not mediated by coping as was hypothesized by the authors. Other studies using the same measure have found moderate results that disappeared after controlling for personality (Austin, Saklofske, & Egan, 2005) or no significant relation at all (Saklofske, et al., 2007). Brackett and Mayer (Brackett & Mayer, 2003) found that high EI measured by the EQ-i (but not the SREIT or the MSCEIT) correlated with less weekly alcohol consumption. A follow-up study using the same design and only the MSCEIT to measure EI only found an association for low EI (perceiving and facilitating thought) and alcohol use in college males (Brackett, et al., 2004). Another study relating to EI and alcohol use found no main effect (using the SREIT) but did find that EI moderated the relation between perceived alcohol peer norms and alcohol use (Ghee & Johnson, 2008).

EI and other drug use. Riley and Schutte (2003) found that lower EI using the SREIT was associated with more drug-related problems. Another study examining the association between marijuana use and EI found that those with lower levels of emotion regulation on the TMMS were more likely to initiate at an earlier age (Limonero, et al., 2006). When compared with those who did not smoke marijuana, marijuana smokers were more likely to have lower levels of emotion understanding. Brackett and Mayer (2004) (using the EQ-i) also found that males with lower EI were more likely to use illicit drugs.

Summary of ATOD use and EI. Overall, EI appears to have a direct and indirect effect on ATOD use (see Table 1 for a summary of studies). However, there are general inconsistencies found between studies. Some of these inconsistencies can be attributed to differences in the construct and measurement of EI (ability versus trait). The original findings relating EI to substance use used the ability EI measure based on Mayer and Salovey's original conception of EI (MEIS). The associations were related to managing and understanding emotions as well as understanding emotions in others. Replications of that study have used Mayer and Salovey's updated conception of EI as well as the updated ability measure (MSCEIT). The SREIT, which is based on the original conception of Mayer and Salovey's EI, attained significant results, but results were inconsistent and were done with college-aged populations. The SREIT also found positive results using EI as a moderator which showed that EI plays a part with perception of social norms. The EQ-i only found results for males when it came to drug use and EI. The TMMS found conflicting results, and again, these were done with older populations.

Many of the significant associations between ATOD use and EI were found using measures that tap emotion understanding and management, as well as recognizing emotions in peers. This is especially true for young adolescents – who were studied in the original Trinidad studies. While it is worthwhile to see how EI associates with ATOD use in older populations, it may be much more advantageous to study with younger populations. After all, EI has been found to improve with age and can be nurtured and increased. If this can be done with

adolescents and in turn, decrease their ATOD use, improving EI may be an important factor in early prevention programs. This may be especially true with the move toward looking for protective factors for youth rather than focusing on risks that are harder to affect and change. EI may be a factor that could promote emotional resilience in youth, especially when dealing with the stressor of peer victimization.

Summary of Current Study

The current study aims to examine the main effects of EI on ATOD as well as EI's interactive effects with the risk factor of peer victimization. This study is using a construct of EI that combines aspects of trait EI as well as social intelligence. The only study that found an association between ATOD use and EI with a similar population used the MEIS, which is no longer used to assess EI. While ability EI has been associated with ATOD use, results have been mixed (see Table 1) and due to participant burden, measures with 100+ questions were not appropriate. Self-report was also vital to the study and the ability-based self-report measures of EI have failed to find consistent associations between EI and ATOD use.

Table 1. Summary of Studies Relating to EI and ATOD Use

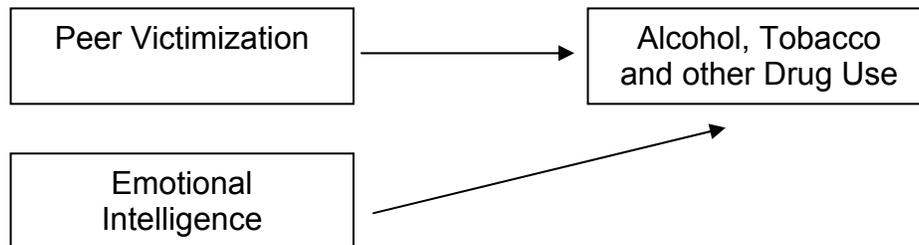
Study	Sample	Design	Measures	Summary of major findings
Trinidad & Johnson, 2002	205 multi-ethnic students, <i>M</i> age 12.63, 52% male	Cross-sectional	MEIS	EI negatively correlated with overall measure of alcohol and tobacco use
Brackett & Mayer, 2003	207 college students, <i>M</i> age 18.93, 37% male	Cross-sectional	EQ-i and SREIT	EI inversely related to drug and alcohol use
Riley & Schutte, 2003	141 student, 38% male, <i>M</i> age 27.89	Cross-sectional	SREIT	Low EI predicted alcohol and drug-related problems
Trinidad, Unger, Chou, Johnson, 2004	416 multi-ethnic middle school students, <i>M</i> age 11.3, 47% male	Cross-sectional	MEIS	EI inversely correlated with smoking risks (greater risk perception and refusal ability) and intentions
Trinidad, Unger, Chou, Azen, Johnson, 2004	416 multi-ethnic middle school students, <i>M</i> age 11.3, 47% male	Cross-sectional	MEIS	High EI and experimentation = more smoking; low EI, low refusal, high hostility = more smoking
Brackett, et al., 2004	330 college students, 27% male, 96% Caucasian, 17-20 years old	Cross-sectional	MSCEIT	EI was inversely correlated with illegal drug use and alcohol use
Tsaousis & Nikolaou, 2005	365 adults, 35% male, <i>M</i> age 25.23	Cross-sectional	TEIQUE	EI negatively correlated with overall measure of alcohol and tobacco use
Austin, Saklofske, Egan, 2005	500 Canadian students, 34% male, <i>M</i> age 22.8; 204 Scottish students, 22% male, <i>M</i> age 43.9	Cross-sectional	SREIT, EQ-i	Alcohol use inversely related to SREIT EI, but disappeared after controlling for personality
Limonero, et al., 2006	133 students, 14% male, <i>M</i> age 21.52	Cross-sectional	TMMS	High EI = low smoking, low EI = marijuana use
Saklofske, et al., 2007	362 students, 28% male, <i>M</i> age 24.1	Cross-sectional	SREIT	No relation between EI and alcohol and smoking

Trait EI combines emotional skills, emotional management skills, social skills, and well-being skills. For the purposes of this study, only the first three skills were included in the construct of EI. Well-being is admittedly important in succeeding in life, but when trying to gauge how an individual will understand and manage emotions, well-being may be an associated variable but not a part of the construct. Further, traits including self-esteem and happiness seem to be variables that would be affected by emotional intelligence, but not necessarily a part of the construct. EI will be measured using the Emotion Awareness Questionnaire (EAQ) as well as the Youth-Estimated Social Intelligence Scale (YESI). The construct of EI will include: (a) understanding and analyzing emotions, (b) understanding and the importance of understanding emotions in others (c) sharing emotions with others, and (d) social flexibility and intelligence. This conceptualization of EI includes intrapersonal emotional skills as well as interpersonal social skills, which are important factors when considering the likelihood of ATOD use.

There has been some support for the main effect of EI on ATOD use, but this study aims to structure these results using a resiliency framework. While EI alone may increase or decrease ATOD use, examining the effect EI could have on ATOD use when there is a risk present may be more applicable to prevention and intervention programs. The main hypotheses of the study are as follows:

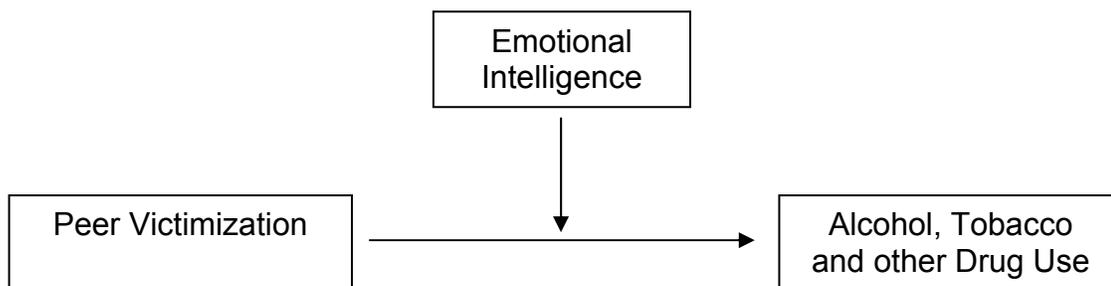
Hypothesis 1. There will be independent main effects for peer victimization and EI on ATOD use in that higher EI will predict lower ATOD use and higher peer victimization will predict higher ATOD use.

Figure 1. *Main Effects of Study Variables*



Hypothesis 2. Youth exposed to higher levels of peer victimization and have lower EI will be more likely to use ATOD when compared to those who have higher EI.

Figure 2. *Interactive Effects of Study Variables*



CHAPTER 3

METHOD

Settings and Participants

English-speaking male and female 7th grade students attending one greater-Richmond, Virginia and one urban Philadelphia, Pennsylvania public middle school were eligible to participate. Out of the 445 participants who completed Wave 1 measures, 428 went on to complete Time 2 measures. The final sample consisted of 376 participants between the ages of 12 and 14 ($M = 13.3$). The sample was predominantly White (60%) followed by African American (21%), and Asian (7%), American Indian/Alaskan native (6%), and Hawaiian/Pacific Islander (6%). Twenty-five percent considered themselves Latino/Latina. The schools differed somewhat in relation to socioeconomic status. For example, the Richmond school had only 5% of its students qualify for free lunch; whereas the Philadelphia school had 85% of its students qualify for free lunch. This difference in schools was controlled for in all analyses.

Procedure

This study is a secondary analysis of data taken from the Writing for Health (WFH) study (Kliewer & Lepore, Co-Principal Investigators). The WFH study is an ongoing randomized controlled trial (RCT) being implemented in three middle schools (one urban Philadelphia, PA, school and two greater-Richmond, VA schools). WFH aims to test the efficacy of a school-based expressive writing intervention designed to reduce psychological distress and behavioral problems (e.g., aggression) in youth exposed to violence. All English-speaking 7th grade

youth were eligible to enroll in the trial if they received parental consent and provided personal assent. One cohort of 7th grade students was recruited in 2008. Following the intervention, self-report questionnaire data (Time 1) were collected from youth using Audio Computerized Self-Administered Interviews (A-CASI). A-CASI was group-administered in students' classrooms, with each student using his or her own computer to complete the questionnaire. A-CASI allows participants to hear questions through headphones and follow along on a computer screen.

Before Time 1 data collection, classrooms (n=18 classrooms; n=445 students) were randomized to either an expressive writing intervention group or a control writing group. The experimental and control writing began approximately 6 weeks after the Time 1 data collection and ran for 6 weeks. A-CASI was administered again (Time 2) approximately six weeks post-intervention. The present analyses uses data collected at Time 2. Due to participant response burden at Time 1, it was not possible to include measures for the present study at Time 1. Therefore, intervention was included as a covariate in all analyses. Seventeen participants left school between Time1 and Time 2 so this reduced the total sample at Time 2 to 428.

Measures

Peer victimization. Peer victimization was measured using the relational victimization and overt victimization subscales of the Problem Behavior Frequency Scale (PBFS) which were based on the Social Experience Questionnaire created by Grotperter and Crick (1996). The 12-item measure

assesses victimization by peers in the previous 30 days, including two subscales: relational victimization and physical victimization. The relational victimization subscale assesses a child's reports of the frequency of peer threats or attempts at harming a child's peer relationships (e.g., "Had someone spread a false rumor about you"). The overt victimization subscale assesses a child's reports of the frequency of peer threats or attempts to harm the child's physical well-being (e.g., "Been hit by another kid"). The students responded to each item by using a 6-point Likert scale (1=never, 2=1-2 times, 3=3-5 times, 4=6-9 times, 5=10-19 times, 6=20 or more times). Mean scale scores were created for each subscale to ease interpretation. High scores indicate higher levels of victimization. This measure has been used on middle school students, grades 6-8 and has internal consistency with a reported Cronbach alpha coefficient reported of .84 for the overt subscale and .84 for the relational subscale. In the current study, the Cronbach alpha coefficient was .87 and .75 for the overt subscale. Studies have found that adolescents with combined relational and overt victimization experience the most maladjustment (Prinstein, et al., 2001). Because this study was concerned with total risk exposure associated with peer victimization and because relational and overt victimization were so highly correlated ($r=.66$), the two subscales were collapsed into one total peer victimization variable. Cronbach alpha coefficient for the total scale improved when collapsed ($\alpha=.88$).

Lifetime alcohol, tobacco and other drug use. The ATOD items from the Problem Behavior Frequency Scale adapted from Farrell, Kung, White and Valois (2000) were used to assess frequency of ATOD use in the past month.

Respondents indicated how frequently 8 drug use items (e.g. “In the last 30 days, how many times have you drunk beer?”) happened in the 30 days prior to the survey, using the following 6-point Likert scale (Never, 1=1-2 times, 2=3-5 times, 3=6-9 times, 4=10-19 times, and 5=20 or more times) with higher scores representing higher levels of drug use. The measure has been used with middle school students, grades 6-8 and has good internal consistency with a reported Cronbach alpha coefficient of .84. Because of the low frequency of ATOD use in such a young population, the 30-day variable was not appropriate for this analysis. Instead, ATOD use was assessed for lifetime (e.g. “In your whole lifetime, how many times have you drunk beer?”). Current internal consistency for the drug use subscale was good with a reported Cronbach alpha coefficient of .79. Additionally, because any use of ATOD before the age of 15 is considered a risk for later dependency (Hingson et al., 2000) the drug use subscale was collapsed and then transformed to a dichotomous variable (e.g. 1=any lifetime ATOD use, 0=no lifetime ATOD use).

Emotional intelligence. When attempting to choose a measure assessing EI, many measures were considered. Although the original report of the main effects of EI on ATOD use was found using a self-report ability-based measure, the conceptualization of EI for this study was based on trait EI. Because the majority of the findings related to ATOD use were found when tapping into emotion understanding and management as well as recognizing emotions in peers, these were the traits addressed in this population. The Self-Report Emotional Intelligence Scale (SREIT, Schutte, et al., 1998) was

considered, however, it had not been validated with young populations. The Trait Meta-Mood Scale (TMMS, Salovey, et al., 1995) was a measure that seemed ideal; however, with only three subscales (attention, clarity, and repair) it did not measure the entire construct of EI, specifically the aspect of social intelligence. Additionally, some of the questions were confusing and vague. The Trait Emotional Intelligence Questionnaire (TEIQue) was ruled out due to its length as well as the fact that it was not self-report (Petrides, et al., 2004).

The Emotion Awareness Questionnaire (EAQ-30; Rieffe, et al., 2007) was selected to measure various aspects of EI including emotional skills, emotional management and empathy skills. The EAQ is a self-report measure aimed at identifying how children and adolescents feel and think about their feelings. The 30-item measure contains 6 subscales: Differentiating Emotions (e.g. "I often don't know why I am angry"), Verbal Sharing of Emotions (e.g. "I find it difficult to explain to a friend how I feel"), Not Hiding Emotions (e.g. "When I am upset, I try not to show it"), Bodily Awareness of Emotions (e.g. When I am sad, my body feels weak"), Attending to Others' Emotions (e.g. If a friend is upset, I try to understand why"), Analyses of Emotions (e.g. "When I am angry or upset, I try to understand why"). Respondents used a 3-point Likert scale to rate how frequently each item was true for them (1=not true, 2=sometimes true, 3=often true). Some items were reverse-coded and then all were scored and summed to create a total score. Mean score scales were then created for each subscale to ease in interpretation. Higher scores indicate higher levels of the subscale construct.

After reviewing the EAQ, the measure seemed like an appropriate proxy for EI. Three of the EAQ subscales (Differentiating Emotions, Verbal Sharing and Others' Emotion) are highly correlated with the TEIQUÉ and the other three subscales are also correlated (Rieffe, Oosterveld, Miers, Meerum Terwogt, & Ly, 2008). Unlike the TEIQUÉ, the EAQ is much shorter with only 30 items. Additionally, the measure can be used with young children with the mean age of one study of the measure at 10 years old (Rieffe, et al., 2008). Unlike the TMMS, the EAQ also included a subscale on concern with other peoples' emotions which is a key construct in EI (Goleman, 1995). One subscale of the EAQ that was not used in the current study is the Bodily Awareness of Emotions subscale. This subscale is not considered a part of the construct of EI and is more related to Alexithymia. The measure has demonstrated good reliability and validity with reported Cronbach alpha coefficients between .63 and .70 (Rieffe, et al., 2008). The EAQ has not been used with an urban population, but the measure has been used with a very young population (10 years old). This sample is between the ages of 12 and 14, but half the sample attends school in inner-city Philadelphia where many reading levels are below grade level. Additionally, after reviewing the wording of the questions in the EAQ and comparing other trait measures of EI, the EAQ had the most straightforward and easy-to-understand questions. The internal consistency of the scale in the current study was adequate with Cronbach alpha coefficients ranging from .60 to .79. A study using the EAQ found associations with increased social anxiety, depression, worry, rumination, as well as complaints of depression (Rieffe, et al., 2008). Another study found

that children reporting less somatic complaints as well as better general mood reported higher rates on the EAQ (Jellesma, Rieffe, Terwogt, & Kneepkens, 2006).

One dimension of EI missing from the EAQ is social aspects of EI. In order to measure this aspect of EI, a revised version of the Peer-Estimated Social Intelligence Scale (Björkqvist, Österman, & Kaukiainen, 2000) was used. The Youth-Estimated Social Intelligence Scale (YESI) is a 10-item scale that assesses social intelligence by measuring person perception (e.g. “you notice easily if others lie”), social flexibility (e.g. “you fit in easily with new people and new situations”) and accomplishment of one’s own social goals and behavioral outcomes (e.g., “you know how to get others to laugh”). Respondents used a 5-point Likert scale to rate how often items happened to them (0=never, 1=seldom, 2=occasionally, 3=often, 4=very often). Internal consistency has been good with reported Cronbach alpha coefficients between .82 and .95 (Braza, et al., 2009; Kaukiainen, et al., 1999; Wallenius, Punamki, & Rimpel, 2007). In the current study, the Cronbach alpha coefficient was .85.

Demographic factors. Gender, school, age, ethnicity, and condition were assessed. Gender, school, and condition were used as control variables in all analyses. There were other possible confounders taken into consideration when approaching this analysis. There is an assumption that controlling can help reduce the influence of the selective process, but this belief has come into question (Liebersen, 1985). Liebersen has suggested that control variables are only appropriate 1) if the control approach is used as a descriptive device and not

for analysis, 2) if selectivity is irrelevant for the problem under consideration, 3) there is no unmeasured selectivity remaining that affects the dependent variable under consideration 4) there is a way to use controls to fully deal with selectivity. The third situation would justify the use of demographic control variables including gender, school, and condition (Lieberson, 1985). However, controlling for differences like parental monitoring, peer drug use, or single parent home, does not answer the question of why these differences are there to begin with (Lieberson, 1985). Because research exists tying monitoring, peer drug use, and single parenting to ATOD use as an outcome, they were considered.

Single parent home and peer drug use was related to ATOD use, however, only peer drug use was also related to peer victimization (although the correlation was weak: $r=.13$, $p<.01$). Using Lieberson's criteria, the use of peer drug use as a control made little sense in this analysis. Specifically because the relation between peer victimization and peer drug use is unclear. There is some support in the literature that increased peer victimization will lead to social outcast and the association with deviant peers and increased ATOD use, however this has not been explicitly studied. Further there is still disagreement regarding the causality of ATOD use and peer ATOD use. These questions relating to the relation between peer drug use and the main variables of interest made including peer drug use as a control variable unfounded. Further no previous studies assessing the association between EI and ATOD use has used peer ATOD use as a control variable, excepting a study looking at social norms, EI, and ATOD use (Ghee & Johnson, 2008).

Data Preparation

First, the missing data assumption, which assumes that missing data be explained by variables included in the analyses that remaining missingness is random, was tested. In order to test whether missingness was random, for those variables with greater than 5% missing data, logistic regression analyses were conducted using dummy variables indicating whether data were missing on a variable (peer victimization, ATOD use, and EI variables). For each case, the variable was coded 1 if missing and 0 if complete. Missingness on these variables was not predicted by any of the control variables: gender, school, and condition, so the data were considered to be missing completely at random (the process of data loss on some variable is unrelated to subjects' scores on other variables in the dataset), (Tabachnick & Fidell, 2007). Because data were missing completely at random, listwise deletion was used. However, before listwise deletion was used, mean scores were generated for scale scores that had 50% or more of their items answered on the EAQ measure. Thirty-three means were imputed for Analysis of Emotions, 19 for Attending to Others, 7 for Verbal Sharing, 17 for Not Hiding Emotions, and 25 for Differentiating Emotions. After this had been done, 45 cases which remained missing were deleted. Additionally, 7 cases were deleted after examining their responses due to abnormally quick response time. Those participants who finished the survey in less than 30 minutes were examined closely for skip patterns or repetitive responding. Many of these participants skipped whole measures or answered the

same way to multiple questions in a row. This haphazard response was deemed inappropriate and the cases were removed.

Continuous variables were assessed for normality. Peer victimization was found to be slightly negatively skewed. However, using Tabachnick and Fidell's (2007) criteria (i.e, skewness >2 or <-2 ; kurtosis >4 or <-4) none of the variables needed to be transformed in order to move on with the analysis. Once normality was deemed appropriate, Mahalanobis distance (which is sensitive to failures in normality and should be done after any needed transformations) was used to identify multivariate outliers (Tabachnick & Fidell, 2007).

Mahalanobis distance is the distance a case is from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables (Tabachnick & Fidell, 2007, p. 74). Mahalanobis distance is evaluated as χ^2 with degrees of freedom equal to the number of variables which in this case is 5 for each main effect analysis. Any case with a Mahalanobis distance greater than $\chi^2(5)=20.52$ is considered a multivariate outlier. There were three cases across the analyses that qualified as multivariate outliers. Separate analyses were completed without these cases and there were no significant differences in the results. Because their inclusion or exclusion made no difference to the results, the decision was made to keep the cases in the final analyses to keep the sample at 376.

Because data was collected within classrooms, bootstrapping was used to deal with clustering effects. Bootstrapping is a process by which statistics (e.g. beta weights) are generated over a large number of replications, with samples

drawn with replacement from a data set (Tabachnick & Fidell, 2007, p. 141). For example, there may be 1000 bootstrap samples taken from 100 cases. One case could be drawn once, another twice, and another not at all, because of replacement (Tabachnick & Fidell, 2007). Bootstrapping is an accepted method for estimating the sample distribution of a statistic (Gonçalves & White, 2005). Bootstrapping is a nonparametric approach to effect size estimation and hypothesis testing that makes no assumptions about the shape and distribution of the variables of the sampling distribution of the statistic (Preacher & Hayes, 2004). It has been found that inference based on bootstrap estimates of standard errors are more accurate in small samples than inference based on asymptomatic closed-form standard error estimates (Gonçalves & White, 2005).

Statistical Analysis

For all statistical analyses, significance level was set at .05 (1-tailed) and the sample size consisted of 376 (which was the final sample after addressing missingness) participants. Rank order percentages were used to report the pattern of peer victimization and ATOD use in the sample. Independent samples t-tests were used to assess control variable differences in continuous major study variables. Pearson chi-square analysis was used to assess control variable differences for ATOD use. Descriptives were reported for continuous and dichotomous study variables. Pearson product-moment correlations were used to assess the relationship between the major study variables and control variables. Hierarchical logistic regression was used to identify odds ratios (OR) and to test the hypothesis that exposure to peer victimization is associated with increased

risk of ATOD use after controlling for demographic variables. The hierarchy consisted of two steps and was structured as follows: (a) control variables (gender, school, condition), and (b) peer victimization. In order to test the hypothesis that EI would be associated with decreased risk of ATOD use after controlling for demographic variables, hierarchical logistic regression was used. The hierarchy consisted of two steps and was structured as follows: (a) control variables (gender, school, condition), and (b) EI construct variable (Differentiating Emotions, Verbal Sharing of Emotions, Not Hiding Emotions, Attending to Others' Emotions, Analysis of Emotions, social intelligence). Finally, to test whether EI moderated the relation between peer victimization and ATOD use, hierarchical logistic regression was used. The hierarchy consisted of four steps: (a) control variables (gender, school, condition), (b) peer victimization, (c) EI variable (differentiating emotions, verbal sharing of emotions, not hiding emotions, attending to others' emotions, analysis of emotions, social intelligence), and (d) the interaction term (peer victimization by EI variable). All statistical analyses were completed using PASW and were then adjusted for clustering effects using bootstrapping syntax in Stata.

CHAPTER 4

RESULTS

Prevalence of Peer Victimization and ATOD Use

Table 2 shows the rank-order percentage of peer victimization in the past 30 days. As is shown in the table, the most common form of peer victimization was verbal attacks (e.g. “been yelled at or called mean names by another kid”) whereas the least common form of peer victimization was more threatening and involved weapons (e.g. “been threatened or injured by someone with a weapon”).

Table 2. Rank Order of Percentages of Peer Victimization in the Past 30 Days

	%
Been yelled at or called mean names by another kid	36
Had kids say mean things about you to get others not to like you	35
Been pushed or shoved by another kid	33
Had someone start a rumor about you	32
Been hit by another kid	25
Had a kid tell lies about you to make other kids not like you anymore	22
Another kid tried to get you to fight	21
Been left out on purpose by other kids when it is time to do an activity	19
Another kid threatened to hit or physically harm you	12
Had a kid tell you he wouldn't like you unless you do what he says	11
Been excluded from a group by another kid	10
Been threatened or injured by someone with a weapon	2

ATOD use was collapsed into one variable for the purposes of assessing total use, but Table 3 shows a breakdown of specific lifetime substance use within the sample. The most common reported substance used was beer whereas the least common reported substance was marijuana.

Table 3. Rank order of Percentages of Lifetime ATOD Use

	%
Drunk beer	33
Drunk wine or wine coolers	28
Drunk liquor	15
Smoked a cigarette	8
Used inhalants	5
Used drugs	3
Used marijuana	2

Differences on Demographic Variables for Study Variables

Table 4 reports school differences found for study variables using independent samples t-tests. The schools differed significantly on three study variables: Verbal Sharing of Emotions [$t(374)=2.67$, $p<.01$, two-tailed, eta squared=.01], Differentiating Emotions [$t(374)=.18$, $p<.05$, two-tailed, eta squared=.01], and Attending to Others' Emotions [$t(374)=3.80$, $p<.001$, two-tailed, eta squared=.04]. Richmond reported higher means for each variable.

Table 4. *Independent Samples T-Tests to Assess School Differences in Study Variables*

	Richmond		Philadelphia		t-statistic
	<i>M</i>	SD	<i>M</i>	SD	
Peer Victimization	1.34	0.56	1.34	0.44	$t(374)=.03$
Verbal Sharing of Emotions	2.27	0.50	2.12	0.48	$t(374)=2.67^{**}$
Differentiating Emotions	2.53	0.37	2.44	0.43	$t(374)=2.18^*$
Not Hiding Emotions	2.12	0.51	2.06	0.54	$t(374)=1.01$
Attending to Others Emotions	2.51	0.40	2.35	0.40	$t(374)=3.80^{***}$
Analysis of Emotions	2.10	0.48	2.00	0.51	$t(374)=1.87$
Social Intelligence	3.20	0.69	3.07	0.76	$t(374)=1.66$

* $p<.05$, two-tailed. ** $p<.01$, two-tailed. *** $p<.001$, two-tailed

Using chi-square statistics, Table 5 shows that Philadelphia reported higher ATOD use when compared to Richmond [$\chi^2=7.50$, $p<.01$; phi coefficient=.14]. Using Cohen's guidelines for interpreting effect sizes (.01=small, .06=medium, .14=large for t-tests and .10=small, .30=medium, .50=large for chi-squares), the magnitude of these differences are considered small (1988). However, school was still tested as an interactive variable in all the moderation analyses, using a 3-way interaction term (School x EAQ subscale/Social Intelligence x Peer Victimization). No significant 3-way interactions were found. While there were no significant interactions, and the eta squares from the t-tests showed a small effect, school was used as a control variable for all analyses in order to exercise caution.

Table 5. *Chi-Square Analysis of the Proportions Who Use ATOD by Demographic Variables*

School, $\chi^2=7.69^{**}$	%
Richmond	40%
Philadelphia	55%
Gender, $\chi^2=4.87^*$	
Male	51%
Female	40%
Condition, $\chi^2=.815$	
Control	43%
Experimental	47%

* $p<.05$, two-tailed. ** $p<.01$, two-tailed.

There were also some gender differences in major study variables. Table 6 uses Independent Samples T-tests to show that females scored higher on all but one EAQ subscale with 3 coming out significant: Not Hiding Emotions [$t(374)=3.04$, $p<.01$, two-tailed, $\eta^2=.04$], Attending to Others Emotions [$t(374)=7.87$, $p<.001$, two-tailed, $\eta^2=.14$], and Analyses of Emotions [$t(374)=5.47$, $p<.001$, two-tailed, $\eta^2=.07$]. Males scored higher on one EAQ subscale: Differentiating Emotions [$t(374)=-2.34$, $p<.05$, two-tailed, $\eta^2=.002$]. Using chi-square analysis, Table 7 shows that males reported more ATOD use [$\chi^2=4.87$, $p<.05$, phi coefficient=.11]. All differences had small effect sizes. However, due to the identified gender differences and the abundance of research (Bar-On, et al., 2000; Crick & Bigbee, 1998; Crick & Zahn-Waxler, 2003; Dawda & Hart, 2000; Goldenberg, et al., 2006; Johnston, et al., 2009; Kilpatrick, et al., 2003; Schutte, et al., 1998; Van Rooy, et al., 2005; Weiner, et al., 2004) pertaining to gender differences when studying EI, peer victimization and ATOD use, gender was tested as an interactive variable in all the interactive analyses, using a 3-way interaction term (Gender x EAQ subscale/Social Intelligence x Peer Victimization). No significant 3-way interactions were found. However, gender was still included as a control variable in each analysis in order to err on the side of caution.

Table 6. *Independent Samples T-Tests to Assess Gender Differences in Study Variables*

	Male		Female		t-statistic
	<i>M</i>	SD	<i>M</i>	SD	
Peer Victimization	1.36	0.55	1.33	0.50	t(374)=-.52
Verbal Sharing of Emotions	2.19	0.49	2.25	0.50	t(374)=1.09
Differentiating Emotions	2.56	0.36	2.46	0.41	t(374)=-2.34*
Not Hiding Emotions	2.01	0.51	2.18	0.52	t(374)=3.04**
Attending to Others Emotions	2.29	0.40	2.60	0.36	t(374)=7.87***
Analysis of Emotions	1.91	0.50	2.19	0.46	t(374)=5.47***
Social Intelligence	3.12	0.75	3.18	0.69	t(374)=.70

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed

Tables 5 and 7 use Chi-Square analysis and Independent Samples T-tests to show that there were no significant differences for study variables pertaining to study condition. However, because all data for the current study were collected post-intervention, condition was included as a control variable to err on the side of caution.

Table 7. *Independent Samples T-Tests to Assess Condition Differences in Study Variables*

	Control		Experimental		t-statistic
	<i>M</i>	SD	<i>M</i>	SD	
Peer Victimization	1.34	0.58	1.34	0.46	t(374)=-.10
Verbal Sharing of Emotions	2.23	0.51	2.21	0.49	t(374)=.23
Differentiating Emotions	2.48	0.38	2.53	0.39	t(374)=-1.14
Not Hiding Emotions	2.14	0.50	2.07	0.54	t(374)=1.24
Attending to Others Emotions	2.46	0.40	2.46	0.41	t(374)=.42
Analysis of Emotions	2.10	0.47	2.46	0.41	t(374)=.95
Social Intelligence	3.15	0.72	3.16	0.72	t(374)=-.197

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed

Descriptives of Continuous and Dichotomous Study Variables

Descriptives of continuous variables are reported in Table 8. The mean scale score for peer victimization was 1.34 (SD=.52) which was on the lower end of the scale. The EAQ subscales mean scale scores ranged from 2.06 to 2.50 which was on the high end of the scale. The Youth-Estimated Social Intelligence Scale had a mean scale score of 3.15 which was on the high end of the scale. Descriptives of dichotomous study variables are shown in Table 9.

Table 8. *Descriptives of Continuous Study Variables*

Variable	M	SD	Range
Peer Victimization	1.34	.52	1-6
Verbal Sharing of Emotions	2.22	.50	1-3
Differentiating Emotions	2.50	.39	1-3
Not Hiding Emotions	2.10	.52	1-3
Attending to Others Emotions	2.46	.41	1-3
Analysis of Emotions	2.06	.49	1-3
Social Intelligence	3.15	.72	1-5

Table 9. *Descriptives of Dichotomous Study Variables*

Variable	n
ATOD Use	
No Lifetime ATOD Use	206
Lifetime ATOD Use	170
Gender	
Female	207
Male	169
Condition	
Experimental	185
Control	191
School	
Richmond	249
Philadelphia	127

Correlations of Study Variables

Pearson Product-Moment correlation coefficients are reported in Table 10. Using Cohen's guidelines for interpretation of strength ($r=.1$ to $.29$ =small, $r=.30$ to $.49$ =medium, $r=.50$ to 1.0 =large), all correlations between ATOD use and study variables were small (Cohen, 1988). Peer victimization was moderately inversely correlated with Differentiating Emotions. The majority of the EAQ subscales were strongly intercorrelated in the expected directions.

Table 10. *Summary of Correlations of Study Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Any ATOD use	—	.21**	-.10*	-.16**	-.17**	.02	-.02	.13**	.11*	.14*	.05
2. Peer Victimization		—	-.20**	-.38**	-.16**	-.01	-.02	-.03	.03	-.00	.01
3. Verbal Sharing of Emotions			—	.41**	.49**	.17**	.08	.14**	-.06	-.14**	-.01
4. Differentiating Emotions				—	.35**	-.05	-.22**	-.05	.12*	-.11*	.06
5. Not Hiding Emotions					—	.01	-.13*	-.02	-.16**	-.05	-.06
6. Attending to Others'						—	.56**	.28**	-.38**	-.19**	.00
7. Analyses of Emotions							—	.24**	-.27**	-.10	-.05
8. Social Intelligence								—	-.04	-.09	.01
9. Gender									—	.12	.01
10. Study Site										—	.03
11. Condition											—

Note: Gender: 0=female, 1=male; Condition: 0=Control, 1=Expressive; School: 0=Richmond, 1=Philadelphia

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

Differences for ATOD Users on Individual EI Items

Individual items on the Differentiating Emotions and Not Hiding Emotions EAQ subscales were explored using independent samples t-tests. Two items were significantly different for those who reported no ATOD use versus some ATOD use: “sometimes I feel upset and I have no idea why” and “I don’t know when something will upset me or not.” Youth who reported more ATOD use scored lower on both these items [$t(374)=2.23$, $p<.05$, two-tailed, $\eta^2=.01$ and $t(374)=2.91$, $p<.01$, two-tailed, $\eta^2=.02$; respectively]. Youth who reported more ATOD use scored significantly lower on all Not Hiding Emotions items but one: “when I am angry or upset I try not to show it” [$t(374)=.99$, $p=.32$] which showed no difference between users and non-users.

Males scored higher on Differentiating Emotions than females. There were two items that highlighted this difference: “I am often confused or puzzled about what I am feeling” and “sometimes I feel upset and I have no idea why.” Males scored significantly higher on both these items [$t(374)=-3.00$, $p<.001$, two-tailed, $\eta^2=.02$ and $t(374)=-3.52$, $p<.001$, two-tailed, $\eta^2=.03$; respectively].

Individual items on the YESI scale were explored using independent samples t-tests. Youth who reported ATOD use scored significantly higher on all the YESI items with four being significantly different: “you fit in easily with new people and new situations” [$t(374)=-2.29$, $p<.05$, two-tailed, $\eta^2=.01$], “you know how to get others to laugh” [$t(374)=-2.87$, $p<.01$, two-tailed, $\eta^2=.02$], “you are able to persuade others to do things” [$t(374)=-2.96$,

$p < .01$, two-tailed, $\eta^2 = .02$], and “you are able to take advantage of others if you want to” [$t(374) = -2.31$, $p < .05$, two-tailed, $\eta^2 = .01$].

Risk Factors and Protective Factors

Results of Maximum Likelihood Logistic Regression analyses are provided in Table 11. The final model testing the main and interactive effects of EAQ subscale and social intelligence by peer victimization revealed significant main effects in several independent variables. There were significant main effects of peer victimization, Differentiating Emotions, Verbal Sharing of Emotions, and social intelligence on ATOD use. Peer victimization had a reported odds ratio of 1.08 and the model as a whole explained 6% (pseudo r^2) of the variance in ATOD use. This indicated that for each unit increase in peer victimization, youth were 8% more likely to report ATOD use. Differentiating Emotions had a reported odds ratio of .88 and the model as a whole predicted 4% (pseudo r^2) of the variance in ATOD use. This suggests that for each unit decrease in Differentiating Emotions, the odds of ATOD use increases by 14%. Verbal Sharing of Emotions had a reported odds ratio of .89 and the model predicted as a whole predicted 6% (pseudo r^2) of the variance in ATOD use. For each unit decrease in Verbal Sharing of Emotions, the odds of reporting ATOD use increases by 12%. Social intelligence had a reported odds ratio of 1.05 and the model as a whole explained 4% (pseudo r^2) of the variance in ATOD use. This indicated that for each unit increase in social intelligence, youth were 5% more likely to report ATOD use.

Table 11: Results of Maximum Likelihood Logistic Regression Main Effects Analyses

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	b	SE												
Gender	.40	.22	.50*	.22	.39	.22	.31	.22	.56*	.24	.43	.22	.43	.22
School	.55*	.23	.48*	.23	.51*	.23	.54**	.23	.63*	.24	.56*	.23	.62**	.23
Condition	.17	.21	.22	.22	.17	.21	.14	.57	.17	.21	.18	.21	.17	.21
PV	.08**	.03												
DE			-.13**	.04										
VSH					-.11	.07								
NHE							-.12**	.04						
AOE									0.10†	.06				
ANE											.02	.04		
SI													.04**	.02

*p<.05, two-tailed. **p<.01, two-tailed., †<.10, two-tailed

Note: PV = peer victimization, DE = Differentiating Emotions, VSH = Verbal Sharing of Emotions, NHE = Not Hiding Emotions, AOE = Attending to Others' Emotions, ANE = Analyses of Emotions, SI = social intelligence

Contrary to the hypothesis, Table 12 shows that there were no interactive effects for any of the EI variables measured in this study.

Table 12. *Results of Maximum Likelihood Logistic Regression Interaction Analyses*

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Gender	.46*	0.23	.42	.22	.32	.22	.56*	.24	.43	.23	.43	.23
School	.50*	0.24	.52*	.24	.56*	.24	.64**	.24	.58*	.24	.64	.24
Condition	.20	0.23	.16	.22	.17	.22	.16	.22	.17	.22	.16	.22
PV	-.17	0.15	-.06	.09	-.05	.09	-.01	.18	.07	.13	.08	.13
DE	-.32*	0.15										
PV X DE	.02	0.01										
VSH			-.41	.23								
PV X VSH			.02	.02								
NHE					-.29	.15						
PV X NHE					.01	.01						

Table 12. *Continued*

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
AOE							-.00	.22				
PV X AOE							.01	.01				
ANE									.02	.19		
PV X ANE									.00	.01		
SI											.05	.06
PV X SI											-.00	.00

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. † $p < .10$, two-tailed

Note: PV = peer victimization, DE = Differentiating Emotions, VSH = Verbal Sharing of Emotions, NHE = Not Hiding Emotions, AOE = Attending to Others' Emotions, ANE = Analyses of Emotions, SI = social intelligence

Hypotheses Revisited

The main hypotheses of the study were: (a) There will be independent main effects for peer victimization and EI on ATOD use in that higher EI will predict lower ATOD use and higher peer victimization will predict higher ATOD use, and (b) Youth exposed to higher levels of peer victimization and have lower EI will be more likely to use ATOD when compared to those who have higher EI. The finding from the study supported. The data partially supported the first hypothesis in that peer victimization was significantly associated with ATOD use. Additionally, two subscales of the EAQ were found to be inversely associated with ATOD use. However, higher social intelligence was associated with reported ATOD use which was unexpected. The second hypothesis was not supported by these data. Results will be discussed in the context of prevention.

CHAPTER 5

DISCUSSION

This study examined the prevalence and effects of lifetime ATOD use, peer victimization, and EI in a middle school sample of youth. Major findings were as follows: (a) prevalence of peer victimization were similar to those found in previous studies; (b) EI measured by the EAQ was high compared to previous studies, as was social intelligence; (c) peer victimization was found to increase the likelihood of ATOD use; (d) the abilities to differentiate emotions and not hide emotions from others were found to decrease the likelihood of ATOD use; (e) higher social intelligence was found to increase the likelihood of ATOD use; and (f) no interactive effects for EI and peer victimization and ATOD use were found.

In order to put this sample's lifetime ATOD use into context, the ATOD use results will be compared to the YRBS middle school survey which is a national representative sample of 7th grade students (Shanklin, et al., 2007). In 2005, YRBS lifetime cigarette use was reported at 27% for 7th grade participants. In contrast, only eight percent of the present sample reported lifetime cigarette use. YRBS reported lifetime alcohol use was 37% for 7th grade participants. In the current sample, 45% reported lifetime alcohol use. The YRBS reported that 10% had used marijuana in their lifetime while 2% of the current sample reported lifetime marijuana use. Five percent of youth in current sample reported inhalant use, which was slightly higher than the reported 1% found by the YRBS. Lifetime reports of ATOD use in this sample are quite low, excepting alcohol use which was 8% higher than the national sample and inhalant use which was 4% higher

than the national sample. Of the 170 youth who reported using ATOD, only 15% reported high use (10 or more times in their lifetime). Further, 85% of the sample reported using between 1 and 9 times in their lifetime. An assumption can be made that most of the use in this sample is social-recreational and that the majority of these youth will not go on to abuse any ATOD. However, studies have shown that youth who start drinking or using drugs before the age of 15 are 40% more likely to abuse later on life (Hingson, et al., 2000). Although the ATOD use may be social at this point, increased use and dependence could follow without proper intervention and guidance.

Consistent with other studies examining peer victimization, a higher proportion of this sample reported experiencing peer victimization. Sixty-eight percent of youth reported experiencing any type of victimization in the past two weeks which falls into a previously reported range of between 40 and 80% (Juvonen & Graham, 2001). The type of victimization reported the most frequently was being yelled at or being called names by peers. Similarly, many youth reported being bad-mouthed by peers to other peers in their school, including being victims of rumors and lies. About a quarter of youth reported being hit by a peer and a little less than a quarter had been a victim of someone else trying to get them to fight. A small percentage (2%) had actually been threatened or injured with a weapon. The mean scale score was low, but similar to previous reports using this scale (Kliewer, Lepore, Oskin, & Johnson, 1998; Weiner, et al., 2004). On average, youth reported at least one act of peer victimization in the past month.

When compared to previous studies this sample of youth scored high on the EAQ (Jellesma, et al., 2006; Rieffe, et al., 2008) and YESI (Wallenius, et al., 2007), so there is a possibility that because of their higher empathic accuracy, they are better able to respond more appropriately in social settings and may have better relationships in general (Gleason, et al., 2009; Goleman, 1995). Additionally, youth who are better at inferring other people's thoughts and feelings are less likely to experience peer issues including victimization (Gleason, et al., 2009). When examining the data however, neither Attending to Others' Emotions nor Social Intelligence was associated with decreased peer victimization.

As reported in the results, there was no significant difference between males and females for reported peer victimization. However, as expected, males reported more ATOD use than females. There were also significant gender differences on all but one subscale of the EAQ. Females scored higher on every subscale except for Differentiating Emotions, where males scored significantly higher. This finding was somewhat surprising as the majority of EI studies report women scoring higher on all aspects of EI. However, one study found that when measuring trait EI, males scored higher on scales assessing independence and optimism (Dawda & Hart, 2000). The specific items where males reported fewer problems with confusion about their emotions were "I am often confused or puzzled about what I am feeling" and "sometimes I feel upset and I have no idea why." There is no clear answer as to why males reported higher emotion understanding, but knowing that males score higher on measures of

independence, the wording of this subscale may have prompted them answer the way they did. Words like “confusion” and “puzzled” for instance, may have promoted a sense of a lack of self-sufficiency. The lack of the relation between gender and peer victimization made further post hoc exploration of gender impractical and overall gender did not have any apparent effect on the outcomes.

As peer victimization increased, the likelihood of ATOD use also increased (OR=1.08) and this association explained 6% of the variation in the model after controlling for demographic variables. This finding further supports peer victimization as a risk factor for increased ATOD use. Without any support from the data to explain this association, there is still a lack of clarity as to exactly why increased peer victimization is associated with increased ATOD use. However, the stress-coping models appear to have the greatest support in the limited literature examining peer victimization and ATOD use. When victimized, youth experience increased stress and negative emotions (e.g. anger) and subsequently use ATOD in order to cope (Weiner, et al., 2004; Wills & Filer, 1995). There could also be an effect of deviant peers in this sample. Youth who are victimized tend to be rejected by normative peer groups resulting in increased affiliation with deviant peer groups (Crick & Bigbee, 1998). Further exploration of anger regulation and peer deviance is needed.

Two subscales of the EAQ were found to be associated with less ATOD use in this sample: Differentiating Emotions and Not Hiding Emotions. Youth who were less confused about emotions and better understood the difference between anger and sadness were less likely to report ATOD use (OR=.88) and

this association explained a further 4% of the variance in the model after controlling for demographic variables. This finding is supported by previous studies which found that understanding emotions and managing emotions was related to less ATOD use (Limonero, et al., 2006; Riley & Schutte, 2003; Trinidad & Johnson, 2002). The association in this study further supports the notion that understanding and managing emotions is a protective factor when trying to prevent or reduce early ATOD use.

When taking a closer look at the items on the Differentiating Emotions subscale, the two items that appeared to be particularly telling when assessing ATOD use was “Sometimes I feel upset and I have no idea why” and “I don’t know when something will upset me or not.” Youth who reported ATOD use scored significantly lower on these two items. Although the EAQ did not specifically measure emotion regulation, a lack of understanding regarding emotions – specifically not understanding what will cause sadness or anger – would make regulating emotions quite difficult. In this sample, ATOD use can still be considered social-recreational, but in older populations of abusers, this lack of understanding feelings related to ATOD use is often targeted in treatment programs. Cognitive behavioral therapy for instance has a functional analysis component which helps a drug dependent individual identify feelings that accompany their drug use. Often being able to identify and recognize these emotions can help an individual avoid a relapse situation (Butler, Chapman, Forman, & Beck, 2006). This sample is still young; however, the association between a lack of understanding their emotions and related ATOD use may

interfere with their ability to cope with stressful situations which could in turn result in maladaptive coping and problem-solving strategies.

Youth who reported that they expressed their emotions to other people and did not try to hide their emotions were less likely to report ATOD use (OR=.89) and this association explained a further 6% of the variance in the model after controlling for demographic variables. When examining the individual items of the Not Hiding Emotions subscale, youth who used ATOD were significantly lower on all but one item. Youth were more likely to report that when they were feeling bad it was “no one else’s business” as well as when they were upset they often “kept it to themselves” or tried “to hide this.” Hiding emotions and feelings from others is not specifically addressed in other measures of EI and the EAQ did not question why these youth felt the need to hide their emotions. The items that made up the Not Hiding Emotions subscale may have been indirectly tapping into social relationships. Support from family has been found to be protective in the relation between violence exposure and initiation of cigarettes (Sullivan, et al., 2006). Further, social support and EI have been found to interact and produce increased well-being in adults (Gallagher & Vella-Brodick, 2008; Schutte, et al., 2010). Whereas social constraints has not been examined regarding ATOD use, low constraints have been found to be associated with a greater risk for symptoms of depression and PTSD (Kliewer, et al., 1998; Ozer & Weinstein, 2004). Not having to hide emotions from others was a protective factor and was associated with a lower likelihood of ATOD use in this

sample. Additional analysis may find that this subscale is further related to having support from others and feeling comfortable using that support.

Females were also more likely to score higher on the Not Hiding Emotions subscale when compared to males. Males were also more likely to report ATOD use when compared to females. Although there was no three-way interaction between gender, ATOD use and not hiding emotions in this sample, there may have been some gender effects influencing the findings on this scale. A larger sample size may provide more power to further evaluate whether males who feel the need to keep their emotions to themselves engage in ATOD use to deal with those emotions. Additionally, although culture was not specifically addressed in this study, some of the items related to keeping emotions hidden may have differed depending on cultural upbringing. Very few studies have addressed race and ethnicity differences with EI (Ployhart & Ehrhart, 2002; Schmitt, et al., 1997) and none have addressed cultural differences. Culture may be an unstudied factor related to EI and positive and negative outcomes.

Using bivariate correlations, Differentiating Emotions and Not Hiding Emotions were associated with peer victimization, but when controlling for peer victimization, both subscales became non-significant. EI did not compensate for the risk of peer victimization on ATOD use. The initial effects were weak ($r=-.38$ and $r=-.20$ respectively) and with the addition of another variable, there may not have been adequate power to sustain the effects of the EI subscales. Additionally, the variance between EI and ATOD use may be shared with the variance between peer victimization and ATOD use. Youth who have higher EI

are less likely to have problems with peer victimization (Gleason, et al., 2009). When taking the effect on ATOD use into account, the content within the measures of peer victimization and EI may have confounded the results. Finally, a mediation model may better explain the association between the three variables. For instance, EI may actually work through peer victimization to affect ATOD use. High EI may protect youth from peer victimization which would in turn protect youth from ATOD use.

Contrary to findings from past research (Andreou, 2006), social intelligence was found to be associated with increased likelihood of reporting ATOD use in this sample (OR=1.05) and this association predicted a further 4% of the variance in the model after controlling for demographic variables. While higher social intelligence is considered a protective and positive ability in people, in this sample, social intelligence turned out to be a risk factor for increased likelihood of ATOD use. This seems surprising, however, further investigation of the items measured by the YESI points toward an explanation. Youth with higher social intelligence are more likely to be more popular among their peers (Andreou, 2006). Moreover, there is considerable support for the association between adolescent ATOD use and peer ATOD use (Botvin, Malgady, Griffin, Scheier, & Epstein, 1998; Crosnoe, et al., 2004; Guo, et al., 2002; Kosterman, Hawkins, Guo, Catalano, & Abbott, 2000; Levy & Pierce, 1990). As drug use expectancies begin to change in this age group, more young adolescents begin experimenting with ATOD use. Negative expectancies (e.g. drinking is bad and will cause me to get sick) regarding ATOD use are suddenly replaced with

positive expectancies (e.g. drinking is fun and popular people do it) (Dunn & Goldman, 1998). As young adolescents become increasingly involved with a social system outside of their family, these positive expectancies are further supported and engrained.

The association between social intelligence and ATOD use may be in some way related to socially intelligent youth having an increased likelihood of having more friends which would put them at an increased risk to use substances socially. There was a positive correlation between peer drug use and social intelligence as well as peer drug use and ATOD use. However, if there is no involvement in crime and delinquency, ATOD use associated with peer ATOD use is not always problematic (Beauvais & Oetting, 1999). Within this sample, when comparing groups within ATOD use (no use vs. some use vs. high use) to groups within social intelligence (low vs. high) there is some support that occasional users are higher on social intelligence when compared to non-users. Youth with higher social intelligence in this sample may exhibit experimental use simply because they are in more social situations that involve ATOD use.

Another look at the YESI scale that includes items pertaining to manipulation and persuasion raises the question as to whether social intelligence measured with the YESI is indeed measuring something positive. Individuals reporting ATOD use were significantly more likely to report higher scores on items including “you are able to persuade others to do almost anything” and “you are able to take advantage of others if you want to.” These items point toward the popular youth in this sample also being able to convince their peers to do things.

These popular youth are also reporting lifetime use. Within this sample, the popular youth are currently in a prime position to be able to influence and possibly pressure their peers into ATOD use. There are prevention programs that attempt to take advantage of this influence by using student selected peer leaders as a way to spread ATOD prevention messages. A Stop Smoking in Schools Trial (ASSIST) trained popular and influential youth to act as peer supporters during informal interactions to encourage their peers not to smoke (Campbell, et al., 2008). The intervention was found to lead to a reduction in smoking prevalence in the studied population. However, this approach to prevention is dependent on chosen peer leaders abstaining from ATOD use.

There are mental health disorders that present with similar patterns of manipulation of others. Individuals with antisocial personality disorder (APD) repeatedly con and use people for personal profit. Prevalence of APD is also higher among patients in alcohol and drug treatment programs (Hare, Hart, & Harpur, 1991). While this population is too young to be diagnosed with APD, conduct disorder typically precedes APD diagnosis and shares similar symptoms. Youth presenting with high manipulation and ATOD use may be at-risk for future behavioral disorders. This early association between certain aspects of SI and ATOD use warrants further study. Examining anger regulation and other problem behaviors like delinquency may prove significant.

The differences between the findings regarding intrapersonal versus interpersonal skills is telling in this sample. Although the subscale measuring Attending to Others' Emotions was found to be a non-significant predictor of

ATOD use ($OR=1.11$, $p=.08$) after adjusting the standard error, the subscale also trended in the direction of predicting ATOD use. The Attending to Others' Emotions subscale asked questions about understanding friends' emotions. In this sample, intrapersonal skills (understanding and sharing one's own emotions) were associated with less ATOD use and interpersonal skills (the importance of understanding and influencing others) were associated with more ATOD use. Many prevention programs emphasize building both social and emotional skills, but the findings in this study support that improving interpersonal skills may not always be protective. Finding a balance between empathizing with peers and putting an enormous amount of stock in opinions of peers may be crucial when tackling peer influence on ATOD use.

The measures used to assess EI in this study were found to be associated with ATOD use; however there were no interactive effects when combined with exposure to peer victimization. There were benefits of EI when examining the ability to differentiate between emotions and show emotions to other people. Scoring higher on these subscales protected this sample from ATOD use. However, these effects did not change under high and low peer victimization. Why was there a lack of a buffering effect in this sample? From a statistical standpoint, there may be several reasons why an interaction was not detected.

First, as mentioned above, a mediation model may better predict the relation between EI, peer victimization and ATOD use. This study incorporated a protective-stabilizing resiliency model. It was hypothesized that EI would counteract the effect of peer victimization on AOTD use. This model is typically

tested using interactions (Luthar, et al., 2000). However, a protective-reactive model of resiliency may have been more appropriate. In a protective-reactive model, the presence of EI would reduce the relation between peer victimization and ATOD use and when EI was removed, the association would become stronger. This model is best tested using mediation. Further, the order of the relation may need to be re-evaluated. As previously mentioned, peer victimization should be examined as a mediator to EI and ATOD use.

Second, this analysis only analyzed EI, victimization and control variables, so there may be some third variable driving this model that has yet to be identified. A more complex analysis could account for other variables including peer drug use, self-efficacy related to EI and ATOD refusal skills, as well as parental involvement and monitoring.

Third, there was restricted range on the EI measure and without sufficient variance in the measures, an interaction is more difficult to attain.

Finally, there may have been measurement issues relating to using a self-report measure of EI. Youth in this sample reported high rates of EI, however, if tested on an ability-level, their EI resources may not be as helpful as they report. In other words, while they report being able to understand and manage their emotions, when actually put in a situation involving stress, their EI could actually be much lower. Not having the ability to test this type of EI may have caused the insignificant interaction under the stress of peer victimization.

Limitations

Importantly, this study was cross-sectional in nature and therefore, these results must be interpreted with caution. In order to establish a causal relationship, a longitudinal study must be undertaken. However, given the limited number of studies reporting an association between peer victimization and ATOD use as well as EI and ATOD use, this study presents valuable findings. Additionally, the results may be considered generalizable due to the use of schools with different characteristics (urban vs. suburban, low-SES vs. middle to upper SES). These findings show that the risk of peer victimization exists in schools, regardless of inherent differences between the schools. Additionally, although Philadelphia reported lower EI overall, certain aspects of EI were found to be protective across both schools.

Although using a school sample can be considered a strong point, it should be noted that only students who were present during the assessments were included in the analysis. Therefore, children who were truant from school may have been excluded. This is especially important to mention because chronically truant youth may also be the same students who are experiencing peer victimization as well as ATOD use (Akiba, LeTendre, Baker, & Goesling, 2002).

All measures used were self-report. Self-report bias is a concern for this study, especially when the outcome of interest is ATOD use. Although confidentiality was assured throughout the process, youth in the study may have felt uncomfortable being honest about their use. A-CASI software was used for

the study and having the ability to answer questions on individual laptops may have counteracted the fear of being truthful. Data used in the study also came from only one source (the youth) and so there may be a problem with shared method variance. However, this problem is not unique to self-report measures.

The measure used to assess EI was not a traditional measure of EI but rather of emotional awareness. There were several reasons as to why this measure was used. First after reviewing the measure and the subscales pertaining to emotion measurement, the EAQ was deemed as an appropriate proxy measure of EI. Second, the measure had to be self-report because of participant burden related to assessment. Third, the measure had to be appropriate for 7th graders, some of whom had reading levels below grade-level. Finally, after reviewing current available self-report measures of EI for this age group, there was little to compare. The few that fit the criteria were confusing or had negative reviews. In general, there has been a significant amount of controversy related to measuring EI. Specifically, there is disagreement over whether a measure should be self-report or ability-based.

A recent review of measurement tools concluded that only the ability-based measure, the MSCEIT, properly measured EI and that self-report measures do not measure the intelligence aspect of EI (Orchard, et al., 2009). The authors suggest that the best way to measure the aspects of EI most related to ATOD use (understanding emotions and empathy) would be to use an emotion-based adaptation of the principal-agent paradigm (EPAP). In the principal-agent paradigm, an agent is used to evaluate the preferences of a

principal, based on known values that the principal hold for different aspects of a decision event (Orchard, et al., 2009). In the case of EPAP, the agent would need to have knowledge to make inferences about emotions that follow events, potential chains of emotion reactions, as well as the action that most likely results from the existence of a certain emotional state (Orchard, et al., 2009).

Additionally, affective forecasting (AF) has also been used to forecast emotional state in the future, especially in response to a specific emotion-inducing event (Orchard, et al., 2009). AF has been found to be correlated with some of the MSCEIT subscales; however, research on both AF and EPAP is very limited. In the end, given the time constraints as well as the age of the sample, the EAQ was the best choice in regards to measurement. The majority of the self-report measures of EI have been found to be lacking and an ability-based measure was not appropriate. While the EAQ was developed from the TAS, the measure overlaps strongly with other measures of EI, specifically the TEIQue. Studies using the EAQ have found associations with increased social anxiety, depression, worry, rumination, as well as complaints of depression (Rieffe, et al., 2008). Additionally, when compared to other measures of EI that have been used in the past, the EAQ appeared to be more straightforward, easy-to-understand, and also tapped into the construct of EI that was targeted in this study.

Summary scores for scales were completed using a cut-point of 50%. Means were then calculated and added by hand. Because of this procedure, a number of cases were deleted. Multiple imputation should have been used in order to retain as many cases as possible. Multiple imputation makes no

assumptions about whether data are randomly missing, can be used on data with single observations, and retains sampling variability (Tabachnick & Fidell, 2007). Retaining the cases that were deleted may have made a difference in finding interactive effects within this dataset.

Finally, the ATOD use variable was collapsed and dichotomous and therefore frequency of use as well as use of different substances was not taken into account for this study. The results showed an association between lifetime use and some EI subscales as well as peer victimization, but there was an inability to say whether this use was truly problematic at this point in time. Based on the age of the sample, any use is surely a risk for later abuse and dependence. However, some drug use is also a part of development, especially when learning to interact socially with peers. Being able to use a continuous ATOD variable would have allowed more exploration relating to how peer victimization as well as EI may have affected frequency of use.

Implications for Interventions

There are obvious problems with measuring EI, but the attention that EI has garnered over the past 15 years has spawned the development of over 300 curriculum-based social and emotional (SEL) programs (Salovey, Mayer, & Caruso, 2002). To this end, the Collaborative to Advance Social and Emotional Learning (CASEL) was developed in order to establish SEL as an essential part of education within the United States (Graczyk, et al., 2000). In the context of ATOD use, and the further support this study poses for the importance of EI in the face of possible use, SEL programs that can work within the context of

prevention programs may be most effective. The Social Development Curriculum is a curriculum (for kindergarten through grade 12) that integrates the development of social and emotional skills in the context of various prevention programs, including drug use prevention (Salovey, Mayer, et al., 2002). This classroom intervention targets and improves on self-monitoring, emotion awareness, perspective-taking, understanding non-verbal communication, anger management, as well as other aspects related to the EI construct. This curriculum is currently being evaluated within the New York City public school system.

When attempting to target youth who have experienced peer victimization and other stressors related to violence, the Resolving Conflict Creatively Program (RCCP) uses EI within a violence prevention program. RCCP program goals include increasing awareness of different choices available with dealing with a conflict, developing skills for making these choices, encouraging children's respect for their own cultural background and the background of others, as well as teaching children how to identify and stand against prejudice (Salovey, Mayer, et al., 2002). RCCP training programs emphasize identifying one's own feelings in situations involving conflict and attempting to take the perspective of others' feelings into consideration before acting (Salovey, Mayer, et al., 2002).

SEL curricula within prevention programs show some promise, however further assessment and exploration is needed. Specifically, empirical evidence showing the positive effects of EI programs should be pursued (Zeidner, et al., 2001). Further, SEL programs should focus specifically on enhancing EI rather

than attempting to add EI components to already established prevention programs (Zeidner, et al., 2001). Given the current findings related to social intelligence, focusing on only EI improvement in schools should be approached with caution. Emotional empathy and understanding are important for improved outcomes, but skills involved in social intelligence may bring youth into more situations involving ATOD use. Therefore, improving SEL within the context of prevention would seem to be the ideal route to overall prevention.

Future Directions and Conclusions

Although this study was unable to establish EI as a protective factor for youth exposed to peer victimization, the associations found relating to ATOD use are important. First, the findings related to peer victimization and ATOD use are notable as there are few studies that have examined this relation (Sullivan, et al., 2006; Weiner, et al., 2004). This study was unable to fully explain why the association between peer victimization and ATOD use occurred and future studies should look into anger regulation coping as well as peer drug use related to peer victimization and ATOD use. The present results also further support the relation between EI and ATOD use, however, the underlying mechanisms that cause this association are still unclear. There are clearly emotional aspects of why someone chooses to use drugs, but there should be further consensus as to how much of the motivation related to use comes from understanding and regulating emotions. This data did not support the hypothesis that EI acted as a buffer to victimization, however EI as a moderator should be examined further using a larger sample with more reported drug use.

The sample in this study reported a high amount of lifetime alcohol use and during a transitional stage of school (middle to high) this use should be monitored. The gateway theory of ATOD use asserts that adolescent substance users progress from experimentation with “legal” substances (e.g. beer, wine, liquor, cigarettes) to regular use of illegal drugs which starts with marijuana (Kandel & Yamaguchi, 1993). Reported marijuana use was low in this sample, but with such a high report of alcohol use, increased marijuana will most likely follow.

Prevention programs during this time have the ability to work on emotional and social risk and protective factors in the context of programming that is currently implemented in schools. This may be especially important considering there are very few known protective factors that can be incorporated and used to reduce or prevent ATOD use in adolescents. Working to improve social and emotional protective factors while intervening with youth who are being victimized may be crucial when attempting to decrease current ATOD use, as well as the future risk of abuse.

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APPENDICES

APPENDIX A

IRB Approval Letter



TEMPLE
UNIVERSITY®

Office for Human Subjects Protections
Institutional Review Board
Medical Intervention Committees A1 & A2
Social and Behavioral Committee B

3400 North Broad Street
Philadelphia, Pennsylvania 19140
Phone: 215.707.3390 Fax: 215.707.8387
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MEMORANDUM

To: LEPORE, STEPHEN J
CHP-PUBLIC HEALTH (0910)

From: Richard C. Throm
Director, Office for Human Subjects Protection
Institutional Review Board Coordinator

Date: 02-Feb-2010

Re: Exempt Request Status for IRB Protocol:
12943: The Moderating Role of Emotional Intelligence in the Relation
Between Peer Victimization and Alcohol, Tobacco and Other Drug Use

It has been determined by Expedited Review that this study qualifies for exemption status as follows:

45 CFR 46 Protection of Human Subjects

Section 101 (b): Unless otherwise required by department or agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

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

Nothing further is required from you at this time; however, if anything in your research design should change, you must notify the Institutional Review Board immediately.

If you should have any questions, please feel free to contact me at 215-707-8757.

Thank you for keeping the IRB informed of your clinical research.

APPENDIX B

Lifetime Alcohol, Tobacco, and Other Drug Use

Section 8

The next questions are about your **whole lifetime**. Please circle the number that best describes you.

<u>In your whole lifetime, have you ever:</u>	[0]	[1]	[2]	[3]	[4]	[5]
	Never	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
1. In your whole lifetime, have you EVER...drunk beer?	0	1-2	3-5	6-9	10-19	20 +
2. In your whole lifetime, have you EVER...drunk wine or wine coolers?	0	1-2	3-5	6-9	10-19	20 +
3. In your whole lifetime, have you EVER...smoked a cigarette?	0	1-2	3-5	6-9	10-19	20 +
4. In your whole lifetime, have you EVER...been drunk?	0	1-2	3-5	6-9	10-19	20 +
5. In your whole lifetime, have you EVER...drunk liquor?	0	1-2	3-5	6-9	10-19	20 +
6. In your whole lifetime, have you EVER...used marijuana?	0	1-2	3-5	6-9	10-19	20 +
7. In your whole lifetime, have you EVER...used drugs?	0	1-2	3-5	6-9	10-19	20 +
8. In your whole lifetime, have you EVER...sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?	0	1-2	3-5	6-9	10-19	20 +

APPENDIX C

Peer Victimization

Section 9

We are interested in how often students your age do different kinds of things. Think about how often the following things have happened to you **IN THE LAST 30 DAYS** and **circle one response** for each question.

<u>In the LAST 30 DAYS,</u> <u>how many times has this happened</u> <u>to you ...</u>	[0]	[1]	[2]	[3]	[4]	[5]
	Never	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
1. Had a kid try to keep others from liking you by saying mean things about you	0	1-2	3-5	6-9	10-19	20+
2. Had someone spread a false rumor about you	0	1-2	3-5	6-9	10-19	20 +
3. Been hit by another kid	0	1-2	3-5	6-9	10-19	20+
4. Been pushed or shoved by another kid	0	1-2	3-5	6-9	10-19	20+
5. Been left out on purpose by other kids when it was time to do an activity	0	1-2	3-5	6-9	10-19	20 +
6. Been yelled at or called mean names by another kid	0	1-2	3-5	6-9	10-19	20+
7. Had a kid say they won't like you unless you do what he or she wanted you to do	0	1-2	3-5	6-9	10-19	20 +
8. Another kid threatened to hit or physically harm you	0	1-2	3-5	6-9	10-19	20+
9. Been threatened or injured by someone with a weapon	0	1-2	3-5	6-9	10-19	20+
10. Another kid tried to get you to fight	0	1-2	3-5	6-9	10-19	20+
11. Had a kid tell lies about you to make other kids not like you anymore	0	1-2	3-5	6-9	10-19	20+
12. Had a kid who was mad at you try to get back at you by not letting you be in their group anymore	0	1-2	3-5	6-9	10-19	20+

APPENDIX D

Emotion Awareness Questionnaire

Section 17

Please circle the answer that best describes you.

	Not True	Sometimes True	Often True
1. I am often confused or puzzled about what I am feeling	Not True	Sometimes True	Often True
2. I find it difficult to explain to a friend how I feel.	Not True	Sometimes True	Often True
3. Other people don't need to know how I am feeling.	Not True	Sometimes True	Often True
4. When I am scared or nervous, I feel something in my tummy.	Not True	Sometimes True	Often True
5. It is important to know how my friends are feeling.	Not True	Sometimes True	Often True
6. When I am angry or upset, I try to understand why.	Not True	Sometimes True	Often True
7. It is difficult to know whether I feel sad or angry or something else.	Not True	Sometimes True	Often True
8. I find it hard to talk to anyone about how I feel.	Not True	Sometimes True	Often True
9. When I am upset about something, I often keep it to myself.	Not True	Sometimes True	Often True
10. When I feel upset, I can also feel it in my body.	Not True	Sometimes True	Often True
11. I don't want to know how my friends are feeling.	Not True	Sometimes True	Often True
12. My feelings help me to understand what has happened.	Not True	Sometimes True	Often True
13. I never know exactly what kind of feeling I am having.	Not True	Sometimes True	Often True
14. I can easily explain to a friend how I feel inside.	Not True	Sometimes True	Often True

15. When I am angry or upset, I try to hide this.	Not True	Sometimes True	Often True
16. I don't feel anything in my body when I am scared or nervous.	Not True	Sometimes True	Often True
17. If a friend is upset, I try to understand why.	Not True	Sometimes True	Often True
18. When I have a problem, it helps me when I know how I feel about it.	Not True	Sometimes True	Often True
19. When I am upset, I don't know if I am sad, scared or angry.	Not True	Sometimes True	Often True
20. When I am upset, I try not to show it.	Not True	Sometimes True	Often True
21. My body feels different when I am upset about something.	Not True	Sometimes True	Often True
22. I don't care about how my friends are feeling inside.	Not True	Sometimes True	Often True
23. It is important to understand how I am feeling.	Not True	Sometimes True	Often True
24. Sometimes, I feel upset and I have no idea why.	Not True	Sometimes True	Often True
25. When I am feeling bad, it is no one else's business.	Not True	Sometimes True	Often True
26. When I am sad, my body feels weak.	Not True	Sometimes True	Often True
27. I usually know how my friends are feeling.	Not True	Sometimes True	Often True
28. I always want to know why I feel bad about something.	Not True	Sometimes True	Often True
29. I often don't know why I am angry.	Not True	Sometimes True	Often True
30. I don't know when something will upset me or not.	Not True	Sometimes True	Often True

APPENDIX E

Youth-Estimated Social Intelligence Inventory

Section 16

The next questions ask you about the ways you interact with others. Please circle the answer that best describes how often the following things happen.

	Never 0	Seldom 1	Occasionally 2	Often 3	Very Often 4
1. You notice easily if others lie.	Never	Seldom	Occasionally	Often	Very Often
2. You are able to get along with other people.	Never	Seldom	Occasionally	Often	Very Often
3. You fit in easily with new people and new situations.	Never	Seldom	Occasionally	Often	Very Often
4. You are able to get your wishes carried out.	Never	Seldom	Occasionally	Often	Very Often
5. You are able to guess the feelings of others, even when they don't want to show them.	Never	Seldom	Occasionally	Often	Very Often
6. You are aware of the weak spots of others .	Never	Seldom	Occasionally	Often	Very Often
7. You know how to get others to laugh.	Never	Seldom	Occasionally	Often	Very Often
8. You are able to persuade others to do almost anything.	Never	Seldom	Occasionally	Often	Very Often
9. You are able to take advantage of others if you want to.	Never	Seldom	Occasionally	Often	Very Often
10. You are able to talk others into taking your side.	Never	Seldom	Occasionally	Often	Very Often